

# **The Medical Curriculum**

## **National University**

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A. Title

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NATIONAL UNIVERSITY, SUDAN [NUSU]

**FACULTY OF MEDICINE AND SURGERY [FOMS]**

# **The Medical Curriculum**

**Edited by**

**Prof. Qurashi M. Ali**  
**Prof. A-Rahman M. Beerli**

**2021**

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**2006, 2015, 2018, 2021**

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## INTRODUCTION

The Sudan is still in need of more doctors, general or specialized. A glance at the health indicators of the country shows that all done in the last century could not bridge the gap between this country and the rest of the world, the developing, let alone the developed. Affiliates of the health profession. The Sudan used to be proud comparing themselves with neighbors in medical education and health services. Know the situation is not better than any of the other African countries at the bottom of the development list. Sudan needs 50-60 years of fast development to reach their level of health service indicators, coverage and quality in developed countries. The recent discovery and utilization of oil and minerals, and the efforts made in agriculture and animal production is likely to reduce this time. Such indicators like maternal or child mortality are embarrassing, and those of doctor: population ratio and distance between health care units is below the minimum expected in a country that has been qualifying doctors for nearly a century. The recent influx of returning highly specialized medical and health professionals to the country is a good omen that our students and graduates are in safe hands in education and training.

Low health indicators are a product of poverty, vast areas and distances and inequitable distribution of the limited health manpower and services. This may be the case in all African and most Arab countries. In all those, the type of curriculum that equips student with their responsibilities and duties in the community is that which is going to have an impact on the health services. Many students from the Arab and African countries come to the Sudan for university education. This is provided in reputable higher education institutions, surrounded by a friendly and helpful community, in a safe, warm, virgin and uncontaminated environment.

The curriculum has to respond to all this national and global aspects. It echoes the state-of-the-art evidence-based course design and details, instructional methods, quality of educational processes and policies directing teaching, learning and assessment. Those guidelines can be seen in each and every course in this document. The document has been discussed and approved by the FOMS Curriculum Committee. Every outcome in this version (2021) has been given an **assessment framework code**, to justify the most suitable assessment method.

Qurashi M. Ali  
A/Rahman O. Beeri  
National University, Sudan



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## FOMS INFORMATION

**Name of the faculty:** Faculty of Medicine and Surgery.

**Name of the university:** National University - Sudan

**Date of establishment:** Established in 2005 as a medical program in the National College for Medical and Technical Studies. In 2014, the program has been renamed as Faculty of Medicine and Surgery, when the National College has been promoted to a university.

**Number of batches graduated:** Ten batches have been graduated (the first batch graduated in 2010).

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## BASIC UNIVERSITY (NUSU) AND FOMS DOCUMENTS {NUSU 1-8), FOMS (9-13)}

Please refer to the following:

1. NATIONAL UNIVERSITY CHARTER
2. ESSENTIAL DOCUMENTS of NUSU for the external and internal regulations and systems of governance. These internal documents include NUSU's Policies, Procedures, and Forms. External documents are Labor Laws and Child laws.
3. PROSPECTUS -2018-2021, Undergraduate and Graduate [ISBN: 978-99942-8-411-8], for a summary of course outlines,
4. STUDENT MANUAL [ISBN: 978-99942-3-671-8], which includes: Academic Regulations, Code of Activities and Conduct, and Fees Regulations.
5. STAFF HANDBOOK [ISBN: 978-99942-5-568-9] setting main terms and conditions of service of academic and administrative staff.
6. JOB DESCRIPTIONS for academic and management staff.
7. GRADUATE PROGRAMMES Course Outline, which includes the outline for the master's degree in human clinical anatomy.
8. POSTERS of policies and procedures.
9. MEDICAL CURRICULUM-2021, SESSION OBJECTIVES
10. CURRICULUM MAP POSTER
11. MEDICAL COURSE FILES
12. POSTERS OF POLICIES AND PROCEDURES
13. QUALITY DEPARTMENT RECORDS

## **VISION, MISSION STATEMENT, AND VALUES OF FOMS**

### **VISION**

The NUSU-FOMS aspires to be one of the leading institutions at both national and international levels and the most respected program of its kind that provides up-to-date medical education, quality health research, and trusted partnership with the community and other health sectors.

### **MISSION**

The NUSU-FOMS strives towards developing the highest standards of educational excellence, health-related research, and appropriate social responsibility to produce medical practitioners who are ethical professionals, lifelong learners, innovative, critical thinkers aware of diversity and local, regional, and global health issues.

### **VALUES**

The NUSU-FOMS values are: (1) obligations to manage community health problems, treat families and individuals with personal and professional integrity, consideration, and mutual respect, (2) commitment to honesty, truthfulness, and respect to human dignity, (3) fair treatment of all people and employees, with no discrimination on the bases of ethnicity, morphology, religion or ideology, (4) promotion of democratic values, hard work, perseverance, commitment to success, accepting responsibility and accountability for one's conduct and obligations, and (5) maintaining a good reputation and positive image in the community as a trusted partner through excellent care of the individual and families, and readiness for accountability in health services, environmental problems and other relevant problems.

## الرؤية والرسالة والقيم

### الرؤية

تتطلع كلية الطب بالجامعة الوطنية في السودان أن تكون إحدى المؤسسات التعليمية الرائدة على المستوى الوطني والعالمي، والأرفع سمعة وتقديراً كبرنامج يتميز بتقديم أحدث نماذج التعليم الطبي مع البحوث الصحية عالية الجودة، وذلك عبر الشراكات الموثوق بها مع المجتمع عامة والقطاعات الصحية خاصة.

### الرسالة

تعمل الكلية على تحصيل أعلى معايير التميز التربوي، والبحث العلمي الصحي، والمسؤولية المجتمعية لتأهيل ممارسين متميزين باخلاق المهنة، وبمهارات التعلم الذاتي مدى الحياة، والابداع، والتفكير النقدي مدركين لاهمية التنوع والقضايا الصحية المحلية والاقليمية والعالمية.

### القيم

تتلخص قيم الكلية في: (1) الالتزام بتدبير مشكلات المجتمع الصحية، وعلاج الأسر والافراد بالإهتمام والاحترام والتقدير الشخصي المتبادل، و(2) التحلي بالصدق والأمانة، واحترام كرامة الإنسان، و(3) العدالة في التعامل مع الناس والمستخدمين خاصة دون تمييز أو تفرقة على أساس العنصر، أو الشكل، أو الانتماء الديني أو الفكري، و(4) ممارسة ونشر قيم الديمقراطية، والجدية في العمل، والمثابرة، والحرص على النجاح، وقبول المساءلة، وتحمل المسؤولية الناتجة عن السلوك أو أداء الواجبات، و(5) العمل، والمحافظة، على السمعة الطيبة في المجتمع كشريك موثوق به، وذلك بالعناية بالفرد والأسرة والاستعداد للمساهمة في خدمة المجتمع من الناحية الصحية والبيئية وأي مشكلات أخرى مهمة. المجتمع من الناحية الصحية والبيئية وأي مشكلات أخرى مماثلة.

## GENDER RIGHTS

Throughout this manual, and on the website, both males and females are equally addressed. Every effort has been made to use him/her, his/her, him /her. It may not be possible to assure that this fair use has been consistent. Any such unintended mistake should be taken to mean both sexes.

## EXCLUSION OF LIABILITY AND DISCLAIMER

Throughout this manual, and the website, every effort has been made to ensure that expert, accurate and up-to-date guidance has been included. The administrative and academic authority of NUSU continuously updates the University's data and academic regulations to satisfy the emerging needs, more quickly than publications would reflect. Approved changes are shown at the official notice-boards of NUSU. Accordingly, neither the Ministry of Higher Education nor the NUSU's leaders and administration shall be liable to any person or entity concerning any loss or damage caused or alleged to be caused, by the information contained or omitted from this manual or website.

## COPYRIGHTS AND ACKNOWLEDGEMENTS

- The curriculum timetables and course details resemble many of those (or may contain parts) in other universities in which the "Founder" of NUSU has been one of the members in the bodies responsible for curriculum design and evaluation. In many of the medical colleges, he has been one of the driving forces for innovation. These include the University of Gezira (the Sudan), Sultan Qaboos University (Oman), Omdurman Islamic University, Alzaeim Al-Azhari University, University of Medical Science and Technology, African International University, National Ribat University, Al-Razi Medical College Albayan University (the Sudan) and Al Qassim University (Saudi Arabia). Major innovations have been added to improve the experience of the above institutions. This, in addition to comprehensive compilation in one document. Therefore, the total set of details, which is not available, in style, in any other college so far, may not be copied or published without written permission from the National University- Sudan.
- The teaching material available hinted at in the document is original and should not be reproduced for commercial use, in any form without written permission of the National University- Sudan. Non-profitable teaching purposes are allowed. Our teachers and colleagues, who are mentioned in the following paragraphs of the acknowledgments, are free to use this material because we could not single out what is ours from theirs.

- Worldwide, the overall innovations and their modifications stem out from the efforts of Professor Bashir Hamad. Every page of our documents could not be finalized, or brought to fruition, without his fatherly influence. His direct and indirect contributions to the curriculum of this university and continuous encouragement are gratefully acknowledged.
- The list, of those who, knowingly or unknowingly, contributed curricular details or ideas registered in NUSU's Founder mind or documents, is exhaustive. Our thanks are to the following professors: A/Hameed Lutfi, Elbagir Ali El Faki, Amir El Mubarak, Omar Abdul Aziz, Othman Taha, Othman Khalafalla, Gaafar M. Malik, Hassan M. Ahmed, Ali Habbour, Omar A. Mirghani, Awadelseed Mustafa, Mubarak Majzoub, M. Awadalla Salih, Othman Hamour, ElTayeb Abdul Rahman, Eisa Othman El Amin, Mamoun Homeida, Hassan M. Ahmed, Ali Abdul Rahman Barri, Ibrahim M. Abdul Rahim, Ahmed A. Muhammadani, Mukhtar El-Khatim, A/Rahman A/Hafeez, Awad A/Rahman El-Awad, M. Elamin El-Sharif, Kamal Zaki, Ibrahim Bani, Sayed M. Ahmed, A/Rahman El-Tom, Mohyddin Majzoub, Jamal Suleiman, Muzamil Hassan A/Qadir, M. A/Rahim A/Aal, Khalid Shamboul, Bakri Musa Abdul Karim, Tahir Othman Ali, Omar Habbal,
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- Numerous and continuous additions and corrections have been carried out by the Curriculum Committee of the Faculty of Medicine and Surgery, NUSU. Nuha Mahmoud and Hiba Elzaki have reviewed the ILOs and the latter contributed to the taxonomy codes as a step forward towards curriculum mapping. The staff and student versions of the problems have been edited by Dr. Sally Baraka.

## ADMISSION POLICY

- Percentage limit: Applications to NUSU-FOMS are processed by the Admission Office, the Ministry of Higher Education and Scientific Research (the Sudan), based on NUSU requirements of 80% score in fresh or recent Sudan Secondary School Certificate or equivalent qualification (please see the Ministry's website). The lowest limit of percentage, fees and scholarships are decided by the NUSU Deans' meeting and a one-page table is signed by the president and sent to the ministry.
- New School Certificate: Applicants who have new school certificate apply online in the Website of the Admission Office of the Ministry. Applicants who

have earlier school certificates, are given an opportunity in later admission cycles which are also processed through the Ministry. Vacancies at the third round of admissions, are filled with direct applicants reviewed by the Admission Office of NUSU and forwarded to the the Admission Office in the Ministry for verification and approval.

- Foreign students: International applicants will be processed as above, but are advised to fill the application form in the website, and wait for a response, and receive Provisional Acceptance letter from the NUSU President, before arriving in The Sudan.
- Transfer: Applicants for transfer from other institutions to NUSU submit their applications to the Admission Officer of NUSU, who sends the documents to the specific faculty (e.g. FOMS, to decide on the academic record, the courses taught and placement. The approved level by the faculty is sent to the Admission Office in the Ministry for verification and approval.
- Mature applicants: Mature students qualified with a previous health science professional BSc or higher degree may be considered. In this case, early application is recommended (6 months before national intake). It takes time for the approval of the Ministry of Higher Education, Sudan. The exact level and placement is decided by the decrees of the National Council of Higher Education, which allowed BSc graduates of science or allied medical sciences to joint medical schools, if their school certificate percentage fulfills the minimum requirement. Such mature students are exempted from courses in first year in medicine, if their school certificate score satisfies the minimum requirement of entry.
- Structural arrangements (slopes, lifts, ground floor access etc..) are made for academically qualified students with a disability. During the interview, students will be advised if they accept the fact that certain disabilities may not allow the practice of the profession they selected. The parents, legal advisor, student counseling officer will help in managing any sensitive choice-ability discordance, and give proper advice.
- No student is admitted or allowed to join classes before being given a Student Number by the Admission Office of the Ministry and agrees to abide by the rules and regulations of the NUSU and pass interviews and medical checkups by the faculty and payment of fees.



## STAFF AND RECRUITMENT

Academic and administrative staff interested in joining the National University-Sudan, may show their intention by filling out the **e-recruitment form** on the website ([www.nu.edu.sd/e-recruitment](http://www.nu.edu.sd/e-recruitment)). A response will be sent by e-mail, and further instructions will follow. The appointment of academic staff is based on academic excellence in the areas of research and teaching. Academic applicants with no research records or grants for research will only be considered for BRIEF full-time positions in this university. Full- and part-time staff lists may be looked up in **Academic Staff of NUSU-FOMS**. Staff orientation, development, rewards, and forms are included in the **STAFF HANDBOOK**. Applicants interested in joining other educational institutions can reach them through our web page. **Well qualified individuals with excellent teaching and research experience may be invited to join NUSU if posts are vacant.**

## LOCATION AND MAP

**The Country:** One of the best advantages of this National University is that it is located in the Sudan, an Afro-Arab country with limited human and natural living resources. The inhabitants are either Arabs or Africans or an amalgam of both. The Sudan educational institutions are known, worldwide, for their academic excellence and professional teaching perfection. Politically driven, media have shown the country as a war-land of animosities, and frequent crises. For those who visited the country the situation is exactly the opposite. A Sudanese national, wherever he/she may be is unique inconsiderateness, courtesy, and hospitality. In almost 80% of the country, it is the safest in the world. It may be one of the very few countries in the world where the color of people has no significance and has never been a cause of conflict. Most of the Sudan dilemmas stem from developmental problems that need resources to solve.

**The City:** The capital is Khartoum, a city made up of three cities striding the White Nile, the Blue Nile as they join to form the Nile. This has given it unique panoramic landscapes and scenery. There are about 5-6 million inhabitants, mostly in traditional houses, known for their spacious yards. Khartoum city, where the National University is located, is the official capital crowded with governmental offices, ministries, embassies, and international organizations. There are some affluent districts where the price of a house may as expensive as in New York or Tokyo, and other poor areas of cheap accommodation. **The exact location is on the Eastern side of Alhawa Highway. The latter separates the NUSU North from Alazhari Block7 South.**

Omdurman the second part of the Sudan Capital is known for its traditional heritage. Khartoum North, which is mainly an industrial city, completes the three parts of the capital



*f Fig. 1: Location of the NUSU-FOMs*

## LEARNING ENVIRONMENT

NUSU is open for students and staff for about 18 hours on days (Saturday-Thursday). The library, self-directed learning facilities are available for registered students and staff. Access to research laboratories is allowed for certain students who are involved in research projects. Sport facilities are available within and near the current learning premises. Indoor recreational facilities are available. Any activity that sways the students' attention to time-wasting and conflict-generating talks or deeds are prohibited. Political activities are forbidden in the learning premises, but they all can contribute to academic dialogues on all issues including political science, particularly those of national interest. Students who enroll in NUSU sign a pledge not to practice politics or represent parties within the learning premises. They have the freedom to practice politics outside NUSU.

The ambitions of the University have designed beautiful, environment-friendly to serve its mission. Students and employees are expected to respect and work towards achieving that. Comments, for improvements, from them and their visitors and patients and co-patients are very important to maintain and improve the level of standards of perfection we intend to reach.

## OBJECTIVES OF THE MEDICAL PROGRAMME

### PROGRAM GOALS/ OBJECTIVES: these are to:

GOAL CODE	GOAL/OBJECTIVE
PG-1	<b>Emphasize values</b> and ethical heritage of the Sudanese Nation in its vision, mission, and curriculum, and follow strategies that lead to strengthening these values, as an important component of the University's philosophy and message, which emphasizes medical ethics, professionalism, interpersonal and communication skills, and ethical commitment
PG-2	<b>Graduate practitioners</b> with the degree of Bachelor of Medicine and Surgery (MB BS), with strong scientific base, laboratory and clinical skills, responsible patient care, community orientation, and public health promotion.
PG-3	<b>Contribute to community development</b> through health services provided in its own health institutions and other institutions co-operating with it, through the following: (a) partnership in designing health programs and plans, and implementation, (b) contribution in continuous education through short and long term courses, to improve efficiency of health workers, (c) provision of technology in education, through a partnership with the Ministries of Education, of Higher Education, and Health and other public and private health institutions, and (d) assume a role in the reputation of Sudan as the World's best promising source of food and natural resources.
PG-4	<b>Strengthen medical and health research</b> , making use of the University's facilities and communication privileges to promote up-to-date modern medical education, evidence-based medical practice, research, and services, with emphasis on legal compliance and public disclosure of research and all activities.

## EXPECTED PROGRAM LEARNING OUTCOMES (PLOs) of the Medical curriculum or (*Characteristics of the Medical Graduate*):

*A graduate of the Faculty of Medicine and Surgery, National University, Sudan should be able to:*

CODE	DOMAINS	PROGRAM LEARNING OBJECTIVES
PLO-1	Ethics, Professionalism, Communication and Interpersonal Skills	<i>Abide</i> by the values and norms of the Sudan, <i>adopt</i> the articles of <i>Charter</i> and <i>Regulations</i> of the University, <i>show understanding</i> of the University's goals, objectives, and strategies, and <i>propagate and follow</i> its policies and procedures for good practice.
PLO-2		<i>Observe</i> in his/her study and practice, the basic health professional ethics stated in <i>Sudan Medical Council</i> documents. including awareness of confidentiality and patient's privacy, autonomy, and dignity, <i>Show appreciation</i> for the value of diversity and multi-ethnicity, <i>maintaining</i> good and honest relations with patients, showing respect to their families, and discussing with them the ethics needed for decision-making in medical dilemmas: beginning and end of life, and the use of genetics' research,
PLO-3		<i>Show</i> respect to his/her colleagues in the "health team" acting as an efficient member with dentists, nurses, clinical pharmacists, laboratory and imaging technologists, physiotherapists, geneticists, biotechnologists, and other health employees, capable of its leadership, <i>divide</i> labor and <i>ensure</i> both effectiveness and homogeneity among the members, and across all related sectors, using good communication skills.
PLO-4		<i>Demonstrate</i> work ethical habits of punctuality, altruism, reliability, diligence, flexibility, adaptability, humility, trustworthiness, and <i>present</i> evidence of responsibility towards the institution and public.

CODE	DOMAINS	PROGRAM LEARNING OBJECTIVES
PLO-5	Basic Science, Clinical Skills, Patient Care, and Health Promotion	<b>Demonstrate</b> detailed knowledge of the human body structure, function, and underlying normal life mechanisms at the system, organ, tissue, cellular and molecular levels, <b>integrate</b> , and <b>explain</b> the scientific structural (anatomical), functional (physiological, biochemical), morbid (microbiological, pathological), and therapeutic (pharmacological) background related to the problems
PLO-6		<b>Discuss</b> the role of each of the developmental, genetic, microbiologic, autoimmune, metabolic, toxic, neoplastic, degenerative, and traumatic causes of disease, <b>describe</b> the structural and functional alterations caused by these factors, and <b>outline</b> preventive and public health measures.
PLO-7		<b>Take</b> detailed medical history and <b>perform</b> physical examination according to the standard scheme and recording vital signs according to the prescribed procedures.
PLO-8		<b>Request</b> the investigations relevant to pediatric, obstetric, gynecologic, medical, and surgical decision-making, <b>reach</b> a diagnosis or <b>suggest</b> an appropriate differential list, and <b>manage</b> common conditions in children and adults to relieve pain and prevent complications.
PLO-9		<b>Obtain samples</b> from patients in the proper and timely manner and in a professional way, and <b>administer</b> or <b>give</b> medications timely and efficiently, <b>demonstrate</b> the skills of interpreting common findings of laboratory diagnostic tests of urine, blood and stools and other body fluids or tissues, and <b>detect</b> alterations in normal parameters.
PLO-10		<b>Outline</b> the physical bases of diagnostic modalities: molecular biology and imaging, and <b>discuss</b> the biochemical and morphological changes in emergencies, trauma, and complications of chronic illnesses.
PLO-11		<b>Diagnose</b> and <b>manage</b> cases of endemic and epidemic diseases, and other health problems prevalent at the level of the individual, family, or society, <i>with special emphasis</i> on the nutritional and environmental problems, common in both developed and developing countries, and <b>play</b> an active role in health promotion.
PLO-12		<b>Manage</b> emergency, terminal, and intensive care, and <b>decide</b> and <b>act</b> promptly on cases needing referrals to specialized centers or personnel.

CODE	DOMAINS	PROGRAM LEARNING OBJECTIVES
PLO-13	Social Accountability, and Informatics	<b>Accepts to work in all settings</b> according to community needs, <b>act</b> to improve health service delivery systems both quantitatively and qualitatively, and <b>encourage</b> community participation in planning and providing suitable solutions, recognizing the community beliefs, ethics, and traditional practices., <b>Continue</b> to consider elements of efficiency, costing, and economic implications in his/her diagnostic and therapeutic choices.
PLO-14		<b>Administer</b> a health "unit" or "center" efficiently according to scientific, medical, statistical, economic, and legal aspects
PLO-15		<b>Use computer efficiently</b> in word processing, statistics, graphics, Learning Management Systems, Open Educational Resources, and <b>connect</b> with a worldwide network of his/her profession to achieve success in other objectives of his/her career.
PLO-16	Research, Career Ambitions, and Quality and Evidence-based Practice	<b>Carry out health or health-related research</b> , alone or with a health team, using scientific methods known in such activities.
PLO-17		<b>Acquire the skills of teaching, and independent learning from the medical sources and communicate</b> as instructor implementing continuous education activities to upgrade his/her own abilities and those of his/her colleagues in the health team, maintaining interest and motivation
PLO-18		<b>Acquire postgraduate qualification</b> in the discipline of his/her choice, recognizing the needs of the society for certain specialties, particularly general practice, and family medicine including maternal and child health.
PLO-19		<b>Apply quality assurance</b> and improvement, and <b>show awareness</b> to risk management in patient consent and records and legal compliance.
PLO-20		<b>Apply</b> the principles of evidence-based practice, in patients, management, and research.

## CURRICULUM MODEL

In constructing a curriculum model, it is widely understood that a curriculum is planned to be implemented, but the planned document is not fully taught, and the taught content is not fully perceived by students. Students also have different other sources of information. These aspects are taken into account in the NUSU-FOMS curriculum model.

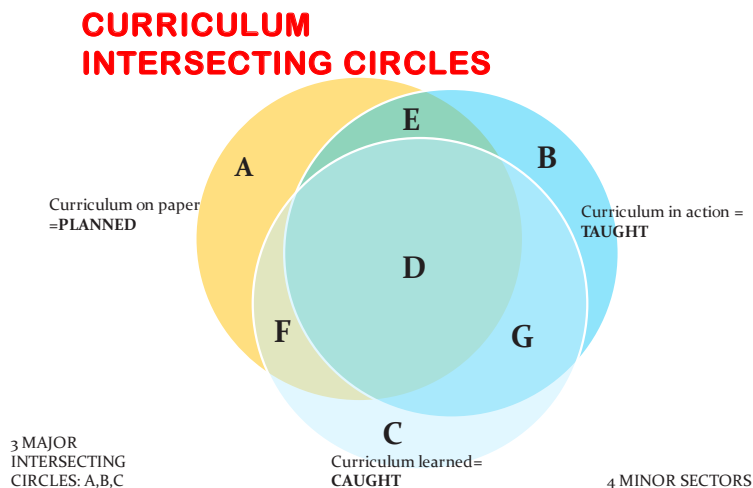


Fig. 2: Planned, taught, and perceived.

The NUSU-FOMS adopts a model based on **SPIRAL COMPETENCY-BASED**. The students go through three phases. They start in **PHASE ONE** with an introduction to medical education, the English language, and introductions to basic sciences. In **PHASE TWO**, anatomy, biochemistry, and physiology are integrated with the basic community and clinical applications, around the organ system in subsequent modules. Carefully selected patient scenarios are used in **PROBLEM-BASED** sessions. **PHASE THREE** is the clerkships where students rotate to study in small groups the scientific and professional aspects of primary health care, general medicine, surgery, obstetrics and gynecology, pediatrics, emergency medicine, orthopedics, ophthalmology, ENT, psychiatry, family medicine, hospital management, evidence-based medicine, and health economics. Students mature gradually from one phase to the other as more is added to the previous phase, in a pattern where basic and clinical sciences intermingle, with more of the latter towards graduation.

## LEARNING STRATEGIES AND INSTRUCTIONAL METHODS

**The learning strategies emphasize the following:** (1) early acquisition of basic clinical skills- including communication, (2) student-centered learning, and maximum student responsibility in the learning process, (3) problem-oriented learning, (4) community-oriented and community-based activities, (5) integration of basic science, community and clinical practice in a multidisciplinary approach, (6) self-and peer education and evaluation, (7) team-work approach, (8) a wide range of electives, (9) continuous evaluation, (10) preparation for continuous education and independent research.

**The Faculty of Medicine adopts the following methods in the daily program of activities:** (1) problem-based learning (PBL) sessions- one problem/ week, (2) seminars and small group discussions –once/ week at least, (3) field practice in rural and primary health care settings and societies not less than 1/5<sup>th</sup> of the timetable, (4) practical sessions (laboratory, clinical) not less than 1/4<sup>th</sup> of the curriculum timetable, (5) Small bedside teaching, (6) Clinical demonstrations, (7) skill laboratory (weekly) sessions, (8) lectures -not more than 1/3<sup>rd</sup> of the curriculum timetable (around 3 lectures/day), (9) educational assignments, reports and research activities (as many as the program and time would allow), (10) electives -about 5% of the curriculum timetable- (about 2 hours/semester).

## EVIDENCE OF EQUALITY AND QUALITY

The Faculty of Medicine is part of NUSU where equality, non-discrimination, and fairness are practices expressed in several published regulations and policies included (where relevant) in the: (1) Essential Documents, (2) Staff Handbook, (3) Student Manual, (4) Prospectus (5) Timetables, and (6) Academic Calendars, and in the Website of NUSU. Equality policies are reflected in POSTERS over the premises, ensuring the distribution of information for all students. Students and their parents or sponsors are not only informed about the Academic, Conduct, and Fees' Regulations, and asked to put their signature, to ensure approval and collective commitment to students' responsibilities and achievements. The President, Secretary of Academic Affairs, Dean of Students, Dean of Faculty, Quality Manager hold regular meetings, almost every semester with each class once, and remind students with regulations, career advice, and appeal procedure. Students report and have the right to complain to the senior staff about any irregularity inflow of instruction, assessment, or inadequacy of services and environment.

The model, the approach to equality, and the learning methods used (see below) including Self-Directed-Learning (SDL) or Directed-Self-Learning (DSL), shown on each and ev-



ery page of TIMETABLES, prepare students to take full responsibility of their learning while at the school and after graduation to obtain higher degrees in sciences or medicine.

Each module has been designed in a special and specific sequence that includes rationale, objectives, list instructional methods and sessions, assessment, reading material, and timetable. The Quality Department of the university reviews strict implementation of the module and documents non-conformance. The Faculty of Medicine and Surgery is part of the university, which passed the ISO-9001-2008 system in 2009 for administrative and academic institutional total quality management. In 2015 the university has achieved institutional accreditation by the British Accreditation Council (BAC- 2015 and 2018 Please see the latest BAC Report and certificate in Appendices II and III].

## **ADOPTION OF SCIENTIFIC METHOD**

The principles of scientific methods are taught and practiced throughout the ten semesters of study. The principles of research are introduced during Phase Two and the students' submit-graduation research topics are assessed thoroughly. Excellent projects are presented at the Annual Students' Research Conference. Evidence-based medicine (EBM) and critical thinking are introduced in the first semester during the course of "Introduction to Medicine and Medical Education". The principles of EBM and self-directed learning (SDL) and analytical thinking are discussed and explained. Research methodology is taught in Semester 5, and the graduation project starts then. The NUSU Centre for Professional Development (CPD) trains teachers at all levels on evidence-based medicine, scientific writing, up-to-date research career advice, instructional techniques, course design, and assessment.

## **BASIC BIOMEDICAL SCIENCES**

Basic biomedical sciences such as biochemistry, biophysics, genetics, immunology, microbiology, anatomy, pathology, epidemiology, physiology are taught early during the first two years (Semesters 1-4). These topics are also taught as part of the organ-system integrated with the clinical aspect when their importance and significance are more illuminated. The basic sciences weigh 36 credit hours standing separately and share in the credit hours assigned to the organ systems. Dissection room, museum, Biochemistry, Physiology, Pathology/Microbiology Laboratories are available for students in regularly scheduled sessions, and for students who opted to take laboratory research projects. The component of basic sciences is updated as needed when the objectives are re-evaluated and approved by the Curriculum Committee before the new timetable is constructed. More science courses have been added to this review of the curriculum. These include Human Biology, Histology, and Bioinformatics.

The university has established a research institute, National University Biomedical Research Institute (NUBRI), to catch up with biomedical science advances and bioinformatics.

## SOCIAL REQUIREMENTS OF “TOMORROWS DOCTOR” BAHAVIOURAL SCIENCE, MEDICAL ETHICS, AND PROFESSIONALISM AND COMMUNICATION SKILLS.

In NUSU-FOMS's model, the students come in contact with society and patients early in their education and training. Introduction to the courses **Medical Ethics** and **Behavioral Sciences** are taught in the early semesters. Communication skills are introduced very early in the first semester as part of the course **“Introduction to Medicine and Medical Education”**, and in the First Part of the **“Professional Skills -211”**, and in-depth in the final year. Courses on **“Psychiatry”** and **“Family Medicine”** assure management of disease in the society and clinics, which are taught in Semester 9. As students approach graduation, the course on **“Medical Professionalism and Communication Skills”**, as well as that of **“Forensic Medicine and Law”**, in the last semester includes all requirements of “Tomorrow's Doctor” ethics.

## REQUIREMENTS ON CLINICAL SCIENCES AND SKILLS

The curriculum in its spiral model aims at early contact of students with patients and the health delivery system. The **clerkship** period from Semester Seven to Ten is wholly devoted to acquiring skills needed for future doctors who are expected to practice evidence-based medicine, as the community and socially responsible leader. The first contact with the patient is studying organ systems with clinical rounds conducted under very close supervision and emphasizing the oneness of the patient despite the particular interest in one system. The dignity and rights of the patients are highly emphasized. The **“Family Medicine”** takes place mainly in the primary health care centers. Students are encouraged to organize health days in the **rural areas** under supervision to help in promoting health and acquiring **basic clinical skills**. These days are usually coordinated with students in other health science colleges like pharmacy, nursing, dentistry and medical laboratory sciences.

## MEDICAL EDUCATIONAL PROGRAMME MANAGEMENT

The **Curriculum Committee** of the FOMS is headed by the Dean, as stated in the **Essential Documents [JOB DESCRIPTION Manual]** there is a full representation of senior staff and representative of the Ministry of Health, community, alumni, and students. The committee is responsible for planning and implementing the curriculum. It is the **authority and responsibility** of the committee to **undertake minor changes** in duration, sequence, content, and calendar of courses, as necessitated by responses to internal and external moderation. **Major changes** of adding new courses or removing courses require justification and approval of the **Secretary of Academic Affairs or the Academic Council** of the university. This has to be proposed by the Curriculum Committee. The University Curriculum Committee seen in the Committee Structure

has been in charge before the upgrade of National College to university. After upgrade, it has no direct role in curriculum details of individual colleges, but approves the full curriculum book presentation, to align with other colleges' curriculum summary format, in the **PROSPECTUS**.

To ensure that the Timetable of each module abides by the quality standards of NUSU, every timetable has to be signed by the **Course Coordinator, the Dean, Secretary of Academic Affairs, and President of the University**. The Quality Department of NUSU approves a course file when it includes the **objectives, timetable, lesson plans, assessment, grade descriptors, teaching observation, attendance records, and students' opinion on implementation, facilities, and teaching staff**. The approved file is the final stage of the course setup.

## LIAISON WITH MEDICAL PRACTICE AND HEALTH SECTOR

The NUSU-FOMS is recognized by the **Sudan Medical Council, General Medical Council of the UK** in conforming with and commitment to the "good medical practice" in its curriculum. The curriculum allows early contact of students with future employers in Semester One in the course "**Introduction to Medicine and Medical Education**" where they pay visits to health institutions including the Ministry of Health and Health Centers, in which they would train later in Family Medicine. The university hospital maintains links with Medical Supplies Corporation, National Council for Drugs and Poisons, Federal Ministry of Health, and health institutions controlled by the Khartoum State Ministry of Health, particularly Health Centers. The second NUSU hospital is 15 Km South, in Bagair, under construction, is approved, followed closely, and helped through concessions by the Gezira State Ministry of Health. It is intended to serve the rural community.

NUSU decided to have its own hospitals; one (urban) started operating and the second (rural) is under construction. At the same time, it established a strong relationship with the ministries of health and other health providers. The Curriculum Committee of the FOIM includes a representative of the Federal Ministry of Health.

## CURRICULUM DURATION AND STRUCTURE [see also Year Plan Poster]

This is a five years period curriculum, divided into three phases (see above) and ten long semesters, composed of over 200 credit hours. A semester maybe 18-24 weeks. As described above, phase one is devoted to basic sciences, phase two for integrated basic medical and clinical sciences, and phase three for clinical clerkships. In phase two there is both horizontal and vertical integration. The curriculum includes ELEC-TIVE courses, all during the End-of-Year vacation.

## CURRICULUM PHASES

The program is of five years (10 semesters) duration divided into three phases, comprising mandatory CHs and elective. A semester is 18-20 weeks in Phase 1 and 2, and 22-24 weeks in Phase 3. There are three compulsory summer courses and three electives; credit hours of electives are included in the total. The FOMS curriculum has three phases:

Phase 1: Introductory science courses      Semesters 1, 2

Phase 2: Introduction and integrated basic science organ system courses Semesters 3-6

Phase 3: Clinical clerkships      Semesters 7-10

The changing dates of national and religious holidays may necessitate changing the sequence of courses, with one- or two-week variations, allowed by the Academic (Scientific) Council.

## ACADEMIC CALENDER FORMS [ACF]

The Scientific Council [SC] of the National University-Sudan [NUSU] approved the Academic Regulations [RGA], which adopted the modular pattern of course organization. The modules in each academic year in the various Faculties include several courses distributed over two semesters, in addition to summer courses including remedial and elective modules. This Academic Calendar Form [ACF] describes the important entries that have to be prepared before the beginning of the academic year for each of the batches of students, in each program. It is the responsibility of the Course Coordinator and the Dean [D] to fill up the form before being signed by the Secretary of Academic Affairs (SAA) and the President of NUSU. The [D] should observe the dates approved by the SC for the beginning and end of each year, and abide by the Curriculum Map and Prospectus. Staff availability and logistics may justify slight changes in the sequence of the courses, which may be approved by the President or SAA. The LOGISTICS column should include the requirements needed for the implementation of the course.

The ACF for each year is shown on the following pages. The course committee will fill up the various areas of the form to remain as a record for the academic year. It also includes Summer courses and electives as well as the exact dates of assessment and feedback on midcourse and final examinations.

## FIRST YEAR

ACADEMIC YEAR: e.g. 2021/2022

FACULTY: Medicine and Surgery

CLASS: First Year

BATCH No. : e.g. 17

**SEMESTER: (1)**

	COURSE TITLE	CODE	DURATION [WEEKS]	CREDIT HOURS (T+P)*	CAL- ENDER DATES	ASSESSMENT				LOGISTICS & REMARKS
						MID-COURSE		FINAL		
						Exam	*F. B	Exam	*F. B	
1	English Language 1	ME - ENG - 113	11	3 (3+0)						Classroom = Students  Inter Semester Vacation:
2	Computer Science 1	ME- COMP- 116	11	2 (1+1)						
3	Introduction to Medicine & Medical Education	ME-EDU - 114	2	2 (1+1)						
4	Physics for Medical Equipment & Investigation	ME - PHYS - 115	4	3 (3+0)						
5	Human Biology	ME- HUBIO-120	3	2 (1.5+.5)						
6	General Histology	ME-HIST-121	3	2 (1+1)						
7	Basic Biochemistry	ME - BIOCH-118	3	2 (2+1)						
8	Introduction to Medical Ethics	ME -ETHIC- 226	2	2 (2+0)						

\*T: Theory, P: Practical, F.B: Feedback on students' works

**SEMESTER: (2)**

#	COURSE TITLE	CODE	DURATION [WEEKS]	CREDIT HOURS (T+P)*	CALENDER DATES	ASSESSMENT				LOGISTICS & REMARKS
						MID-COURSE		FINAL		
						Exam	*F. B	Exam	*F. B	
1	English Language 2	ME-ENG-123	12 Longit	3 (2.5+.5)						Classroom = Students  Inter Semester Vacation:
2	Computer Science 2	ME-COMP-124	12 Longit	2 (1+1)						
3	Biostatistics	ME-STAT-117	11 Longit	2 (1+1)						
4	Behavioral Science	ME-BEHAV-128	11 Longit	3 (3+0)						
5	Genetics and Molecular Biology	ME-GET-119	3	2 (1.5+0.5)						
6	Bioinformatics	ME-BIOINFO-129	2	2 (1.5+0.5)						
7	Man and His Environment	ME-ENV-127	3	2 (1.5+0.5)						
8	Human Growth and Development	ME-GROW-126	3	2 (1.5+0.5)						
9	Immunology	ME-IMM-216	3	2 (3+0)						
10	Medical Entomology and Parasitology	ME-PAR-125	3	2 (1.5+0.5)						

\*T: Theory, P: Practical, F.B: Feedback on students' works

END-OF-YEAR-BREAK FOR Those who attended and passed all courses:

NEW ACADEMIC YEAR STARTS ON:

Signature Dean of Faculty

Signature Secretary of Academic Affairs

SUMMAR 1: ELECTIVES:

**1.Health quality: 2 CHs**

**2.Management and leadership: 2CH**

## SECOND YEAR

ACADEMIC YEAR: e.g. 2022/2023

FACULTY: Medicine and Surgery

CLASS: Second year

BATCH No. : e.g. 17

### SEMESTER: (3)

#	COURSE TITLE	CODE	DURATION [WEEKS]	CREDIT HOURS (T+P)*	CAL- ENDER DATES	ASSESSMENT				LOGISTICS & REMARKS
						MID-COURSE		FINAL		
						Exam	*F. B	Exam	*F. B	
1	Professional Skills 1	ME-SKILL-211	18	2 (0.5+1.5)					Classroom = Students  Inter Semester Vacation:	
2	Principles of Disease 1	ME-DIS-212	3	3 (2+1)						
3	Principles of Disease 2	ME-DIS-212B	3	3 (2+1)						
4	Basic Pharmacology	ME-BPHARM-217	2	3 (3+0)						
5	Blood and Lymph	ME-HEM-316	3	3 (2+1)						
6	Cardiovascular System	ME-CVS-214	4	5 (2+3)						
7	Respiratory System	ME-RES-213	4	5 (3+2)						

\*T: Theory, P: Practical, F.B: Feedback on students' works

**SEMESTER: (4)**

#	COURSE TITLE	CODE	DURATION [WEEKS]	CREDIT HOURS	CALENDER DATES	ASSESSMENT				LOGISTICS
						MID-COURSE		FINAL		
						Exam	*F. B	Exam	*F. B	
1	Professional Skills 2	ME-SKILL-221	18	2 (1+1)					Classroom = Students	
2	Primary Health Care	ME-PHC-215	2	2 (1+1)						
3	Musculoskeletal System	ME-MSK-223	4	4 (1+(2))						
4	Nutrition & Metabolism	ME-NUT-224	4	4 (3.5+0.5)						
5	Gastrointestinal System	ME-GIT-225	4	6 (3+3)						
6	Basic Epidemiology	ME-EPI-312	2	2 (2+0)						

\*T: Theory, P: Practical, F.B: Feedback on students' performance

-END-OF-YEAR-BREAK FOR Those who attended and passed all courses:

NEW ACADEMIC YEAR STARTS ON: Date:

Signature Dean of Faculty

Signature Secretary of Academic Affairs

**SUMMAR 2: ELECTIVES:**

1. **Evidence-based medicine:: 2 CHs**
2. **Global halth: 2 CH**

**SECOND YEAR PROGRAMME EVALUATION**



## THIRD YEAR

ACADEMIC YEAR: e.g. 2023/2024

FACULTY: Medicine and Surgery

CLASS: Third year

BATCH No. : e.g.17

### SEMESTER: (5)

#	COURSE TITLE	CODE	DURATION [WEEKS]	CREDIT HOURS (T+P)*	CALENDER DATES	ASSESSMENT				LOGISTICS
						MID-COURSE		FINAL		
						Exam	*F. B	Exam	*F. B	
1	Professional Skills 3	ME-SKILL-311	18	2 (1+1)					Classroom = Students  Inter Semester Vacation:	
2	Research Methodology	ME-SEARCH-227	2	2 (2+0)						
3	Graduation Project	ME-EPID-215	2	3 (0+2)						
4	Urinary System	ME-URO-313	5	5 (3+2)						
5	Endocrine System	ME-ENDO-315	3	4 (3+1)						
6	Reproductive System	ME-REP-314	4	4 (2+2)						

\*T: Theory, P: Practical, F.B: Feedback on students' works

**SEMESTER: (6)**

#	COURSE TITLE	CODE	DURATION [WEEKS]	CREDIT HOURS (T+P)*	CALENDER DATES	ASSESSMENT				LOGISTICS
						MID-COURSE		FINAL		
						Exam	*F. B	Exam	*F. B	
1	Professional Skills 4	ME-SKILL-321	18	(1+1) 2						Classroom = Students  Inter Semester Vacation:
2	Head and Neck	ME-HAN-322	3	(0+2) 2						
3	Nervous System and Special Senses	ME-CNS-323	7	(4+4) 8						
4	Tropical Medicine	ME-TROP-324	3	(1.5+0.5) 2						
5	Clinical Pharmacology	ME-CPHARM-325	3	(4+0) 4						

\*T: Theory, P: Practical, F.B: Feedback on students' performance

**END-OF-YEAR-BREAK FOR Those who attended and passed all courses:**

**NEW ACADEMIC YEAR STARTS ON:**

Signature Dean of Faculty

Signature Secretary of Academic Affairs

**SUMMER 3 ELECTIVES:**

**1. Scientific writing: 2CHs**

**2. Medical informatics: 2CHs**

THIRD YEAR PROGRAM EVALUATION

## FOURTH YEAR

ACADEMIC YEAR: e.g. 2024/2025

FACULTY: Medicine and Surgery

CLASS: Fourth year

BATCH No. : e.g. 17

**SEMESTER: (7)**

**Group (A)**

#	COURSE TITLE	CODE	DURATION [WEEKS]	CREDIT HOURS (T+P)*	CALENDER DATES	ASSESSMENT				LOGISTICS & REMARKS
						MID-COURSE		FINAL		
						Exam	*F. B	Exam	*F. B	
1	Internal Medicine	ME-MED-411	12	(4+8) 12					Classroom = Students  Inter Semester Vacation:	
2	Emergency Med- icine	ME-MER-412	2	(2+2) 4						
3	Dermatology	ME-DERM-413	2	(1+1) 2						

\*T: Theory, P: Practical, F.B: Feedback on students' works

**SEMESTE R: (8)**

#	COURSE TITLE	CODE	DURATION [WEEKS]	CREDIT HOURS (T+P)*	CALENDER DATES	ASSESSMENT				LOGISTICS & REMARKS
						MID-COURSE		FINAL		
						Exam	*F. B	Exam	*F. B	
1	General Surgery	ME-SURG-421	9	(4+8) 12					Classroom = Students  Inter Semester Vacation:	
2	Orthopedics	ME-ORTOP-422	3	(2+2) 4						
3	Ophthalmology	ME-OPTAL-423	2	(1+1) 2						
4	Ear, Nose and Throat	ME-ENT-424	2	(1+1) 2						

\*T: Theory, P: Practical, F.B: Feedback on students' works

END-OF-YEAR-BREAK FOR Those who attended and passed all courses:

NEW ACADEMIC YEAR STARTS ON:                                  Dat:.

Signature Dean of Faculty

Signature Secretary of Academic Affairs

**SUMMAR 4: ELECTIVES:**

**1. British and American professional examinations: 2 CHs**

**2. Sports medicine: 2 CHs**

**3 Addiction medicine: 2CHs**

**FIFTH YEAR**

ACADEMIC YEAR: e.g. 2025/2026

FACULTY: Medicine and Surgery

CLASS: Fifth year

BATCH No. : e.g 17

**SEMESTER: (9)****Group (B)**

#	COURSE TITLE	CODE	DURATION [WEEKS]	CREDIT HOURS (T+P)*	CALENDER DATES	ASSESSMENT				LOGISTICS & REMARKS
						MID-COURSE		FINAL		
						Exam	*F. B	Exam	*F. B	
1	Family Medicine	ME-FAM-513	2	3 (1+20)					Classroom = Students  Inter Semester Vacation:	
2	Psychiatry	ME-SYC-512	3	4 (2+2)						
3	Obstetrics & Gynecology	ME-OBGYN-511	11	12 (4+7)						

\*T: Theory, P: Practical, F.B: Feedback on students' works

**SEMESTER: (10)**

#	COURSE TITLE	CODE	DURATION [WEEKS]	CREDIT HOURS	CALENDER DATES	ASSESSMENT				LOGISTICS
						MID-COURSE		FINAL		
						Exam	*F. B	Exam	*F. B	
1	Pediatrics	ME-PED-521	10	(4+7) 11						Classroom = Students
2	Forensic Medicine	ME-LAW-522	2	(1+1) 2						
3	Medical Professionalism Communication & skills	ME-Prof-514	2	(2+0) 2						
4	Health Economics and Hospital Management	ME-HM-523	1	(2+0) 2						
5	Radiology and Imaging	ME-RAD-414	1	(2+0) 2						
6	Rural Residency	ME-RUR-524	2	(0+2) 3						

\*T: Theory, P: Practical, F.B: Feedback on students' performance

Signature Dean of Faculty

Signature Secretary of Academic Affairs

**Rotation of the clerkship groups is as follows:**

Semester 7 = A B C D

Semester 8 = B C D A,

Semester 9 = C D A B

Semester 10 = D A B C

**CLERKSHIP EVALUATION AND GRADUATION**

## GUIDELINES FOR DESIGN OF COURSE OR MODULE

At the beginning of each course, the student will be given a booklet, or referred to a soft copy, containing the following components of the course, not only titles of lectures or instructional sessions.

Course title:	
Course symbol and number:	number may or may not indicate year and semester
Duration and credits:	
Staff coordinators:	1 -2 staff members, not necessarily specialists in the area of the course, and contact details
Student coordinator:	e.g. students of semester X and contact details
Responsible course committee [multidisciplinary group (MDG)]:	
Intended Students:	
PREREQUISITES:	e.g. URO-305 or Phase II courses
Rationale:	
Justifications	for teaching this module for the specific outcomes
General learning outcomes:	short outline of the purpose of course or main outcomes
Intended (specific) learning outcomes (ILOs):	a detailed set of behavioral objectives of high taxonomy level.
Educational strategies and methods:	instructional techniques approved and sessions delivered
Instructional sessions:	lectures, practicals, seminars, tutorials, problem-solving sessions, self-directed learning (SDL), or directed self-learning (DSL)
Evaluation and assessment methods:	including the percentage of each assessment component, Grade descriptors (Rubrics) and assessment framework are included below and should be part of all courses.
Required resources:	personnel, space, facilities, material, and staff needed for implementation.
Academic support plan:	
Reading material:	student texts, reference material, unpublished handout given serial numbers and provided with this document.
Direct the attention of students to attendance and plagiarism policies Ensure the presence of adequate facilities for the student with disabilities.	

It is the students' responsibility to find out the methods of acquiring competencies listed in the objectives of each course. Staff members **MUST TELL STUDENTS THAT AND REMAIN AVAILABLE TO GUIDE THEM** during their **OFFICE HOURS** or beyond that.

Each student is assigned an academic and social advisor who should be consulted and given all information about a student's academic and social problems if there are. Even excellent students need their advisors for elective supervision and carrier choices.

When a course has pre-requisite, it means the student studied, not necessarily passed, the pre-requisite.

## COURSE DETAILS

FONTCODES : Please note the following font codes

**Ordinary red bold** = Course **tile and subtitles**

***Violet italic bold*** = **Session (S) titles**

***Blue italic bold*** = ***basic, clinical, or computer skill outcomes***

***Green italic bold*** = ***ethics and professionalism outcomes***

***Red italic bold*** = ***Must be diagnosed problems or problematic situations***

***Brown italic bold*** = ***Suggested diagnosis, or among the differential list.***

**Ordinary black** = Knowledge (cognitive) outcomes and other text



## ASSESSMENT FRAMEWORK

Millers	Taxonomy	Level	Method of assessment
Knows	C1	Recall	Written Exam (MCQS A-Type ,SSAQs, Essay)
Knows how	C2	Interpretation	Written Exam (MCQS A-Type, SSAQs, Essay, Spotter,)
	C3	Problem-solving	Written Exam (MCQS A-Type, case scenario)
Shows how	P1	Observe skills being performed	Clinical and practical assessment: OSCE, Direct Observation, OSPE
	P2	Assists in performing skills	
	P3	Perform skill under supervision	
Does	P4	Perform skill independently	Clinical and practical assessment: OSCE, Direct Observation, OSPE
Does Identity status (IS)	A	Attitude and behavior	MCQs with higher cognitive level, OSCE, Direct observation

Academic support plans for individual needs (in coordination with the academic supervisor and deanship of students' affairs):

- 1- Individual and groups meetings
- 2- Academic Advisor,
- 3- Academic, emotional, and social support
- 4- Office hours: Tutors
- 5- Study skills support

## PHYSICAL DISABILITIES

NUSU has a policy regarding disabled students (**NC- SP04**). A student with a disability that may affect his/her success in this course and wish to discuss academic accommodations, should arrange to meet with the course coordinator as soon as possible and not later than the end of the first week/semester of the block course/ longitudinal course.

The University has made appropriate ramps for those using wheelchairs to reach the ground floor and then use the lift for the targeted floor.

- 1- Utilities for the disabled such as toilets .....etc. are available at NUSU.
- 2- The student's affairs office which cares for non-academic aspects of university life has no discrimination against the disabled and they are welcomed in all the cultural, sport, and leisure activities.
- 3- Those with other physical disabilities are subjected to full medical examination and would meet the dean of the faculty they are applying for to discuss the expected limitations imposed by the disability and would receive detailed advice which may range from the full acceptance that his disability would not limit him/her or the advice to change his/her career. The discussion would include the limitations as a student and/or as a professional with a clear distinction between the two.

## ATTENDANCE POLICY

Attendance is a fundamental aspect in NUSU, and students attending less than 80% of any course will not be allowed to sit for the first round of examinations, graded as "Failure for Absenteeism" (FF\*). They are allowed to sit for supplementary examinations when offered. **(Please see Attendance Regulations SC/REG01/02). The new development in instructions allowed approval of online education, as effective as face-to-face interaction.**

## PLAGIARISM POLICY

Educate students –both undergraduates and postgraduates–about the principles of academic writing, the correct use of academic resources, and citation. These should be explicitly included in each program at different levels. Principles of academic integrity should be stressed. The nature of plagiarism should be explained together with the penalties for such an offense. In the first year, these are included in courses teaching basic learning skills and the basics of research. In the following years, the message can be re-enforced in every research course, professionalism courses, and courses requiring submission of a thesis or report. (Please see Plagiarism Policy & Procedures SC- PP-04).

# PHASE I BASIC SCIENCES





# English Language 1 and 2

## (ENG-113, 123) -2 CHs each longitudinal

TITLE: English Language

CODE:  
ENG-113, 123

DURATION/CREDITS: CHs  
each - Lentil/2

COURSE COMMITTEE:

STAFF COORDINATOR: NAME/TEL:

STUDENT COORDINATOR; NAME/TEL

INTENDED STUDENTS;

PREREQUISITES:

### Rationale

The sources of health information in the World are still in English. The Internet navigation to obtain information is basically in English. Some of the patients, attending clinics in Sudan, may speak the only English language, especially with the open-up of borders with economic development and globalization. Passing the English language examination is an essential entry requirement to universities in Sudan.

### General Learning Outcomes

By the end of this course, the student is expected to:

1. Pronounce correctly the medical terms, including those related to health services in the country.
2. Read correctly and shows an understanding of texts from medical books.
3. Express himself/herself in good English describing his daily activities, career ambitions, present problems in health, and current attempts at management.

### Intended (specific) Learning Outcomes (ILOs)

At the end of this course the student should be able to:

### ENG-113

#### S1: Introduction to the course

1. Introduce the various aspects of the course and outline. assessment
2. Show understanding of the general structure of the course.

3. Show a list of the outcomes and specific objectives (ILOs) of the course.
4. Explain the bases and contents of the assessment and feedback.
5. Appoint or elect a student coordinator.
6. List hard and soft reading material.
7. Explain attendance regulations and the consequences of absenteeism.
8. Divide the class into groups to carry out specific functions

### **S2: Pre-assessment**

1. Attend the assessment session for language proficiency (C1)

### **S3: Sources of learning the English language**

1. Explain the signs used in dictionaries for pronunciation (C2).
2. Review and comment on ten U-tube sources of learning English language, relevant to Arab- and African-speaking students (c2).

### **S4: Pronunciation and accents**

1. Pronounce correctly the medical terms, including those used in basic medical sciences, clinical sciences, and health services (C1).
2. Recognize pronunciation and accents of certain nationalities (C2).

### **S5: Prefix and suffix**

1. Explain the prefix and suffix component of words, and word roots used in health and relate them to their original language (C2),
2. Explain the meaning of new words without frequent resort to a dictionary, using prefix and suffix (2).

### **S6: Seminar-1: Pronunciation and accents (c2)**

#### **S7: *Daily life***

1. Name the times of the day from sunrise to the next morning (C1).
2. List the activities of humans during the day and night (C1)
3. List the recreations of humans during the day and night (C1)

#### **S8: *Transport***

1. List the means of transport used in your country and worldwide (C1)
2. How do you tell to the conductor where you want to get off (C2).
3. Describe in 100 words how do you take the transport from home to university (C2)

#### **S9: *Work and business***

1. List the names of jobs included in the "Job Description" manual of NUSU (C1).
2. List the names of jobs seen in a tertiary hospital (C1)

3. List the business types usually outsourced in a hospital (C1)

### **S10: Science and nature**

1. List the sciences taught in the university (C1)
2. Name some of the insects and vectors which affect human health (C1)
3. Name some of the diseases transmitted between humans and animals (C1)

### **S11: Reading and writing**

1. Write clearly and correctly from medical texts (C1)
2. Write correctly dictated paragraphs (C1)
3. Show understanding of the material written (C2)

### **S12: Scientific papers**

1. Skim new material from medical textbooks or journals to identify the main topics (C2)
2. Explain the meaning of article headings in published papers (C2)
3. Search literature in English to find specific information, e.g. PubMed and Google Scholar (C2)

### **S13: Food and drinks**

1. Name the types of foods and drinks consumed on regular basis in the locality (C1).
2. Whereabouts do people take their meals in the house and outside? (C2)

### **S14: Assessment: End of Course**

## **ENG-123**

### **S15: Dates to remember**

1. Name the official holidays in the country (C1)
2. Name the dates celebrated worldwide (C1)

### **S16: Whereabouts are you in the world**

1. Describe the permanent and temporary location of your residence and study (C1)
2. Describe the location of your direct relatives. (C1)

### **S17: Scientific English**

1. List the characteristics of scientific English (C1)
2. Explain the meaning of the scientific essay given to you (C2).

**S18: Medical terminology**

1. Name the terms used in biology and medicine, especially those describing cells, tissues, organs, and systems (C1)
2. Name the terms used in describing common organisms (C1).
3. Name the terms used in describing common diseases, management, and prevention (C1).

**S18: Summary of scientific papers**

1. Write correct notes from extensive articles and prepare charts and diagrams from them (C2)
2. Enumerate the general ideas of any article and distinguish them from specific supporting information (C2)

**S19: Translation**

1. Translate 3 pieces from medical literature(300 words each) from English to mother tongue (C2)
2. Translate three others from medical literature from mother tongue to English (C2).

**S20: Seminar -2: *instant translation*****S21: Delivering speech**

1. Deliver satisfactorily a 5-minute PowerPoint presentation on a topic in English to a group of colleagues and a supervisor. (C2)
2. Assess peers delivering speeches (C2)

**S22: Video replay-1**

1. Identify the profession of the speakers in video-1. (C2)
2. Write a 10-line summary of the topic covered in video-1 (C2)

**S23: Video replay 2**

1. Identify the profession of the speakers in video-2 (C2)
2. Write a 10-line summary of the topic covered in video-2 (C2)

**S14: Seminar-3: Medical terminology****Recommended textbooks and/or reading material:**

- Staff PowerPoint notes
- The Language of Medicine in English- Tiersky + Tiersky, Prentice Hall Regents.

**General Timetable**

Week 1 = Medical education objectives



Week 2 = Assignments in health facilities and practices, and responsibilities and ethics of a general practitioner.

Week 3 = Reporting on assignments and presentations + evaluation

### Educational Strategies and Methods (Lecture, Seminar, Practical.... etc.):

- 1- Interactive lectures
- 2- Practical sessions
- 3- Tutorials
- 4- Seminars
- 5- Assignments and videos for understanding and interpretation

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance /Presentation= 10%	MCQs= 20%	MCQs = 60%
Practical/Clinical= 0%	SQs= 0%	SSQs= 0%
Assignments/Tutorials= 10%: reading writing, listening	Essays/ Short notes= non	Essays/ Short notes= none
Others= 0%	Others= -----%	Others= 0
<b>Total= 20%</b>	<b>Total= 20%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with the assessment task  An impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task  Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound  High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required resources****Premises**

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Language laboratory

**Staff**

- English language staff

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms

## Computer Science-1 & 2 (COMP-116, 126)- 2 CHs [3 weeks] each,

**TITLE:** Computer Science

**CODE:** COMP-116, 126

**DURATION/CREDITS:**  
blok or Lonitl/2 CHs each  
2-week-

**COURSE COMMITTEE:**

**STAFF COORDINATOR: NAME/TEL:**

**STUDENT COORDINATOR; NAME/TEL**

**INTENDED STUDENTS;**

**PREREQUISITES:**

### Outline

The course is intensively focusing on the basic principles of computer electronics and applications relevant to health science education. This is mainly on the hands-on experience in dealing with famous programs like DOS, Word, Excel, PowerPoint, Access, and Internet Explorer. The use of CDs is stressed covered as well as having e-mails and navigating the internet for health information including how to access medical journals, and communicate with scientists worldwide.

### Rationale

Most of the textbooks of medicine and allied sciences are available on CDs, in which a large volume of knowledge is saved and easily retrievable. There are many software packages demonstrating methods and techniques in clinical skills including patient rapport in history taking, clinical examination, investigations and management. Students and teacher can access the internet for the unlimited sources of health information, both at their professional level and public level for health education. Students and future doctors are educators who have to prepare smart documents and presentations for the health team and profession at large. Knowledge of programs like Word, Excel, and PowerPoint is indispensable for anyone learner or teacher. Computer is important for students both in the developed or developing world, more so for the latter, who might not have inherited voluminous libraries in their colleges and have to utilize the virtual libraries available all over the world. Medical journals as hard copies are difficult to be owned by one institution, now almost all are available online for those who can use the computer efficiently

## General Learning Outcomes

By the end of the course students are expected to:

1. Be familiar with the parts of the computer.
2. Can use word processing, spreadsheet, and presentation program.
3. Add or remove programs following installation instructions.
4. Add or remove upgrades and peripherals, when needed.
5. Uses internet to communicate and extract health information.

## Intended (specific) Learning Outcomes (ILOs)

At the end of this course the student should be able to:

### S1: Introduction to the course

1. Show understanding of the general structure of the course.
2. Show a list of the outcomes and specific objectives of the course.
3. Explain the bases and contents of the assessment and feedback.
4. Appoint or elect a student coordinator.
5. List hard and soft reading material.
6. Explain attendance regulations and the consequences of absenteeism.
7. Indicate the role of students in the evaluation of the course and instructors.

### S2: Hardware

1. Identify major components and chips (C1)
2. List the common external connections and peripherals (C1)
3. Describe how to connect and disconnect peripherals. (C1)
4. Outline upgrading options, and how to purchase a unit suiting particular use (C1).
5. Discuss issues of choosing a mobile phone, media projector (C2). Followed by PRACTICAL-1: computer hardware

### S3: PRACTICAL-1: Computer hardware-

### S4: Software

- 1- Show understanding of adding and removing programs (C2).
- 2- Show ability to acquire applications for computers and mobile phones (C2).  
Followed by PRACTICAL-2: programs and applications

### S5: PRACTICAL-2: Programs and applications

### S6: Word documents

- 1- Create a Microsoft word document, make page margins, header, and foot-

- er, charts, diagrams and graphics (P2),*
- 2- *Show ability to cut, copy and paste, find and replace (P2),*
  - 3- *add footnotes and bullets, spelling and grammar checks, fonts and colors, indenting, bullets, graphics and diagrams, templates (P2).*
  - 4- *print a document- black and color (P2). Followed by PRACTICAL-3: word documents*

### **S7: PRACTICAL-3: Word documents**

#### **S8: Worksheets**

1. *Create workbooks and worksheets using Excel (P2),*
2. *Demonstrate ability to make rows and columns, edit data in worksheets (P2)*
3. *Analyze data, filter and sort, use formulas, and add drawings and charts (P2), Followed by PRACTICAL-4 Spreadsheets*

#### **S9: PRACTICAL-4: Spreadsheet-**

#### **S10: PowerPoint**

1. *Create slides using PowerPoint and make presentations (P2).*
2. *Show ability to insert photos, clip arts charts, animation, and tables (P2).*
3. *Practice running presentations with transitions and timings settings, sound videos (P2).*
4. *Print handouts from presentations (P2).* Followed by PRACTICAL-5: PowerPoint

#### **S11: PRACTICAL-5: PowerPoint-**

#### **S12: Web Page**

1. *Practice navigation of websites (P2).*
2. *Outline the design of a front page and a webpage (C1).*
3. *Show ability to use images on web pages, get reports on web status, create lists, bookmarks, and Text Hyperlinks (P3).*

#### **S13: Internet**

1. *Define the internet and its history and effects, and show the ability to communicate and carry out searches on health and general information. (C1)*
2. *Make chapter summary, save information, download programs, view document off-line and create setup conclusion (C2).*
3. *Get a file from the FTP server, address FTP and send a file via FTP (P2). Followed by PRACTICAL -6: Internet use*

## S14: PRACTICAL-6: Interest use-

### Recommended reading material:

- Staff PowerPoints notes and webpage uploaded lectures

### Educational strategies and methods (lecture, seminar, practical... etc):

- 1- Interactive lectures
- 2- Practical sessions
- 3- Tutorials
- 4- Seminars
- 5- Assignments

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance/Presentation= 5%	MCQs= 20%	MCQs = 50%
Practical/Clinical= 0%	SQs= 0%	SSQs= 20%
Assignments/Tutorials=5%	Essays/ Short notes= 0%	Essays/ Short notes= non
Others= 0% (	Others= -----%	Others= 0%
<b>Total= 10%</b>	<b>Total= 20%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

**\*Ref. Academic Course policy (SC- PP 09)****Required resources****Premises**

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Computer laboratory setup

**Staff**

- Computer hardware and software staff
- Physicists

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms

# Introduction to Study of Medicine and Medical education (ME-EDU 114) - 3 CHs [3 weeks], Block

TITLE: Introduction to Study of medicine and medical education	CODE: ME-EDU-114	DURATION/CREDITS: block /3 CHs - 3-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

## Outline

This is a three-week (2 CHs) block, which focuses on the meaning and message of health; health care delivery system in the country; the role of the physician in health care; the role of other professional and administrative staff; priority health problems; concepts and principles of learning; adult education and learning; student-centered and problem-based learning; instructional techniques (lecture, small group etc.); student assessment methods; holistic approach; interdisciplinary and partnership concepts; curriculum development, program evaluation and leadership. Students are divided to groups to spend a week in a health facility, hospital theatre, hospital outpatient, health centre, various directorates and departments of Federal and State Ministries of Health, etc.. Meanwhile students go through discussion sessions on group dynamics and instructional methods. At the end of the course the groups present their field activity using suitable audiovisual techniques. Evaluation assesses the knowledge and attitudes of the students in areas listed above according to the objectives below as well as the course as a whole.

## Rationale

There is a growing reform in methods of learning and teaching to improve the quality of medical education and practice. In addition, the continuous progress in information technology has been followed by an explosive outflow of health science information. It is, therefore, of utmost importance that future health professionals to acquire the information they need and regularly update themselves.



This course hopes to introduce students at this early stage to what is medicine, and how to study it effectively. The aim is to provide students with the basic knowledge on educational and behavioral skills enabling them to proceed smoothly and pursue their learning effectively, efficiently and humanely in their new system of education in this faculty.

## General learning outcomes)

By the end of this course the students are expected to:

1. Show awareness of their responsibility in learning and become motivated and willing to be self-learners.
2. Show understanding of the basics of medical education, problem-solving environment of the university and faculty, and the basic definitions and components of the adopted educational policy (i.e learning through small groups, integrating basic and clinical sciences, making optimum utilization of available instructional resources and critically appraising learning materials and methods).
3. Acquire the skills of mutual interactive communication in the class and the skills of seeking relevant information from different reference sources and learning through small groups.
4. Develop positive attitudes towards the learning process in general (and independent, self-directed learning in particular) and towards peers/colleagues and the society.
5. Build up effective study habits to accommodate information overflow and utilization of affordable resources.

## Intended (specific) Learning Outcomes (ILOs)

At the end of this course the student should be able to:

### S1: Introduction to the course

1. Introduce the various aspects of the course and outline. assessment
2. Show understanding of the general structure of the course
3. Recognize the list of the outcomes and specific objectives of the course.
4. Explain the bases and contents of the assessment and feedbacks.
5. Appoint or elect a student coordinator.
6. List hard and soft reading material.
7. Explain attendance regulations and consequences of absenteeism.

## S2: Health system

1. Divide class to groups to visit health institutions and set time for the visits.
2. Describe the health system, health services and priority health problems in Sudan (C1)

## S3: Seminar-1

1. Field work reports: Evaluate groups on group fieldwork presentation in: [Seminar-1](#) (C3)

## S4: Learning theories

1. Define learning (C1)
2. Outline theories of learning (C1).
3. Describe the differences between adult and young learning (C1)

## S4: Problem – based learning

1. Define problem-based learning (PBL) (C1).
2. List the merits of PBL and discuss requirements. in conducting and evaluating a PBL session (C1).
3. State the differences between PBL and traditional learning (C2).
4. Define problem solving method of learning (C1).
5. Given a problem within a small group, follow the steps of problem solving: 'the seven jumps' (C3).
6. Explain the role of the student and the role of tutor in PBL(C2)

## S5: Communication skills

1. Define the term "communication skills" and outline its importance in learning (C1)
2. Discuss the relevance of communication skills in health profession(C2)
3. Discuss the individual behavior enhance (promote) or undermine positive group dynamics (C2)

**Followed by Seminar-2:** Practical exercise on group dynamics.

## S6: Seminar-2: Practical exercise on group dynamics

## S7: Self-directed learning and instructional methods

1. Define self-directed learning (SDL) and directed self-learning (DSL) and state their philosophy and characteristics (C1).
2. Mention the pros and cons of different instructional formats (C1).
3. Describe briefly the role of practical laboratory skills and museums in self-directed learning (SDL) (C1)
4. Identify the commonly used laboratory (Anatomy, Physiology, Biochemistry, Pathology, Microbiology, Pharmacology) equipment, and the components of the skill lab (C1)

5. Explain the components and appearance of a timetable (C2)

### S8: Assessment and moderation

1. Explain the various, commonly used methods of student continuous and final assessment (C2).
2. Outline the terms “validity” and “reliability” of an assessment tool, and apply to any of the instruments used in assessment (C1).
3. Discuss the suitable instruments for the assessment of knowledge, skills, attitudes, field work, report, research article, discussion session, presentation, etc. (C2).
4. Discuss how assessment improves learning (C2)
5. Outline the Assessment and Moderation Policy of NUSU (C2)

### S9: Quality assurance of course and programme evaluation

1. Why quality assurance? (C2)
2. Describe aspects of quality course evaluation at NUSU (C1)
3. Outline programme evaluation strategies (C1)

### S10: Strategies of the medical curriculum at NUSU

1. List the objectives (outcomes) of the Faculty of Medicine and Surgery (C1)
2. List the characteristics of medical graduate (the responsibilities of a medical practitioner), and his/her role in a “health team” (C1)
3. Discuss the strategies of the medical curriculum to achieve the objectives (outcomes).(C2) **Followed by Seminar -3:** Briefly outline the history of Islamic world contribution to medicine, and how aspects of medical education are incorporated in the practice

### S11: Seminar-3” History of Islamic medicine

### S12: Library and Information

1. **Perform with reasonable accuracy a computer search using a generic browser or meta search tool for a common term or abbreviation usable in learning or health, e.g. learning, behavior, skill or PBI (P2).**
2. Outline how to use the Electronic Library facility in the university, and define the function of the D-space provided (C1).
3. Gather relevant references ‘textbooks, atlases, chapters, pages and titles’ over a certain topic of interest, utilizing the library and available personnel (C2)
4. **Assignment -1:** Write a brief scientific report on a given topic conforming with a certain form including introduction, goals, methods, summary and conclusions showing real, individual effort both in selection and understanding of the given theme.

### **S13: Leadership**

1. Define leadership and show its relation to management (C1).
2. Compare characteristics of a leader and manager (C2)
3. Outline leadership styles and show their importance as applied to the medical field (C1).
4. Discuss teamwork as it relates to the health team (C2)

### **S14: Evidence-based medicine**

1. Define “evidence –based medicine” and describe the methods used (C1)
2. Discuss its role in the medical profession, and give examples (C2)

### **S15: Complementary medicine**

1. Define “Complementary medicine” and list the methods used (C1).
2. Discuss the role of traditional practitioners in health care. (C2)

### **Recommended reading material:**

- Sir Kenneth C. Calman, Medical Education: Past, Present and Future, Elsevier, Edinburgh, 2007, ISBN: 13: 978-0-443-07473-8
- Hamad B. Community-oriented medical education. Medical Education
- Staff Notes

### **General Timetable**

- Week 1 = Medical education objectives
- Week 2 = Assignments in health facilities and practices, and responsibilities and ethics of a general practitioner.
- Week 3 = Reporting on assignments and presentations + evaluation

### **Educational strategies and methods (lecture, seminar, practical, ward round.... etc):**

- 1- Interactive lectures
- 2- Practical sessions
- 3- Tutorials
- 4- Seminars
- 5- Assignments and visits to health-associated institutions

## Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance/Presentation= 5%	MCQs= 25%	MCQs = 30%
Practical/Clinical/Visits= 5%	SQs= 0%	SSQs= 20%
Assignments/Tutorials=5%	Essays/ Short notes=	Essays/ Short notes= non
Others= 5% (e.g. peer)	Others= -----%	Others= 10 (e.g. peer)
<b>Total= 15%</b>	<b>Total= 25%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

### \*Grade Descriptors (Rubrics):

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

## Required resources

### Premises

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Transport to healthcare facilities and ministries of health

### Staff

- Community physicians

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms

# Physics for Medical Equipment and Investigations (ME-PHYS-115)

TITLE: Physics for Medical Equipment and Investigations	CODE: PHYS-115	DURATION/CREDITS : CHs - 2-week/2
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

## Rationale

The basic principles of general physics are important for understanding certain mechanism that take part in the human body, and also, the technical background of many medical equipment. A medical professional is often confronted with a method of investigation or intervention that is based on simple physical or mechanical process in the human being and he/she has to deal cautiously with the machine and use it correctly considering its proper maintenance and patient's and worker's safety. These include physical chemistry, gas laws, physics of light and sound, and radiation.

## General Learning Outcomes

At the end of this course the student should be able to:

1. Demonstrate knowledge of the basic general physics.
2. Show understanding of terminology in the field of applied physics.
3. Acquire knowledge of the physical principles related to medical equipment and investigation.

## Intended (specific) learning objectives (ILOs)

At the end of this course the student should be able to:

### S1: Introduction to the course

1. Show understanding of the general structure of the course.
2. Show list of the outcomes and specific objectives of the course.
3. Explain the bases and contents of the assessment and feedbacks.

4. Appoint or elect a student coordinator.
5. List hard and soft reading material
6. Explain attendance regulations and consequences of absenteeism.
7. Indicate the role of students in evaluation of the course and instructors.

### **S2: Electricity**

1. Outline the basics of electricity (C1).
2. State Coulomb's law and Ohm's law and their application (C1).
3. Outline electrical technology (C1).

### **S3: Physics of the central nervous system**

1. Describe the physical principles of light wave's production and propagation (C1).
2. Outline basic principles of optics, reflection and refraction (C1).
3. Discuss the optics and the human eye, eye defects and corrections and Images and optical systems (C2).
4. Discuss vision and CNS (C2).

### **S4: Heat**

1. Outline the kinetic theory and energy (C1).
2. Describe the states of the matter (C1).
3. Discuss thermodynamics and heat transfer (C2)

### **S5: Physics of body fluids**

1. Describe the physical characteristics of fluids and fluid pressure (C1).
2. Describe osmosis and diffusion (C1).
3. Describe the osmosis and diffusion in the kidney (C1).
4. Discuss blood pressure physics (C2).

### **S6: Physics of gases**

1. Outline the physical characteristics of gases (C1).
2. State and discuss gas laws and demonstrate their relationship to the understanding of physiological processes (C2).
3. Discuss the application of gas physics to human body, e.g. ventilation and ventilators, blood gasses (C2).
4. Show understanding of the physical principles of anesthetic machines (C2),

### **S7: Atomic physics**

1. Describe the atomic components and nucleus (C1).
2. Discuss radioactivity and radioactive nuclei (C1)
3. Describe the applications of radioactivity in medical investigations and management, nuclear medicine, basic principles of radiation oncology, external beam therapy, brachytherapy (C1).



4. Outline the biological effects of radiation and basics of radiation protection (C1).

### S8: Imaging physics

1. Describe the production of X-rays and image formation (C1).
2. Describe ultrasound physics, image production and ultrasound physics instrumentation (C1).
3. Explain the physical basis of the CT, image production and CT instrumentation (C2).
4. Explain Physical bases of MRI, MRI instrumentation and image production (C2).

### S9: Other applications of physics in medicine

1. Outline the physical principles of physiotherapy and fitness equipment (c1).
2. Outline the physical principles of ECG, EEG, and EMG (C1).

### S10: Physics practical (optional)

#### Reading material:

- Staff PowerPoints notes and webpage uploaded lectures

#### Educational strategies and methods (lecture, seminar, practical.... etc.):

- 1- Interactive lectures
- 2- Practical sessions
- 3- Tutorials
- 4- Seminars
- 6- Assignments

#### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance/Presentation= 5%	MCQs= 20%	MCQs = 50%
Practical/Clinical= 0%	SQs= 0%	SSQs= 20%
Assignments/Tutorials=5%	Essays/ Short notes= 0%	Essays/ Short notes= non
Others= 0%	Others= -----%	Others= 0%
<b>Total= 10%</b>	<b>Total= 20%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required Resources****Premises**

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Physics laboratory setup

**Staff**

- Physicists
- Medical engineers

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms

# Human Biology

## [ME-HUBIO-120], 2 CHs, 3 weeks

TITLE: Human Biology	CODE: ME-HUBIO-120	DURATION/CREDITS: lock /2 [1.5+0.5] CHs 3-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Rationale

This course is one of the important basic sciences' foundational courses. It exposes students and introduces them to the applications of biological sciences as an introduction to medical and health sciences. It is also a prerequisite to other basic medical courses.

Students will be enriched with the basic knowledge and skills and be prepared for their future studies.

### Outline

A 3-week (2 CHs) course on the inter-relation between Biology and medicine, basic concepts of biology and cellular activities, cell and its organelles, Biology of the viruses, bacteria, fungi, vertebrates, arthropods, and insect vectors, Life cycle of the common parasites, Principles of genetics, molecular biology, and metabolism, Mammalian body systems including reproductive, nervous, cardiovascular, respiratory, endocrine, and renal system.

### General learning outcomes

By the end of the course, students are expected to:

- 1- Outline the concepts of biology and state their relevance to medicine
- 2- Show understanding of the animal kingdom and mammalian classification
- 3- Describe the human body position and descriptive terminology
- 4- Explain the role of genetics and environment in human disease

## **Intended (specific) learning outcomes (ILOs):**

By the end of the course, students are expected to:

### **S1: The definition and divisions of biology**

1. Define biology and its main divisions
2. Classify living material and organisms
3. Outline the evolution theory

### **S2: The animal kingdom**

1. Define the animal kingdom (C1).
2. Draw the classification of the animal kingdom (C2).

### **S3: Anatomical position of the human body and descriptive terms**

1. Describe the anatomical position (C1).
2. List and define the anatomical terms used to describe locations and relationships in the human body (C1).

### **S4: Food, digestion and metabolism**

1. Describe the types of human food and their nutritional values (c1).
2. Outline the location where the main food substances are digested (C1).
3. Define metabolism and list organs and organelles involved in human metabolism (C1).

### **S5: Medicinal plants**

1. Define medicinal plants and name the most common.
2. Outline the process of extraction, purification and experimentation of drugs

### **S6: Genetics, molecular biology**

1. Define genetics and molecular biology (C1)
2. Outline the role of genetics in human disease (C1).
3. Outline the role of molecular biology in medicine (C1).

### **S7: Microbes and parasites**

1. List the microbes and parasites associated with human disease (C1).
2. List the vector associated with transmission of pathogenic agents to human (C1).
3. List the diseases transmissible between humans and animals (C1).

### **S8: Environment and health**

1. Define environment and list the components of the environment (C1)
2. Outline the role of environment and environmental pollutants in the

- causation of human illness (C1).
3. Outline the role of occupational health in human life (C1).

### S8: Organ -system functions

1. Describe the structure and function of the human cells and organelles (C1).
2. Define and list human tissues and organs (C1).
3. Define and list the body systems and their functions (C1).

### Recommended Textbooks/ References:

- Reece JB, Urry LA, Cain ML, Wasserman SA, Minorsky PV, Jackson RB. Campbell biology. Boston: Pearson; 2014 Jan 1.
- Fowler S, Roush R, Wise J, Sronck D. Concepts of Biology. OpenStax College, Rice University; 2013
- Staff webpage uploaded lectures

### Educational strategies and methods (lecture, seminar, practical.... etc):

- 1- Interactive lectures
- 2- Practical sessions
- 3- Tutorials
- 4- seminars
- 5- Assignments

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance/Presentation= 5%	MCQs= 20%	MCQs = 50%
Practical/Clinical= 5%	SQs= non	SSQs= 20%
Assignments/Tutorials=5%	Essays/ Short notes= non	Essays/ Short notes= non
Others= 5%	Others= -----%	Others= 10
<b>Total= 10%</b>	<b>Total= 20%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required Resources****Premises**

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Biology laboratory setup

**Staff**

- Anatomists
- Histologist

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms

# General Histology

## (cells and tissues) [ME-HIST-121] -2 (1+1) CHs, 2 weeks

TITLE: Human Histology	CODE: ME-HUBIO-120	DURATION/CREDITS: block /2 [1.5+0.5] CHs
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Rationale

This course is one of the important basic sciences' courses, includes the human cells and tissues and their functions. It contains general objectives, a description of general tissues or microscopic anatomy. It is a basic course that studies the basic tissues that build the human body. The study of basic tissues helps students understand anatomy and other disciplines such as pathology and physiology. The basic histology course is a prerequisite for studying the units' system. It introduces the student to the basics of the cell inside the human being, the classification of human tissues and their properties, the appropriateness of their functions to their properties, and their location in the structures of the human body.

### Outline

A 3-week (2 CHs) course on the cell organelles, divisions and components of major compartments of body fluids, the four basic tissue types, general structural features and functions of: epithelial tissues, connective tissue, muscular tissues, nervous tissue and clinical correlation.

### General learning outcomes:

By the end of the course, students are expected to:

- 1- Review the human body systems and organs
- 2- Describe the animal cell and its organelles and functions
- 3- Discuss the histological structure and function of the various tissues and organs in the human body

## Intended (specific) learning outcomes (ILOs):

By the end of the course, students are expected to

### S1: Introduction to the course

- 1- Show understanding of the general structure of the course.
- 2- List of the outcomes and specific objectives of the course. Explain the bases and contents of the assessment and feedbacks Appoint or elect a student coordinator.
- 3- List hard and soft reading material.
- 4- Explain attendance regulations and consequences of absenteeism.
- 5- Indicate the role of students in evaluation of the course and instructors.

### S2: The human body parts and terminology

1. Describe the human body division to organs and systems (C1).
2. Describe the terminology of orientation of the human body, planes and directions (C1).

### S3: Histology definition and techniques

1. Define the basic concepts of histology and its relevance to medicine (C1).
2. List the different steps of tissue preparation for light microscopy (C1).

### S4: Cell structure and functions

- 1- Name the types of cells of the human body (C1).
  - 2- Describe the cell as a structural and functional unit of the body (C1).
  - 3- Describe the basic and electron microscopic structure of the cell membrane (C1).
  - 4- Describe the structure and functions of each cell organelle (C1).
- 5- Recognize, under the microscope, the cell organelles (P1)**

### S5: Structure and functions of cell membrane

1. Describe the structure of cell membrane (C1).
2. Explain the importance of proteins and phospholipids in the cell membrane (C2).
3. Explain the role of membrane proteins in electrolyte mobility (C2).

### S6: Epithelial tissues

1. List the basic types of tissues (C1).
2. Classify epithelial tissues on the bases of their structure and functions (C1).
3. Describe the structure, example, location and functions of each component of the epithelial tissues and membranes (C1).
4. Differentiate the types of glandular epithelium (C1).
5. Describe the sites and types of serous membrane (C1).

#### **6. Identify epithelia under the microscope (P2)**



## S7: PRACTICAL -1: organelles and epithelia

### C8: Connective tissues

1. Name the components and give classifications of the connective tissues (C1)..
2. Describe the structure and functions of connective tissues (C1).
3. *Recognize connective tissues under the microscope (P2).*

### S9: Muscular tissues

1. Classify types of muscular tissue and describe their locations (C1) .
2. Explain the histology of each type of muscular tissues and their functions (C2).
3. *Recognize muscular tissue under the microscope (P2).*

## S10: PRACTICAL-2: Connective tissue and muscular tissue

### S11: Nervous tissue

1. Describe and draw and label the parts of the neuron and types and functions of neuroglia (C1).
2. Describe and identify the histological appearance of nervous tissues (C1).
3. Outline the relations of nerve cells to common neurological problems (C1).
4. Describe the structure and actions at the neuromuscular junction, and the muscle spindle (C1).
5. List the types and main features of sensory receptors (C1).

### S12: Bone tissue

1. Describe the types of bone tissue (C1).
2. Describe their specific locations of histological features (C1).
3. *Identify bone tissue under the microscope (P2).*

### S13: Cartilage

1. Define the histological features of each type of cartilage (C1).
2. Outline their relation to common clinical problems (c1).
3. *Identify cartilage type under the microscope (P2).*

## S14: PRACTICAL-3: Nervous tissue, bone and cartilage

### S15: Skin and appendages

1. Describe the skin and its derivatives, and list their functions (C1)
2. *Recognize skin and derivatives under the microscope (P2).*

## S16: PRACTICAL -4: Skin and appendages and revision.

### Recommended Textbooks/ References:

1. Mescher, Anthony L. Junqueira's basic histology: text and atlas. Vol. 12. 13th ed. New York: McGraw-Hill Medical, 2013.
2. Wheater, Paul R., H. George Burkitt, and Victor G. Daniels. Functional histology. A text and colour atlas. Churchill Livingstone, Terrace, Edinburgh, EH4 3TL.
3. Staff webpage uploaded lectures.

### Educational strategies and methods (lecture, seminar, practical....etc):

- 1- Interactive lectures
- 2- Practical sessions
- 3- Tutorials
- 4- Seminars
- 5- Assignments

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance /Presentation= 5%	MCQs= 20%	MCQs = 50%
Practical/Clinical= 10%	SQs= 0%	SSQs= 15%
Assignments/Tutorials=5%	Essays/ Short notes=0%	Essays/ Short notes= 0%
Others= 5%	Others= -----%	Others= 10
<b>Total= 20%</b>	<b>Total= 20%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required Resources****Premises**

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Biology laboratory setup

**Staff**

- Anatomists
- Histologist

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms

# Basic Biochemistry (ME-BIOCH-118)

TITLE: Basic Biochemistry	CODE: ME-BIOCH-118	DURATION/CREDITS: block /3 CHs - 3-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

## Outline

A three-week block early module in Semester 1 or 2, to include: introduction of organic compounds, classification of aliphatic and aromatic hydrocarbons, their properties and reactions; aldehydes and ketones, alcohols, phenols, and ethers acids and amines benzenes and their derivatives; carbohydrates, lipids and proteins, vitamins and enzymes and coenzymes.

## Intended (specific) Learning Outcomes (ILOs)

By the end of the course students are expected to:

### *S1: Introduction to the course*

1. Show understanding of the general structure of the course.
2. Show a list of the outcomes and specific objectives of the course.
3. Explain the bases and contents of the assessment and feedback.
4. Appoint or elect a student coordinator.
5. List hard and soft reading material.
6. Explain attendance regulations and the consequences of absenteeism.
7. Indicate the role of students in the evaluation of the course and instructors

### *S2: Terminology and abbreviations used in biochemistry*

1. List the terms used to describe compounds in biochemistry (C1).
2. List the abbreviations used in biochemistry (C1)

### S3: Chemical bonding and chemical reactions

1. Define chemical bonding and list the different types of chemical bonds (C1).
2. Explain the covalent bond and hydrogen bond, and list the properties of covalent bonds (C2).
3. List the different types of chemical reactions, define oxidation number and state and describe the oxidation and reduction reaction (C1).
4. Explain combination reaction and double and single displacement reaction (C2).

### S4: Molecular formulae

1. Define anabolism and catabolism and conservation of mass and explain the balancing of equation (C1).
2. Define gram atomic weight, molecular weight and molar volume, and Avogadro's number (C1).
3. Describe molecular formulae with empirical formula and calculate formula weight, molecular weight, equivalent weight, and the number of moles (C1).

### S5: Solvent and buffers

1. Define solute-solvent, solution, and solubility and list the factor affecting solubility (C1).
2. Define and calculate molarity, molality, normality, and mole fraction (C1).
3. Define acids and bases and neutralization and list the differences between acids and bases (C1).
4. Define buffer, list different types of buffers and calculate pH (C1).
5. Define the chemical kinetics, chemical equilibrium, and the rate of reaction, and list the factors affecting the rate of reaction (C1).

### S6: Seminar-1 Solvents and buffers

### S7: Definition, importance, and classification of carbohydrates

1. Define carbohydrates(C1)
2. Classify the carbohydrates according to their structure (C1).
3. List the functions of Carbohydrates and their medical importance (C1) (C1).
4. *Identify carbohydrates in the laboratory preparations (P2).*

### S8: Monosaccharides and their properties.

1. Differentiate between the structures of monosaccharides (C1).
2. Distinguish the roles and importance of physiologically significant monosaccharides (C1) (C1).

### S9: Glycosidic bonds and disaccharide

1. Define the glycosidic bond (C1).

2. Differentiate between the structures of disaccharides (C1).
3. Distinguish the roles and importance of physiologically significant disaccharides (C1).

### ***S10: Oligosaccharide and polysaccharide***

1. Differentiate between the structure of oligosaccharides and polysaccharides (C1).
2. Distinguish the roles and importance of physiologically significant oligosaccharides and polysaccharides (C2).

### ***S11: Proteoglycans and glycoproteins***

1. Define proteoglycans and glycoproteins (C1).
2. Discuss the role of complex carbohydrates (proteoglycans and glycoproteins) in mammalian bodies (C2).

### ***S12: Amino acids: importance and chemical structure***

1. Define and classify amino acids and mention their properties (C1).
2. Differentiate between the hydrophobic and hydrophilic amino acids and know their importance in protein folding (C2).
3. Distinguish between the nutritionally essential and none essential amino acids (C2).

### ***S13: Peptide and protein (definition and functions)***

1. Define peptides and proteins (C1) (C1).
2. List the functions of peptide-protein (C1)
3. Link between protein structure and function (C2).

### ***S14: Protein classification, folding, misfolding and denaturation***

1. Differentiate between different classes of proteins (C2).
2. Outline the process of protein folding, misfolding, and denaturation (C1).
3. Outline the causes and effects of protein misfolding and protein denaturation on the human body (C1).

### ***S15: Lipids definition, functions, and classifications***

1. Define lipids and outline their biological roles (C1).
2. List the classes of lipids (C1).
3. Define essential fats and their functions and sources (C1).

### ***S16: Fatty acids, simple lipids, and eicosanoids***

1. Define fatty acids, simple lipids, and eicosanoids (C1).
2. Compare the structure and functions of fatty acids, simple lipids, and eicosanoids (C2).

**S17: Phospholipids and cholesterol**

1. Define phospholipids (C1).
2. Show understanding the physiological roles of phospholipids and cholesterol in human (C2).

**S18: Glycoproteins**

1. Define glycoproteins (C1).
2. Illustrates the roles of glycoprotein in the human body (C1).

**S19: Lipoproteins**

1. Define lipoproteins (C1) (C1).
2. Differentiate between the classes of lipoprotein structurally and functionally (C2).

**S20: Derived lipids**

1. Define derived lipids (C1).
2. Differentiate between different types of derived lipids (C1).
3. Discuss their biological roles and functions (C2).

**S21: Purines and pyrimidines, definition and functions**

1. Define purine and pyrimidines (C1).
2. Describe their biological roles (C1).
3. Differentiate between purine and pyrimidine structurally and functionally (C2).

**S22: Nucleosides and nucleotides**

1. Define nitrogen bases, nucleoside and nucleotide, and nucleic acids (C1).
2. Describe their structure and functions (C1).

**S23: DNA structure and functions**

1. Define DNA and identify the DNA nucleotides (C1).
2. Outlines the functions of DNA (C1).
3. Define base pairing and Chargaff's rule (C1).
4. Differentiate between the gene, and genome (C2).
5. Differentiate between chromosomes, chromatids, and supercoiling of DNA (C2)

**S24: RNA structure and functions**

1. Define RNA and identify its nucleotides (C1).
2. Differentiate between the various RNAs and their functions (C1).
3. Differentiate between DNA and RNA (C1).

**S25: Enzymes and coenzymes: definition, nomenclature and classification**

1. Define enzymes, coenzymes (C1).

2. Classify enzymes and differentiate between them (C1).
3. Describe the nomenclature of enzymes and coenzymes (C1).

### **S26 Enzyme properties, mechanism of actions, and inhibitors**

1. Explain the properties of enzymes, functions, and biochemical importance (C1).
2. Identify the active sites of enzymes, holoenzymes, cofactor and coenzyme (C1).
3. Differentiate between water-soluble and fat-soluble vitamins (C2).
4. Explain the mechanism of action of enzymes, and factors affecting enzyme activity (C2).
5. Name and describe actions of enzyme inhibitors (C1).

### **S27: Enzyme regulation, disease state, and clinical diagnosis**

1. Describe the ways of regulation of enzyme (regulation of allosteric enzymes, regulation by covalent modification, and induction and repression of enzyme synthesis) (C1).
2. Explain the alteration of plasma enzyme levels in the disease state (C2).
3. Discuss the importance of plasma enzymes as diagnostic tools (C2).
4. Define isoenzymes and explain their role as a means of identifying the site of tissue damage (C1).

### **S28: Water-soluble vitamins**

1. Define water-soluble vitamins and distinguish their biomedical roles (C1).
2. List sources, functions, RDA, deficiency, and toxicity of water-soluble vitamins (C1).

### **S29: Fat-soluble vitamins**

1. Define fat-soluble vitamins and distinguish their biomedical roles (C1).
2. List sources, functions, RDA, deficiency, and toxicity of fat-soluble vitamins (C1).
3. List sources, functions, RDA, deficiency, and toxicity of fat-soluble vitamins (C1).

### **S30: Macro-minerals**

1. Define macro-minerals and outline their biochemical role (C1).
2. List sources, RDA, deficiency, and over the toxicity of macro-minerals (C1).

### **S31: Micro-minerals**

1. Define micro-minerals and outline their biochemical role (C1).
2. List sources, RDA, deficiency, and toxicity of micro-minerals (C1)



### Reading material:

- Staff PowerPoint Handouts and website uploaded lectures
- Lippincott Biochemistry
- Harper's Illustrated Biochemistry

### Educational strategies and methods (lecture, seminar, practical....etc):

- 1- Interactive lectures
- 2- Practical sessions
- 3- Tutorials
- 4- Seminars
- 5- Assignments

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance/Presentation= 5%	MCQs= 25%	MCQs = 30%
Practical/Clinical/Visits= 5%	SQs= 0%	SSQs= 20%
Assignments/Tutorials=5%	Essays/ Short notes=	Essays/ Short notes= non
Others= 5% (e.g. peer)	Others= -----%	Others= 10 (e.g. peer)
<b>Total= 15%</b>	<b>Total= 25%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required Resources****Premises**

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Biochemistry laboratory or virtual laboratory software

**Staff**

- Biochemists

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms

# Introduction to Medical Ethics

## [ME-ETHIC 226), 2 CHs, Block 2 weeks or longitudinal

TITLE: Introduction to Medical Ethics	CODE: ME-ETHIC-226	DURATION/CREDITS: block or longtl/2 CHs - 2-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

This is a 2-credit hour course (block or longitudinal) on medical ethics including (1) Islamic medicine, (2) good medical practice, (3) ethics of publications, (4) ethics of clinical trials.

### Rationale

Dealing with a living creature, particularly human requires taking care of their lives, and avoiding pain and suffering. This is controlled by a set of basic religious ethics, as well as rules and regulations extracted from early on Greek and Muslim physicians and current authorities organizing the profession.

### General Learning Outcomes

By the end of the block a student should be able to:

1. Review the Hippocrates Oath, Islamic Codes of medical practice, SMC Oath
2. Show understanding of the meaning of good medical practice.
3. Describe the ethical requirements of publications, clinical trials

### Intended (specific) learning outcomes

By the end of this block the student should be able to:

#### S1: Introduction to the course

1. Show understanding of the general structure of the course.

2. Show list of the outcomes and specific objectives of the course.
3. Explain the bases and contents of the assessment and feedbacks.
4. Appoint or elect a student coordinator.
5. List hard and soft reading material.
6. Explain attendance regulations and the consequences of absenteeism.
7. Indicate the role of students in the evaluation of the course and instructors.

## **S2: History of medical ethics and Hippocratic Oath**

1. *Review the Oaths used for the medical profession (A).*
2. *Review the Islamic history of physicians (A).*

## **S3: Principles of ethical guidelines**

1. *Explore principles of medical ethics (A).*
2. *Focus on the principle of doing no harm (A).*
3. *Show strength in ethics and morality (A).*

## **S4: Moral dilemmas in medicine**

1. *Show understanding of concept of moral dilemma. Differentiate between morality and ethics (A).*
2. *Show understanding of the complexity of certain decision in practice (A).*

## **S5: International declarations**

1. *Review the international declarations and codes and its relation to ethics (A).*
2. *Discuss the focus of each declaration or code (A).*

## **S6: Doctor-patient relationship**

1. *Distinguish aspects of the patient care, give examples of ethical and unethical practice (A).*
2. *Discuss the behavior of a medical doctor while dealing with a patient (A).*
3. *Describe the “medical malpractice” (A).*

## **S7: Doctor-doctor relationship**

1. *Discuss the behavior of a medical doctor while dealing with their colleges (A).*
2. *Discuss rights and responsibilities of doctor towards their colleges (A)*

## **S8: Justice and equity in health**

1. *Explore the concept of equity and concept of equality (A).*
2. *Show understanding of the vertical equity and horizontal equity (A).*

## **S9: Human rights and medical ethics**

1. *Review human rights declaration and laws (A).*
2. *Discuss issues related to HIV and reproductive health (A).*

### **S10: Ethics and medical research**

1. *Discuss the ethics of duplicate publication, ghost writing, disclosure of potential conflicts of interest and the nature of publication bias (publication of negative results) (A).*
2. *Discuss the role of parental informed consent in the enrollment of minors in clinical research trials (A).*
3. *Discuss ethical issues in the enrollment of patients in double-blind, placebo-controlled clinical trials (A)*
4. *Discuss ethical aspects of enrolling normal subjects in clinical trials (A).*
5. *Discuss the appropriate response after an adverse medical incident (A).*
6. *Describe the primary reasons why patients sue after an adverse medical incident (A).*
7. *Describe factors associated with the awarding of damages in a malpractice suit (A).*

### **S11: Health law, policy and biomedical ethics**

1. *Discuss the difference between Law, Policy & Ethics (A)*
2. *Describe the role and ethical duties of an expert witness in a medical malpractice case (A).*
3. *Discuss appropriate documentation after a medical error (A)*

### **S12: Ethics in public health**

1. *Discuss the concept of public benefit and public welfare (A)*
2. *Discuss issues related to environmental sanitation and vaccination (A).*

### **S13: Seminar-1: Ethics and publications**

1. Objectives and content compiled by students

### **S14: Seminar-2 Ethics of clinical trials**

2. Objectives and content compiled by students

### **Educational strategies and methods (lecture, seminar, practical....etc):**

- 1- Interactive lectures
- 2- Practical sessions
- 3- Tutorials
- 4- Seminars
- 5- Assignments

## Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance/Presentation= 5%	MCQs= 25%	MCQs = 30%
Practical/Clinical/Visits= 5%	SQs= 0%	SSQs= 20%
Assignments/Tutorials=5%	Essays/ Short notes=	Essays/ Short notes= non
Others= 5% (e.g. peer)	Others= -----%	Others= 10 (e.g. peer)
<b>Total= 15%</b>	<b>Total= 25%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

### \*Grade Descriptors (Rubrics):

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

## Required Resources

### Premises

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Problems scenarios

### Staff

- Community physician
- Legal advisor

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms

# Biostatistics (STAT-117) - 2 CHs, 2 weeks

TITLE: Biostatistics	CODE: STAT—117	DURATION/CREDITS: block /2 CHs - 2-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

## Outline

A two-week course basic statistics as applied to health, to include: introduction to statistics, probabilities, data summary, presentation; measurement of central tendency (mean, median, and mode); interpretation of variation (dispersion), normal distribution; confidence interval, frequency distribution, sampling techniques, calculation and interpretation of the concept of confidence interval, the concept of p-value and its interpretation, the normal and skewed frequency distribution of biomedical data, and apply the appropriate test of significance for a given data set and a given research methodology (using t-test as an example).

## Rationale

In recent years biostatistics has become one of the most stimulating areas of applied statistics. The field encompasses the methodology and theory of statistics as applied to problems in the life and health sciences. Biostatisticians are trained in the skilled application of statistical methods to the solution of problems encountered in public health and medicine. They collaborate with scientists in nearly every area related to health and have made major contributions to cancer, genetics, bioinformatics, and immunology, as well as other areas.

## Intended (specific) learning outcomes

By the end of the course students should be able to:



**S1: Introduction to the course**

- 1- Show understanding of the general structure of the course.
- 2- Show list of the outcomes and specific objectives of the course.
- 3- Explain the bases and contents of the assessment and feedbacks.
- 4- Appoint or elect a student coordinator.
- 5- List hard and soft reading material.
- 6- Explain attendance regulations and consequences of absenteeism.
- 7- Indicate the role of students and instructors in evaluation of the course

**S2: Definitions**

- 1- Define data collection, internal estimation, hypothesis testing, variables, descriptive and inferential data, observational study (C1).

**S3: Sampling**

- 1- Define sample and population (C1).
- 2- Differentiate between sample and population (C1).
- 3- Describe appropriate sampling methods from the different types of sampling techniques and the merits of each type (C1).
- 4- Identify convenient sample by using sampling theory (C1).
- 5- Recognize that statistics from randomized samples tend to be more representative and centered at the population parameter (C1).

**S4: Data collection**

1. Identify data relating to variable/variables (C1).
2. Estimate population means, recognize, calculate and interpret the concept of confidence interval (C1).

**S5: Observational and randomized studies**

1. Distinguish between observational and randomized studies (C2).
2. Indicate which of them is important for causation finding- not only association (C1).
3. Design and implement a basic randomized experiment (C1) .

**S6: Variables**

1. Define a variable, and indicate how to identify variables in an experiment (C1).
2. Indicate potential confounding variables in an observational study (C1).
3. Explain what a positive or negative association means between two quantitative variables (c2)

**S7: Analysis**

1. Use the normal or t-distribution, the standard error formulas, and the formula

(statistic - null value)/SE to calculate a p-value for tests for means, difference in means, proportions, difference in proportions, correlation, and slope (C1).

### **S8: Data summary and representation**

1. Create meaningful graphs using data (C1).
2. Interpret these graphs to communicate important information (C1).
3. Demonstrate understanding the merits and demerits of the different types of data presentation (C1).
4. Require sample size for a given level of confidence (C1).

### **S9: Statistical skills**

1. *Given a data set, calculate and interpret measures of central tendency (mean, median and mode), measures of variation / dispersion (range, percentile, variance, standard deviation, coefficient of variation), frequency distribution (normal and skewed distribution) and probability of an event (addition and multiplication rules) (P2).*
2. *Given a data set, apply the appropriate test of significance (t-test and chi-square) for a given data set and a given research methodology (using t test as an example) (P2).*
3. *Use the statistical packages available in computer program (P2).*

### **S10: Placebos and blinding**

1. Define placebo and blinded studies (C1),
2. Explain why placebos and blinding are used in experiments (C2).

### **S11: Confidence**

1. Interpret a confidence interval in context (C2).
2. Explain the logic behind statistical confidence intervals and hypothesis tests (C2).

### **S12: Statistical significance**

1. Indicate when and why statistical tests are needed. Discuss the concept of statistical significance (C1).
2. Explain the concept of p-value and its interpretation (C2).
3. Realize that the strength of evidence against the null hypothesis depends on how unlikely it would be to get a statistic as extreme just by random chance, if the null hypothesis were true (C2).
4. *Show how to calculate the p-value (P2).*

### **S13: Inference**

1. Describe if the conditions are met to use a normal, t, or chi-square distribution for inference (C1).

**S14: Normal distribution – measurement of central**

1. Define and recognize normal distribution (C1).
2. Interpret data via normal distribution (C2).
3. Define the principal concepts of probability (C1).
4. *Compute the percentage of areas between given points under a normal curve (p2).*

**Recommended textbooks and/or reading material:**

- Staff PowerPoint notes

**Educational strategies and methods (lecture, seminar, practical....etc):**

- 1- Interactive lectures
- 2- Practical sessions
- 3- Tutorials
- 4- Seminars
- 5- Assignments

**Assessment**

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance/Presentation= 5%	MCQs= 25%	MCQs = 30%
Practical/Clinical/Visits= 5%	SQs= 0%	SSQs= 20%
Assignments/Tutorials=5%	Essays/ Short notes=	Essays/ Short notes= non
Others= 5% (e.g. peer)	Others= -----%	Others= 10 (e.g. peer)
<b>Total= 15%</b>	<b>Total= 25%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
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Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required Resources****Premises**

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Computer laboratory with statistics software

**Staff**

- Statisticians
- Epidemiologists

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms

## Behavioral Science (BEHAV-119)2 CHs- 2 weeks

TITLE: Behavioral Science	CODE: ME-BE-HAV-119	DURATION/CREDITS: block /2 CHs - week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

A three-week block during Semester 1, to include: (1) introducing human psychology: psychoanalysis, defense mechanism manifesting as behaviors, (2) role of stress in the etiology of physical and psychological illness, (3) coping with loss, grief and death, (4) biological basis of behavior (catecholamines, dopamine, neurotransmitters, neuropeptides), (5) cultural considerations in medical practice, (6) family structure and dynamics in health care, (7) health and illness behavior, (8) personality, (9) terminology of psychiatric disease, (10) medical bases of substance and drug abuse.

### General Learning Outcomes

By the end of the course students are expected to:

1. Demonstrate knowledge of psychosocial aspects of human development.
2. Demonstrate familiarity with the learning process in humans.
3. Show understanding of the genetic, developmental, and environmental factors that control human behavior.

### Intended (specific) learning outcomes

By the end of the course students are expected to:

#### S1: Introduction to the course

1. Show understanding of the general structure of the course.
2. List of the outcomes and specific objectives of the course.
3. Explain the bases and contents of the assessment and feedbacks

4. Appoint or elect a student coordinator.
5. List hard and soft reading material.
6. Explain attendance regulations and consequences of absenteeism.
7. Indicate the role of students in evaluation of the

## **S2: Definition and history of psychology**

1. Define psychology (C1).
2. Describe psychosocial and sociocultural relations (C1).
3. Outline the history of psychology (C1).
4. Define psychological health (C1).
5. Explain relationship of psychology to health and illness (C2).

## **S3: Psychological development**

1. Describe the psychological development of children and adults (C1).
2. Explain how psychological development relates to health and disease (C2).

## **S4: Branches of psychology**

1. List the branches of psychology (C1).
2. Explain how each is related to health and disease (C2).

## **S5: Social and learning psychology**

1. Define social psychology (C1).
2. Define learning and cognitive psychology (C1).
3. Define cognitive psychology (C1).
4. Explain how learning behavior affects health (2).

## **S6: Clinical psychology**

1. Define clinical psychology (C1).
2. Describe the role of the clinical psychologist in health (C1)
3. Discuss the scientific basis of psychoanalysis and other methods of psychotherapy (C2).

## **S7: Behavioral science and personality**

1. Define behavioral science (C1).
2. Define personality (C1).
3. Discuss the relevance of behavioral science to medicine (C2).

## **S8: Sociocultural aspects of human behavior**

1. Outline the sociocultural aspects of human behavior (C1).
2. List the harmful effects of sociocultural aspects that influence public health (C2)

**S9: Biological basis of behavior**

1. List examples of biological bases of behavior (C1).
2. Discuss the dilemma of accountability and responsibility in biologically-based behavior (C2).

**S10: Healthcare seeking behavior**

1. Explain healthcare seeking behavior (C2).
2. Discuss how it affects the patient and healthcare systems (C2).

**S11: Behavioral disorders and behavior modification**

1. List the behavioral disorders of health impact (C1).
2. Explain how behavior can be modified (C2).

**S12: Organizational psychology**

1. Define organizational psychology (C1).
2. Explain how it is related to health (C2)

**S13: Legal issues related to psychological illness**

1. Discuss the legal issues in management of psychological illness (C2).
2. Explain the role of psychologist and psychiatrist in criminology and legal evidence (C2).

**S14: Community and society**

1. Define community (C2).
2. Describe social phenomena (C1).
3. Enumerate elements of the society (C1).

**S15: Impact of illness**

1. Discuss the effect of illness on the individual and family (C2).
2. Describe impact of illness and health problems on the community (C1)

**S16: Childhood illness**

1. Explain interrelations of childhood, illness and the environment (C2).
2. Enumerate the psychological illnesses in children (C1).

**S17: Role of the psychologist**

1. Describe the qualifications of a psychologist (C1).
2. Discuss his/her role in illness (C2).

**S18: Stress coping and depression**

1. Define stress coping (C1).

2. Define depression (C1).
3. How to help a patient cope with stress (C2).

### S19: Violence

1. List the types of violence in behavioral disorders (C1).
2. Explain how to deal with violence in health service settings (C2).

### S20: Role of social worker

1. Describe the qualifications of a social worker (C1).
2. Discuss his/her role in illness (C2).

### S21: Substance abuse

1. List the types of substance abuse.
2. Outline management of substance abuse (C1).

### S22: Ethical and professional issues

1. Discuss confidentiality in psychological and psychiatric illness (A).
2. Discuss the extent and limits of patient's autonomy (A)

## Recommended reading material

Steven's, VM, Behavioral Science, Mosby, 978-0323020077

## Educational strategies and methods (lecture, seminar, practical....etc):

- 1- Interactive lectures
- 2- Practical sessions
- 3- Tutorials
- 4- Seminars
- 5- Assignments

## Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance /Presentation= 10%	MCQs= 30%	MCQs = 30%
Practical/Clinical/Visits= 5%	SQs= 0%	SSQs= 0%
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<b>Total= 30%</b>	<b>Total= 30%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.



**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
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Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required Resources****Premises**

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Problem scenarios

**Staff**

- Psychologists
- Psychiatrists
- Medical ducationists

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms

## Genetics and Molecular Biology (MEGENT-119), 2CHs, Block, 2 Weeks

TITLE: Genetics and Molecular Biology	CODE: MEGENT-119	DURATION/CREDITS: block /2 CHs - 2-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

This is a 2-week block intended to expose the student to basic knowledge on the structure and function of the DNA and organization of the human genome and molecular cell biology in health and disease.

### Rationale

The course describes the flow of information from DNA to mRNA to proteins, as well as the role of molecular genetics in the investigation and understanding of disease processes such as— inborn errors of metabolism and cancer as well as utilization of such knowledge in treatment and follows up of patients. The open future of this new aspect in science will be introduced.

### General learning outcomes:

By the end of the block a student should be able to:

1. Show understanding of normal human genetics, chromosome structure, and function.
2. Identify the major types of molecules and biochemical reactions that occur in living human cells.
3. Describe the process of protein synthesis in normal functioning cells.
4. Show understanding of the flow of information from DNA to RNA to protein and the major metabolic pathways for the synthesis, storage, and breakdown of biological molecules of energy generation and nutrition.
5. Apply knowledge of genetics to understand the biology of human cells.

6. Relate knowledge of human genetics to normal and abnormal functions.
7. Show understanding of human genetics disorders, chromosome structural defects, and abnormalities
8. Become aware of the genetic basis of inherited disorders and cancer.
9. Developing the ability to learn, and to build a professional approach includes new approaches to treatment using the present knowledge of gene therapy and stem cell therapy.

### **Intended (specific) Learning Objectives (ILOs):**

By the end of this course the students expected to:

#### **Introduction to the course**

1. Show understanding of the general structure of the course.
2. Show a list of the outcomes and specific objectives of the course.
3. Explain the bases and contents of the assessment and feedback.
4. Appoint or elect a student coordinator.
5. List hard and soft reading material.
6. Explain attendance regulations and the consequences of absenteeism.
7. Indicate the role of students in the evaluation of the course and instructors.

#### **S2: Cell general structure**

1. Show understanding of the general structure of the cell. Identify the cellular organelles (C1).
2. List the structure and functions of each organelle (C2).
3. Outline medical conditions that result from the dysfunction of these organelles (C1)

#### **S3: DNA & RNA structure**

1. Describe the structure of DNA and RNA (C1).
2. Differentiate between the structure, organization, and functions of the major biological nucleic acids (C2).

#### **S4: Cell cycle and cell division**

1. Name the cell cycle stages (C1).
2. Define and describe meiosis and mitosis divisions and give examples (C1).
3. Compare the stages of the cell cycle in meiosis and mitosis (C2).

#### **S5: DNA replication and repair**

1. Name and define the steps of DNA replication. List enzymes involved in the process of DNA replication (C1).

2. Show understanding of the insults that can occur in the DNA during replication, their consequences, and mechanisms for repairing those insults (C2).

### **S6: PRACTICAL-1 visit to NUBRI**

1. Find the location of the National University Biomedical Research Institute (NUBRI) (C1).
2. Identify the equipment and list the technique used in DNA research (C2)

### **S7: Transcription**

1. Define Transcription (C1).
2. List the steps of transcription (C1).
3. Name the enzymes involved in the process and their specific actions (C1).

### **S8: Post-transcription modification**

1. Define post-transcriptional modifications (C1).
2. List the modifications that end up with the synthesis of messenger ribosomal and transfer RNA (C1)

### **S9: Translation and genetic code**

1. Define translation and genetic code (C1).
2. Show understanding of the mechanism of protein synthesis (C2).
3. Describe the level of a code in a gene up to the stage of forming a mature functioning protein (C2)

### **S10: Chromosomal abnormalities**

1. Differentiate between numerical and structural abnormalities (C1).
2. Give an example of the most common abnormalities and discuss their causes (C2).
3. Compare normal with an abnormal karyotype (C2).

### **S11: Mendelian and non-Mendelian diseases**

1. Describe the general molecular pathogenesis of Mendelian diseases and disorders of DNA repair system (C1)
2. Explain gene therapy approaches to treat those diseases (C2).
3. Interpret family pedigrees and conventional sequencing results for Mendelian disorders (C2).

### **S12: Polymerase chain reaction (PCR)**

1. Define PCR and describe the steps of the technique List some of the applications of the technique (C1).

### **S13: Genetic bases of cancer**

1. Shows understanding of the general molecular pathogenesis of cancer (C2).

2. List three types of cancer thought to have genetic bases (C1).

### **S14: Recombinant DNA technology**

1. Compare the major vectors used in recombinant DNA technology (C2).
2. Discuss the recombinant DNA technology applications (C2).

### **S15: Introduction virtual laboratory**

1. Define and describe applications of the virtual lab (C1).
2. *Attend a performance of simulated PCR and list some of the applications of the technique (P1)*

### **S16: Human genome project**

1. Show understanding of the major applications of the human genome projects (C2).
2. Search the main genome browsers (UCSC, NCBI, and Ensembl) (C2).
3. Differentiate between Sanger sequencing and next-generation sequencing (NGS) technologies (C2).

### **S17: Seminar-1: topic includes:**

1. Differentiate between the concepts of chromosomal and molecular genetic defects (C2).
2. Discuss the roles of the major gene regulatory proteins and molecules including signal transduction and cell cycle control (C2).
3. List the common features of genetic diseases (C1).
4. Differentiate between primary (genetic) and secondary (acquired) diseases (2).
5. Differentiate and give examples of various types of genetic disorders (C2).

### **S18: Seminar-2: topics include:**

1. Relate properties of cancerous cells to mutational changes in gene function (C2).
2. Show understanding of the concept and the aim of molecular diagnosis and research (C2).
3. Show awareness of international issues such as the role of genetics in forensic medicine and the human genome project (C2).
4. *Review the basic ethical issues in applications of genetic sciences (A).*

### **Educational strategies and methods (lecture, seminar, practical....etc):**

- 1- Interactive lectures
- 2- Practical sessions
- 3- Tutorials
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## Assessment

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\*Ref. Academic Course policy (SC- PP 09)

## Required Resources

### Premises

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Genetics and molecular biology laboratory, and Computer laboratory

### Staff

- Geneticists
- Molecular biologists
- Pediatricians

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms

## Introduction to Bioinformatics (ME- BIOINFO- 129), 2(1+1) CHs, Block, Duration= 2 weeks

TITLE: Introduction to Bioinformatics	CODE: ME-BIO-INFO-129	DURATION/CREDITS: block /2 CHs - 2-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:	1. Computer course (ME-COPM-116 and ME-COMP- 125) 2. Basic biochemistry (ME-BIOCH-118) 3. Genetics and molecular biology (ME-GENET-11)	

### Rationale

The need for bioinformatics has arisen from the recent explosion of publicly available genomic information, such as resulting from the Human Genome Project. Students must gain a better understanding of gene analysis, taxonomy, & evolution. Bioinformatics is the application of tools of computation and analysis to the capture and interpretation of biological data, it is essential for the management of data in modern biology and medicine. Chronic diseases are rapidly expanding all over the world, and associated healthcare costs are increasing at an astronomical rate. We need to develop personalized treatments tailored to the genetics of increasingly diverse patient populations, to clinical and family histories, and environmental factors. This requires collecting vast amounts of data, integrating it, and making it accessible, and useful

### Outline

This is a two weeks course (2 CHs) that surveys the major areas of bioinformatics, exploring the history of bioinformatics concerning advances in computing hardware and software; the biological problems currently being addressed using bioinformatics; and future applications of bioinformatics. Major topics include; medical informatics, genomics; genome sequencing projects; proteomics; structural genomics; and phylogeny.



## General Learning Outcomes

By the end of this course students are expected to:

1. Realize the objective of this course, which is to introduce students to the fundamentals of molecular biology and recent advance in genomics technology. These principals underlie much of modern bioinformatics, and students will be shown how they apply to many of the basic bioinformatics methods that are of common use in the field.
2. Show ability of practical and hands-on programming experience with commonly used bioinformatics tools and databases.
3. Grasp the basic theory and application of programs used for database searching, protein and DNA sequence analysis, and prediction of protein function.
4. Discuss the social impact and ethical considerations of this emerging technology and overwhelming information.

## Intended (specific) Learning Outcomes (ILOs)

By the end of the course, students are expected to:

### S1: PRACTICAL-1 second visit to NUBRI

1. Reach the location of the National University Biomedical Research Institute (NUBRI).
2. Discuss the equipment and list the technique used in DNA research

### S2: Genomic and proteomic databases

1. Demonstrate the use of a variety of currently available genomic and proteomic databases (C2).
2. Explain the importance of the databases (C2)
3. Search and retrieve information from genomic and proteomic databases (e.g. GenBank, Swiss-Prot) (C2).
4. Analyze their search results using software available on the internet (e.g. BLAST, ClustalW) (C2).

### S3:Biological sequences

1. Compare and analyze biological sequences and how to interpret the results of their analyses (C2).
2. Locate consensus sequences, genes, and open reading frames within biological sequences (C2).

### S4:Phylogenetic tree

1. Construct phylogenetic trees based on biological sequence data (C2).

2. Assignment: present (each student) a phylogenetic tree of one common disease (C2)

### S5: Protein structure and function

1. *Perform elementary predictions of protein structure and function (P1)*

### S6: Genomic analysis

1. *Perform elementary comparative genomic analysis (P1).*

### S7: Use of a suitable computer

1. *Use computer systems or other appropriate forms of technology to achieve educational and personal goals (P3)*

### S8: Seminar-1: Journal club of bioinformatics papers.

### Reading material

- Staff PowerPoint presentations and website uploaded lectures
- Practical Bioinformatics, 1st edition Agostino, M., Garland Science, 2013
- Bioinformatics and Functional Genomics, 2nd edition Jonathan Pevsner, Wiley-Liss, ISBN# 978-0-470-08585-1.

### Educational strategies and methods (lecture, seminar, practical....etc)

1. Interactive lectures
2. Practical sessions
3. Tutorials
4. Assignments

### Assessment

Continuous Assessment		
Throughout the course	Mid- Exam	Final Examination
Seminar/Presentation = 10 %	MCQs= 0	MCQs = 60%
Practical/Clinical/Visits = 20 %	SQs= 0	SSQs= 0
Assignments/Tutorials = 10%	Essays/ Short notes= 0	Essays/ Short notes= 0%
Others= 0%	Others= 0	Others= 0
<b>Total= 40 %</b>	<b>Total= 0</b>	<b>Total= 60 %</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	<sup>3</sup> 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	<sup>3</sup> 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	<sup>3</sup> 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	<sup>3</sup> 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	<sup>3</sup> 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required Resources****Premises**

- Lecture hall equipped with audiovisual aids
- Tutorial rooms for small group discussion
- Computational resources: access to a computer with an internet connection

**Staff**

- NUBRI staff
- Computer unit staff

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms

## Man, and Environment (ME-ENV-127) – 4 CHs Block 4 weeks

TITLE: Man and Environment	CODE: ME-ENV-127	DURATION/CREDITS: block /4 CHs - 4-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

A 6-week (5 CHs) course on the inter-relation between Man's internal and external environments, basic concepts of internal physiologic activities, body fluids, acid-base balance, biological membrane, body systems (respiratory, gastrointestinal, nervous etc..) exposed to environment, impact of environment on health, health consequences of exposure to potential environmental hazards (physical, chemical and biological), multi-disciplinary approach to environment, the role of the international organizations interested in environmental protection, principles of epidemiology, biological spectrum of environmental diseases, endemic and epidemic diseases.

### Rationale

Humans continuously affect their environment and are affected by it. Throughout history, humans have changed their environment through hunting, farming, mining, and introducing new animal species with them as they traveled to new lands. The availability of specific nutrients, in the local environment changes the physiological characteristics of humans, i.e. improved nutrition in developed countries has increased the height of Man. The *milieu interior*, or the internal environment, is formed of the body systems working in harmony to achieve homeostasis, a state of equilibrium of all influences, including the external environment. The body can lead a disease-free life, or be crippled by disease, mostly from failure of this equilibrium. Man cannot be separated from his environment. His mental state is closely linked with his surroundings (physical, biological and social) and the extent of his adaptation and tolerance to these surroundings.

Advances in health, sanitation, and nutrition have more than doubled longevity worldwide, more so in the developed countries. The killer diseases (e.g. cholera, tuber-

culosis, malaria, diarrheal diseases, influenza, plague and measles) are related to poor environmental conditions and practices, including land and water use. Water-borne diseases are estimated to cause 5 million deaths a year, particularly affecting children and the elderly. Schistosomiasis, affecting more than 200 million people, is believed to have arisen in the last few decades because of irrigation practices in hot climates.

Environmental health researchers are also investigating why individuals vary in their susceptibility to toxins and infectious agents. Rapidly growing knowledge in the genetic sciences is providing new insight into the interaction between genetic characteristics and environmental factors.

This block deals with the study of Man in relation to his environment, both internal and external, and the interaction between him and this environment as well as the study of the conditions and diseases resulting from or aggravated by this interaction.

## General Learning Outcomes

By the end of this course students are expected to:

1. Describe the internal environment, homeostasis, fluid- electrolyte balance and acid-base balance.
2. Recognize under the microscope the biological membranes: structure, composition and functions.
3. Describe the structural and functional organization of the gastrointestinal tract.
4. Explain the body fluid compartments, their composition and functions and buffers and buffering mechanisms.
5. Describe the structural and functional organization of the nervous system.
6. Explain the causative factors of diarrhea and the impact of gastroenteritis on the individual, his family and community.
7. Describe the effects of hot and cold environment on human beings and the body's ability to adapt to it.
8. Describe acclimatization to high altitude, deep sea diving and other hyperbaric conditions.
9. Describe ecological perspectives in human-environment relationship and health consequences of exposure to a variety of potential hazards (physical, chemical and biological) in the environment.
10. Describe the agent-host-environment triad on disease occurrence, the transmission of disease and the incubation and latent period.
11. Explain the biological spectrum of disease and pollution of the external environment.
12. Describe the effects of external environment on endemic, epidemic and pandemic diseases, in addition to investigation of an epidemic and distribution

and frequency of diseases.

13. List the investigations and understand the management of epidemics and the levels of prevention of disease.

## **Intended (specific) learning outcomes**

By the end of this course students are expected to:

### **S1: Introduction to the course**

- 1- Show understanding of the general structure of the course.
- 2- List of the outcomes and specific objectives of the course.
- 3- Explain the bases and contents of the assessment and feedbacks
- 4- Appoint or elect a student coordinator.
- 5- List hard and soft reading material.
- 6- Explain attendance regulations and consequences of absenteeism.
- 7- Indicate the role of students in evaluation of the course and instructors

### **S2: Function of membrane proteins**

- 1- Explain the importance of proteins and phospholipids in the cell membrane (C2).
- 2- Explain the role of membrane proteins in electrolyte mobility (C2).

### **S3: Body composition**

1. Describe the different components of body: water, proteins, lipids and minerals (C1).
2. Explain general functions of each component (C2).

### **S4: Functions of water**

1. Enumerate the amount and functions of body fluids (C1)
2. Discuss the transport of nutrients, respiratory gases, hormones, enzymes and waste products (C2).
3. Discuss the role of water in exchange of substances (C2).

### **S5: Body fluids compartments**

1. List the various body fluid compartments (C1).
2. Define intracellular fluid, extracellular fluid, extravascular, intravascular, interstitial, transcellular and lymphatic fluids. Estimate their volumes (c1).
3. Describe the principles of concentration gradient, water soluble and lipid soluble substances, and cell size (C1).

### **S6: Plasma osmolarity units and concentrations**

1. Define osmolarity, tonicity and explain how to measure them (C1).
2. Explain the effect of different solutions on the cell (C2).

### S7: Electrolytes

1. Define electrolytes: cations, anions (C1).
2. Describe their distribution across the cell membrane (C1).
3. Explain the electrical charges, biopotentials and metabolic activity (C2).

### S8: Transport across the cell membrane

1. Describe diffusion, facilitated diffusion, primary and secondary active transport, co-transport and counter transport with examples (C1).
2. List and explain the overall cell functions (special functions) like pinocytosis and phagocytosis (C2).

### S9: Transport across capillary membrane

1. Explain the hydrostatic pressure – colloid and crystalloid osmotic pressures and their importance in kidney, lung and other tissues (C2).
2. Describe the features of physical regulation – fluid shift, and renal filtration (C1).
3. Perform determination of albumin, inulin for different compartments – ICF and ECF (P1).

### S10: Homeostasis and control systems

1. Define and explain homeostasis and its mechanisms - neural, endocrine, and neuroendocrine and enzymes (C2).
2. Describe constancy or stability (in narrow range) of composition of body fluids – osmolality, viscosity, pH, pressure, temperature & volume (C1).
3. Explain the neural mechanism – concept of receptors, molecular and sensory (C2).
4. Describe role of hypothalamus – thermoreceptors (body temperature), glucoreceptors (hunger and food intake), osmoreceptors (volume, osmolarity, water intake and thirst) and chemoreceptors (oxygen, carbon dioxide and pH) (C1).
5. Describe the Sino aortic mechanism – baroreceptors for BP and chemoreceptors for respiration (C1).
6. Explain the neuroendocrine mechanism – osmoreceptors (ADH). (C2).
7. Explain the negative and positive feedback mechanisms (C2).

### S11: Electrolyte channels and Na-K pump

1. Explain the transport systems of Na and K across cell membrane (C2).
2. Discuss the lipid bilayer and the protein channels (C2).

### S12: Water balance

1. Identify water balance, way of water intake and loss (C1).
2. Explain the physiological variations in water intake and water loss (C2).
3. Describe the hypothalamus and its role in homeostasis of temperature, os-

molarity, fluid volume and fluid intake (C1).

### **S13: Intracellular communication**

1. Define intracellular communication and mechanism. by which second messengers act (C1).
2. Define receptors and their location (C1).

### **S14: Resting membrane potential and action potential**

1. Define membrane potentials (C1).
  2. Explain the basic principles and origin of membrane potentials (C2).
  3. Define action potential and describe the stages of action potential (C1).
  4. Explain the ionic changes across cell membranes in development of action potentials (C2).
  5. Describe the sodium potassium voltage gated channels (C1).
  6. Explain the propagation of action potential (C2).
  7. Explain conduction velocity (C2).
- 8. Perform experiments to calculate conduction velocity of nerves (P2).**

### **S15: Autonomic nervous system (ANS)**

1. Describe the general and functional organization of the nervous system (C1)
2. Define sensory receptors, sensory pathways (C1)
3. Define the ANS, discuss the general plan and functions of ANS (C1).
4. Explain the role of ANS in homeostasis: response to external environment, sex behavior and defense (C1).
5. Explain response of ANS to internal environment, baro-, chemo-, osmo- and thermo receptors, and their role in homeostasis (C2).
6. Discuss the role limbic system in relation to emotional responses (C2).

### **S16: Basal metabolic rate (BMR)**

1. Define basal metabolic rate (C1).
2. Describe the method of BMR measurement (C1).
3. List the significance of BMR and the factors affecting its value (C1).

### **S17: Acid-base balance**

1. Define acids and bases, pH, acidity of a solution and alkaline solutions (C1)
2. Explain the Henderson-Hasselbach equation, disturbances in acid base balance, classification of acid base disturbance and anion gap (C2).
3. Describe the buffers and buffer mechanisms in the body (C1).

### **S18: Body temperature regulation**

1. Describe the hypothalamus and its role in homeostasis of temperature (C1).



2. Identify body response to hot and cold environment (C1).
3. Describe abnormalities of body temperature (fever, heat stroke and heat exhaustion) (C1)

### **S19: Man and nature: house and health**

1. Describe mechanism of transmission of disease (C1).
2. Define horizontal transmission: human to human–direct contact, indirect contact, onhuman to human soil, water sources, animal, directly, via insect vector (C1).

### **S20: Disposal of waste and epidemics**

1. Describe the methods of waste disposal (C1)
2. Describe investigation and management of epidemic resulting form inappropriate disposal and level of prevention (C1).

### **S21: Air pollution**

1. Define air pollution and list its causes (C1)
2. Explain role of air pollution in disease occurrence (endemic) (C2).
3. Describe investigation and management of epidemic and level of prevention of diseases caused by air pollution (C1).

### **S22: Water pollution**

1. Define water pollution and list its causes (C1).
2. Explain role of water pollution in disease occurrence (endemic) (C2).
3. Describe investigation and management of epidemic and level of prevention of diseases caused by water pollution (C1).

### **S23: Soil pollution**

1. Define soil pollution and list its causes (C1).
2. Explain role of soil pollution in disease occurrence (endemic) (C2).
3. Describe investigation and management of epidemic and level of prevention of diseases caused by soil pollution (C1).

### **S24: Occupational health**

1. Define occupational health (C1).
2. Explain the relation of occupation and its effect on health (C2)
3. Discuss the work environment of hospitals, cement and agriculture industries and cotton mills in disease causation (C1).

### **S25: Physical hazards**

1. Define physical hazards in environment (C1)

2. Define horizontal transmission: (a) human to human: direct and indirect contact, (b) nonhuman to human: soil, air and water sources, (c) animal, directly, or via insect vector (C1).
3. Review the investigation and management of epidemic and level of prevention of diseases associated with other physical hazards (C1).

### **S26: Chemical hazards**

1. List the sources of chemical hazards and diseases associated with each (C1).
2. Describe the effect of oil spills on environment pollution (C1)
3. Describe working in oil refineries and related industry as an occupational hazard (C1).
4. Describe the diseases caused by industrial smoke on entire cities and communities (C1)

### **S27: Mechanical hazards**

### **S28: Disease triad**

### **S29: Endemic diseases**

1. Explain disease transmission, incubation and latent periods (C2).
2. Explain role of environment in disease occurrence (endemic, epidemic and pandemic), distribution and frequency of disease (C2).

### **S28: Infectious diseases**

1. Explain disease transmission, incubation and latent periods (C2).
2. Explain role of environment in disease occurrence (endemic, epidemic & pandemic), distribution and frequency of disease (C2).
3. Describe investigation and management of epidemic and levels of disease prevention (C1).
4. Explain methodology, construction, and interpretation of epidemic curve (C1)
5. Describe investigation and management of epidemic and level of prevention (C1)

## **General timetable**

Week 1: Structure and function of cells and organelles, transport across cell membranes, action potential and impulse propagation and nerve conduction (1-16).

Week 2: Homeostasis, body fluids, role of hypothalamus and other mechanisms, effect of heat and heat exhaustion, adaptation to cold environment, low oxygen, acid base balance (17-40)

Week 3: Structure and function of GIT, role in homeostasis, bacterial flora, diarrheal diseases, ORT (41-54)

Week 4: Structure and function of the nervous system, role in homeostasis, hypothalamus, hormones (55-61).

Week 5: Transmission of disease, agent, host, environment triad, investigation and management of epidemics, environmental pollution, occupational diseases (62-73).

Week 6: Assignments, evaluation

### Recommended reading material:

- Young, Whether's Functional Histology, Churchill Livingstone, ISBN 0443056188 [IE]
- Underwood, General and Systemic Pathology, Churchill Livingstone, ISBN 0443062862 [IE].

### Educational strategies and methods (Lecture, seminar, practical....etc):

1. Interactive lectures
2. Practical sessions
3. Tutorials
4. Assignments

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Seminar/Presentation= 5%	MCQs= 20%	MCQs = 40%
Practical/Clinical/Visits= 510	SQs= 0%	SSQs= 20%
Assignments/Tutorials=0%	Essays/ Short notes=	Essays/ Short notes= 0%
Others= 5% (e.g. peer)	Others= -----0%	Others= 0%(e.g. peer)
<b>Total= 20%</b>	<b>Total= 20%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good n(B)	≥ 65 to <75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to <60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required Resources****Premises**

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Physiology laboratory, visit to occupational health laboratory

**Staff**

- Physiologists
- Histologists
- Occupational physician

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms

## Growth and Development (ME-GROW-126) – 4 CHs Block 3 weeks

TITLE: Growth and Development	CODE: ME-GROW-126	DURATION/CREDITS: block /4CHs -3-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

This is a four-week integrated block module on general embryology (reproductive organs, gamete formation, fertilization, implantation, organogenesis, and subsequent morphological changes in the human development during prenatal, postnatal, childhood, preschool, school age, adolescence, adulthood and elderly (both physical and psychological) changes, teratogens and congenital anomalies. Students should visit an antenatal setup, a labor room, child care center and discuss growth monitoring charts, milestones, abnormalities of physical growth, maternal and child health care, elderly care.

### Rationale

This block is placed early in the curriculum so as to give the students an overview of the different phases of human life. The students learn about the stages starting at the very beginning with gametogenesis, fertilization and implantation and then the different teaching/ learning activities will help them acquire knowledge about early embryological development and fetal growth, then infancy, childhood, adolescence, adulthood and finally about old age. Students become familiar with the special features of all these stages and also gain knowledge about the role of health care providers at the different phases of human life in accordance to the specific needs of each phase.

This block is planned to facilitate learning about the process of fertilization, embryological development, intrauterine growth and the physiology of pregnancy. Knowledge will also be acquired about the growth and development during infancy and early child-

hood, with special emphasis on nutrition and immunization. It also aims to guide the students towards the adolescent period and make them learn about physical, psychological and hormonal changes occurring during this phase. An integral part of this block is to make the students realize and gain knowledge about the health needs of the elderly in society and the provision of health care facilities for them.

It is planned to achieve these objectives through the different problems submitted in this block and tutorials augmented by lab skills and clinical skills tutorials in addition to student interactions with the subject specialists. The students will also visit health centers and get acquainted with the health care delivery system with reference to antenatal care, pediatric care, immunization and also geriatric care.

### General Learning Outcomes

By the end of this course students are expected to:

1. Learn about the male and female organs of reproduction.
2. Understand mitosis, meiosis and in extension gametogenesis in males and females.
3. Acquire knowledge about fertilization, implantation and organogenesis.
4. Understand the physiology of pregnancy and lactation and importance and methods of antenatal, natal and postnatal care.
5. Elucidate the different stages of intrauterine growth.
6. Be cognizant with the developmental stages and milestones in early childhood and health care provision for infants and children under five years of age.
7. Be acquainted with the changes and required care during puberty and adolescence.
8. Understand the process of ageing, its associated complications and the health care needs of the elderly.

### Intended (specific) learning outcomes

By the end of these course, students would be able to:

#### S1: Introduction to the course

1. Show understanding of the general structure of the course.
2. Show list of the outcomes and specific objectives of the course.
3. Explain the bases and contents of the assessment and feedbacks.
4. Appoint or elect a student coordinator.
5. List hard and soft reading material.
6. Explain attendance regulations and consequences of absenteeism.
7. Indicate the role of students in evaluation of the course and instructors.

**S2: Reproductive system**

1. Describe the male and female organs of reproduction (C1).
2. Identify the histological features of male and female gonads (C1).
3. Draw and explain the structures of male and female gametes (C2)

**S3: Cell division**

1. Describe the steps of mitosis and meiosis (C1).
2. Describe the structural features of DNA and list its replicative steps (C1).
3. List the steps of protein synthesis (C1).

**S4: Gametogenesis**

1. Explain the process of oogenesis in females and list the hormones controlling it (C2).
2. Explain the process of spermatogenesis in males and list the hormones controlling it (C2).

**S5: Uterine cycle and ovulation**

1. Describe the endometrium and its regular shedding (C1).
2. Describe hormonal control of menstruation (C1).
3. Describe how the endometrium cyclically prepares for implantation of two weeks the conceptus (C1).

**S6: First week of development**

1. Explain the process of fertilization and cleavage (C2).
2. List the different sites of implantation along with the most common site (C1).
3. Explain the developmental changes occurring in the first week of pregnancy (C2).

**S7: Second week of development**

1. Outline the formation of the fetal membranes and the placenta (C1).
2. Explain the developmental changes occurring in the second week of pregnancy (C2).

**S8: Third week of development**

1. Explain the developmental changes occurring in the third week of pregnancy (C2).
2. Discuss the aspect of brain development at this stage (C2)

**S9: Physiological changes during pregnancy**

1. List the physiological changes occurring in pregnancy (C1).
2. List the maternal changes during pregnancy (C1).

**S10: Embryonic period**

1. Review the developmental changes occurring during weeks 3 to 8 of pregnancy (C1).

### **S11: Fetal period**

1. List the changes occurring during the fetal period (C1).
2. Describe cardiovascular changes during this period (C1).

### **S12: The placenta**

1. Follow the steps of the formation of placenta (C1).
2. List the different sites of placental implantation (C1).
3. List the functions of the placenta (C1).

### **S13: Fetal membranes and amniotic**

1. List the components of gestational sac (C1).
2. Outline the formation of the fetal membranes and the placenta (C1).

### **S14: Antenatal care**

1. Outline the antenatal care programme (C1).
2. List the special calorie requirement and the dietary supplements for the pregnant mothers (C1).
3. Explain the vaccination during pregnancy, name them and explain their role (C2).

### **S15: Labor**

1. Describe the stages of labor (C1).
2. Attend two labors in hospital or health center (P2).
3. What does the midwife do after the baby is out? (C2)
4. What does the pediatrician do after the baby is out? (C2)

### **S16: Physiological changes during puberty**

1. Define terms like, menarche, menstruation, menopause (C1).
2. List the physical and psychological changes during puberty and adolescence and explain the hormonal basis of these changes (C1).
3. Explain the development of breast as a gland, the secretion transport, and expression of breast milk along with the hormonal control of these phenomena (C2).
4. Explain the importance of breast feeding (C2).
5. Suggest appropriate methods for handling problems resulting from these changes at the family and health care levels (C2).

### **S17: Growth and development**

1. List the developmental stages in early childhood. (C1)
2. List the different milestones and the ages at which they are normally reached (C1).



3. Describe the dentition and ossification of bones (C1).
4. Define ossification centers and list the major ones and discuss the age of a child from x-ray of relevant bones (C1).
5. Draw the structure of the tooth (C1).
6. Explain the dental formula for deciduous teeth (C2).
7. Describe the methods of monitoring growth in early childhood (C1).
8. Outline the changes occurring with menopause (C1).

### **S18: Congenital anomalies**

1. List the causes of congenital malformations and suggest counseling methods on how to prevent the most common ones (C1).
2. List a few common congenital malformations and their causes (C1).

### **S19: Introduction to pediatrics**

1. Describe the pediatric health care system (C1)

### **S20: Childhood nutrition**

1. List the different dietary needs of growing children and the supplements required at this stage (C1).
2. Define weaning, list the different weaning foods (C1).

### **S21: Vaccination**

1. Define immunization and explain its protective role in preventing the incidence of vaccine preventable childhood diseases (C1).
2. List the different vaccines given to children (C1)
3. Explain the EPI schedule for vaccination in the Sudan (C2).

### **S22: Physiology of aging**

1. Explain the process of ageing (C2).
2. List the degenerative changes occurring during the process of ageing (C1).
3. Explain the special health care needs of the elderly (C2).

### **Reading material**

- Sadler TW, Longman's Medical Embryology, Lippincott Williams and Wilkins, ISBN 0781743109.
- Intoudemire A. Human behavior: An Introduction to Medical Students
- Medical Ethics and Law, Hope+Saulescu+ Hendrick, Churchill 978-0443062551

### **Educational strategies and methods (lecture, seminar, practical....etc):**

1. Interactive lectures

2. Practical sessions
3. Tutorials
4. Assignments

## Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Seminar/Presentation= 5%	MCQs= 20%	MCQs = 40%
Practical/Clinical/Visits= 15%	SQs= 0%	SSQs= 20%
Assignments/Tutorials=0%	Essays/ Short notes=	Essays/ Short notes= non
Others= 0% (e.g. peer)	Others= -----0%	Others= 0%
Total= 20%	Total= 20%	Total= 60%

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

### \*Grade Descriptors (Rubrics):

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

## Required resources

### Premises

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Museum, dissection room.
- Antenatal care units, and obstetrics labor rooms,

### Staff

- Anatomists
- Obstetricians
- Pediatricians

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms

# immunology

## (ME-IMM-216) 2 weeks Block, 2 CHs

TITLE: Immunology	CODE: ME-IMM-216	DURATION/CREDITS: block /2 CHs - 2-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

This is a 2-week block, on the structural details of (1) the structure and Anatomy (2) functional aspects of immune system (3) Molecules involved and steps of activation in the various immunological reactions (4) diseases of the immune system in terms of; pathogenesis, clinical presentation and diagnostic methods.

### Rationale

The study of this system is of utmost importance since it involves many diseases in which each of the immune system components is subject to numerous abnormalities which affect the overall function of the body systems. Immunology is an everyday growing subject and is part of all diseases whether infectious, allergic, autoimmune or oncogenic. The student should know the normal profile of immune system and the changes that require attention, taking AIDS as an example.

### General Learning Outcomes

By the end of the block a student should be able to

1. Identify the basic aspects of immune system: the normal structure and function of immune system.
2. Describe the mechanism of Immune disorders
3. Correlate pathologic processes with signs and symptoms of immunological disease.
4. Correlate the vaccination process to the immune system.

## Intended (specific) learning outcome (ILOs)

By the end of the block a student should be able to:

### S1: Introduction to the course

1. Show understanding of the general structure of the course
2. Introduce the various aspects of the course and outline assessment
3. Show list of the outcomes and specific objectives of the course.
4. Explain the bases and contents of the assessment and feedbacks
5. Appoint or elect a student coordinator
6. List hard and soft reading material
7. Explain attendance regulations and consequences of absenteeism

### S2: Terms in immunology

1. List the basic terms in immunology (C1).
2. Define immunity, immune response, antigen, antibody, vaccine, innate immunity, adaptive immunity, hypersensitivity reaction, histocompatibility genes and antigens (C1)

### S3: Components of the immune system

- 1- Explain the basic roles of the immune cells (macrophages, dendritic cells, NK cells, lymphocytes, plasma cells) (C2).
- 2- Describe the structural organization of secondary lymphoid organs (C1).
- 3- Describe the T-lymphocytes and their role in immunity (C1).

### S4: Plasma proteins and immunoglobulins

1. Describe the structure of antibodies (C1).
2. List the classes of antibodies (C1).
3. Discuss the production and function of antibodies (C2)

### S5: Major histocompatibility complex

1. State the properties, structure and function of MHC (C1)
2. Describe the role of MHC in antigen presentation and transplant immunology (C1).

### S6: Antigens

1. Describe the structure of Ag and its immunogenicity (C1).
2. Differentiate between Antigen and immunogen (C2).

### S7: Acquired immunity

1. Define the acquired immunity and its classification (humeral and cellular) (C1).
2. List the phases of acquired immune response (humeral and cellular) (C1).

3. Determine the function of each component (C1)

### **S8: The complement system**

1. Name the pathways of complement activation (C1).
2. Describe the functions of the complement system (C1).
3. Discuss regulation of complement system (C2).

### **S9: Innate immunity**

1. Define the innate immunity (C1).
2. Count the component of innate immunity (C1).
3. Determine the functions of each component (C1)
4. Elicit the role of innate in activation of acquired (C1)

### **S10: The antigen- antibody reaction**

1. Define the types of reactions (e.g. agglutination, and precipitation) (C1).
2. Explain how to classify the reaction (C2).
3. Count the examples for each type of reaction and the principals involved (C1).
4. Count the application and uses of each type of reaction (C1)

### **S11: The cytokines**

1. Identify the source of cytokines (C1).
2. State the properties of cytokines (C1).
3. Discuss the roles of the major cytokines in immunity (C2)

### **S12: The immune deficiencies**

1. Discuss the types of immunodeficiency diseases (C2).
2. Differentiate between primary (genetic) and secondary (acquired) immunodeficiency (C2).
3. Describe the common feature of immunodeficiency (C1)
4. Describe the common causes of secondary immunodeficiency (C1).
5. List common diseases associated with immunology (C1).

### **S13: HIV and other secondary immunodeficiencies**

1. Identify the etiology, morphology, pathogenesis, stages of HIV and AIDS-defining conditions (C1).
2. Outline management and prevention of HIV-AIDS (C1)

### **S14: Transplantation immunology**

1. Define the transplanted graft and count its types (C1).
2. Define the rejection of transplanted graft (C2).
3. Count the types of transplantation rejection and its pathophysiology (C1).

4. Define the graft versus host disease (C1).
5. Determine the mechanism of the graft versus host disease (1).
6. Determine other complications of transplantation (C1).

### S15: Hypersensitivity reaction

1. State the difference between allergy and hypersensitivity (C2)
2. State the types of hypersensitivity and pathophysiology of each one (C1)
3. Give examples of the different types of hypersensitivity reactions. (C1)

### S16: Tumor immunology

1. Describe immune surveillance system against tumor cells (C1).
2. Describe the tumor antigens and common oncogenic viruses (C1).

### S17: Autoimmune disease

1. Describe the common features of autoimmune diseases (C1).
2. Outline the etiology, pathogenesis, morphology, and clinical expression of systemic lupus erythematosus, rheumatoid arthritis, systemic sclerosis (scleroderma), mixed connective tissue disease, and polyarteritis nodosa (C2).

### S18: Corona virus

- 1- Show understanding of the immunological reactions in response to corona virus (C2).
- 2- List the variants of COVID-19 and compare spread and severity of infections of each variant (C1).

### S19: Vaccination

- 1- Show understanding of the concept and the aim of vaccination (C2).
- 2- Describe the immune elements involved in vaccinations (C1)..

### Educational strategies and methods (lecture, seminar, practical....etc):

5. Interactive lectures
6. Practical sessions
7. Tutorials
8. Assignments and visits to immunology laboratories

### Recommended reading material

- Snell R. Clinical Anatomy, ISBN 078174315x.
- Young, Weather's Functional Histology, Churchill Livingstone, ISBN 0443056188 [IE]
- Guyton. Human Physiology and Mechanism of Disease, WB Saunders, ISBN 0808920030 [IE]

- Abbas, Basic Immunology, WB Saunders, ISBN 0808922998 [IE].

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Seminar/Presentation= 5%	MCQs= 20%	MCQs = 40%
Practical/Clinical/Visits= 15%	SQs= 0%	SSQs= 20%
Assignments/Tutorials=0%	Essays/ Short notes=	Essays/ Short notes= non
Others= 0% (e.g. peer)	Others= -----0%	Others= 0%
<b>Total= 20%</b>	<b>Total= 20%</b>	<b>Total= 60%</b>

**1MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

### Grade Descriptors (Rubrics):

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)



## Required Resources

### Premises

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussion
- Microbiology laboratory, NUBRI

### Staff

- Immunologists
- NUBRI staff
- Biochemist

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms

## Medical Entomology and Parasitology (ME-PAR-125) - 3 CHs, Block 3 weeks

TITLE: Medical Entomology and Parasitology	CODE: ME-PAR-125	DURATION/CREDITS: block /3 CHs -3-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

This is a three-week (3 CHs) block, concerned with vector and organisms' surveillance and control, considering the operational control personnel as one of the health team. There is special emphasis on insects and closely related arthropods that impact human health. It describes the life cycles of the vectors and parasites, their geographical distribution, ecology, and the epidemiology, presentation and broad management and control of the diseases caused by them. These include parasites of the intestinal tract, blood-borne parasites and those found in other body sites.

### Rationale

Insects have tremendous potential for transmitting organisms that cause disease in human and other animals. The disease-causing organisms include protozoa, viruses, bacteria, and worms. The deadliest disease worldwide is malaria which is vectored by mosquitoes, which can also transmit viruses (including those causing encephalitis) and filarial nematodes. Other vectors include flies and ticks.

### General Learning Outcomes

By the end of this course the students are expected to:

1. Acquire knowledge about the tropical and subtropical health problems.
2. Recognize the various species of insects and arthropods involved in human disease.
3. Describe the morphology of major human parasites and the clinical pictures of parasitic diseases and develop a skill of differentiating between them.
4. Be aware of the basics of management and control of such diseases, includ-

ing pests' control.

5. Perform health education on behavioral and environmental preconditions promoting the transmission and control of the disease.

## Intended (specific) learning outcomes

By the end of this course the student is expected to:

### S1: Introduction to the course

1. Introduce the various aspects of the course and outline assessment Show understanding of the general structure of the course
2. Show list of the outcomes and specific objectives of the course.
3. Explain the bases and contents of the assessment and feedbacks
4. Appoint or elect a student coordinator
5. List hard and soft reading material
6. Explain attendance regulations and consequences of absenteeism

### S2: Definitions

1. Define the terms used in parasitology: insect, arthropod, parasite, entomology, medical parasitology, modes of transmission, management, prevention and control, helminthology, protozoology, definite and intermediate hosts, reservoir hosts (C1).
2. Outline the importance of parasitic infections (C1).
3. Recall the scientific and common names for each parasite studied (C1).
4. Describe the means by which each infection spreads (C1).

### S3: Parasitology scope

1. Define the terms used in parasitology: insect, arthropod, parasite, entomology, medical parasitology, modes of transmission, management, prevention and control, helminthology, protozoology, definite and intermediate hosts, reservoir hosts (C1).
2. Outline the importance of parasitic infections (C1)
3. Discuss the significance of parasite life cycles in relation to diagnosis, pathology, management, prevention and control (C2).

### S4: Parasite and disease

1. Name the diseases caused by the parasites studied, and outline their common symptoms and pathology (C1).
2. Discuss the significance of parasite life cycles in relation to diagnosis, pathology, management, prevention and control (C2).
3. State the appropriate body specimen to examine for diagnostic stage of each

- parasite and list other laboratory tests used in its diagnosis (C2).
4. Recognize the diagnostic stage of each parasite studied (P2).

### **S5: LABORATORY-1: demonstration**

1. *Recognize the morphological features of parasites, their classification, life cycles, infective stage, mode of transmission, clinical features, direct and indirect diagnostic methods and outline management of: Entamoeba histolytica, Plasmodium species, Giardia, Leishmania, Schistosoma, Taenia, Hymenologues, Entropies, Strongyloidiasis, Trichinella, hook worms, Filaria, Echinococcus, Fasciola, Ancylostoma (P2)*

### **S6: Entomology and classification**

1. Describe the insects associated with transmission of human disease (C1).
2. Discuss the preventive measures against harmful insects (C2).
3. Describe the morphology of mosquitoes, house- and sand flies, bugs, lice and fleas, their habitat and life cycles (C1).

### **S7: Vector patient relationship**

1. Discuss the vector-patient relationship (C2).
2. Discuss this relationship in (view of) treatment, prevention and control of tropical diseases (C2).

### **S8: Hemoprotozoa: Plasmodium sp. Malaria parasite.**

1. Discuss the etiology and environmental causes of malaria (C2).
2. Describe the morphological features, their classification, life cycles, infective stage, mode of transmission and presentation (C1).
3. *Identify the organism under the microscope (P2)*
4. Outline management and discuss the prevention and control of malaria including development of malaria vaccine (C1).
5. Outline the basic activities of the National Programs (Federal Ministry of Health) on malaria,
6. Schistosomiasis, guinea worm and onchocerciasis (C1).

### **S9: Trematodes: Schistosoma sp, schistosomiasis**

1. Discuss the etiology and epidemiology of schistosomiasis; urinary and intestinal (C1).
2. Describe the clinical and laboratory diagnosis, prevention and control of schistosomiasis (C1)..
3. *Identify the organism under the microscope (P2)*
4. *Given a problem of portal hypertension due to periportal fibrosis, outline symptoms and signs of infestation, carry out (or describe technique of) the*

*diagnostic methods and outline management (C3,P2)*

**S10: Intestinal protozoa: E. histolytica: amoebiasis**

1. Discuss the etiology and epidemiology of amoebiasis (C2).
2. Describe the control of amoebiasis (C1)..
3. Describe the morphological features, their classification, life cycles, infective stage, mode of transmission, and presentation (C2)
4. **Identify the organism under the microscope (P2)**
5. **Outline management and prevention of amoebiasis (C1).**

**S11: Hemoprotozoa: Leishmania sp. Leishmaniasis**

1. Discuss the etiology and epidemiology of leishmaniasis (C2).
2. Describe the morphological features, their classification, life cycles, infective stage, mode of transmission, and presentation (C1).
3. **Identify the organism under the microscope (P2)**
4. Describe the diagnosis, prevention, control and outline management of leishmaniasis (C1).

**S12: Hemoprotozoa: Trypanosoma sp. Trypanosomiasis**

1. Outline the etiology and epidemiology of trypanosomiasis (C1).
2. Describe the morphological features, their classification, life cycles, infective stage, mode of transmission, and clinical features (C1).
3. **Identify the organism under the microscope (P2).**
4. Outline the prevention, control and outline management of trypanosomiasis (C1)

**S13: Hemoprotozoa: Toxoplasma gondii**

1. Describe the morphological features, their classification, life cycles, infective stage, mode of transmission, and presentation (C1)
2. Name the direct and indirect diagnostic methods (C1)
3. **Identify the organism under the microscope (P2).**
4. Outline management and prevention (C2).

**S14: Intestinal and GU flagellate: G. lamblia + T. vaginitis**

1. Describe the morphological features, their classification, life cycles, infective stage, mode of transmission, and presentation (C1)
2. Name the direct and indirect diagnostic methods (C1).
3. **Identify the organism under the microscope (P2).**
4. Outline management and prevention of G. lamblia and T. vaginalis (C2).

**S15: Intestinal Nematodes: Hookworms**

1. Describe the morphological features, their classification, life cycles, infective

- stage, mode of transmission, and presentation (C1).
2. Name the direct and indirect diagnostic methods (C1)
- 3. Identify the organism under the microscope (P2)**
4. Outline management, complications and prevention of hookworm (C1).

### **S16: Intestinal Nematodes: A. lumbicoides + S. stercoralis**

1. Describe the morphological features, their classification, life cycles, infective stage, mode of transmission, and presentation (C1)
2. Name the direct and indirect diagnostic methods (C1)
- 3. Identify the organism under the microscope (P2).**
4. Outline management, complications and prevention of Ascaris Lumbicoides and S. stercoralis (C2).

### **S17: Intestinal Nematodes: E. vermicularis + T. trichira**

1. Describe the morphological features, their classification, life cycles, infective stage, mode of transmission, and presentation (C1).
2. Name the direct and indirect diagnostic methods (C1)
- 3. Identify the organism under the microscope (P2)**
4. Outline management, complications and prevention of Enterobius vermicularis and Trichuris trichiura (C2).

### **S18: Cestodes: Taenia worm**

1. Describe the morphological features, their classification, life cycles, infective stage, mode of transmission, and presentation (C1).
2. Name the direct and indirect diagnostic methods (C1).
- 3. Identify the organism under the microscope (P2)**
4. Outline management, complications and prevention of Taenia worm (C2)

### **S19: Cestodes: Echinococcus sp. + Hymenolepis nana**

1. Describe the morphological features, their classification, life cycles, infective stage, mode of transmission, and presentation (C1).
2. Discuss the etiology and epidemiology of hydatid disease (C2).
3. Describe the clinical, serological and radiological diagnosis of hydatid cyst in internal organs (C1).
- 4. Identify the organism under the microscope**
5. Outline management, complications and prevention of Echinococcus sp (hydatid disease). and Hymenolepis nana (C1).

### **S20: Tissue Nematodes: W. bancrofti + Filariasis**

1. Describe the morphological features, their classification, life cycles, infective stage, mode of transmission, and presentation (C1)

2. Name the direct and indirect diagnostic methods (C1)
3. **Identify the organism under the microscope (P2)**
4. Outline management, complications and prevention of *W. bancrofti* (C2).

### **S21: Thread worm**

1. Outline the epidemiology of thread worm (C1).
2. **Identify the worm (P2).**
3. Outline the prevention and complications of thread worm infestation (C1).

### **S22: Strongyloidiasis**

1. Outline the epidemiology of strongyloidiasis (C1).
2. **Identify the worm (P2).**
3. Outline the prevention and complications of strongyloidiasis (C2).

### **S23: Skills**

1. **Identify the above-mentioned parasites by the naked eye or under microscope (P2).**
2. **Carry out a health education session on the causes, management and prevention of diarrhea (P2).**
3. **Given a problem of frequent passage of stools with mucous and blood-flecked stools, outline symptoms and signs, carry out diagnostic methods and outline management (P2).**

### **S24: Scorpion sting and snake bite**

1. List the effects and complication of scorpion sting and snake bites (C1).
2. Indicate scorpion and snake habitat (C1)
3. Describe the management of scorpion stings and snake bites (C1).

### **S25: SEMINAR-1: Hemorrhagic fevers**

### **S26: SEMINAR-1: Aspergillosis**

### **S27: National program: schistosomiasis control**

1. Visit the National program on schistosomiasis (C1).
2. Outline the activities of the program (C1).

### **S28: National program: malaria control**

1. Visit the National program on malaria (C1).
2. Outline the activities of the program (C1).

### Recommended reading material:

- PowerPoint notes and website uploaded lectures.
- Chiodini, Atlas of Helminthology and Protozoology, 4e, 2001, ISBN 0443062676 [IE]

### General timetable

Three CHs divided equally for theoretical and practical instruction. Practical include naked eye observation of vectors, processing of specimens used in diagnostic procedures and microscopic identification of common parasites, and effects on human tissues. The resource practical material is the museum.

### Educational strategies and methods (lecture, seminar, practical....etc):

#### Premises

- Interactive lectures
- Practical sessions
- Tutorials
- Assignments and visits to museums

#### Staff

- Parasitologists
- Microbiologists
- Pathologists
- Physician

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Seminar/Presentation= 5%	MCQs= 20%	MCQs = 40%
Practical/Clinical/Visits= 15%	SQs= 0%	SSQs= 10%
Assignments/Tutorials=0%	Essays/ Short notes=	Essays/ Short notes= non
Others= 0% (e.g. peer)	Others= -----0%	Others= OSPE--10%
<b>Total= 20%</b>	<b>Total= 20%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.



**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required Resources**

1. Lecture theatres equipped with audiovisual aids
2. Tutorial rooms for small group discussions
3. Laboratory, museum,

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms



# PHASE II BASIC MEDICAL SCIENCE





## PHASE II: Introduction to organ-system modules

### Organization

The main emphasis in this phase is an organ-system approach. It starts with an introduction to the principles of the study medicine and medical education, which addresses the concepts and principles in the field of medicine and their application in an integrated manner. The main aim of the phase is for students to explain the basic mechanisms of common health problems in terms of structure, function, pathogenesis and the psychosocial, ethical and cultural dimensions. They are also expected to interpret data and diagnose some of these problems. Although disease management is partly addressed in each course of this phase, details of professional management are deferred to the clerkship period (Phase 3).

Students and faculty focus on the block that is on at the time. The blocks follow in sequence one after the other. In each block a variety of teaching/learning methods are used with emphasis on problem-based learning (PBL), and self-directed learning (SDL). The courses include community medicine and public health issues training is not only on campus (in basic science and skills laboratories), but also in health facility/ community-based settings.

The strength of this system is on early clinical exposure and introduction of early professional skills, which run almost all over this phase, initially in Skills Laboratory and later on patients.

### Community- Based Education (CBE)

Community-based skills courses represent community-based education (CBE) program conducted in health centers in Khartoum State in close collaboration with the State and Federal Ministries of Health. Clerkships contain many community-based activities. The rest of the courses should be community-oriented as much as possible. Community courses have been reviewed and renamed by the Medical Program (then) in 2013, and approved by the National College (then) Curriculum Committee, and Scientific Council in 2014, just before the National College was promoted to University. A review has been done in 2018. The curriculum approved by the Ministry of Higher Education, when established in 2005 is the same as the 2013-14 Document (submitted for the upgrade to university). This version (2021) included another community-based course just before graduation: Rural Residence.

## Problem –Based Learning (PBL)

In each course in this phase, the block/course MDG (PIs. see below) selects the problems for PBL according to defined selection criteria including: common (high incidence or prevalence) or serious (high mortality), preventable/ treatable, holistic/ integrated, compatible (appropriate for level), clinically current and motivating.

Each problem is assigned to a coordinator (a coordinator may be responsible for more than one problem). The problem coordinator meets with the resource people to decide on the specific objectives of the problem. The problem is then written according to a certain format, peer reviewed and or edited by an education expert, which constitutes the focus of learning for a week..

In each semester the students are divided into small groups of 8-12 students. A tutor is assigned to each group to facilitate the learning process. The students go through one problem, every week (if possible).

## Evaluation and assessment

Evaluation is a general term which indicates seeking the value of any activity or object, while assessment is specifically limited to judging student's fulfillment of the program objectives; but the two terms are often used interchangeably. There are two main types of evaluation, **summative** and **formative**.

**Summative evaluation or assessment** is the final or midcourse examination where marks and grades are assigned to student, and constitutes the so called "examination results". In continuous assessment, They the marks obtained during the course before the final examination. In summative evaluation, variety of methods are used for written exams: mini-problem short essays, multiple choice questions (one-best-answer type) and structured short-answer questions. The objective structured practical/clinical examination (OSPE/OSCE) should be in each and every examination of courses in the organ-system phase.

The final marks obtained in summative assessment and converted to grades in the table below should be composed of a continuous assessment portion of not less than 30% and a final assessment of not more than 70%.

The term **continuous assessment** as a strategic policy of the Faculty of Medicine means that the grade points obtained at each of each semester are added to those of the following semesters to constitute a flow of achievements or failures of a student. No student is dismissed or advice to repeat a semester on the bases of one failure results (see [Academic Regulations](#)).

**Formative evaluation or assessment** is one that is conducted during the course

“present in each course” to monitor progress and detect any strengths and weaknesses in the programme as a whole including students in order to rectify the deficiencies at an early stage. The results of any tests used for **formative evaluation should not be used to contribute marks for either the continuous or final (summative) evaluation/assessment.**

Certain forms and questionnaires are completed by concerned faculty and students on the problems, seminars and lectures. Students are asked to rate faculty and evaluate the programs through completing questionnaires and through open discussion sessions (course evaluation).

**Table 1: The National University (Sudan) credit hour scoring system (based on strict “open system” of correction. The Faculty of Medicine and Surgery did not take the option of the so called “closed system” marking.**

Mark	Grade	Symbol	Points
80-100	Distinction	A	4
75-<80	Very good	B+	3.5
65- <75	Good	B	3
60-<65	Average	C+	2.5
50-<60	Pass	C	2.0
40-<50	Failure	F	0 (Repeat examination)

- Grade point average is calculated for the semester courses.
- Students with F score can re-sit for the examination when offered or requested.
- Students with FF score is advised to re-do the course when offered or requested. They must do it in clerkships and intense practical or skill laden course.

## Professional Skills 1, 2 (ME-SKIL-211, 221) – 2 CHs each longitudinal

TITLE: Professional Skills-1,2	CODE: ME- KIL-211,221	DURATION/CREDITS: CHs each - Longit/3
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

A 2-hour weekly session during semesters 3-6, to include: (1) communication skills of speaking, hearing, listening, recognizing strengths and weaknesses of close-ended and open-ended questions, non-verbal communications, establishing rapport, interview and be interviewed, dealing with a difficult patient, (2) taking history and perform examination of respiratory and cardiovascular systems, specifically taking respiration rate, temperature, locate palpable arteries, and accurately take pulse, blood pressure, (4) examine venous blood and recognize normal blood cells, basic blood tests for respiratory disease, safety measure in blood taking, administering IV fluids, (5) prepare sputum for detection of mycobacteria, (6) interpret a normal PA chest x-ray, and recognize pneumonia, tuberculosis, and lung mass (7) interpret a normal ECG and that of myocardial infarction, (8) basic life support skills.

### Rationale

Professional skills programme is one of the most important strands in the Faculty of Medicine curriculum. Medicine is not a theoretical science; it is a practical one. For this reason, to be a good doctor you must not only have a certain amount of knowledge is not enough, but you should be capable of practicing what you know. This cannot be achieved without acquiring the required skills.

Unfortunately, deterioration of the clinical skills level of medical graduates has recently been noted which could be due to difficulty in training on the patients due to humane, religious, or social reasons or allotment of less time for training. For the



previous reasons, developing clinical skills units in medical schools has become mandatory in the study of medicine.

The main aim is to improve the clinical skills of medical students in general and pre-clinical students in particular before their contact with the patients in hospitals and health units in the clinical phase. The programme extends longitudinally throughout the curriculum from year 2 to year 4 and is coordinated with the block/system and the learning problems. In this way the basic clinical skills (social, lab. and clinical) are acquired early in the programme to give enough time for their perfection before graduation.

## General Learning Outcomes

The student is expected to acquire at an early stage a core of standardized clinical skills with emphasis on communication and attitudinal dimensions. The objectives of the clinical skill laboratory are:

1. Show an understanding the importance clinical skills, very early in their study, in a standardized way.
2. Learn how to take into consideration the humane side of patients during training, using real patients if possible, and if the procedure is harmful use skills models.
3. Take good history from a colleague or patient for all system of the body in a stepwise manner.
4. Perform proper physical examination.
5. Carry out simple laboratory investigations, and interpret their results of those and others which cannot be carried out by students, including ECG and imaging.
6. Perform life-saving resuscitation, and first aid activities.
7. Carry out simple surgical procedures (e.g. skin suturing) and interventional procedures, at the level of a general physician.

## Intended (specific) learning outcomes [blocks (ME-SKILL-211, 221)- Semesters 3 and 4]

By the end of this block the student should be able to:

### S1: Introduction to the course

1. Introduce the various aspects of the course and outline assessment Show understanding of the general structure of the course
2. Show list of the outcomes and specific objectives of the course.

3. Explain the bases and contents of the assessment and feedbacks
4. Appoint or elect a student coordinator
5. List hard and soft reading material
6. Explain attendance regulations and consequences of absenteeism

## **S2: Communication skills and approach**

1. *Show ability of effective communication with (a) colleagues, (b) instructors, (c) patients, (d) co-patients, (e) members of the health team and (f) community members (P2).*
2. *Approach the patient correctly (A)*

## **S3: Vital signs: pulse**

1. *Record the radial pulse including rate, rhythm, volume, and special character (P2).*
2. *Compare the radial to femoral pulse (P2)*
3. *Examine the arterial pulse in different locations, eg radial, brachial, carotid, popliteal, posterior and anterior tibial (P2).*

## **S4: Vital signs: blood pressure**

1. *Measure the BP accurately in different persons (obese, lean, males, females, adults, elderly, and children) in different positions (lying, sitting and standing) (P2).*
2. *Interpret the readings of BP in different positions: standing, sitting, and supine position (P2).*

## **S5: Vital signs: temperature**

1. *Use correctly different types of thermometers to measure temperature*

## **S6: History taking from a patient with chest pain**

1. *Take a history from the patient following standard interviewing techniques (P2).*
2. *Take a history from a patient with a chest disease (P2).*
3. *Deal with the patient and co-patient effectively to obtain relevant history (A).*

## **S6: Examining a patient with a respiratory problem**

1. *Perform a general examination in a patient with a chest disease with emphasis on cyanosis, edema, jaundice, and raised JVP (P2).*
2. Describe the different abnormalities of the chest by inspection (C2)
3. *Identify the signs of abnormal breathing (P2).*
4. *Palpate the chest correctly and orderly.(P2)*
5. *Perform percussion of the chest correctly and orderly (P2).*
6. *Interpret resonance and dullness (P2).*

7. Enumerate two examples at least for abnormal dullness in the chest (C1).
8. **Auscultate the chest correctly and :**
  - a. Describe the breath sounds, adventitious sounds, and other sounds (C2).
  - b. Explain the origin of the normal vesicular sound and the mechanical cause of the other abnormal breath sounds like bronchial breathing (C2).
  - c. List the causes of abnormal breath sounds (C2).

### S7: Examination of the cardiovascular system

1. **Perform a general examination (GE) in CVS patient (P2).**
2. **Describe some abnormalities in GE like clubbing of fingers, pitting edema, cyanosis, purpura, splinter hemorrhage, etc. (P2)**
3. **Perform inspection and palpation of the heart correctly (P2).**
4. Describe the apex beat of the heart (C1).
5. Describe other pulsations, thrills, and heart sounds (C2).
6. **Outline the surface anatomy of the heart by percussion (P2).**
7. **Describe correctly the normal heart sounds, while hearing them (P2).**
8. **Interpret the mechanical causes of the normal and abnormal heart sounds (P2).**
9. Describe the different types of common murmurs including timing, character, etc. (C1)
10. Explain the origin of each murmur (C2).

### S8: Chest procedures

1. **Use spirometer and peak flow meter (P1).**
2. **Apply correctly the devices used for administration of oxygen: e.g. masks, prongs etc. (P2)**
3. **Attend different types of intubations, especially nasogastric intubations and endotracheal intubation (P1),**
4. **Perform intubation in a model (P2)**
5. **Perform correctly CPR (P1).**

### S9: Examination of the breast

1. **Examine the breast in females and males correctly (P2).**
2. **Observe ethical considerations (A)**

### S10: Examination of a swelling

1. **Examine a swelling or a mass by different methods: inspection, palpation, percussion, and auscultation (P2).**
2. **Perform special tests to examine a swelling like trans-illumination test and fluctuation test (P2).**
3. **Examine perfectly the lymph nodes of the body including the cervical, axil-**

*lary, epitrochlear, inguinal and popliteal (P2).*

4. Interpret the different possibilities of lymph node enlargement (C2)

### **S11: Electrocardiogram (ECG)**

1. *Perform independently ECG for your colleague (P2).*
2. *Interpret the normal record of the ECG for the patient (P2)*
3. *Indicate the different waves like P, QRS, and T wave (P2).*
4. *Indicate different durations like PR interval, QRS duration, etc. (P2)*
5. *Detect some common abnormalities in the ECG record like ST elevation or depression, pathological Q wave, and peaked P wave (P2).*
6. *Write a complete report about the ECG record in 5 minutes (P2).*

### **S12: Intramuscular injection**

1. *Perform IM injection correctly in different sites especially buttocks, arm, and thigh (P1) or in a model (P2).*

### **S13: Intravenous injection**

1. *Perform IV injection in different veins especially cubital vein and veins of dorsum of the hand (P1) or in a model (P2).*
2. *Perform peripheral venous cannulation using different types of cannula in different sizes of veins (P1) or in a model (P2).*

### **S14: Blood transfusion**

1. Indicate the steps of blood transfusion: blood grouping and cross matching (C2).

### **S15: Emergency situations**

1. Describe and enumerate the first aid measures in different emergency situations like burn, drowning, hemorrhage, shock, fractures, choking, myocardial infarction, asthma (C2).

### **S16: Imaging of the respiratory system**

1. *Describe the normal findings in an X-ray film (P1).*
2. *Interpret some of the common x-ray abnormalities like homogenous opacity, collapse, consolidation, cavity, fibrosis, solitary or multiple nodules, mediastinal shift, mediastinal mass.*
3. *Diagnose pulmonary tuberculosis, pleural effusion, pneumothorax (P1).*

### **S17: Imaging of the cardiovascular system**

1. *Describe the normal finding in x-ray film of the heart correctly, particularly mediastinal borders and cardiac chamber (P1).*
2. *Diagnose cardiomegaly, specific chamber enlargement, pericardial effusion, aortic aneurysm (P1)*

**S18: History taking from a patient with abdominal pain**

1. *Take a history from a patient with GIT disease (P2).*
2. *Deal with the patient and co-patient effectively to obtain relevant history(A).*

**S19: Examination of a patient with an abdominal problem**

1. *Perform GE in the patient with GIT disease including skin pigmentation, jaundice, pitting edema, etc. (P2)*
2. *Perform inspection of the abdomen correctly (P2).*
3. *Indicate the normal findings in abdomen by inspection (P2).*
4. *Detect some common abnormalities by inspection like distension, localized bulging, everted of the umbilicus, and hair distribution (P2).*
5. *Perform light and deep palpation correctly (P2).*
6. *Detect areas of tenderness and rigidity (P2).*
7. *Palpate major organs perfectly especially, liver, spleen, and kidneys by different methods (P2).*
8. *Perform percussion of the abdomen correctly (P2).*
9. *Perform special tests for detecting moderate and severe ascites like shifting dullness and fluid thrill (P2).*
10. *Describe the normal intestinal sounds by auscultation (P1).*
11. *Observe anus and rectal examination correctly (P1).*
12. *Detect some common abnormalities in the anal region by inspection (from photographs) like fistula, hemorrhoids, fissures etc (P1)*

**S20: Examining lower GIT and adjacent problems**

1. *Observe PR examination (P1).*
2. *Observe PR examination the normal prostate and report on its characters like size, shape, consistency, etc. (P2)*
3. *Detect by palpation some common abnormalities of the prostate (in the model) like hard nodule, enlarged prostate, etc. (P1)*
4. *Manipulate the proctoscope correctly (P1).*

**S21: Imaging of abdominal problems**

1. *Identify the technique and normal findings in a plain abdomen x-ray, barium swallow, barium meal, barium follow through, barium enema, ultrasound of liver and GB, CT and MRI of abdomen (P2).*

**S22: Important diagnoses in the abdomen**

1. *Suggest an acceptable diagnosis of cases like: intestinal obstruction, perforation, achalasia, ca esophagus, hiatus hernia (C3,P2),*

### S23: Sutures

1. Enumerate the types of sutures and wounds (C1).
2. **Observe (P1) or perform in model or patients (P2) Suturing of skin lacerations.**
3. Enumerate the types of sutures and wounds (C1).
4. Discuss basic wound care (C2).

### S24: Skin drain

1. **Observe (P1) or perform (P2) incising and draining of superficial abscess.**

### Steps of teaching a clinical skill

- The students, firstly, acquire the theoretical knowledge related to the skill to be taught. This is supplemented by a lecture delivered by a consultant (e.g. internal medicine), followed by demonstration of steps of the examination in a patient (volunteer) or a model.
- The tutor in his class (a group of 7-10 students) again demonstrates the steps of examination on one of the students (peer examination), or on the model according to the steps outlined in the check list. The tutor is not expected to waste time in theoretical instruction as the time is mainly for practical application.
- While performing the examination, the tutor should ask students in each step why they are doing it in that manner (technical points).
- The way in which the tutor performs the steps of the skill is the standard way on which both training and assessment will be conducted. For this reason, standard check lists are available for all students and tutors at the beginning of the class (there is no objection for students to know other methods of examination but the standard method agreed here is the only one that would be followed during assessment).
- The tutor should ensure that all students see him clearly during examination.
- Students then perform the skill under supervision of the tutor.
- The tutor and student peers should inform students about their mistakes (feed-back).
- Assessment is based on a checklist evaluation, during each session and in the final examination at the end of the Semester 6 at the earliest or during the clerkships.

***There is no immediate end of course examination.***

### Recommended reading material:

- PowerPoint notes webpage uploaded lectures.
- Hutchisons Clinical Methods

## Educational strategies and methods (lecture, seminar, practical....etc):

1. Interactive lectures
2. Practical skills sessions

## Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Seminar/Presentation= 0%	MCQs= 0%	Practical skill = 60%
Practical/Clinical/Visits= 0%	SQs= 0%	SSQs= 0%
Assignments/Tutorials=0%	Essays/ Short notes=	Essays/ Short notes= non
Others= 0% (e.g. peer)	Others= -----0%	Others= OSPE--40%
<b>Total= 0%</b>	<b>Total= 0%</b>	<b>Total= 100%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

## Grade Descriptors (Rubrics):

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the skill
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the skill
Good (B)	≥ 65 to <75%	Intellectually competent Factually very sound High degree of attaining the skill learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound skill performance
Acceptable (C)	≥ 50 to <60%	Minimal acceptable level of intellectual engagement and skill performance with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement and skill performance level

\*Ref. Academic Course policy (SC- PP 09)

## Required Resources

### Premises

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Skills laboratory, museum,
- Hospital: ER, outpatients, inpatients, Health Center

### Staff

- Physicians
- Nurses

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms



## Principles of Disease-1 (ME-DIS-212), 3 CHs, 3 weeks block

TITLE: Principles of Disease-1	CODE: ME-DIS-212	DURATION/CREDITS: block /3 CHs - 3-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

A three-week-block on general microbiology to include: (1) morphology, classification, staining reactions, and pathogenicity of bacteria, viruses, fungi, (3) sterilization and disinfection, (4) principles of inheritance, introduction to molecular biology, and genetic defects underlying inherited disorders, antimicrobial and anti-parasitic drugs.

### Rationale

This block on Principles of Disease is, a vital one since its main objective is to provide students with sufficient knowledge of basic concepts of microbiology with some inputs from molecular biology. The need for this block to precede the integrated blocks on 'systems' is therefore quite obvious. Basic concepts of processes like infections, which cause most of the morbidity and mortality in the world are introduced in the block to prepare the ground for the more in-depth study of the various organ systems of the body.

### General Learning Outcomes

By the end of the block a student should be able to:

1. Show understanding of, and explain, the basic concepts of general microbiology, general pharmacology, and community health issues related in particular to infectious diseases.
2. Correlate pathologic processes with signs and symptoms of infection, understand the mechanism of disease (pathogenesis) and, independently, think of the methods of prevention of disease.

## Intended (specific) Learning Outcomes (ILOs)

By the end of the block a student is expected to:

### S1: Introduction to the course

1. Show understanding of the general structure of the course.
2. List of the outcomes and specific objectives of the course
3. Explain the bases and contents of the assessment and feedbacks
4. Appoint or elect a student coordinator.
5. List hard and soft reading material.
6. Explain attendance regulations and consequences of absenteeism.
7. Indicate the role of students in evaluation of the course and instructors.

### S2: Introduction to microbiology

1. Define microbiology and explain the basic concepts of microbiology (C1),
2. Review community health issues related to infectious diseases (C1).

### S3: Role of a microbiology laboratory

1. Explain the general approach in diagnosis of bacterial infections (C2).
2. Describe the common methods used for bacterial identification and typing (C1).

### S4: Morphology and classification of bacteria

1. Classify the bacteria on the basis of morphology i.e. cocci, and rods, etc. (C2)
2. Classify bacteria on the basis of Gram's stain (C2).
3. Describe the general appearance and structure of bacteria (C1)

### S5: Normal flora

1. Explain the role of host defenses like mechanical barriers, and the protection afforded by normal flora (C2)..

### S6: Bacterial growth and genetics

1. List the essential and non-essential structures in the bacterial cell, their chemical composition (C1).
2. Explain how antigenicity has a role in disease production (C2).
3. Outline the growth cycle of bacteria (C1)

### S7: Bacterial pathogenesis

1. Explain the mechanism of disease production by bacteria (pathogenesis) (C2).
2. Explain the mechanism of disease, e.g. hypersensitivity as well as autoimmune reactions (C2).

### S8: Sterilization and disinfection

1. Explain the concepts of sterilization and disinfection (C2).
2. Describe the methods used to achieve the two principles (C1).

### S9: Vaccination

1. Compare active and passive immunization (C2).
2. List the types of vaccines (C1).
3. Review the national immunization program (C2).

### S10: PRACTICAL-1: bacteria

1. *Identify the types of bacteria, culture plates, colonies of common pathogens, and parasites and their ova on glass slides, projection slides, etc..(P2).*

### S11: Anaerobic bacteria infections

1. Explain the mechanism of disease production by anaerobic bacteria (C2).
2. Suggest the diagnosis, and outline management and prevention (C2).

### S12: Enterobacteriaceae

1. Describe the effects of the major enterobacteria (C1).
2. List the morphology of E. coli, klebsiella and proteus, and describe the related infections (C1).

### S13: Gram +ve bacilli

1. Describe the effects of the G+ve bacilli and G- bacilli(C1).
2. Outline their morphology and related infections (C1).

### S14: Laboratory safety

1. Describe the lab safety principles, methods and equipment (C1).
2. Explain risks to new appointees (C1).

### S15: Viruses: definition and classification

1. Define viruses (C1).
2. Explain what harmful viruses do, and differentiate between viruses and other microorganisms (C2)..
3. Classify the viruses affecting humans, and give examples of organism and infections (C2).
4. Describe the basic principles of viral infections: HIV, influenza, polio, SARS, COVID-19 (C2).

### S16: Viral pathogenesis

1. Explain the direct cytopathogenic as well as the immunologic mechanisms of

disease production by viruses (C2).

2. Explain the role of viruses in carcinogenesis, for example the role of HPV in cervical cancer and HBV in liver cancer (C2).

### **S17: Viral replication**

1. Describe the interactions between viruses and hosts in terms of multiplication of viruses (C1).
2. Give examples of these interactions (C2).

### **S18: Diagnosis and treatment of viral infections**

1. Outline the clinical and laboratory roles in diagnosing viral infections (C1)
2. Give examples of tests carried at the level of rural and general hospitals (C1).

### **S19: Antibiotics: mechanism of action**

1. Define antibiotics (C1).
2. Explain the basic principle of antibiotic net effect, selective toxicity, spectrum and mechanisms of action (C2).
3. Give examples of antibiotics used in common infections and the organisms targeted (C1).

### **S20: Introduction to fungal infections**

1. Define fungi (C1).
2. List the fungi related to human disease (C1).
3. *Identify the fungi and differentiate between fungi and other microorganisms, regarding their basic structure (P2).*

### **S21: Superficial fungal infections**

1. List the superficial fungi (C1).
2. Explain the mechanisms by which they produce disease (C2).
3. List the subcutaneous fungi (C1).
4. Explain the mechanisms by which subcutaneous fungi produce disease (C2).

### **S22: Systemic fungal infections**

1. List the systemic fungi (C1).
2. Explain the mechanisms by which they produce disease (C2).
3. Identify the opportunist fungi and state the factors which enable them to produce disease (C1).

### **S23: PRACTICAL-2: staining techniques**

1. *Perform the staining techniques (Gram's stain and AFB stain) as (p2).*

### **S24: PRACTICAL-3: observing bacterial colonies**

1. *Review importance of recognizing morphologic features of bacterial colonies, and recognition of some important media (P2).*
2. *Identify the types of bacteria, culture plates, colonies of common pathogens, on glass slides, projection slides, etc. (P2)*
3. Discuss the basic principles of solid and liquid media, making of smears, inoculation of media (C2).

### Reading material:

- Staff PowerPoint notes and webpage uploaded lectures
- Inglis, Master Medicine, Microbiology and Infection, Churchill Livingstone, ISBN 0443070954

### Educational strategies and methods (lecture, seminar, practical....etc):

1. Interactive lectures
2. Practical sessions
3. Tutorials
4. Assignments

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Seminar/Presentation= 5%	MCQs= 20%	MCQs = 40%
Practical/Clinical/Visits= 15%	SQs= 0%	SSQs= 20%
Assignments/Tutorials=0%	Essays/ Short notes=	Essays/ Short notes= non
Others= 0% (e.g. peer)	Others= -----0%	Others= 0%
<b>Total= 20%</b>	<b>Total= 20%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**R Required Resources****Premises**

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Skills laboratory, Dissection room, museum,
- Hospital: ER, outpatients, inpatients, Health Center

**Staff**

- Microbiologists

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms

## Principles of Disease- II (ME-DIS-213), 3 CHs, 3 weeks block

TITLE: Principles of Disease-2	CODE: ME-DIS-213	DURATION/CREDITS: block /3 CHs - 3-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

A Three-week block on general pathology to include: (1) general histology, (2) Basic concepts of tissue injury, adaptation and death, and responses at cellular level (3) basic concepts in immunity, (4) physiology of white blood cells and the lymphatic system, (5) general pathology of inflammation, hemodynamic disorders, neoplasia and abnormal cell growth.

### Rationale

Pathology is considered the basis of disease. This block on Principles of Disease is, therefore, a vital one since its main objective is to provide students with sufficient knowledge of basic concepts of pathology. The first part of this course was covered during the first year in semester 2, and this part deals mainly with general pathology with some inputs from anatomy and physiology. The need for this block to precede the integrated blocks on systems is quite obvious. Basic concepts of processes like infections, inflammations and neoplasia which cause most of the morbidity and mortality in the world are introduced in the block to prepare the ground for the more in-depth study of the various organ systems of the body.

### General Learning Outcomes

By the end of the block a student should be able to:

1. Show understanding and explain the basic concepts of general pathology, and pathological mechanisms in particular to infectious diseases and cancer.
2. Describe causes of cell injury adaptation to injury in addition to different

types of tissue damage.

3. Correlate pathologic processes with signs and symptoms of disease, understand the mechanism of disease (pathogenesis) and, independently, think of the methods of prevention of disease.

## Intended (specific) Learning Outcomes (ILOs)

By the end of the block a student is expected to:

### S1: Introduction to the course

1. Show understanding of the general structure of the course
2. Introduce the various aspects of the course and outline assessment
3. Show list of the outcomes and specific objectives of the course.
4. Explain the bases and contents of the assessment and feedbacks
5. Appoint or elect a student coordinator
6. List hard and soft reading material
7. Explain attendance regulations and consequences of absenteeism

### S2: Histology and histopathology

1. Describe the basic histology of epithelia (C1).
2. Describe the basic histology of connective tissue (C1).
3. Explain the histopathology of disease e.g. neoplasia, dysplasia (C2).

### S3: Cells and cell cycle

1. Classify the cells according to replication and cell cycle (C1).
2. Define cell cycle and explain each stage of cycle (C1).
3. Identify the various types of tissues, and state their classification in relation to the histogenesis classification of tumors (C2).
4. Explain the cell cycle, and classify the cells based on their replicative ability i.e. labile, stable and permanent cells (C2).

### S4: White cells

1. Illustrate the morphology of white blood cells (C1).
2. Describe the development and types of white cells (C1).
3. Explain the functions of white cells in relation to the cellular mechanisms involved in inflammation (C2).

### S5: Cell injury

1. List the causes of cell injury (C1).
2. Explain the mechanisms of reversible and irreversible injury due to ischemia, chemicals, and free radicals (C2).



## S6: Cell necrosis and gangrene

1. Define necrosis (C1).
2. List the types of necrosis.
3. *Identify the light microscopic changes seen in necrosis with relevant clinical examples, like fat necrosis: enzymatic and traumatic types, fibrinoid necrosis (P2).*
4. Define gangrene, mention its types (C1).
5. List the differences between dry, moist and gas gangrene (C2)

## S7: Apoptosis

1. Define apoptosis (C1).
2. Explain the physiologic and pathologic situations in which it occurs, explain in brief the mechanisms of apoptosis(C2).
3. List the differences between apoptosis and coagulative necrosis (C1).

## S8: Pathologic calcification

1. Identify the types of pathologic calcification (C1).
2. Review the clinical situations in which it occurs (C1).
3. Explain its importance of calcification in radiography and mammography (C2).

## S9: Acute inflammation

1. Define purposes and cardinal signs of acute inflammation and explain the differences between acute and chronic inflammation (C1).
2. Explain the vascular events in acute inflammation and mention the differences between exudates and transudates (C2).
3. Explain the cellular events in acute inflammation: neutrophil adhesion, chemotaxis, recognition, attachment and engulfment as well as bacterial killing and degradation (C2).
4. List the chemical mediators of inflammation (C1).
5. List the sources and actions of the various groups of chemical mediators, and explain what stimuli cause their release and/or synthesis (C1).
6. Explain the fate of acute inflammation (C2).

## S10: Chronic inflammation

1. Define chronic inflammation and identify the reasons for chronicity of inflammation, citing examples with emphasis on chronic granulomatous inflammation, pathogenesis and types of granulomatous inflammation (C1).
2. Describe the morphology of the inflammatory responses i.e. fibrinous, serous, suppurative, membranous, catarrhal, ulcers etc (C1).

### **S11: Regeneration and repair**

1. Define regeneration and the importance of an intact connective tissue framework in regeneration (C1).
2. Enumerate growth factors involved in repair (C1).
3. Describe the repair of damaged tissue, and healing of skin wounds by primary and secondary intention (C1).
4. Explain the factors affecting wound healing, and complications of wound healing (C2).

### **S12: Atrophy, hypertrophy and hyperplasia**

1. Define atrophy, hypertrophy and hyperplasia and identify the physiologic and the pathologic stimuli causing them (C1).
2. Explain the role of hyperplasia as a fertile soil for cancerous transformation using endometrial hyperplasia as a model (C2).

### **S13: Metaplasia and neoplasia**

1. Define metaplasia, and mention the types, causes and its possible evolution into dysplasia (C1).
2. Define neoplasia and mention the clinical features as well as the gross and histological differentiating features of benign and malignant tumors (C1).
3. State the nomenclature used in neoplasia, and give the classification according to histogenesis and behavior (C1).

### **S14: Congestion, edema and hyperemia**

1. Define congestion, edema and hyperemia (C1).
2. Give example and explain causes (C2).

### **S15: PRACTICAL-1: Inflammation-demonstration**

*Using glass and projection slides and/or other audiovisual aids students should be able to: (a) identify types of necrosis, (b) identify the morphology of inflammatory cells in tissue sections, (c) identify the different types of inflammation as seen by the naked eye, (d) identify lesions like abscess, granulomas, calcification etc. (P2)*

### **S16: Definition and causes of cancer**

1. Define cancer (C1).
2. Enumerate the routes of spread of cancers (C1).
3. Explain carcinogenesis mentioning the different types of carcinogens: viral, chemical, radiational, and environmental (C2).
4. Discuss biological carcinogenesis e.g. *Helicobacter pylori* in gastric lymphoma and *Schistosoma haematobium* and *Clonorchis* in urinary bladder and

biliary tract carcinomas. Respectively (C2).

5. Explain the impact of infectious diseases and cancer on patient. Family and community (C2).

### S17: Prevalence of cancer

1. Outline the magnitude of cancer, locally and internationally and explain the role of environmental factors in the causation of cancer (C2).
2. *Educate the masses through the effective use of print and audiovisual media on the preventive aspects of infectious diseases and cancer (P2).*

### S18: PRACTICAL -2: Cancer- demonstration

Using glass and projection slides and/or other audiovisual aids students should be able to: (a) identify types of cancer (b) identify the carcinoma cells in tissue sections, (c) identify the sarcoma cells in tissue section (P2).

### S19: Thrombosis and embolism

1. Define thrombosis and embolism (C1).
2. Review the clotting factors and mechanism (C1).
3. Explain the causes of thrombosis and embolism (C2).

### Recommended reading material:

- Master Medicine, Pathology, Churchill Livingstone, ISBN 0443070946
- Young, Whether's Fncional Histology, Churchill Livingstone, ISBN 0443056188 [IE]
- Kumar, Robbins and Cottran Pathological Basis of Disease, WB Saunders, ISBN 808923021 [IE]
- Underwood, General and Systemic Pathology, Churchill Livingstone, ISBN 0443062862 [IE].

### General timetable

Week 1: (Problem: inflammation): Histology, anatomy, physiology and general pathology

Week 2: (Problem: Neoplasm): General Pathology

Week 3: Neoplasia (Revisions and seminars)

### Educational strategies and methods (lecture, seminar, practical....etc):

1. Interactive lectures
2. Practical sessions in pathology and hospital laboratories
3. Tutorials and PBL sessions
4. Assignments

## Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Seminar/Presentation= 5%	MCQs= 20%	MCQs = 40%
Practical/Clinical/Visits= 15%	SQs= 0%	SSQs= 20%
Assignments/Tutorials=0%	Essays/ Short notes=	Essays/ Short notes= non
Others= 0% (e.g. peer)	Others= -----0%	Others= 0%
<b>Total= 20%</b>	<b>Total= 20%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

### \*Grade Descriptors (Rubrics):

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to <75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to <60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

## Required Resources

### Premises

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Dissection room, museum, laboratories
- Hospital: outpatients, inpatients

### Staff

- Pathologists

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms

## Basic Pharmacology (ME-PHAR), 3 (2+1) CHs, Block, 3 weeks

TITLE: Introduction to Pharmacology	CODE: ME-PHAR-213	:DURATION/CREDITS block /3 (2+1)CHs - 3-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Rationale

This course is one of the basic courses of medical pharmacology that is taught in the integrated courses and treatment course. The course includes the pharmacology curriculum and its features, contains general objectives to familiarize students with basic pharmaceutical concepts and terms. It addresses the basic principles of medical pharmacology that are central to medicine. Evaluation cases, explain the mechanisms involved in pharmacological processes and cover the mode of action and effects of drugs in clinical medicine. It discusses the mechanisms of action of some drugs, with reference to treatments selected for specific conditions. Covers the basic principles of drug action; drug receptor interactions; absorption, distribution and excretion of the drug; drug metabolism How drugs act on certain systems in the body; and how to use medicines for a variety of common complaints including the latest changes in pharmacology

### Outline

A 3-week (2 CHs) block course during semester 6 on the inter-relation between pharmacology and medicine, basic concepts of pharmacology, to include: definition of a drug, and Introduction to Pharmacology, Pharmacokinetics, Pharmacodynamics, Autonomic nervous system pharmacology

### General learning outcomes

By the end of the course, students are expected to:

1. Define terms used in pharmacology and pharmacy practice

2. Acquire familiarity with drug information sources
3. Classify pharmaceuticals
4. Outline the pharmacological actions of common drug groups

### **Intended (specific) learning Outcomes (ILOs):**

By the end of the course, students are expected to:

#### **S1: Introduction to the course**

- 1- Show understanding of the general structure of the course
- 2- Introduce the various aspects of the course and outline assessment
- 3- Show list of the outcomes and specific objectives of the course.
- 4- Explain the bases and contents of the assessment and feedbacks
- 5- Appoint or elect a student coordinator
- 6- List hard and soft reading material
- 7- Explain attendance regulations and consequences of absenteeism

#### **S2: Definitions**

1. Define the basic terms and concepts e.g pharmacology, pharmaceuticals, pharmacognosy, analytical chemistry (C1).
2. List the sources of drug information (C1).
3. What is the WHO's essential list of drugs (C1).

#### **S2: Drug history and discovery**

1. Outline the milestones of drug treatment historically (C1).
2. Name 10 scientists in the history who contributed most to drug discovery (C1).
3. List the modern steps in drug discovery and approval (C1).

#### **S3: Pharmacokinetics**

1. Define pharmacokinetics (C1).
2. Give examples of the effects of the body on drugs injected or ingested (C2).

#### **S4: Pharmacodynamics**

1. Define the basic terms pharmacodynamics (C1).
2. Give examples of the effects of drug on the body (C2).

#### **S5: Autonomic receptors**

1. Define autonomic receptors (C1).
2. Describe the locations of these receptors and detail their functions (C1).
3. Explain the clinical effects of sympathetic/parasympathetic agonists and antagonist (C2).

### S6: Classification of drugs

1. Outline the classifications of drugs and drug groups (C1).
2. Outline how drugs act to relieve pain, spasm, fever, cough (C2)..

### S7: Pharmacy practice

1. Define pharmacy practice (C1).
2. Discuss the local regulations controlling good practice (C2).

### S8: Clinical pharmacy

1. Define clinical pharmacy (C1).
2. Indicate the role of pharmacist and collaborations within the medical team in the wards and outpatients (C2).

### Recommended textbooks/ references:

- Staff PowerPoint presentations and webpage online lectures
- Whalen, K., Finkel, R., & Panavelil, T. A. (2015). Lippincott illustrated reviews: Pharmacology (6th ed.). Philadelphia, PA: Wolters Kluwer.

### Educational strategies and methods (lecture, seminar, practical....etc):

- 1- Interactive lectures
- 2- Practical sessions in pharmacy laboratories
- 3- Tutorials | seminars
- 4- Assignments and visits to pharmacies

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance /Presentation=10%	MCQs= 20%	MCQs = 20%
Practical/Clinical= 10%	SQs= non	SSQs= 10%
Assignments/Tutorials=10%	Essays/ Short notes= 0%	Essays/ Short notes= non
Others= 0%	Others= -----)%	Others= OSCE=20
<b>Total= 30%</b>	<b>Total= 20%</b>	<b>Total= 50%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.



**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required Resources****Premises**

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Pharmacy laboratories

**Staff:**

- Pharmacy staff

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms

## Blood and Lymph (ME-HEMAT-316), 4 CHs, 4 weeks block module

TITLE: Blood and Lymph	CODE: ME-HE-MAT-316	DURATION/CREDITS: block /4 CHs - 4-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

This is a three-week block module that introduce: (1) hemopoiesis, (2) hypochromic anemias and iron overload, (3) megaloblastic anemia and other macrocytic anemias, (4) hemolytic anemias, (5) genetic disorders of hemoglobin, (6) the white cells, (7) hematologic malignancies: - acute leukemias, chronic myeloid leukemia, chronic lymphoid leukemia, myelodysplasia, myeloproliferative disorders, (8) aplastic anemia and bone marrow failure, (9) platelets, blood coagulation and hemostasis, (10) Bleeding disorders, (11) coagulation disorders, (12) thrombosis and anti-thrombotic therapy, (13) blood transfusion, and pregnancy and neonatal hematology.

### Rationale

Developments have occurred in the understanding of biochemical, physiological and immunological processes of blood cell formation and function and the disturbances that may ensue. There is increased awareness of range of treatments available for patients with diseases of the blood and blood forming organs. A graduate of medicine has to know the basics of hematology and the developments that are rapidly emerging.

### General Learning Outcomes

By the end of the block a student should be able to:

1. Understand and explain the general aspects of blood cell formation: erythropoiesis, myelopoiesis and thrombopoiesis.
2. Recognize the presentations, investigation and management of anemias\Re-

- view the synthesis of hemoglobin and the genetic disorders of hemoglobin
3. Describe the presentation, investigations and outline management of hematological malignancies
  4. Discuss homeostasis and bleeding and coagulation disorders.
  5. Develop awareness of safe and unsafe blood transfusion.

## Intended (specific) learning outcomes

By the end of the block a student is expected to:

### S1: Introduction to the course

- 1- Show understanding of the general structure of the course
- 2- Introduce the various aspects of the course and outline assessment
- 3- Show list of the outcomes and specific objectives of the course.
- 4- Explain the bases and contents of the assessment and feedbacks
- 5- Appoint or elect a student coordinator
- 6- List hard and soft reading material
- 7- Explain attendance regulations and consequences of absenteeism

### S2: Hemopoiesis

- 1- Describe sites of hemopoiesis (C1).
- 2- Draw the cell line that arise from the pluripotent stem cell (C1).
- 3- Describe the meaning of stem cell plasticity (C1).
- 4- Outline the regulation of hemopoiesis and the role of growth factor- erythropoietin (C2).

### S3: Coagulation

- 1- Discuss the process of blood coagulation (C1).

### S4: Classification and management of anemia

- 1- Define anemia (C1).
- 2- Classify anemias and discuss the causes of each class (C1).
- 3- Outline management and prevention of anemias (C1).

### S5: WARD ROUND-1: anemia

***Presented with a patient or written scenario of anemia, show understanding of basic sciences of physiology and biochemistry on hemoglobin synthesis and degradation, observe the clinical features and laboratory findings and outline management and prevention (C2,P2).***

### S6: Bleeding disorders

- 1- Discuss the causes of bleeding disorders and laboratory findings and outline the clinical features and management (C2).
- 2- List the coagulation disorders, describe the laboratory findings, and outline management (C1).

### S7: Hemoglobin

- 1- Describe the types, functions and synthesis of hemoglobin (C1).
- 2- Define and describe the clinical features and laboratory findings in anemias- hypochromic, megaloblastic and hemolytic, outlining the management of each (C1).
- 3- List and outline the genetic disorders of hemoglobin and their clinical presentations (C1).

### S8: Lymphadenopathy

- 1- List the differential diagnoses of localized and generalized lymphadenopathies (C1).
- 2- *Recognize mediastinal lymphadenopathy in chest x-ray (P2).*

### S9: Hematological malignancies

- 1- Outline the etiology and genetics of hematological malignancies (C1).
- 2- Outline management of the most common malignancies (C1).

### S10: Leukemia

- 1- Define leukemia (C1).
- 2- Discuss the classification and pathogenesis of acute leukemias (C1).
- 3- Describe the clinical features and laboratory findings of leukemias (C1).
- 4- List the differential diagnoses, and prognosis (C1).
- 5- Outline management of chronic myeloid leukemias and chronic lymphoid leukemias (C2).

### S11: Multiple myeloma

- 1- Define multiple myeloma (C1).
- 2- Discuss the pathological features of multiple myeloma (C2).
- 3- Describe the clinical features of multiple myeloma (C2).
- 4- Discuss the laboratory findings in multiple myeloma (C2).
- 5- Discuss the prognosis of multiple myeloma (C2)..
- 6- Outline management of multiple myeloma (C2).

### S12: Aplastic anemia

- 1- Define aplastic anemia (C1).

- 2- Discuss the pathological and clinical features of aplastic anemia (C2).
- 3- Describe the laboratory findings of aplastic anemia (C1).
- 4- List the differential diagnoses, and prognosis of aplastic anemia (C1).
- 5- Outline management of aplastic anemia (C2)

### **S13: Blood grouping and transfusion**

- 1- Discuss the red cell antigens and blood group antibodies (C2).
- 2- Describe the techniques of blood group serology, cross matching and pre-transfusion tests (C1).
- 3- Describe the hazards of allogeneic blood transfusion (C1).
- 4- Outline management of transfusion reactions (C1).
- 5- Outline the uses and preparation of transfusion of blood components (C1).

### **S14: PRACTICAL-1: Hemoglobin**

*Perform basic investigation on hemoglobin, blood cell count, blood group serology and coagulation tests (P2)..*

### **S15: SEMINAR-1: anemias, leukemias, homeostasis, bleeding disorders**

Recommended reading material:

- Essential Hematology, Hoffbrand et al, Blackwell, 978-1405136495
- Staff PowerPoint notes and website uploaded lectures

### **General timetable**

Week 1: (Problem: anemia): hemopoiesis

Week 2: (Problem: hematologic malignancy): white blood cells

Week 3: (Problem: bleeding disorders): coagulation and bleeding disorders

Week 4: Revisions and evaluation

### **Educational strategies and methods (lecture, seminar, practical....etc):**

1. Interactive lectures
2. Practical sessions in hematology laboratories in the faculty and hospital
3. Tutorials/ seminars
4. Assignments

## Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance/Presentation= 5%	MCQs= 20%	MCQs = 40%
Practical/Clinical/Visits= 10%	SQs= 0%	SSQs= 10%
Assignments/Tutorials=5%	Essays/ Short notes=	Essays/ Short notes= non
Others= 0% (e.g. peer)	Others= -----0%	Others= Practical=10%
<b>Total= 20%</b>	<b>Total= 20%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

### \*Grade Descriptors (Rubrics):

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
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Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

## Required Resources

### Premises

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Pathology/hematology, laboratories
- Hospital: hematology laboratory, outpatients, inpatients,

### Staff

- Pathologists/ hematologists

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms

# Cardiovascular System

## (ME-CVS-214) - 6 CHs Block 6 weeks

TITLE: Cardiovascular System	CODE: ME-CVS-214	DURATION/CREDITS: block /5 CHs - 4-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

A six-week block on the structure, functions and disorders of the heart and blood vessels, morphology of the heart, its blood supply, various blood vessels, structure of cardiac muscle, contraction of cardiac muscle, electrical activity of the heart and normal ECG tracing, cardiac cycle and cardiac output, blood pressure regulation, hypertension, coronary arteries and ischemic heart disease, rheumatic fever and valvular heart disease, heart failure, essential drugs used in cardiovascular disease.

### Rationale

To continue living, all aerobic organisms need continuous supply of oxygen and other nutrients to their different tissues and organs. This metabolism supplies tissues with the required energy and builds up substrates as well as a wide range of waste products that may cause severe tissue damage if not directly eliminated! By using blood as a transporting tool, the cardio-vascular system (CVS) plays this bi-directional role. It delivers blood containing oxygen and nutrient substances to the tissues and delivers waste products to organs of elimination or metabolism.

This vital role of the CVS is accomplished via a few hundred miles of vascular structures (arteries, arterioles, capillaries, venules and veins) and a reliable pump (heart) which must beat regularly for a lifetime.

Any factor that disturbs this basic function contributes to the increased morbidity and mortality due to cardiovascular diseases seen among the different societies all over the world.



Although these factors may differ from one society to the other, most of them can be eliminated in our societies simply by modifying our habits and lifestyle. Examples include taking balanced diet (amount and type), ceasing smoking and alcohol consumption, regular physical activities and early management of any disease.

The cardiovascular system module is designed to provide an overview of the structure and function of the cardiovascular system. Clinical case problems are based on the cardiovascular diseases or incidents that are common in the Sudan. Through these cases and associated activities, students come to understand the functioning of the cardiovascular system. They explore the hierarchy of the cardiovascular system, from molecules, cells, tissues and organs to function as a system, and follow the impediments of such normal function resulting from the impact of variety of diseases that impair one or more of the system's components. Throughout, a special attention is made to allow the students to understand how the resulting impairment of function generates specific symptoms or signs and how it affects the patient as an individual and a member of a family and a community.

## General Learning Outcomes

*By the end of this course the student is expected to:*

1. Describe the basic anatomy and histology of the heart and identify them on an appropriate model or diagram: (a) location of the heart within the body, (b) chambers and valves of the heart, (c) structure of the heart wall, (d) coronary circulation and (e) conducting system of the heart.
2. Identify the body's major arteries and veins and name the body region supplied by each.
3. Compare and contrast the basic anatomy, physiology and function of the vascular system: (a) arterial and arterioles system, and (b) venous and capillary system.
4. Describe the normal development of CVS and fetal circulation and its changes after birth.
5. Explain pump and valve function and the hemodynamic properties of the cardiac cycle: (a) systole and diastole, (b) components and the chronological events in the cardiac cycle, and (c) cardiac output.
6. Become acquainted with cardiovascular hemodynamics: (a) pulse, (b) blood pressure, and (c) systemic peripheral resistance.
7. Describe the unique features of special circulations of the body: brain, coronary and portal.
8. Explain fuel supply and metabolism of the heart.
9. Describe electrical impulse generation and conduction of the heart and peripheral pumping mechanism.

10. Explain the pathophysiological changes that may affect the CVS components.
11. Recognize the common health problems in the CVS.
12. Explain the rationale of common investigations applied to the CVS.
13. Outline the general management of common CVS problems including primary and secondary prevention.

### **Intended (specific) learning outcomes**

By the end of the block a student is expected to:

#### **S1: Introduction to the course**

- 1- Show understanding of the general structure of the course
- 2- Introduce the various aspects of the course and outline assessment
- 3- Show list of the outcomes and specific objectives of the course.
- 4- Explain the bases and contents of the assessment and feedbacks
- 5- Appoint or elect a student coordinator
- 6- List hard and soft reading material
- 7- Explain attendance regulations and consequences of absenteeism

#### **S2: Chest wall, mediastinum and pericardium**

1. Review the structure of the chest wall (C1).
2. Define mediastinum, describe its divisions and contents (C1).
3. Describe the contents of the divisions (C1).
4. Describe the pericardium (C1).
5. Describe the reflections of parietal to visceral pericardium (C1).
6. Locate the transverse and oblique sinuses of the pericardium (C1).

#### **S3: PRACTICAL -1 Mediastinum and pericardium**

#### **S4: External features of the heart and surface anatomy**

1. Hold the heart in its anatomical position (C1).
2. Describe the external anatomic features of the heart and great vessels (C1).
3. Describe the surface anatomy of the heart (C1).
4. Relate each chamber to the borders and surface of the chest wall (C1).
5. Locate valves to the chest wall, and compare with area of auscultation (C1).

#### **S5: Internal features of the heart**

1. Identify the structures in the interior of each chamber of the heart (C1).
2. Locate the cardiac and great vessels' valves and their structures (C1)

**S6: PRACTICAL-2: external and internal features of the heart****S7: Histology of cardiovascular system**

1. Describe the normal histology of arteries and veins (C1).
2. Label on diagrams (and/or recognize on models) the arteries, veins, arterioles, venules and various types of capillaries (C1).
3. Describe light and electron microscopic features of capillaries (C1).
4. Discuss the relevance of structure of blood vessels to their functions (C2).
5. Describe the microscopic structure of the endocardium, myocardium and epicardium (C1).

**S8: Properties of cardiac muscles**

1. Identify the histology of cardiac muscle under light and electron microscope (C1).
2. Define the four specific characters of cardiac muscle (rhythmicity, conductivity, excitability and contractility) and explain their importance on physiological basis (C1).

**S9: PRACTICAL -3: Histology of cardiovascular system****S10: Blood supply of the heart**

1. Name the blood vessel distribution on the external surface of the heart (C1).
2. Name the blood supply of each chamber in the heart (C1)
3. Identify the vessels commonly occluded or narrowed in disease processes (C1).
4. Name the pathological processes that cause cardiac vascular disease (C1).
5. List the symptoms and signs of cardiac ischemia and outline investigations and management (C1).

**S11: PRACTICAL-4: Blood supply of the heart.****S12: Epidemiology of cardiovascular disorders**

1. Describe the epidemiology of cardiovascular diseases, and explain briefly the current status and changes worldwide in the pattern of cardiovascular diseases (C1).
2. Define the morphology and classification of Streptococci (C1).
3. Give an account on infections caused by streptococci, especially those related to cardiovascular disease (C1).
4. Outline the laboratory diagnosis and management of these infections (C1).

**S13: ECG-1**

1. Describe the origin of the electrical activity of the heart (C1).
2. Describe the myogenic nature of the cardiac action potential, and the mechanism and route of spread of electrical activity through myocardium. (C1).

3. Describe the ionic basis of each phase of the action potential, and the characteristics of the action potential in different regions of the heart (C1).
4. Explain the temporal relationship between mechanical and electrical events (C2).
5. Describe how to record a 12-lead ECG and/or perform it (C1).
6. Give the direction from which each of the 12 standard ECG electrodes views the heart (C2).

### S14: ECG-2

1. Identify and draw a normal standard ECG and name the events represented by each wave (C1).
2. Describe the principles and usefulness of exercise ECG (C1).
3. **Identify the following abnormal ECG patterns: (i) hypertrophy of left atrium, left ventricle, right atrium, right ventricle, (ii) right and left bundle branch block, (iii) myocardial infarction and (iv) myocardial ischemia (P2).**

### S15: Cardiac cycle

1. In a labeled diagram of the cardiac cycle, identify the seven phases of the cardiac cycle: events taking place, names of the various pressure waves and approximate duration at rest (C1).
2. State the values of pressure changes in the atrium left ventricle, right ventricle; changes in ventricular volume and aortic blood flow over a single cycle (C1).
3. Define the sites of the cardiac valves and correlation of cycle events with heart sounds and ECG (C1).

### S16: PRACTICAL-6: ECG and cardiac cycle

#### S17: Heart sounds and murmurs

1. Identify and differentiate normal heart sounds S1 and S2, and describe their origin (C1).
2. Describe how S1 and S2 may vary in disease states (C1).
3. Discuss the significance of S3 and S4 (C1).
4. Explain the genesis of cardiac murmurs (C2).
5. Differentiate between systolic and diastolic murmurs (C1).
6. List 5 features of a cardiac murmur in childhood that suggest it is pathological  
5 features of a cardiac murmur in childhood that suggest that it is benign (C1).

#### S18: WARD ROUND -1: Cardiac sound and murmurs-

**Provided with a patient or a written scenario with valvular heart disease, listen to the heart sounds to identify and differentiate normal heart sounds S1 and S2, how they may vary in disease states, and discuss the significance of S3 and S4 and suggest an outline of diagnosis and management of valvular heart disease (C2, P2).**

**S19: Cardiac output**

1. Define cardiac output and describe importance in health a disease (C1).
2. Explain importance of cardiac reserve (C2).

**S20: Nerve supply of the heart**

1. Describe the source and course of the autonomic innervation of the heart (C1).
2. Name the nerve endings of the carotid and aortic body (C1).
3. Describe the location and structure of chemoreceptors (C1).
4. Describe the role of cerebral ischemia, and cardiac receptors in the reflex regulation of the circulation (C1).

**S21: Conducting system of the heart**

1. Describe the components and structure of the conducting system of the heart (C1).
2. Follow the pathway of impulses along the system and blood supply of conducting system

**S22: Venous return**

1. Describe briefly the venous and lymphatic drainage of the limbs (C1).
2. Explain the effect of posture on circulation and the role of venous valves in prevention of backflow (C2).
3. Describe the symptoms and signs of varicose veins and outline management (C1).

**S23: Development of the cardiovascular system**

1. Describe the normal development of the heart, its chambers, septa and orifices (C1).
2. Describe normal fetal circulation and its changes at birth and thereafter (C1).
3. List the developmental anomalies of cardiovascular system including cyanotic and asyanotic diseases (C1).
4. Outline the etiology, hemodynamic, clinical features, diagnosis, management, prevention and prognosis of septal defects, tetralogy of Fallot, congenital valvular disease (C1).

**S24: Blood pressure**

1. Discuss the determinants of mean arterial blood pressure ( $B.P. = C.O. \times T.P.R.$ ) (C2).
2. define the role of the kidney in the regulation of blood pressure (C1).
3. State the locations of baroreceptors, and describe their light and electron microscopic features, the mechanism of their activation, sensitive range, static and dynamic response, and type of information conveyed
4. Discuss the determinants of mean arterial blood pressure ( $B.P. = C.O. \times T.P.R.$ ), (C2).
5. Describe the role of the kidney in the regulation of blood pressure (C1).

6. State the locations of baroreceptors, and describe their light and electron microscopic features, the mechanism of their activation, sensitive range, static and dynamic response, and type of information conveyed (C1).
7. List the reflex responses to baroreceptor activation and describe their role in the short-term regulation of blood pressure (C1).
8. Explain the interrelationship between cardiac output and venous return (C2).
9. Explain how exercise could affect heart rate, cardiac output, arterial B.P. and vascular functions (C2).

### **S25: PRACTICAL-7: Measuring blood pressure**

### **S26: Hyperlipidemia and cardiac enzymes**

1. Define lipoprotein particle and explain the rationale of its formation in blood (C1).
2. Describe the different types of plasma lipoproteins, their composition, and features and explain their metabolism (C1).
3. Explain the methods of plasma lipoprotein separation (electrophoresis, ultracentrifugation) (C2)
4. Outline the different types of dyslipoproteinemia, their common causes and complications (C1).
5. Define the atherogenic lipid profile and explain the mechanisms by which it contributes to atherosclerosis (C1).
6. List the different types of drugs commonly used to lower plasma lipids and explain their pharmacology (C1).

### **S27: WARD ROUND-2: Symptoms and signs of cardiovascular diseases:**

- 1. Take proper history of cardiovascular system (P1).**
- 2. Conduct accurate examination of a patient with a cardiovascular problem (P2).**
- 3. Explain symptoms and signs on the basis of hemodynamics (P2).**
- 4. Outline management of mitral stenosis aortic stenosis, heart failure (P2)**

### **S28: Atherosclerosis**

1. Describe the characteristic structural features of elastic and muscular arteries and arterioles
2. Define and differentiate between the terms "atherosclerosis" and "arteriosclerosis (C1).
3. Describe the macroscopic and microscopic pictures of atherosclerotic arteries (C1).
4. State the rate of incidence, causes and risk factors of atherosclerosis (C2).
5. Describe the pathological events leading to atherosclerosis (C1).

6. List the signs, symptoms and tests indicating the presence of atherosclerosis.
7. Explain the pathological consequences, prognosis and common complications of atherosclerosis (C1).
8. Outline a plan for early diagnosis, prevention, management and treatment of atherosclerosis

### **S29: WARD ROUND-3: Heart failure-**

***Presented with a patient or written scenario of heart failure, take brief history, examine surface markings of heart, listen to heart sound, auscultate the lungs and examine other relevant sites, usually involved peripheral parts of the body and suggest an outline of management and prevention (C2 P2).***

### **S30: Prevention & control of cardiovascular disease**

1. Illustrate, through examples, the role of screening in the prevention of cardiovascular diseases (C1).
2. Explain how life style modification can affect conditions like dyslipidemia, atherosclerosis, hypertension, and IHD and their complications (C2).
3. Evaluate community and public health programs, and trials to reduce the burden of cardiovascular diseases at local level, using means described below (C2).
4. Describe how cardiovascular diseases prevention should be integrated with primary health care. (C1).
5. Integrate cardiovascular health education with other health promotion programs (C2).
6. Arrange cardiovascular health promotion to be part of the national media strategy (C1).
7. Address cardiovascular health issues in school curriculum (C2).

### **S31: Life style changes**

1. Encourage physical activity for women in an environment that respect religious traditions (C1).
2. Encourage the role of mosques, other worshipping sites, and workplaces in disseminating messages related to relationship between wise life style and cardiovascular health (C2).

### **S32: Diseases of blood vessels**

1. Define aneurysm and list types and sites of occurrence (C1).
2. Differentiate between true, false, and dissecting aneurysms (C2).
3. Define vasculitis, list the main types, sites of occurrence, causes, pathological events and consequences (C1).
4. Define primary and secondary varicose veins. List their causes, risk factors,

complications and different diagnostic investigations (C1).

5. Outline the primary prevention, possible advice and management including treatment of varicosity (C1).

### **S33: Cardiac arrhythmias**

1. Define arrhythmia, list the common causes and explain their mechanisms (C1).
2. Outline the diagnostic clinical and ECG features of common arrhythmias (C2).
3. Outline the basic principles of treatment (medicines, vagal maneuvers, DC cardioversion and defibrillation) (C2).

### **S34: Rheumatic heart disease**

1. Outline infections due specifically to group A streptococci (sore throat and skin infections) and post-infection complications with emphasis on rheumatic fever (C1).
2. Explain the pathogenesis of rheumatic heart disease (RHD) and determine the involved cardiac structures (C2).
3. Describe the epidemiology, prevention, outline treatment and control of acute rheumatic fever and RHD (C1).
4. Outline the epidemiology, diagnosis and management of infective endocarditis and explain the importance of blood culture in diagnosis and how to take multiple blood samples for culture taking the necessary precautions to avoid contamination (C1).

### **S35: Pericarditis, myocarditis & endocarditis**

1. Define myocarditis. Mention its incidence, main causes, risk factors, prevention, main diagnostic symptoms, signs and tests and outline management including treatment (C1).
2. List the pathological consequences and complications of myocarditis (C1).
3. Outline the changes in cardiac function resulting from acute and chronic pericardial changes (C1).
4. List the typical symptoms and signs of acute pericarditis and cardiac tamponade. Describe briefly how to manage common acute and chronic pericardial diseases (C1).
5. Suggest an approach for etiological diagnosis in a patient with suspected pericarditis or myocarditis (C2)

### **S36: Drugs for cardiac failure**

1. Define proteinoids and outline their chemical nature, biological and pharmacological effects (C1).
2. Explain the pathways of the synthesis and degradation of proteinoids (C2).



### S37: Imaging of CVS

1. *Identify the body parts in a postero-anterior (PA) chest X-ray image, not omitting the lower cervical spine and shoulder girdle (P2)..*
2. *Count the ribs correctly in a PA chest X-ray image (P2).*
3. *Identify the trachea, arch of aorta, lung hilum and heart borders in a PA radiography, indicating the superior and inferior vena cavae, right atrium, apex, left ventricle, pulmonary arteries, arch of aortic knuckle and descending aorta (P2).*
4. *Identify the diaphragm, liver, gastric and colonic gas bubbles in a PA or lateral X-ray images of the chest. Identify the right ventricle, ascending aorta and pulmonary artery in lateral chest X-ray image and recognize enlarged heart and specific chamber(s) involved (P2).*

### S38: Heart failure

1. Outline differences between right versus left heart failure; high output versus low output failure; systolic versus diastolic failure (C1).
2. Describe the different evaluating measures in patients with heart failure (including key symptoms, physical examination - key signs, investigations - ECG, chest x-ray, (C1).
3. Outline the management of acute and chronic heart failure, including: (a) an assessment of underlying correctible causes, (b) role of nonpharmacologic measures (rest, diet, older techniques such as rotating tourniquets), (c) the clinical use of medications (digitalis, diuretics, vasodilators, ACE inhibitors, inotropes), and (d) the option of cardiac transplantation (C2).
4. Outline the underlying conditions and potential precipitating factors of heart failure (C1).

### S39: Valvular disease

1. List the acute and chronic symptoms of common valvular diseases and their effects on cardiac chambers, myocardium and function with emphasis on the most common forms of mitral and aortic valve (stenosis and/or regurgitation) (C1).
2. Outline the appropriate investigations for assessment and management of these lesions (C2).

### S40: Ischemic heart disease

1. Explain the term “ischemic heart disease (IHD)” and give an account on pathophysiology of myocardial ischemia, spectrum of acute myocardial ischemia (sudden death, stable and unstable angina, infarction) and its pathological aspects, main steps needed to make the diagnosis of IHD (history, signs, ECG,

- echocardiography and serum enzymes) (C1).
2. List the common acute and long-term complications of IHD (C1).
  3. Outline the potential ways to limit infarct size; the role of thrombolytics (C1).
  4. Outline the pharmacology of commonly used antianginal drugs (C1).
  5. Outline the principles of non-pharmacologic management of patients with IHD (exercise program, risk factor modification, angioplasty, coronary by-pass graft) (C1).

#### **S41: Physiology of acute coronary disease**

1. Describe the mechanics of local vascular control with emphasis on coronary circulation (C1).
2. Outline the factors affecting blood flow to individual organs, i.e. the importance of pressure and resistance in determining flow (C1).
3. Outline the different hypotheses of autoregulation of blood flow and how they apply to individual organs (metabolic, myogenic and tissue pressure theories) (C1).
4. Describe the role of special factors which affect coronary blood flow, e.g. myocardial and skeletal muscle contraction and collateral circulation. Identify the preferred substrates for myocardium metabolism (C1).
5. Outline the metabolic differences between aerobic and ischemic conditions (C1).

#### **Recommended reading material:**

- Snell R. Clinical Anatomy, ISBN 078174315x.
- Young, Whether's Functional Histology, Churchill Livingstone, ISBN 0443056188 [IE]
- Guyton. Human Physiology and Mechanism of Disease, 6e, WB Saunders, ISBN 0808920030 [IE]
- Abbas, Basic Immunology, WB Saunders, ISBN 0808922998 [IE].
- Kumar, Robbins and Cotran Pathological Basis of Disease, WB Saunders, ISBN 808923021[IE]
- Underwood, General and Systemic Pathology, Churchill Livingstone, ISBN 0443062862 [IE].
- Rang, Pharmacology, Churchill Livingstone, ISBN 0443072027[IE].
- Patel, Lecture Notes on Radiology, Blackwell, ISBN 0632047585.

#### **Educational strategies and methods (lecture, seminar, practical....etc):**

1. Interactive lectures
2. Practical sessions

3. Tutorials
4. Assignments

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Seminar/Presentation= 10%	MCQs= 30%	MCQs = 40%
Practical/Clinical/Visits= 10%	SQs= 0%	SSQs= 20%
Assignments/Tutorials=0%	Essays/ Short notes=	Essays/ Short notes= non
Others= 0% (e.g. peer)	Others= -----0%	Others= 0%
<b>Total= 20%</b>	<b>Total= 20%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

### Grade Descriptors (Rubrics):

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

## Required Resources

### Premises

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Dissection room, museum
- Pathology/hematology, laboratories
- Hospital: hematology outpatients, inpatients,

### Staff

- Basic scientists (anatomist, biochemists and physiologists)
- Pathologists/ hematologists

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms .

## Respiratory System (ME-RES-213) - 4 CHs, Block 5 weeks

TITLE: Respiratory System	CODE: ME-RES-213	DURATION/CREDITS: block /5 CHs - 5-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

A five-week block in Semester 3, to include: (1) describing the anatomy of the thoracic cage, muscles, diaphragm, upper and lower respiratory tract (including nasal cavity, larynx, trachea, bronchial tree, lungs, pleura), mediastinum, mechanism of respiration, (2) physiological and biochemical bases of normal lung functions and volumes, gas exchange in lung and tissues, gas transfer, (3) pathological and microbiological aspects in airway obstruction, respiratory pathogens, respiratory infections, (4) skills of taking history and performing physical examination to elicit physical signs, prepare a list of differential diagnoses and suggest suitable investigations, (5) given one of the following problems/conditions: pneumonia, foreign body inhalation, bronchial asthma, pleural effusion, pneumothorax, chest/lung tuberculosis, mediastinal masses, ca bronchus: use basic and clinical scenarios to outline diagnostic criteria and management, and show the impact on family and community, (6) role of inherited, environmental and occupational factors in respiratory disease.

### Rationale

Respiratory system is one of the most essential components of a living organism. In humans, lungs fulfill this essential function by providing a source of oxygen for the body as well as help to rid the body of carbon dioxide. In doing so the respiratory system inhales an array of pollutants and infectious agents. These infectious agents may colonize the lung tissue and cause severe respiratory ailments. In the developing countries, relatively high mortality is associated with high incidence of respiratory diseases. In many of these countries, there is a special national health programme for acute respiratory infections (ARI) in which pneumonia often contributes the leading

cause of death for infants and children less than five years. Internationally the major respiratory disorders currently rank among the 10 leading causes of death worldwide i.e. pneumonia (third), chronic obstructive pulmonary disease (COPD; fifth), tuberculosis (TB; sixth) and lung cancer (ninth). There are predictions of an increase in mortality due to COPD, TB and lung cancer, with COPD becoming the third leading cause of death worldwide. In addition, asthma is currently the most frequent chronic disease affecting children, as well as adults.

In the recent years new life-threatening respiratory infections have emerged in different parts of the world i.e. severe acute respiratory syndrome (SARS) had caused panic in the south east Asian countries as well as in the western hemisphere. Avian flu has also emerged as life threatening disease for humans in the past six months. Such respiratory infections spread like a wild fire as every droplet that is exhaled can be a source of infection for another person. COVID pandemic is prevailing now, resulting in millions of patients and thousands of deaths in the Sudan.

The increasing abuse of the environment leading to air pollution and respiratory diseases of occupations together with the prevailing unhealthy life style with special reference to smoking gives further emphasis on the study of this block.

Through the study of this block, the students are expected to recognize the major respiratory illnesses in the Sudan understand the structure, function of the system, and explain the underlying mechanisms in the pathogenesis of these diseases. The students are also expected to devise treatment regimens and preventive measures to control the spread of these diseases in the community.

## General Learning Outcomes

By the end of this course, the student should be able to:

1. Describe the mechanism of respiration and airflow obstruction including the anatomy and histology of respiratory system, lung volumes, tissue elasticity and surface tension in respiration in addition to factors determining airway caliber.
2. Explain the basic pathological mechanisms in airway obstruction with principles of treatment of airway obstruction.
3. Explain the process of gas exchange including the pulmonary circulation, alveolar ventilation and PCO<sub>2</sub>, role of ventilation in acid- base balance and blood pH, features of hemoglobin dissociation curve and relationship of ventilation/perfusion in gas exchange disturbances and environmental pollution as cause of gas exchange disturbances.
4. Describe the lung defenses and lung injury i.e. non-specific and immunological defenses in respiratory system, characteristics of respiratory pathogens

(pyogenic and TB), pathology of respiratory infections, epidemiology of respiratory infections.

5. Explain the pharmaco-dynamics of first line anti -TB drugs, antibiotics in respiratory infections and bronchial carcinoma, etiology, incidence and classification.

## Intended (specific) Learning Outcomes (ILOs)

At the end of this course, the student should be able to:

### S1: Introduction to the course

1. Show understanding of the general structure of the course
2. Show list of the outcomes and specific objectives of the course.
3. Explain the bases and contents of the assessment and feedbacks
4. Appoint or elect a student coordinator
5. List hard and soft reading material
6. Explain attendance regulations and consequences of absenteeism
7. Indicate the role of students in evaluation of the course and instructors.

### S2: Thoracic wall and diaphragm

1. Describe the features of the sternum, ribs and thoracic vertebrae (C1).
2. List structures passing through the thoracic inlet and thoracic outlet (C1).
3. Describe the location, parts and attachment of the diaphragm (C1).
4. Describe the nerve and blood supply of the diaphragm (C1).
5. Name the diameters of the chest and the movements that change these diameters in the mechanism of normal and artificial respiration (C1).
6. Explain the contents and arrangement of the intercostal space (C2).
7. Describe the microscopic appearance of pleura (C1).
8. Describe pleurae, pleural cavity and the relation between pleural and other pulmonary pressures (C1).

### S3: PRACTICAL-1: Thoracic wall and diaphragm

#### S4: Nasal cavity

1. Name the bone and cartilage forming the nose and the types of mucous membrane lining nasal cavity (C1).
2. Describe the wall of nasopharynx (C1).
3. Explain the air condition function of the nose (C2).
4. Explain the importance of little area of the nose (C2).
5. Explain the complications of chronic maxillary sinusitis (C2).
6. Describe the sneeze reflex and the cough reflex (C1).

7. Explain the relevance of Little's area of the nose in nasal bleeding(C2).
8. Name the organisms causing rhinitis and sinusitis and outline the drug treatment of the two conditions (C1)>

### S5: Nasopharynx

1. Describe the walls of nasopharynx (C1).
2. Explain the communications of nasopharynx (C2).
3. **Recognize section of the adenoids in a slide under the microscope (P2).**
4. **Recognize the signs and symptoms of enlarged adenoids (P2).**
5. Enumerate the components of middle ear cleft (C1).

### S6: Paranasal sinuses

1. **Recognize the mucosa of the nose and paranasal sinuses in a slide under the light microscope (P2).**
2. Name the sinuses and describe their gross features, innervation and functions (C1).
3. List the causes and presentation of sinusitis (C1).
4. List the complications of chronic maxillary sinusitis (C1).

### S7: PRACTICAL -2: Nose and paranasal sinuses

### S8: Larynx

1. Name the paired and the unpaired cartilage of larynx (C1).
2. List the intrinsic muscle of the larynx with those adducting and abducting the vocal cord and those tensing and relaxing the vocal cord (C1).
3. Enumerate the intrinsic and extrinsic ligaments and membranes of the larynx (C1).
4. **Recognize under the microscope a slide of vocal cords and remaining structures of the larynx (P2).**
5. Explain the effects of paralysis of laryngeal muscles and vagus or recurrent and external laryngeal nerves (C2).

### S9: Trachea and bronchi

1. Describe the morphology and structure of the trachea-bronchial tree, naming generation or division (C1).
2. **Identify the mucosa and wall structure of the airways (P2).**

### S10:PRACTICAL-3: Larynx, trachea and bronchial tree

### S11: Lung volumes and capacities

1. Describe the gross features of the lungs: lobes, fissures, segments and surface markings (C1)



2. Identify the structure of the lung under the light microscope (C1).
3. Describe pulmonary volumes and capacities (C1).
4. Describe the interpret changes in volumes and capacities under different condition of breathing (C1).
5. *Perform or attend spirometry and interpret it (P2).*

### **S12: Lungs and pleura**

1. Describe the microscopic appearance of pleura (C1).
2. Describe pleurae, pleural cavity and the relation between pleural and other pulmonary pressures (C1).
3. Describe the root and blood supply of the lungs (C1).
4. Describe the components of interstitial of lungs
5. *Perform or attend pleural tapping in a model (P2).*

### **S13: PRACTICAL-4: Lungs and pleura**

#### **S14: Histology of the respiratory system**

1. Describe the light and electron microscopic appearance of alveoli and alveolar sac (C1).
2. Differentiate in a slide between different types of bronchioles (C2).

#### **S15: Bronchial tone and lung compliance**

1. Give brief account of the concept of dead space and the physiological shunt (C1).
2. Define the terms compliance & airway resistance (C1).
3. List the conditions with altered compliance & airway resistance (C1).

#### **S16: Surface anatomy**

1. Review the external markings of the larynx, trachea, pleura and lung lobes and fissures (C1).
2. Name the diameter of the chest and the movements that change these in the mechanism of normal and artificial respiration (C1).
3. Explain how the location of the intercostal space affects interventions in the thoracic cavity (C2)
4. *Outline on a human body, model or diagram the surfaces markings of the lung and pleura (P2).*

#### **S17: PRACTICAL-5: Surface anatomy of chest and respiratory system**

#### **S18: Mechanism and work of breathing**

1. Describe mechanics of ventilation (C1).
2. Describe the role of chest skeleton and muscles in the change of thoracic

dimensions (C1).

3. Explain the mechanics of respiration (C2).

### **S19: Surfactant**

1. Describe the role of surfactant in maintaining alveolar stability (C1).
2. Name the conditions with surfactant deficiency and outline the deranged physiology (C1).

### **S20: Development of the respiratory system**

1. Describe the development of lung, trachea and bronchioles (C1).

### **S21: Lung emphysema**

1. Define emphysema (C1).
2. Describe the morphology and basic pathological mechanisms of emphysema (C1).
3. *Recognize emphysema in a chest x-ray (C1).*

### **S22: Bronchial asthma**

1. List the factors associated with increased magnitude of bronchial asthma in the local community (C1).
2. *Prescribe the drugs in a case of acute attack of bronchial asthma (C1).*
3. *Counsel patients, families and the community for prevention of bronchial asthma (A)*

### **S23: Gas exchange**

1. Describe the physical principle of gaseous exchange (C1).
2. Explain diffusion of oxygen and carbon dioxide through the respiratory membrane (C1).

### **S24: Gas transport**

1. Outline the transport of oxygen and carbon dioxide in the blood and body fluids (C1).
2. Describe the role of RBC & plasma in the transport of CO<sub>2</sub> (C1).
3. *Plot oxygen hemoglobin dissociation curve and evaluate shifts in different conditions (P4).*

### **S25: Control of respiration**

1. Describe chemical control of respiration via chemoreceptors and other control mechanism (C1).
2. Explain regulation of respiration (C2).
3. Describe the respiratory changes in exercise, high altitude and deep sea (C1).

### S26: Denfence mechanism and pathogenesis of pneumonia

1. Describe non-specific and immunological defenses in the respiratory system (C1).
2. **Recognize in histopathology slides the bacterial, viral and fungal pneumonias and pulmonary TB (P2).**

### S27: Prevention and control of respiratory disease

1. Explain the effect of active and passive smoking hazards and their relation to respiratory system morbidity and mortality
2. Explain the influence of occupational factors on occurrence of respiratory system disease

### S28: Respiratory diseases

1. List the most common respiratory diseases, and outline the causes of each (C1).
2. Explain the pathogenesis, morphology, mode of spread, risk factors and prognosis of carcinoma bronchus (C2).
3. Recognize the burden of acute respiratory tract infections in Sudan community and explain the impact of environmental and social factors on magnitude and spread of the problem (C2).
4. Design program(s) adopted in Primary Health Care setting for the control of acute respiratory tract infections (C2)
5. **Recognize under light microscope the histopathology slides of common respiratory conditions in infants, children and adults (P2).**

### S29: Pneumonia

1. Define pneumonia and list its causes (C1).
2. Describe the pathogenesis and morphology of pneumonia (C1).
3. Outline the clinical features and management of pneumonia (C1).
4. **Recognize the appearance of lobar pneumonia in chest x-ray (P2).**

### S30: Upper respiratory tract infections

1. List upper respiratory tract infections and state their burden on the health system (C1).
2. Outline the features and management of laryngitis (C1).
3. Define SARS and COVID-19 and their causative organism and pathological and clinical features (C1).

### S31: Tuberculosis

1. Describe the etiology, pathogenesis and morphology of pulmonary TB (C1).
2. Explain the changing global trends in epidemiology of T.B and the factors influencing these trends (C2).

3. Explain problems that interfere with the global and national control of T.B (C2).
4. Outline the presentation and drug treatment of pulmonary TB with reference to DOTS (C1).
5. **Counsel patients, families and the community for prevention of bronchial asthma (A).**

### **S32: WARD ROUND-1: Tuberculosis**

Presented with a patient, simulation or written scenario of tuberculosis in the lung, use the basic science to show understanding of the underlying etiology, presentation, outline diagnostic procedures, management and prognosis. (C2, P2).

### **S33: Occupational lung disease**

1. Explain the influence of occupational and environmental factors on the occurrence of respiratory disease (C2).
2. Explain the effect of active and passive smoking hazards and their relation to respiratory system morbidity and mortality (C2).
3. Outline the adverse health effects of air pollution (C1).
4. Describe the pathogenesis of lung disease due to inhalation of dust (pneumoconiosis) (C1).

### **S33: Drugs in respiratory diseases**

1. Name the organisms causing rhinitis and sinusitis and outline the drug treatment of the two condition (C1).
2. Suggest the drugs in pulmonary infection (C1)

### **S35: Hypoxia and cyanosis**

1. Describe the physiological basis of types of hypoxia and of cyanosis (C1).

### **S36: Chest injury**

1. Classify chest injury with regard to diagnosis and possible interventions (C1).
2. Discuss the technical procedures of chest tube applications and its side effect and complication (C2).

### **S37: Tumors of the lung**

1. Classify lung tumors (C1).
2. Recognize a lung mass and outline its differential diagnosis (C2).
3. Enumerate the common tumors of the lungs prevalent in this part of the world (C1).
4. Explain the pathogenesis, morphology,, risk factors and prognosis of carcinoma bronchus (C2).

**S38: WARD ROUND-1 Lung space occupying lesions (SOLs)**

*Presented with a patient, simulation or written scenario of SOL in the lung, use the basic science to show understanding of the underlying etiology, presentation, outline diagnostic procedures, management and prognosis. (e.g. bronchial carcinoma, hydatid cyst, lung abscess) (C2,P2)*

**S39: Epidemiology of environmental lung disease**

1. Outline the adverse health effects of air pollution (C1)
2. Describe the pathogenesis of lung disease due to inhalation of dust (C1).

**S40: Pleurisy and pleural effusion**

1. Define pleurisy and outline etiology (C1).
2. Describe the etiology and chemical difference between exudative and transudative pleural effusion (C1).
3. *Suggest the diagnosis of pleural effusion in chest x-ray (P2)*

**S41: Lung abscess**

1. Define abscess (C1).
2. Identify route of infection and etiology (C1).
3. Describe presentation and pathogenesis of lung abscess (C2).

**S42: Viral and opportunistic chest infection**

1. Describe non-specific and immunological defense in the respiratory system (C2)

**S43: WARD ROUND-3: Clinical examination of the respiratory system**

1. Inspect, palpate, percuss and auscultate the chest (P2)

**S44: Imaging of respiratory system**

1. *Identify the bony parts in a posterior-anterior (PA) chest x-ray image, not omitting the lower cervical spine and shoulder girdle (P2).*
2. *Count the ribs correctly in a PA chest x-ray image (P2).*
3. *Identify the trachea, arch of aorta, lung hilum and heart borders in a PA chest radiograph (P2).*
4. *Identify the diaphragm, liver and gastric and colonic gas bubbles in a PA or Lateral x-ray images of the chest (P2).*
5. *Identify lung fissures and lung zones in PA and Lateral chest x-ray images (P2).*
6. *Recognize consolidation in pneumonia, hyperinflation on emphysema and fibrocystic changes in TB in PA and Lateral chest x-ray images (P2).*
7. *Recognize a lung mass and outline its differential diagnosis (P2).*

### Recommended reading material:

- Snell R. Clinical Anatomy, ISBN 078174315x.
- Young, Whether's Functional Histology, Churchill Livingstone, ISBN 0443056188 [IE]
- Guyton. Human Physiology and Mechanism of Disease, 6e, WB Saunders, ISBN 0808920030 [IE]
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Seminar/Presentation= 10%	MCQs= 30%	MCQs = 40%
Practical/Clinical/Visits= 10%	SQs= 0%	SSQs= 20%
Assignments/Tutorials=0%	Essays/ Short notes=	Essays/ Short notes= non
Others= 0% (e.g. peer)	Others= -----0%	Others= 0%
<b>Total= 20%</b>	<b>Total= 20%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required Resources****Premises**

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Dissection room, museum
- Pathology/hematology, laboratories
- Hospital: hematology outpatients, inpatients,

**Staff**

- Basic scientists (anatomist, biochemists and physiologists)
- Pathologists/ hematologists, microbiologists

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

## Primary Health Care (ME-PHC-215) - 3 CHs, Block 3 weeks

TITLE: Primary Health Care	CODE: ME- PHC-215	DURATION/CREDITS: block /3 CHs - 3-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

This is a block module during Semester 4. It consists of theoretical studies on health system, the socioeconomic, psychological, behavioral and environmental factors related to primary health care. This course is devoted to expose students to health centers and villages trying to understand the health problems and help the local people and authorities by suggestions and involvement in solving them. This is possible through the health research and the methods used in community medicine to investigate maternal and child health, and control of endemic and communicable diseases. This course is based on theoretical aspects in class sessions and practical training in primary health care centers.

### Rationale

The purpose of the undergraduate curriculum in community medicine is to expose the students to the problems of the community in order to understand the principles of care of defined population, based on cost-effective and scientifically sound methods. The curriculum also aims at producing doctors who can understand health in socio-psychological and economic milieu and devise a holistic approach towards care of individuals, families and communities. The curricular approach also imparts hands-on training for conducting operational and other research as well as critically appraising scientific literature for keeping them updated.

The course is essential for the students to understanding health and its determinants together with the factors responsible for disease. This course is offered to facilitate



students to acquire the knowledge and skills for providing basic promoting, preventive and selected curative care at the primary and secondary levels.

The course also covers the essential elements of reproductive health that is practical in the PHC setup creating a broad understanding of issues of reproductive health, and safe motherhood and adolescent health. Inappropriate handling at this critical stage of development may lead to serious consequences ranging from deviant behavior to indulgence in criminal activities.

The courses touch on occupational health problems and provide orientation to hazards at work places and environment. They also deal with some problems in the care of elderly people. These aspects are consolidated in other courses.

## General Learning Outcomes

At the end of this course the student should be able to:

1. Show understanding of the health system of the Sudan, with special emphasis on primary health care (PHC).
2. Explain the basic health care for mothers, children, adolescents and the elderly and recommend strategies to address the needs of women of child-bearing age.
3. Consider a general spectrum of possible interventions in management of health problems.
4. Recognize the features of selected occupational diseases and the need for occupational health services in order to deal with them appropriately.

## Intended (specific) Learning Outcomes (ILOs)

At the end of this course the student should be able to:

### S1: Introduction to the course

1. Show understanding of the general structure of the course
2. Show list of the outcomes and specific objectives of the course
3. Explain the bases and contents of the assessment and feedbacks
4. Appoint or elect a student coordinator
5. List hard and soft reading material
6. Explain attendance regulations and consequences of absenteeism
7. Indicate the role of students in evaluation of the course and instructors.
8. Show an understanding of the health care system in Sudan

### S2: Sudan Health Care system

- 1- Describe the general structure of the health care system of the Sudan.

### S3: Definition and principles of PHC

1. Explain the principles of PHC (C2).
2. *Work in harmony within a health care team and accept the role of each member or leader of the health team (A)*
3. Explain the basic principles for setting a health management information system (C2).
4. Describe the steps in planning a health care program for a community (C1).

### S4: Components of PHC

1. List the components of PHC (C1).
2. Explain the functions of each member (cadre of health workers) of the health care team at the assigned PHC center (C2).
3. Describe the role of primary, secondary and tertiary care services in the health system (C1).

### S5: Health for all and Millennium Developmental Goals (MDGs)

- 1- Describe the primary health care approach and the goal of "Health for All" (C1).

### S6: Reproductive health

1. Define the term "reproductive health" (C1).
2. State measures used to identify fertility trends among populations, and describe the advantages and disadvantages of each measure (C2).
3. Explain the factors affecting fertility trends among Sudanese population (C2).
4. *Outline the social, cultural and behavioral determinants of reproductive health-giving examples from Sudan (A).*
5. *Explain medical ethics in family planning, reproduction and termination of pregnancy in the light of the prevailing culture and religion in the Sudan (A).*
6. Describe the health service program provided to expectant mothers and their children by different community organizations (C1).
7. Describe the epidemiology, screening and preventive measures of reproductive tract malignancies (C1). Describe the epidemiology, screening and preventive measures of reproductive tract infections (C1).
8. Describe the safe motherhood initiative endorsed by WHO (C1).
9. Describe the intergenerational effects of maternal malnutrition (C1).
10. Explain the role of nutrition in preventing low birth weight (LBW) (C2).
11. *Provide premarital and post marital genetic counseling to women of CBA for hereditary diseases (A).*

### S7: IMCI

1. Go through the "seven jumps" to solve the problem (C2).

2. Suggest the most possible causes dehydration (C2).
3. Identify the signs and symptoms of types of dehydration (some/severe dehydration) (C2).
4. Outline the basic principles of management according to plan A and plan B of WHO guidelines for management of diarrhea (C1).
5. Explain the rationale for oral rehydration theory (ORT or ORF) (C2).
- 6. Advise on methods of preparation of homemade and packet ORT (P2)**
- 7. Advise mothers for home-care of children with diarrhea (P2)**
8. Describe the methods of prevention and control of diarrhea (C2)
9. Identify the risk factors for ARI (pneumonia) in children (C1).
10. Classify the child with ARI according to the WHO guidelines for management of ARI (C1)
11. State the general principles of home management of ARI according to the WHO guidelines for management of ARI (C1).
- 12. Advise the mothers for home-care of children with ARI (P2)**

### **S8: VISIT to PHC center: growth charts**

### **S9: Growth and development**

1. Describe the short- and long-term consequences of low birth weight (C1).
2. Differentiate between small for date and pre-term newborns (C1).
- 3. Plot and interpret growth charts for children under five (P2).**
4. Interpret the growth of a child by using weight, height, mid-arm circumference and head circumference (C2).
5. Describe the uses of growth chart (C1).
6. Explain the consequences caused by deficiency of vitamin A, D, Iron, Folic Acid, Iodine and Zinc on growth and development of child (C2).

### **S10: Nutrition**

1. Provide advice to mothers on the advantages of breastfeeding and disadvantages of bottle-feeding (C1).
2. Give nutritional advice to mothers for infants less than 6 months of age, infants more than 6 months to 1 year of age and children of 1-5 years of age (C1).
- 3. Advise mothers with common breastfeeding problems (P2).**
4. Explain the methods of evaluating sufficiency of breast milk for a mother complaining insufficiency of breast milk (C2).
5. Define Protein- Energy malnutrition (PEM) (C1).
- 6. Differentiate –in children or diagrams-between marasmus and kwashiorkor(non-edematous and edematous PEM) (P2)**
7. Explain the principles of management of protein energy malnutrition (PEM) (C2)

8. Explain the risk factors for PEM and its prevention (C2).
9. In a patient or diagram, identify the micronutrient deficiency caused by Vitamin A, D, Iron, Folic Acid, Iodine, and Zinc (P2).

### **S11: Health indicators**

1. Describe the steps in planning a health care programme for a community (C1).
2. Prioritize a given set of problem using a prioritization grid (C2).

### **S12: Communication skills**

1. *Apply basic principles and guidelines of communication skills in dealing with patients (P2).*
2. *Apply effective communication skills for conflict resolution (P2)*
3. *Demonstrate use of verbal and non-verbal communication (P2)*

### **S13: School health**

1. *Explain elements of school health (P2).*

### **S14: VISIT to PHC Center: School health**

### **S15: Adolescence health**

1. Define adolescence (C1).
2. Describe the special need of adolescence (C1).
3. Explain the principles of adolescent health care
4. Describe the physical and psychological problems encountered in adolescent with special emphasis on substance abuse and sexual behavior (C1).
5. Recommend appropriate promotive and preventive strategies for problems of adolescence (C2).
6. Describe the epidemiology, promotive and preventive strategies of AIDS (C1).
7. *Advice adolescents and their families on adolescents' problems and how to prevent deviations (P2).*

### **S16: VISIT to PHC Center: Nutrition**

### **S17: Health promotion**

1. Demonstrate cost-effective primary and secondary level skills in preventive, promotive, curative and rehabilitative care (C2).
2. *Apply the skills of planning, monitoring, evaluation to promotive, preventive, curative and rehabilitative care (P2).*

### **S18: Immunization**

1. Describe the etiology, mode of transmission, incubation period, period of

communicability, signs and symptoms, major complications and preventive methods of vaccine preventable diseases of public health importance (C1).

2. Explain the schedule of immunization for children under-five and women of CBA (15-49 years) to the mother / or attendant/ patient (C2).
- 3. Give the appropriate vaccine in appropriate doses and through the correct route after ascertaining the contraindications for the specific vaccines (P2)**
4. Give correct advice regarding missed doses of vaccine or immunization of children coming after few months to years after birth (C1).
5. Explain the goals and objectives of the WHO's Expanded Program of Immunization (EPI) (C2).
6. Explain the cold chain for vaccine (C2).

### **S18: VISIT to PHC Center: Immunization**

### **S19: Environmental health**

1. Describe the environmental services provided at the assigned PHC center (C1).

### **S20: Occupational health**

1. Explain prevention of occupational diseases (C2).

### **S21: VISIT to factory for occupational health precautions**

### **S22: Healthcare of the elderly**

1. Explain why the elderly are vulnerable to disease (C2).
2. Explain the common health problems of elderly (C2).
3. Specify the health care need for the elderly (C2)

### **S22: VISIT to PHC Center: Rotation different components of PHC**

### **S23: Occupational health**

1. Define occupational health (C1).
2. Discuss occupational hazards (C2).

### **Reading material:**

- Staff PowerPoint Anotes and webpage online instructional sessions

### **Educational strategies and methods (lecture, seminar, practical....etc):**

1. Interactive lectures
2. Practical sessions
3. Tutorials / clinics
4. Assignments

## Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Seminar/Presentation= 5%	MCQs= 20%	MCQs = 40%
Practical/Clinical/Visits= 15%	SQs= 0%	SSQs= 20%
Assignments/Tutorials=0%	Essays/ Short notes=	Essays/ Short notes= non
Others= 0% (e.g. peer)	Others= -----0%	Others= 0%
<b>Total= 20%</b>	<b>Total= 20%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

### \*Grade Descriptors (Rubrics):

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

## Required Resources

### Premises

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Laboratory
- Visits to clinics and factories

### Staff

- Family physicians

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

## Musculoskeletal System (ME-MSK223), 6 CHs, Block 7 weeks

TITLE: Musculoskeletal System	CODE: ME-MSK-223	DURATION/CREDITS: block /6 CHs - 7-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

A seven-week-block, on the structural and functional details on bones, muscles, nerves and joints, physiology of excitable tissues, processes of muscle contraction, disruption in continuity of bone and methods of restoration of bone function, complications of bone fractures, calcium metabolism, bone infections, inflammation and degeneration in joints, bone and muscle tumors, living anatomy or bony landmarks of musculoskeletal system, examination skills of musculoskeletal system, musculoskeletal pain, and essential drugs used in musculoskeletal disorders, road traffic accidents and their impact on individual, family and community.

### Rationale

The study of the musculoskeletal system is important for medical students and at this stage, as it provides a spectrum of different structures (bones, muscles and joints) which constitute considerable proportion of the body. The main function of the musculoskeletal system is the mechanical support for movement. In addition to this main function it is as vital to life. It plays an essential role in mineral homeostasis, temperature homeostasis and houses hematopoietic elements.

Problems of the musculoskeletal system constitute an important part of medical practice. Road traffic accidents are a common cause of traumatic lesions which involve bones, joints, muscles and nerves. It leads to serious complications. Osteomyelitis is a serious disease which needs rapid diagnosis and treatment to avoid its complications. Osteoarthritis is a common type of joint disease in which a lot of money is spent for its treatment and lost days of work. Thus it is very important to study the normal and pathological conditions related to this system.



## General Learning Outcomes

By the end of this course the student is expected to:

1. Understand the basic normal structure, function and pathological conditions of the musculoskeletal system.
2. Outline the management of the common health problems associated with the system including community aspects.
3. Conduct physical examination of the musculoskeletal system.

## Intended (specific) Learning Outcomes (ILOs)

By the end of this course the student is expected to:

### S1: Introduction to course

1. Show understanding of the general structure of the course
2. Show list of the outcomes and specific objectives of the course
3. Appoint or elect a student coordinator
4. List hard and soft reading material
5. Explain attendance regulations and consequences of absenteeism
6. Indicate the role of students in evaluation of the course and instructors

### S2: PRACTICAL-1: Bones of the upper limb

1. Identify the major parts of the following bones: scapula, clavicle, humerus, radius, ulna, carpal bones, hand, vertebral column (C1).
2. Identify the attachments of the muscle groups to long bones, and specifically those of the following muscles: pectoralis major and minor, deltoid, latissimus dorsi, trapezius, serratus anterior, thumb muscles, long and short flexors and extensors of the hand and wrist (C1).
3. Name the nerves related to upper limb bones and describe the causes and effects of injury to these nerves (C1).

### S3: PRACTICAL-2: Vertebral column

1. Identify the major parts of the following bones: vertebral column scapula and pelvis (C1),
2. Identify the attachments of the muscle groups to bones, and specifically, latissimus dorsi, trapezius, serratus anterior, psoas muscle, quadratus lumborum, erector spinae muscles (C1).
3. Name the nerves related to vertebral column bones and describe the causes and effects of injury to these nerves (C1).

**S4: Histology of muscles, bones and cartilage**

1. Describe microscopic structure and normal development, growth and maintenance of bone (C1).
2. Describe microscopic structure of skeletal muscles and tendons (C1).
3. Define and identify skeletal muscle fiber, sarcomere, muscle spindle, motor end plate and organization of muscles (C1).

**S5: PRACTICAL-3: Histology****S6: PRACTICAL-4: Joints of the upper limb****S7: Muscles of the upper limb**

1. Name the groups of muscles of the upper limb (C1),
2. Name the muscles responsible for shoulder movement and describe their attachments, actions, nerve supply and effects of nerve injury on each muscle (C2).
3. Identify the rotator cuff muscles, describe their attachments, innervation, actions and effects of injury (C2).
4. Name the muscles forming the anterior and posterior groups of muscles of the arm and describe the attachments, actions, nerve supply and effects of nerve injury on each muscle (C1).
5. Name the muscles forming the anterior and posterior groups of muscles of the forearm and describe the attachments, actions, nerve supply and effects of nerve injury on each muscle (C1).
6. Name the muscles acting on the elbow and wrist joints (C2).
7. Name the small muscles of the hand and outline their general attachments, innervation and action and effects of loss of action (C1).

**S8: PRACTICAL-5: Muscles of the upper limb****S9: Joints of the upper limb**

1. List the various types of joints in the upper limb (shoulder, elbow, radioulnar, wrist and hand) giving examples for each type and its range of movement (C1).
2. Describe the anatomical details (bony ends, capsule, synovial membrane, intraarticular structures) of joints of the upper limb including microscopic structure (C1).
3. Define movements occurring in each joint, stabilizing factor and name the muscles responsible for each movement (C2).
4. List the muscle groups working on joints and relate them to their innervation (C2).

**S10: PRACTICAL-6: Bones of the lower limb:**

1. Identify the major parts of the following bones: pelvis, femur, tibia, patella, fibula, tarsal bones, and foot (C1).
2. Identify the attachments of the muscle groups to long bones, and specifically those of the following muscles: abdominal wall muscles, psoas muscle, quadratus lumborum, quadriceps, hamstring, calf, tibialis anterior and posterior, peroneus longus and brevis, dorsiflexors, planter extensors, invertors and evertors (C1).
3. Name the nerves related to bones and describe the causes and effects of injury to these nerves (C2).

**S11: Muscles of the lower limb**

1. Name the groups of muscles of the lower limb (C1).
2. Name the muscles responsible for hip movement and describe the attachments, actions, nerve supply and effects of nerve injury on each muscle (C2).
3. Name the muscles forming the anterior, posterior and medial groups of muscles of the thigh and describe the attachments, actions, nerve supply and effects of nerve injury on each muscle (C1).
4. Name the muscles forming the anterior, posterior and lateral groups of muscles of the leg and describe the attachments, actions, nerve supply and effects of nerve injury on each muscle (C1).
5. Name the muscles acting on the knee and ankle joints (C2).
6. Name the small muscles of the foot and outline their general attachments, innervation and action and effects of loss of action (C1).
7. Describe the arches of the foot and explain how the weight of the body is transmitted to the ground (C1).

**S12: Proteoglycan and proteins of the musculoskeletal system**

1. Enumerate proteins of the bone, muscles and tendons (C1).
2. Define proteoglycans and differentiate them from glycoproteins (C1).
3. Describe the functions of proteoglycans and structural proteins of the musculoskeletal system (C1).

**S13: Joints of the lower limbs**

1. List the various types of joints in the lower limb (hip, knee, tibiofibular, ankle, foot) giving examples for each type and its range of movement (C1).
2. Describe the anatomical details (bony ends, capsule, synovial membrane, intraarticular structures) of joints of the lower limb including microscopic structure (C1).
3. Define movements occurring in each joint, stabilizing factors and name the

muscles responsible for each movement (C1).

4. List the muscle groups working on joints and relate them to their innervation (C2).

### **S14: Resting membrane potential and action potential**

1. Explain the mechanism of muscle contraction including the resting membrane potential, electrical change, action potential, mechanical change and metabolic change (C2).
2. Explain the cause of muscle fatigue (C2).

### **S15: Neuromuscular junction**

1. Draw and label a neuromuscular junction (C1).
2. Explain the steps of synaptic transmission (C2).

### **S16: Fractures and healing of bone**

1. *List the types of fractures and their common causes, and explain the effects that these produce on the movement and weight bearing (P2).*
2. List the sequence of gross and microscopic changes in the natural healing process (C2).
3. List the different causes of pathologic fractures and suggest modes of prevention of these fractures (C2).
4. List the complications of fractures (C1).

### **S17: Septic arthritis and osteomyelitis**

1. List the common pyogenic bacteria causing osteomyelitis and arthritis in different age groups and describe the routes by which these bacteria (including tubercle bacillus) reach bone and joints (C1).
2. Describe the sequence of events and explain the corresponding gross and microscopic changes produced in the course of such infections (C2).
3. Suggest methods for diagnosing such infections and outline the basic principles of their management (C2).
4. List and define the different metabolic diseases of bone and explain the aetiological and associated predisposing factors for the two disorders common in the elderly (osteoporosis and osteomalacia) as well as rickets (the counter part of the latter in children) (C2).
5. List the sequence of pathologic changes in these disorders and correlate these with physiologic, biochemical and histological changes in bone (C1).
6. Describe the main differences between osteoporosis and osteomalacia (C2).
7. Suggest methods for prevention of osteoporosis, osteomalacia and rickets in the community (C2).

### S18: Soft tissue and bone tumors

1. Classify tumors and tumor-like conditions of bone and soft tissue (C1).
2. List the major predisposing factors for tumors and tumor-like conditions of bone and soft tissue (C1).
3. List the diagnostic methods for tumors and tumor-like conditions of bone and soft tissue (C1)..
4. Explain the role of history, age, sites and radiological features in confirmation of histopathological diagnosis of bone tumors (C2).

### S19: Calcium metabolism

1. Discuss the sources of calcium in the human body (C2).
2. Discuss the metabolism of calcium (C2).
3. Outline the pathologic condition associated with calcium and their presentation and management (C1).

### S20: PRACTICAL-7: Blood and nerve supply of the upper and lower limbs

#### S21: Inflammatory conditions affecting joints and muscles

1. List and define the inflammatory conditions affecting joints (C1).
2. Describe the etiologic factors and pathogenetic sequence of events in diseases like osteoarthritis, gout and tuberculous arthritis (C1).
3. Identify the pathologic changes in specimens, radiographs etc. of patients suffering from such diseases (C1).
4. Describe complications of osteoarthritis, gout and tuberculous arthritis (C1).
5. Describe the bacterial, viral and parasitic infections of muscles; and describe the deep fungal infections like mycetoma and others (C1).

#### S22: Non-infectious diseases of skeletal muscles

1. List and define the various non-infectious diseases of skeletal muscle and identify the relatively common ones (C1).
2. Define the pathologic terms used for muscle diseases and list the pathologic changes in different muscle diseases (C1).
3. List the investigations needed for diagnosing common muscle diseases (C1).
4. **Advise patients or their parents to seek genetic counseling in cases where the muscle disease has a known mode of inheritance (A).**
5. Suggest methods for creating community awareness of genetic factors involved in muscle diseases (C2).
6. Explain how immunological mechanisms in relation to bone and joint diseases are used in investigating patients with such diseases (C2).

**S23: WARD ROUND-1: History taking and clinical examination****S24: Drugs in musculoskeletal disease**

1. Name the drugs used in treatment of common musculoskeletal diseases like osteomyelitis, rickets, osteoporosis, osteomalacia (C1).
2. Outline the mechanism of action, pharmacokinetics, pharmacological side effects and drug interactions of salicylates and nonsteroidal anti-inflammatory drugs (NSAID) (C1).

**S25: SEMINAR-1: Metabolic bone diseases****S26: WARD ROUND-2: Osteoarthritis and rheumatoid arthritis****S27: SEMINAR-2: Nerve injury of the upper and lower limbs****S28: WARD ROUND-3: Lower limb fractures****S29: Imaging of the musculoskeletal system**

1. *Provided with an image of the musculoskeletal parts, name the imaging technique or procedures and outline the underlying physical background (conventional radiography, ultrasound, CT, MRI, interventional imaging) (P2)*
2. *Diagnose bone fractures and stages of fracture healing (P2)*

**Recommended reading material:**

- Crash Course: Musculoskeletal System
- Snell R. Clinical Anatomy, ISBN 078174315x.
- Aidley DJ. The Physiology of Excitable Cells, Cambridge University Press.
- Adams Orthopedics

**Educational strategies and methods (lecture, seminar, practical...etc):**

1. Interactive lectures
2. Practical sessions
3. Tutorials
4. Assignments

## Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Seminar/Presentation= 10%	MCQs= 20%	MCQs = 30%
Practical/Clinical/Visits= 20%	SQs= 0%	SSQs= 10%
Assignments/Tutorials=10%	Essays/ Short notes=	Essays/ Short notes= non
Others= 0% (e.g. peer)	Others= -----0%	Others= 0%
<b>Total= 40%</b>	<b>Total= 20%</b>	<b>Total= 40%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

## Grade Descriptors (Rubrics):

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

## Required Resources

### Premises

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Dissection room, museum
- Pathology/hematology, laboratories
- Hospital: hematology outpatients, inpatients,

### Staff

- Basic scientists (anatomist, biochemists and physiologists)
- Pathologists/ hematologists, microbiologists

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.



## Nutrition and Metabolism (ME-NUT224)- 4 CHs, Block 4 weeks

TITLE: Nutrition and Metabolism	CODE: ME-NUT-224	DURATION/CREDITS: block /4 CHs - 4-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

This is a four-week block, on the nutritional aspects of carbohydrates, lipids, proteins, vitamins and minerals, the constituents of breast milk, nutritional requirements, metabolism, calories, nutritional planning, malnutrition, malnutrition-related diseases, nutritional disease management and prevention, effects of overeating in the individual and society, nutritional therapy, the social and psychological factors in eating style and the institutions involved in designing and implementing criteria on nutrition and food safety. The course includes related normal metabolic functions and the abnormalities causing diseases like diabetes mellitus, their diagnosis, management and prevention at individual and community levels.

### Rationale

There are some beneficial and other harmful food substances. Certain quantities of the beneficial food are required if balanced, more or less may result in disease. Diseases are either from overconsumption or under nutrition. Adequate knowledge of food substances is needed to advice healthy people and arrange for the treatment of patient suffering from nutritional disorders. The nutritional problems are variable, depending to some extent, on the income of the community. Children in poor communities suffer from debilitating malnutrition diseases, while a large percentage of the population suffer from obesity in wealthy communities. Therefore, in the study of nutrition, biochemistry and physiology are integrated with clinical presentations, community medicine, sociology and developmental indices.

Protein carbohydrates and lipid metabolism have anabolic and catabolic pathways, which depend on hormones, vitamins, minerals, enzymes and coenzymes. These path-

ways are interrelated in various situation. Inborn errors of metabolism, various metabolic disorders and vitamin deficiencies constitute an important part of clinical practice.

### **Intended (specific) Learning Outcomes (ILOs)**

By the end of this course the student is expected to:

#### **S1: Introduction to the course**

1. Show understanding of the general structure of the course
2. Show list of the outcomes and specific objectives of the course.
3. Explain the bases and contents of the assessment and feedbacks
4. Appoint or elect a student coordinator
5. List hard and soft reading material
6. Explain attendance regulations and consequences of absenteeism
7. Indicate the role of students in evaluation of the course and instructors.

#### **S2: Food constituents, dietary fats, carbohydrates and proteins: digestion and absorption**

1. List the major sources of human food (C1).
2. Explain how nutrients are used in the human body (C2).
3. Outline the key metabolic pathways associated with the catabolism and anabolism of carbohydrates, lipids and proteins in mammalian tissues (C1).

#### **S3: Basic skills: Anthropometric measurement**

1. Describe the growth chart and to know how to plot children growth in the growth chart (C1).
2. **Take the weight, height, length and head circumference (P2)**
3. Discuss significance of body mass index and how to use it (C1).

#### **S4: Physiology of satiety and factors regulating food intakes**

1. Describe the center that regulate food intake and body weight (C1)
2. Define the neurotransmitter that are involved in regulation of food intake (C1).
3. Discuss the theories that regulate the food intake (C2).

#### **S5: Energy requirements in human**

1. Demonstrate an understanding of nutritional substances and energy requirements (C1).
2. State the requirements from each substance (C1).

#### **S6: Malnutrition**

1. Define and list types of malnutrition (C1).
2. Discuss the associated disorders (C2).

**S7: Nutritional disorders**

1. Outline the prevention and control measures for common nutritional disorders in the Sudan (C1).
2. Describe the clinical presentations of nutritional diseases (C1).
3. Outline management in health institutions and community. (C1)

**S8: Dietary pyramid**

1. Define food pyramid (C1).
2. Discuss the components of food pyramid (C2).

**S9: Weight control**

1. Explain the importance of exercise and weight control on the general health of the body (C2).
2. Discuss the optimum weight for a healthy adult male and female (C2).

**S10: SEMINAR-1: Obesity**

1. Describe the sociological and psychological aspects of eating behavior (C1).
2. Outline the etiology and management of obesity (C1).

**S11: SEMINAR-2: Food poisoning**

1. Discuss the optimum weight for a healthy adult male and female (C2).

**S12: Introduction to metabolism**

1. Define metabolism (C1).
2. Explain what it means giving examples (C2).

**S13: Glycolysis**

1. List the steps of glycolysis and its regulation (C1).
2. Describe the differences between aerobic and anaerobic type of glycolysis (C1).

**S14: Fate of pyruvate**

1. List the sources of pyruvate and its fate (C1).
2. Describe the steps of conversion of pyruvate to acetyl CoA (C1).

**S15: Tri-carboxylic acid cycle (TCA)**

1. List the steps of TCA cycle regulation (C1).
2. Explain its amphibolic nature (C2).

**S16: Electron transport chain**

1. Describe electron transport chain, and the components of electron transfer chain (C1).

2. Outline the sources and fate of NADH+H and FADH<sub>2</sub>. List the steps of oxidative phosphorylation (C1).

### **S17: Pentose phosphate pathway (PPP)**

1. Describe the various steps of PPP and its importance (C1).

### **S18: Gluconeogenesis**

1. Define and describe gluconeogenesis (C1).
2. Explain the regulation of blood glucose level (C2).

### **S19: Glycogen metabolism**

1. Describe the various steps of glycogenesis, and glycogenolysis (C1).
2. Explain their regulation (C2).

### **S20: Glycogen storage disease**

1. Describe the glycogen metabolism (C1).
2. List the glycogen storage diseases (C1).

### **S21: Galactose and fructose metabolism**

1. Describe the pathways of fructose and Galactose metabolism (C1).
2. Discuss the in born errors of metabolism (C2).

### **S22: Lipogenesis**

1. Define and describe lipogenesis (C1).
2. List the sources of acetyl CoA and its fate (C1).

### **S23: Lipolysis**

1. Describe the breakdown of fatty acids (C1)

### **S24: Ketogenesis**

2. Identify significance of ketogenesis pathway (C1).
3. Describe the clinical aspects of ketosis and diabetic ketoacidosis (C1).

### **S25: Cholesterol synthesis**

1. Describe cholesterol metabolism (C1).
2. Describe its derivatives and related disorders (C1).

S26: Metabolism of tricyclglycerol (TAG) and phospholipids 1. Explain the significance of TAG and phospholipids (C2).

2. Describe their biosynthesis (C1).

### **S27: Prostaglandins**

1. Define prostaglandins (C1).

2. Describe their biosynthesis (C1).
3. List their pharmacological uses (C1).

### S28: Lipoproteins

1. Define and classify lipoproteins (C1).
2. Explain the causes of hypercholesterolemia and outline treatment (C2).

### S29: Amino acid metabolism (fate of ammonia and urea cycle)

1. Define transamination and deamination Give examples (C1).
2. Describe urea cycle and its disorders (C1).

### S30: Amino acid metabolism (fate of carbon skeleton of amino acid)

1. Describe the metabolism of aliphatic, aromatic and Sulphur containing amino acids (C1).
2. List disorder of their metabolism (C1)

### S31: Conversion of amino acids to specialized products

1. Describe the conversion of amino acids to specialized product (C1).
2. Describe the specialized products of amino acids specially Tyrosine (C1).

### S32: Metabolism of purine and pyrimidine

1. List the steps of purine and pyrimidine metabolism (C1).
2. Discuss their related disorders (C2).

### S33: WARD ROUND-1: Malnutrition

***Presented with a problem on malnutrition (real or simulated patient or case of obesity, kwashiorkor or marasmus: (a) Identify the problem, (b) explain etiology and underlying mechanisms. and (c) outline management including health promotion and prevention (C2,P2)***

### S34: Vitamins

1. Define and classify vitamins (C1).
2. List the sources and functions of each (C1).

### S35: Water soluble vitamins

1. List water soluble vitamins (C1).
2. Explain the nature of co-enzymes, their biochemical role (C2).
3. Describe deficiency disorders and outline management (C1).

### S36: Fat soluble vitamins

1. List fat soluble vitamin, their biochemical functions (C1).

2. Describe their deficiency disorders and outline management (C1).

### S37: Metabolic adaptation in starving and feed-fast cycle

1. Describe the pathways that occur in the fed, fasting and starved states (C1).
2. Describe hormonal control of the pathways (C1).

### S38: Metabolism of xenobiotics

1. Define xenobiotics. (C1).
2. Discuss their importance (C2).
3. Describe the mechanism of their metabolism (C1).

### Recommended reading material:

- Harper's Illustrated Biochemistry
- Staff PowerPoint presentations and website uploaded lectures
- Guyton. Human Physiology and Mechanism of Disease, WB Saunders, ISBN 0808920030 [IE] Abbas, Basic Immunology, WB Saunders, ISBN 0808922998 [IE].

### Educational strategies and methods (lecture, seminar, practical....etc):

1. Interactive lectures
2. Practical sessions in biochemistry laboratory
3. Ward round in hospital / Tutorials
4. Assignments and visits to specialized centers

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Seminar/Presentation= 5%	MCQs= 20%	MCQs = 40%
Practical/Clinical/Visits= 5%	SQs= 0%	SSQs= 10%
Assignments/Tutorials=0%	Essays/ Short notes=	Essays/ Short notes= non
Others= 0% (e.g. peer)	Others= -----0%	OSPE/SOCE= 20%
<b>Total= 10%</b>	<b>Total= 20%</b>	<b>Total= 70%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required Resources****Premises**

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Laboratory
- Visits to clinics and factories

**Staff**

- Basic medical scientists (biochemists, physiologists)

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

## Gastrointestinal System (ME-GIT-225)- 6 CHs, Block 6 weeks

TITLE: Gastrointestinal System	CODE: ME-GIT-225	DURATION/CREDITS: block /6 CHs - 6-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

This is a six-week block, on the structural details of (1) the structure of anterior abdominal wall, inguinal region, scrotum, testes, abdominal cavity, gastrointestinal tract, associated glands (liver, biliary tract, pancreas, and spleen including innervation, (2) functional aspects of mastication, deglutition, digestion and absorption of food, mobility and homeostatic role of the hepatobiliary system and GI tract, (3) gastrointestinal symptoms of nausea, vomiting, diarrhea, constipation, abdominal pain, distension, etc., (4) common diseases like peptic ulcer, jaundice, infections and infestations, neoplasms and their definite or possible etiology, pathogenesis, and clinical features (5) common investigative procedures applied in GIT (e.g. stools and blood examination, ultrasonography, radiology, endoscopy ), (6) common operative procedures, and (7) essential drugs used in common and serious GIT problems.

### Rationale

The study of this system is of utmost importance since it involves many diseases that humans come across during the whole span of life, diseases of common occurrence ranging from minor to the severe ones. It includes also those problems that require explorative laparotomy for their diagnosis. It involves a complex set of organs and various associated glands and poses great challenge to the doctor especially when confronted with a case of acute abdomen.

The system is also involved in the changes that occur in other systems of the body, it is the system where food on which we depend for life is taken care of: ingestion, digestion, absorption etc., in addition to the fact that it also includes the liver (pow-



er-house) and biliary system.

It is affected by a diversity of diseases of congenital, inflammatory and malignant nature, in addition to various bacterial, viral, fungal and parasitic infections. The GIT is involved in many medical and surgical emergencies. The student should, therefore, know GIT thoroughly well, its structure, function, and how to deal effectively with these emergencies.

## General Learning Outcomes

*By the end of this course the student is expected to:*

1. Identify the organs of alimentary canal and accessory organs of digestion and their structural relationship to each other particularly gross appearance and histological characteristics.
2. Explain the chemical and mechanical basis of digestion, absorption, assimilation, stool formation and defecation in association with various mechanical movements of the parts of GIT including deglutition and peristalsis.
3. Describe the sites of various enzymes, their role on various digestive processes and their utility in clinical application especially their altered activity in disease processes.
4. Describe the structure and correlate it with the function of the various digestive organs.
5. Describe the mechanism of absorption of various nutrients at the molecular level.
6. Explain the role of GIT in the mechanism of homeostasis and describe the effects of fluid, electrolytes and pH imbalance on the system.
7. Explain the etiological factors and associated biochemical and pathophysiological changes in the various common diseases affecting the GIT.
8. Perform the basic clinical skills of the GIT including taking history, physical examination and interpret the given laboratory data.
9. Describe the constitution of the anterior abdominal wall and its various quadrants, conventional lines, surface markings and peritoneal disposition and explain, on the basis of these, the complications due to rupture of hollow viscus.
10. Define the action of the drugs on the various organs of GIT particularly their effects on motility, secretions and control of the activity of bacteria in specific parts of the system.
11. Outline the prevention and control measures for common GIT health problems in the Sudan and the region.

## Intended (specific) Learning Outcomes (ILOs)

By the end of this block the student is able to:

### S1: Introduction to the course

1. Show understanding of the general structure of the course
2. Show list of the outcomes and specific objectives of the course.
3. Explain the bases and contents of the assessment and feedbacks
4. Appoint or elect a student coordinator
5. List hard and soft reading material
6. Explain attendance regulations and consequences of absenteeism
7. Indicate the role of students in evaluation of the course and instructors.

### S2: Anterior abdominal wall

1. **Locate the conventional lines which divide the abdomen into various quadrants (P2).**
2. **Locate and map on the surface of human body and diagrams, the topography of abdominal viscera (P2)**
3. Describe the constitution of the anterior abdominal wall with rectus sheath (C1).

### S3: PRACTICAL -1: Anterior abdominal wall

#### S4: Inguinal region

1. Locate the inguinal canal and name its boundaries (C1).
2. List the structures passing through it in males and females (C1).

#### S5: PRACTICAL-2: Inguinal region

#### S6: Symptoms and signs of GIT illness

1. List the common/possible features of clinical presentation in a patient with GIT disease (C1).
2. Outline the steps in examination of the abdomen List the signs that may be found on clinical examination (C1).
3. Name some extra-abdominal features of GIT diseases that may be found on examination (C1).

#### S7: Hernias of the anterior abdominal wall

1. Define the term hernia (C1).
2. State the different types of abdominal herniae and their risk/causing factors (C1).
3. Differentiate by anatomical position/relations of the types of abdominal hernia (C1).

4. List the possible complications of this hernia (C1).
5. Outline the presentation, differential diagnosis and management of scrotal swellings (C1)

### S8: Peritoneum

1. Define the term “peritoneum” and state its functional importance in the abdomen (C1).
2. Locate the viscera of the GIT individually and describe their specific characteristics, relation with peritoneum (C1).

### S9: Oral cavity and salivary glands

1. Recognize the gross and microscopic structure of the lips and tongue and explain their role in digestive processes (C1).
2. Describe the gross and microscopic structure of parotid, submandibular and sublingual salivary glands and explain salivary secretion regarding its composition, regulation and functions (C1).

### S9: PRACTICAL-3: Oral cavity and salivary gland

### S10: GIT histology

1. Recognize the microscopic structure of the gastrointestinal organs (P2).
2. List the layers forming the walls of the gastrointestinal tract and the cell types of each (C1).
3. Identify the organs of the GIT when viewing slides/specimens under the microscope (C1).

### S11: Pharynx

1. Describe in detail the structure of pharynx (C1).
2. Describe its role in the phase of deglutition (C1).

### S12: Esophagus

1. Identify the gross anatomical features of the esophagus (C1)
2. State the locations of the esophageal constrictions and explain their clinical relevance (C1)
3. **Identify the microscopic features of the esophagus on a specimen/slide (P2)**

### S13: Physiology of mastication and swallowing

1. Describe the role of mastication in digestion (C1).
2. Outline the process of mastication (C1).
3. State the events and control of swallowing (C1)

### S14: Anatomy and physiology of the salivary glands

1. Describe the anatomy of the salivary glands (C1)

### S15: Development of the GIT

1. Outline the normal development of each organ of the GIT (C1)
2. Follow the sequence of normal rotation of the gut (C1)
3. Follow deviations from normal development (if any) and describe their manifestation (C1)

### S16: Pathology of the oral cavity and salivary glands

1. Identify the diseases of the oral cavity like ulcerative stomatitis, candidiasis and aphthous ulcers (C1).
2. Explain the pathogenesis of common salivary gland tumors (C2).

### S17: Pathology of the esophagus

1. Outline the common inflammatory diseases affecting the esophagus, and explain their pathophysiology, complications, investigative procedures and management ((C1).
2. Outline the malignant diseases affecting the esophagus, and explain their pathophysiology, complications, investigative procedures and management (C1).

### S18: Stomach

1. **Identify the stomach in its gross and microscopic structure on specimen/slide (P2).**
2. List the anatomical relations, blood supply and innervation of the stomach (C1).
  1. List the inflammatory conditions affecting the stomach and their complications (C1).
  2. Describe the causes and presentation of stomach ulcer and outline management, prevention and complications (C1).
  3. List the neoplastic diseases affecting the stomach (C1)
1. Outline the management of the inflammatory and neoplastic conditions and prevention of complications (C2).

### S19: Duodenum

1. Identify the duodenum in its gross and microscopic structure on specimen/slide (P2)
2. Recognize the second part of the duodenum and identify its relevant anatomical features (ampulla of Vater) (C1)
3. Discuss the causes and presentation of duodenal ulcer and outline management, prevention and complications (C2).

## S20: PRACTICAL-4: Stomach and duodenum

### S21: Gastric function

1. Explain the chemical and mechanical basis of digestion in the stomach with the role played by the enzymes (C2).
2. Explain the composition, regulation and functions of gastric juice and interpret the gastric function tests including other procedures namely endoscopic procedures and their basis (C2).

### S22: Gastric motility

1. Give an account on physiological basis of gastric emptying and vomiting reflex (C1).

### S23: Normal flora

1. Describe the normal flora of the intestines (C1).
2. Describe the effects of derangement of the normal flora (C1).

### S24: H. pylori

1. Identify the features of H pylori infection and its risk factors (C1).
2. Outline plan for a proper regime for the treatment of ulcers of stomach including the treatment of H. pylori positive cases (C1).

### S25: Liver

1. Identify on specimens the gross structure of liver, lobes, portal vein, portal circulation, sites of portocaval anastomosis, supports, and segments (C1).
2. **Recognize the histological structure of liver and extrahepatic biliary apparatus both under light and electron microscope (P2).**
3. Describe cirrhosis of the liver and explain its etiology, pathogenesis and complications (C1).
4. Outline management and complications of liver cirrhosis (C1).
5. List the neoplastic conditions affecting the liver (C1).
6. Outline management, complications and prevention of neoplastic diseases (C1).

### S26: Biliary system

1. Describe the gross structure of the gall bladder (C1).
2. Trace the formation of the biliary tree (C1).
3. Name the boundaries of Callout's triangle and state its clinical importance (C1).
4. Recognize the histological structure of the extrahepatic biliary apparatus both under light and electron microscope (C1).
5. List the inflammatory and neoplastic conditions of the gallbladder (C1).
6. Discuss the formation, presentation, management and complications of gallstones (C2)..

**S27: Functions of the liver and bile**

1. Explain the role of the liver in digestion (C2).
2. Explain the role of bile in digestion (C2).
3. *Given results of liver function tests interpret them in the light of disease processes (P2).*

**S28: PRACTICAL-5: Liver and biliary system****S29: WARD ROUND-1: Viral hepatitis**

*Given a problem, differentiate the type of hepatitis, explain its responsible agents, pathogenesis, prevention, epidemiology and outline appropriate management (C2,P2).*

**S30: Schistosomiasis**

1. Define schistosomiasis (C1).
2. Explain the mode of infestation of schistosomiasis (C2).
3. Draw, label and discuss the stages of the life cycle (C2).
4. Outline the diagnostic criteria, management, complications and prevention of schistosomiasis (C2).
5. Describe the clinical manifestations of portal hypertension (C1).

**S31: Liver flukes**

1. List the liver flukes (C1).
2. Explain the mode of infestation of liver flukes (C2).
3. Draw and label the stages of life cycle (C2).
4. Outline the diagnostic criteria. Management and prevention of liver flukes (C2).

**S32: WARD ROUND-2: Jaundice**

*Given cases, classify the various types of jaundice on physiological and biochemical bases and outline management including promotive and preventive aspects (C2, P2).*

**S33: Spleen**

1. Identify specimens of the spleen and recognize its gross features (C1).
2. Describe the blood supply of the spleen (C1).
3. Recognize the histological structure of the spleen (C1).
4. List the functions of the spleen (C1).
5. Outline the causes of splenomegaly and the complications of a splenectomy at different ages (C1).

### S34: WARD ROUND-4: Splenomegaly

*Given a patient or written scenario of splenomegaly, use scientific bases to explain the increase in size, vascularity or associated systemic problems, and outline management options (c2,P2).*

### S35: Pancreas

1. **Recognize the pancreas specimen (P2).**
2. Describe briefly the location, relations and blood supply of the exocrine component of pancreas and passages of its secretions (C1).
3. **Recognize the histological appearance of pancreatic tissue (P2).**
4. **Explain the role of the pancreatic juice on digestion with its various enzymes,** and outline abnormalities in digestion that may occur in deficiency of these enzymes (C2).
5. Describe briefly the common inflammatory conditions affecting the pancreas with their etiology, pathogenesis and complications (C1).
6. List the neoplastic conditions of the pancreas and outline the presentation, diagnostic management and complications of pancreatic malignancy (C1).
7. Discuss the role of the pancreas in diabetes mellitus (C1).

### S36: Small intestine (jejunum and ileum)

1. **Recognize specimens/slides, and differentiate the various components of small intestine (jejunum and ileum) macroscopically and histologically (P2)**
2. Describe the blood supply and innervation of the small bowel (C1).
3. Explain the correlation between gross features, structure and function.

### S37: Large intestine (cecum, ascending, transvers, descending and sigmoid, and anal canal)

1. **Recognize specimens/slides, and differentiate the various components of the large intestine macroscopically and histologically (P2)**
2. List the gross differences between small and large intestine (C1)..
3. Describe the blood supply and innervation of the large bowel (C1).
4. Explain their correlation with function (C2)).
5. List the pathological conditions affection the large intestine (C1).
6. Outline the presentation, diagnosis, management and complications of ca colon (C1).

### S38: PRACTICAL-6: Small and large intestine

**S39: GIT motility**

1. Explain the mechanisms involved in gastro intestinal motility and peristalsis (C2).
2. Explain the role of enteric nervous system on various organs (C1)..

**S40: Digestion and absorption**

1. List the various enzymes with their specific role on the various parts of the intestine (C1).
2. Explain the principles governing the absorption of various nutrients in small intestine (C2).

**S41: Defecation**

1. Explain the physiological basis of feces and flatus formation (C2).
2. Explain the role of fibers on the prevention of constipation (C2).

**S42: Diarrheal diseases and shigellosis**

1. Describe the common bacterial diseases including gastro-enteritis and food poisoning affecting the gut with special reference to their bacteriological classification and relationship to diarrhea (C1).
2. Outline the epidemiology, diagnosis and management of diarrhea (C1).

**S43: GIT tuberculosis**

1. Outline the tubercular involvement of GIT (including its epidemiology, microbiology and pathogenesis) (C1).
2. Outline its management, complications and prognosis (C1).

**S44: SEMINAR-1: Large bowel diseases**

1. **Given a problem, explain the etiology and pathogenesis of common inflammatory and neoplastic diseases affecting the large intestine (C2, P2).**
2. Discuss the diagnosis and outline management of cancer in colon, rectum and anal canal (C2).
3. Recognize on slides the pre-cancerous conditions affecting GI system and outline their effective management (C2).
4. **Given a problem of diarrhea, outline its diagnosis and treatment of diarrhea of varied etiology with special reference to ORT (C2,P2)**
5. Outline the sequence of events in irritable bowel syndrome (C1).
6. Identify, classify and describe the pathogenesis of the polyps of GIT system (C1).

**S45: Epidemiology of diarrheal diseases**

1. **Give a brief account on the national program on control of diarrheal diseases (CDD program), evaluate the program and summarize its strengths and areas for improvement (C2<P2).**



2. **Given a case of food poisoning outbreak, explain the etiology and management including epidemiological and prevention and control measures (C2, P2).**

#### **S46: Typhoid fever**

1. Outline the etiology of typhoid fever and the pathology and bacteriology, and diagnostic criteria (C1).
2. Outline management, prevention and complications of typhoid fever (C1).

#### **S47: Cholera**

1. Describe the epidemiology, etiology, bacteriology, and pathogenesis of cholera (C1).
2. Discuss the management, prevention and complications of cholera (C2).

#### **S48: WARD ROUND-5: Abdominal masses**

**Presented with a patient with, or written scenario of, abdominal mass, identify the location, carry out assessment of size, site, consistency and mobility and suggest a diagnosis, outline management and prognosis (C2, P2)**

#### **S49: Malabsorption**

- 1- Describe malabsorption syndrome (C1).
- 2- Explain its etiologic background, pathogenesis and outline of management (C2)..

#### **S50: SEMINAR-2: Blood supply of GIT**

#### **S51: SEMINAR-3: Nerve supply of GIT**

#### **S52: WARD ROUND-6: Acute abdomen**

**Presented with a patient or written scenario with acute abdomen, use the basic science background and clinical skills to suggest investigations and differential diagnosis and propose follow up (C2, P2).**

#### **S52: SEMINAR-4: Acute abdomen**

**Presented with a patient or written scenario with acute abdomen, use the basic science background and clinical skills to suggest investigations and differential diagnosis and propose follow up (C2, P2).**

#### **S53: Imaging of GIT**

**Interpret the normal radiographic images of GIT including: (a) plain abdomen x-ray, (b) barium swallow (esophagus), meal (stomach and duodenum), 'follow through' (small intestine) and enema (large intestine), (c) ultrasound images of liver, gallbladder and pancreas, and (d) CT cuts of the abdomen (P2).**

### Recommended reading material:

- Snell R. Clinical Anatomy, ISBN 078174315x.
- Young, Whether's Functional Histology, Churchill Livingstone, ISBN 0443056188 [IE]
- Guyton. Human Physiology and Mechanism of Disease, WB Saunders, ISBN 0808920030 [IE]
- Abbas, Basic Immunology, WB Saunders, ISBN 0808922998 [IE].
- Yotis/Friedman, Appleton and Lange Review of Microbiology and Immunology, ISBN 007137177x.
- Kumar, Robbins and Cotran Pathological Basis of Disease WB Saunders, ISBN 808923021[IE]
- Rang, Pharmacology, Churchill Livingstone, ISBN 0443072027[IE].
- Patel, Lecture Notes on Radiology, Blackwell, ISBN 0632047585.

### Educational strategies and methods (lecture, seminar, practical....etc):

1. Interactive lectures
2. Practical sessions
3. Tutorials
4. Assignments

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Seminar/Presentation= 10%	MCQs= 20%	MCQs = 30%
Practical/Clinical/Visits= 0%	SQs= 10%	SSQs= 10%
Assignments/Tutorials=0%	Essays/ Short notes=	Essays/ Short notes= non
Others= 0% (e.g. peer)	Others OSPE/OSCE= -----10%	Others OSPE/OSCE= 20%
<b>Total= 10%</b>	<b>Total= 30%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required Resources****Premises**

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Dissection room, museum, laboratories

**Staff**

- Basic medical scientists (anatomists, physiologist, biochemist)
- Physicians/ surgeons/ orthopedic surgeons, microbiologists, pathologists

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

# Basic Epidemiology

## (ME-EPI-312)-2 weeks or longitudinal, 2 credit hours

TITLE: Basic Epidemiology	CODE: ME-EPI-212	DURATION/CREDITS: block or longit /2 CHs - 2-week-
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

This is a 2-week- block or longitudinal, if staff timetable and community arrangements allow during Semester 5, or 6. They consist of theoretical studies on health system, the socioeconomic, psychological, behavioral and environmental factor related to epidemiology of disease and affecting its management, as well as primary health care. Most of the time is this course is devoted to visits to health centers and villages trying to understand the health problems and help the local people and authorities in suggestions and involvement in solving these problems. This is possible through study of epidemiology and health research, and the methods used in community medicine to investigate epidemics, maternal and child health, and control of endemic and communicable diseases.

The longitudinal modules are called ME-COM-312 and 322 (3<sup>rd</sup> Year). The division of the curricular content of the ME-COM modules is based on the activities conducted in the field and the research project identified by the students. . The course is based on theoretical sessions in the Faculty of Medicine and practical training in the PHC Centers.

### Rationale

The purpose of the undergraduate curriculum in community medicine is to expose the students to the problems of the community in order to understand the principles of care of defined populations, based on cost-effective and scientifically sound methods. The curriculum also aims at producing doctors who can understand health in socio-psychological and economic milieu and devise a holistic approach towards care of the individuals, families and communities. The curricular approach also imparts

hands-on training for conducting operational and other research as well as critically appraising scientific literature to keep updated.

The course is essential for the students for understanding health and its determinants together with the factors responsible for disease. This course is offered to facilitate students to acquire the knowledge and skills for providing basic promotive, preventive and selected curative care at the primary and secondary levels.

The students need to understand the basic concepts of epidemiology so that they can apply them in understanding health statistics, investigating epidemics and designing small research projects. They will be able to apply these concepts in understanding and evaluating medical literature.

The course covers the essential elements of reproductive health that is practiced in the PHC setup, creating a broad understanding of issues of reproductive health, and safe motherhood and adolescent health. Inappropriate handling at this critical stage of development may lead to serious consequences ranging from deviant behavior to indulgence in criminal activities.

The course content is intended to strengthen the knowledge base for research. The basic concepts of analytic epidemiology are required for answering research questions. Applied biostatistics is essential for analyzing and interpreting data obtained in the research project.

In addition, the courses touch on occupational health problems and provide orientation to hazards at work places and environment. They also examine some problems in the care of elderly people. These aspects may also be consolidated in other courses.

## General Learning Outcomes

By the end of this course a student should be able to:

1. Understand the Health System of the Sudan with especial emphasis on Primary Health Care (PHC).
2. Describe the demographic characteristics of the Sudan.
3. Understand the importance of epidemiology in the practice of medicine, and the expansion and updating of health information.
4. Recognize the disease pattern in the community.
5. Explain the basic health care for mothers, children, adolescents and the elderly and recommend strategies to address the needs of women of child-bearing age.
6. Consider a general spectrum of possible interventions in management of health problems.
7. Investigate an epidemic.

8. Understand the basics of biostatistics.
9. Plan and write protocol for research, conduct research and write and present the findings.
10. Recognize the features of selected occupational diseases and the need for occupational health services in order to deal with them appropriately.

## Intended (specific) Learning Outcomes (ILOs)

By the end of this course a student should be able to:

### S1: Introduction to the course

1. Show understanding of the general structure of the course
2. Show list of the outcomes and specific objectives of the course.
3. Explain the bases and contents of the assessment and feedbacks
4. Appoint or elect a student coordinator
5. List hard and soft reading material
6. Explain attendance regulations and consequences of absenteeism
7. Indicate the role of students in evaluation of the course and instructors.

### S2: Introduction to basic epidemiology

1. Explain the concept of health and disease (C2).
2. Describe the importance of health and its determinants and factors responsible for disease (C1).

### S3: Definition and aims of epidemiology

1. Define epidemiology, and its aims (C1).
2. Describe the application of an epidemiology in disease processes with respect to person, place and time (C1).

### S4: Data calculation and interpretation

1. *Given a data set, calculate and interpret: (a) sensitivity, (b) specificity, (c) positive predictive value, (d) negative predictive value (P2)*
2. Explain the process of investigating an epidemic of communicable disease and recommend measures for its prevention and control (C2).

### S5: Theories of disease causation

1. Discuss the different theories of disease causation (C2).

### S5: Natural history of disease

1. Apply knowledge of natural history of disease for effective disease prevention and control (C1).

2. Describe the mode of disease transmission (C1).
3. Explain McKeown's concept of disease prevention (C2).

### **S6: Prevention and control**

1. Define the concept of prevention (C1).
2. Explain the level of prevention (C2).
3. Explain the concept of control (C2).

### **S7: Dynamics of infectious diseases**

1. Define infectious diseases (C1).
2. Explain the dynamic of infectious disease and the recommended measures for its prevention and control (C2).

### **S8: Outbreak investigations**

1. Explain the process of investigating an epidemic of a communicable disease (C2).
2. Discuss the steps of outbreak investigation (C2).

### **S9: Surveillance and notification**

1. Define surveillance and concept of notification (C1).
2. Discuss the main objectives of surveillance system (C2).

### **S10: Epidemiology of non-communicable diseases**

1. Define non communicable diseases (C1).
2. Explain the Epidemiology of non –communicable diseases of lifestyle with cancer as model (C2)

### **S11: Screening**

1. Explain the concept of screening and its application in health promotion and diseases prevention (C2).
2. Explain the significance of screening tests giving examples (C2).
3. Evaluate suitability of a disease for screening using standard criteria (C2).

### **S12: Health information system**

1. Define the general concept of health information system (C1).
2. Determine the importance, aims and objectives of health information system (C2)

### **S13: Concepts of health and disease**

1. Define health (C1).
2. Apply the knowledge of natural history of disease for effective disease prevention and control (C1).
3. Explain levels of prevention (C2).

4. Explain the epidemiology of non-communicable diseases of lifestyle with cancer as a model (C2).
5. Describe the environmental and occupational hazards affecting human health (C1).

#### **S14: Data sources and management**

1. Identify the sources of data (C1).
2. Explain the importance of census and state briefly how it is planned and implemented, giving examples from the Sudan or any other country of similar nature (C2).

#### **S15: Measurement of mortality**

1. Define the basic measures in epidemiology (C1).
2. **Explain, calculate and interrupt measures of fertility: Crude birth rate (CBR), total fertility rate (TFR), Gross fertility rate (GFR), Age specific fertility rate (ASFR) (P2)**
3. Explain and interrupt population pyramid and the dynamics of population growth (C2).
4. **Explain, calculate and interrupt measures of mortality: crude death rate (CDR), Age specific death rate (ASDR), Infant mortality rate (IMR), Neonatal mortality rate (NMR), Under five mortality rate (UFMR), Maternal mortality ratio (MMR), Perinatal mortality rate (PNMR). (P2).**

#### **S16: Measurement of morbidity**

1. Explain, calculate and interrupt measures of morbidity: Incidence and prevalence (C2).

#### **S17: Association and causation**

2. Define the concept of association and causation (C1).
3. State the appropriate measures of association (C1).
4. Calculate and interrupt the results of measures of association (C2).

#### **S18: Epidemiological methods**

- 1- Identify the study designs (C1).
- 2- State the strengths and limitations of study designs (C1).
- 3- Explain the biases may be encountered (C2).
- 4- Identify and justify an appropriate study design for given research question (C2).

#### **Recommended reading material:**

- Epidemiology and Statistics, Nordness, Mosby, 978-0323034067
- Staff PowerPoint Notes



- Manson's Tropical Diseases

### Educational strategies and methods (lecture, seminar, practical....etc):

1. Interactive lectures
2. Practical sessions
3. Tutorials
4. Assignments

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Seminar/Presentation= 10%	MCQs= 20%	MCQs = 40%
Practical/Clinical/Visits= 0%	SQs= 10%	SSQs= 10%
Assignments/Tutorials=0%	Essays/ Short notes=	Essays/ Short notes= non
Others= 0% (e.g. peer)	Others OSPE/OSCE= -----0%	Others OSPE/OSCE= 10%
<b>Total= 10%</b>	<b>Total= 30%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\* Ref. Academic Course policy (SC- PP 09)

**Required resources****Premises**

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Computer laboratory
- Hospital health data and statistics

**Staff**

- Epidemiologists
- Statisticians

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

## Professional Skills –3, 4 (ME-SKIL- 311, 321) –2 CHs longitudinal

TITLE: Professional Skills -3.4	CODE: ME-SKIL-311, 321	DURATION/CREDITS: block or longit /2 CHs each 2-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

A 2-hour weekly session during semesters 5-6, to include: (1) advanced communication skills of speaking, hearing, listening, recognizing strengths and weaknesses of close-ended and open-ended questions, nonverbal communications, establishing rapport, interview and be interviewed, dealing with a difficult patient, (2) review taking history and perform examination of respiratory, cardiovascular systems, specifically taking respiration rate, temperature, locate palpable arteries, and accurately take pulse, blood pressure, and history of digestive, musculoskeletal, urinary, reproductive and central nervous system (4) Recognize normal blood cells, basic blood tests for respiratory disease, safety measure in blood taking, administering IV fluids, (5) prepare sputum for detection of mycobacteria, (6) interpret a normal PA chest x-ray, and recognize pneumonia, tuberculosis, and lung mass, and abdominal x-rays of abdominal masses, intestinal obstruction, perforations, (7) interpret a normal ECG and that of myocardial infarction, (8) basic life support skills.

### Rationale

Professional skills programme is one of the most important strands in the Faculty of Medicine curriculum. Medicine is not a theoretical science; it is a practical one. For this reason, to be a good doctor you must not only have a certain amount of knowledge, but you should also be capable of practicing what you know. This cannot be achieved without acquiring the required skills.

Unfortunately, deterioration of the clinical skills level of medical graduates has recently been noted which could be due to difficulty in training on the patients due to humane, religious, or social reasons or allotment of less time for training. For the previous reasons, developing clinical skills units in medical schools has become man-

datory in the study of medicine.

The main aim is to improve the clinical skills of medical students in general and pre-clinical students in particular before their contact with the patients in hospitals and health units in the clinical phase. The programme extends longitudinally throughout the curriculum coordinated with the block/system and the learning problems. In this way the basic clinical skills (social, Lab. and clinical) are acquired early in the programme to give enough time for their perfection before graduation.

### General learning outcomes

The student is expected to acquire at an early stage a core of standardized clinical skills with emphasis on communication and attitudinal dimensions. The objectives of the clinical skill laboratory are:

1. Show understanding of the importance clinical skills, very early in their study, in a standardized way.
2. Learn how to take into consideration the humane side of patients during training, using real patients if possible, and if the procedure is harmful use skills models.
3. Take good history from a colleague or patient for all system of the body in a stepwise manner.
4. Perform proper physical examination.
5. Carry out simple laboratory investigations, and interpret the results of those and others which cannot be carried out by students, including ECG and imaging.
6. Perform life-saving resuscitation, and first aid activities.
7. Observe surgical and interventional procedures, at the level of a general physician and assist in simple ones e.g. skin suturing)

### Intended (specific) learning outcomes (ILOs)

By the end of clinical training a student would be able to:

#### S1: Introduction to the course

1. Explain attendance regulations and consequences of absenteeism
2. List hard and soft reading material
3. Show understanding of the general structure of the course
4. Introduce the various aspects of the course and outline assessment
5. Explain the bases and contents of the assessment and feedbacks
6. Appoint or elect a student coordinator

#### S2: Communication and approach

1. *Show ability of effective communication with (a) colleagues, (b) instructors, (c) patients, (d) co-patients, (e) members of the health team and (f) community members (P3)*
2. *Approach the patient correctly (A)*

### S3: Vital signs

1. *Record the radial pulse including rate, rhythm, volume, and special character (P2).*
2. *Compare the radial to femoral pulse (P2)*
3. *Measure and record vital signs correctly, (pulse, blood pressure, temperature) (P3).*
4. *Examine the arterial pulse in different locations, e.g. radial, brachial, carotid, popliteal, posterior tibial, and anterior tibial (P2P)*
5. *Measure the BP accurately in different persons (obese, lean, males, females, adults, elderly, and children: lying, sitting and standing) (P3).*
6. *Interpret the readings of BP in different positions: standing, sitting, and supine position (P3)*

### S4: Mouth, throat, nose and ear

1. Examine the mouth and throat using tongue depressor and pen torch (P2).
2. *Detect the common abnormalities (in photographs) in mouth and throat (P1).*
3. Enumerate the common reasons for the common abnormalities detected C1).
4. *Examine the nose using the nasal speculum and the otoscope (P2).*
5. Detect the common abnormalities in the nose (in photographs) and enumerate their causes (P1).
6. Examine the external ear by inspection and palpation (P2).
7. Examine the external auditory canal and ear drum using the otoscope (P2).

### S5: The eyes

1. *Take a history from a patient with an eye disease (P2).*
2. *Examine the eye correctly by inspection, palpation and by special tests (P2).*
3. *Observe examination of the fundus of the eye using the ophthalmoscope (P2).*

### S6: History taking from a patient with renal complaint

1. *Take a history from the patient following standard interviewing techniques (P2).*
2. Take a history from a patient with a renal disease, and record symptoms indicating renal involvement (P2).
3. Deal with the patient and co-patient effectively to obtain relevant history (A)

**S7: Examining a patient with a renal problem**

1. *Perform a general examination in a patient with a renal disease with emphasis on, edema, or other signs indicating renal disease (P2).*
2. *Perform inspection, palpation, percussion and auscultation of urinary system correctly, for renal masses or ascites (P2).*
3. Describe the different abnormalities of the abdomen and flanks by inspection (C1).

**S8: Taking history and performing examination for a genital tract problem**

1. Take history from a patient with a genital problem (P2).
2. *Evaluate the stage of growth of the female genital organs in children and adolescents (P2).*
3. Enumerate some common abnormalities in external female genital organs (C1).
4. *Observe the general examination of genital tract (P2).*
5. *Examine and describe the normal female external genital organs (P2).*

**S9: History and examination of a pregnant lady**

1. *Take a history from a pregnant lady (P2).*
2. *Perform general examination of a pregnant lady including edema, hypertension, jaundice, cyanosis, etc. (P2).*
3. *Perform abdominal examination of a pregnant lady including inspection, palpation, percussion and auscultation (P2).*
4. *Evaluate the size of uterus and position of the baby (P2).*
5. *Differentiate between the fetal heart sounds and the mother's heart sounds (P2).*
6. *Examine the breast in females and males correctly (P2).*
7. *Observe ethical precautions (A)*

**S10: Examine a swelling**

1. *Examine a swelling or a mass by different methods: inspection, palpation, percussion, and auscultation (P3).*
2. *Perform special tests to examine a swelling like illumination test and fluctuation test (P3).*
3. *Examine perfectly the lymph nodes of the body including the cervical, axillary, epitrochlear, inguinal, popliteal, and para-aortic lymph nodes (P2).*
4. *Interpret the different possibilities of lymph node enlargement (P2).*

**S11: Urine catheterization**

1. **Assist in urinary catheterization in males using (P2).**
2. Identify Foley's and discuss precautions and complications (C2).

### S12: Genital tract procedures

1. Attend urinary catheterization in females (P1).
2. Attend, PV correctly three times (P1).
3. Describe the normal organs detected by PV (C1).
4. Indicate some common abnormalities that could be detected by PV (C1).
5. Attend speculum examination of female internal genital organs (P1).
6. Attend application of IUD insertion (P1)

### S13: IV injection

1. Attend IV injection in different veins especially cubital vein and veins of dorsum of the hand (P1).
2. Attend peripheral venous cannulation using different types of cannula in different sizes of veins (P1).

### S14: Blood transfusion

1. Indicate the steps of blood transfusion (C2).
2. Perform blood grouping and cross matching (P2).

### S15: Emergency situations

1. Enumerate the most important causes of loss of consciousness (P2).
2. Discuss differentiation between the causes of coma clinically e.g. morphine poisoning and pontine hemorrhage (C2).
3. Attend management of a comatose patient including catheterization, intubations, nutrition, etc (P1).
4. Attend different types of intubations especially nasogastric intubations and endo-tracheal intubation correctly (P1), or perform in a model (P2)..
5. Describe and enumerate the first aid measures in different emergency situations like burn, drowning, hemorrhage, shock, etc. (C1).
6. Describe and enumerate the first aid measures in different emergency situations like burn, drowning, hemorrhage, shock, fractures, choking, myocardial infarction, asthma (C2).
7. Take relevant information from relatives of unconscious patient (P2).
8. Determine the grade of loss of consciousness (P2).
9. Attend examination of a comatose patient (P1).
10. Diagnose the cases which are in need of CPR (P2)..
11. Perform correctly the steps of CPR (P1).

### S16: Imaging for renal problems

1. Identify the technique and normal findings in KUB films, IVU, US kidneys, US pelvic organs, CT of kidneys (P2).

2. Diagnose hydronephrosis, and suggest diagnosis of ureteric reflux and vesical stone (P2).

### **S17: Blood disorders and procedures**

1. *Take a history from a patient with a blood disease (P2).*
2. *Perform general examination for a patient with a blood disease including petechia, purpura, ulcers, etc. (P2).*
3. *Examine the jugular venous pressure (JVP) (P2).*
4. *Identify the common normal and abnormal variations in JVP (P2).*
5. *Attend peripheral venous cannulation using different types of cannula in different sizes of veins (P1).*
6. *Enumerate the steps of blood transfusion (C1).*
7. *Perform ID injection correctly in different sites by different methods, using models(P2).*
8. *Perform SC injection correctly in different areas of the body, using models (P2).*

### **S18: Endocrine system**

1. *Take a history from a patient with a metabolic and/or endocrine disease (P2).*
2. *Perform general examination for a patient with an endocrine or a metabolic disease (P2).*
3. *Select the appropriate investigations required for reaching the final diagnosis according to the findings detected by history taking and general examination (P2).*
4. *Take a history from a patient with a thyroid swelling (P2).*
5. *Perform general examination in a patient with thyroid disease including eye examination (P2).*
6. *Perform local examination of the thyroid gland including inspection, palpation, percussion, and auscultation (P2).*
7. *Suggest the possible cause of swelling of the thyroid gland (P1).*
8. *Take a history from a patient with diabetes mellitus (DM) (P2).*
9. *Perform general examination of a patient with DM including fundoscopy and nervous system examination (P2).*
10. *Detect the presence of complications in DM patient (P2).*

### **S19: Nervous system**

1. *Take proper history (P2)*
2. *Perform a complete and systematic general examination of the patient from head to foot correctly (P2).*
3. *Perform motor examination of the nervous system (NS) including inspection, palpation, percussion and special tests (P2).*



4. *Determine the tone and power of different groups of muscles (P2).*
5. *Determine the distribution and extent of muscle paresis (P2).*
6. *Examine the superficial and deep sensation correctly (P2).*
7. *Examine the coordination and gait of the patient (P2).*
8. Enumerate different types of abnormal gaits (C1).
9. *Perform examination of the cranial nerves correctly (P2).*
10. Enumerate the manifestations of the common cranial nerve paralysis like facial palsy and how to diagnose it (C1).
11. *Perform lumbar puncture and intrathecal injection correctly, using model(P1).*

### **S20: Locomotor system and imaging**

1. *Take a history from a patient with locomotor disease (P2).*
2. *Perform general examination in patients with locomotor disease (P2).*
3. *Examine the locomotor system including the individual joints by inspection, palpation, range of movements and special tests (P2).*
4. *Identify in bone x-rays, the various parts of the skeleton, and diagnose osteosarcoma and osteomyelitis (P2).*
5. *Identify the various parts of the shoulder, hip and knee joints in CT and MRI cuts (P2).*

### **S21: Skin**

- 1- *Perform complete skin examination including inspection, palpation and special tests (P2).*
- 2- *Differentiate, on skin photographs and diagrams, between different skin lesions, primary and secondary (P2).*
- 3- Enumerate the types of sutures and wounds (C1).

### **S22: Pediatrics**

1. Take the history form pediatric patient or his/her mother (P2)
2. Perform examination of a child (P2).
3. Deal effectively with children during history taking and examination (P2).
4. Perform general examination of a child with emphasis on milestones of growth and development (P2).
5. Perform local system examination of children with emphasis on the differences between adult and children examination (P2).
6. Perform suturing of skin wounds correctly and by different methods including interrupted sutures, mattress sutures, and continuous sutures (P2).

### **Steps of teaching a clinical skill**

- The students, firstly, acquire the theoretical knowledge related to the skill to

be taught. This is supplemented by a lecture delivered by a consultant (e.g. internal medicine), followed by demonstration of steps of the examination in a patient (volunteer) or a model.

- The tutor in his class (a group of 7-10 students) again demonstrates the steps of examination on one of the students (peer examination), or on the model according to the steps outlined in the check list. The tutor is not expected to waste time in theoretical instruction as the time is mainly for practical application. The examined student should not stay on bed more than 30 minutes.
- While performing the examination, the tutor should ask students in each step why they are doing it in that manner (technical points).
- The way in which the tutor performs the steps of the skill is the standard way on which both training and assessment will be conducted. For this reason, standard check lists are available for all students and tutors at the beginning of the class (there is no objection for students to know other methods of examination but the standard method agreed here is the only one that would be followed during assessment).
- The tutor should ensure that all students see him/her clearly during examination.
- Students then perform the skill under supervision of the tutor.
- The tutor and student peers should inform students about their mistakes (feed-back).

Assessment is based on a checklist evaluation, during each session and in the final examination at the end of the Semester 6 at the earliest or during the clerkships.

### **There is no immediate end of course examination.**

Recommended reading material:

- PowerPoint notes.
- Hutchisons Clinical Methods

### **Educational strategies and methods (lecture, seminar, practical....etc):**

1. Interactive lectures
2. Practical skills sessions

## Assessment

Final examination of skill is carried out later during clerkships		
Continuous Assessment		<b>Final Examination</b>
<b>Throughout the course</b>	<b>Mid- Exam</b>	
Seminar/Presentation= 0%	MCQs= 0%	Practical skill = 60%
Practical/Clinical/Visits= 0%	SQs= 0%	SSQs= 0%
Assignments/Tutorials=0%	Essays/ Short notes=	Essays/ Short notes= non
Others= 0% (e.g. peer)	Others= -----0%	Others= OSPE--40%
<b>Total= 0%</b>	<b>Total= 0%</b>	<b>Total= 100%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

### \*Grade Descriptors (Rubrics):

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the skill
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the skill
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the skill learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound skill performance
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement and skill performance with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement and skill performance level

\*Ref. Academic Course policy (SC- PP 09)

## Required Resources

### Premises

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Skills laboratory, dissection room, museum, laboratories

### Staff

- Physicians/ surgeons/ orthopedic surgeons, nurses

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

## Research Methodology (ME-RES-227) – 2 CHs, Block 2 weeks

TITLE: Research Methodology	CODE: ME-RES-227	DURATION/CREDITS: block or longit /2 CHs - 2-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

This is a two-week block, on the basis of medical research to include: (1) the importance of research, (2) essentials and requirements of research, (3) framing a research problem/s, (4) developing a knowledge base through literature review on the topic, (5) formulating research question/s, (6) designing an experimental research, (7) collecting information and data, (8) statistical analysis of the data obtained and organizing the results, and (9) discussing the findings with previous research and drawing conclusions.

### Rationale

Carrying out research is a challenging, creative and intellectually satisfying activity. Research develops and advances knowledge, which will improve the services and techniques used to enhance the lives of the people or reduce the suffering and solve the problems affecting the individuals, families and communities. A medical profession is evidence-based and whatever is used in the diagnosis and management of disease or in the promotion of health has to have a sound and correct scientific base, founded on observations, measurements of experimental or naturalistic inquiry. A medical professional has to know how these findings are arrived at and be able in the future to conduct research of his/her own, in the area of interest. The medical councils and other bodies governing the process of health care, put much weight on the conduct of the professional and if her/his practice follows the up-to-date scientific findings.

Intended (specific) learning outcomes

At the end of this course the student should be able to:

### S1: Introduction to the course

1. Show understanding of the general structure of the course
2. Show list of the outcomes and specific objectives of the course.
3. Explain the bases and contents of the assessment and feedbacks
4. Appoint or elect a student coordinator
5. List hard and soft reading material
6. Explain attendance regulations and consequences of absenteeism
7. Indicate the role of students in evaluation of the course and instructors

### S2: Concept of research

1. Show understanding of concept and importance of research and the rationale of conducting research (C2).

### S3: Research ethics

1. *Show understanding of the ethical issues in research, and consider all during the conduct of project (A).*
2. Apply and get approval from authorized research ethics committees (A)
3. Continue to consider ethics during the research conduct (A).

### S4: Research types and steps

1. Define research, types and determine the steps discuss why it is necessary to conduct research (C1).
2. List and outline the essentials of research (C1).

### S5: Writing a research proposal

1. *Discuss philosophical foundation of the research (C2).*
2. *Frame a research problem (P2).*
3. *Determine and include supporting knowledge (P).*
4. *Develop a specific question or query (P2).*
5. *Select design strategy (P2)..*
6. *Set study boundaries (P2).*
7. *Obtain information (P2).*
8. *Analyze information and draw conclusion (P2).*
9. *Share and use the finding (P2)>*

### S6: Selection of a research topic

1. *Describe how to carry out literature search (P2).*
2. *Identify a gap in literature or understanding of issues in the area of specialty (P2).*
3. *Present search on one topic, during the course (P2).*

4. *Write a title for research project that includes all issues to be studied (P2).*

### S7: Literature review

1. Show understanding on how to review literature (C2)
2. Be familiar with literature reviews (C2),
3. *Collect the material for the review (P2)*
4. *Organize material on various subtopics of the title (P2)*

### S8: Study design

1. Identify different types of study designs (C2).
2. *Select study design of the topic selected during the literature review course (P2).*
3. *Practice on how to select the study design (P2)*

### S9: PRACTICAL-1: Searching literature

#### S10: Research objectives

1. Discuss how to develop research objectives (C2)
2. *Review research objectives of scientific papers, and compare yours with the ones in the literature (P2)*

#### S11: Practical steps

1. Show understanding on how to design studying problems (C2).
2. *Design data collection instruments (P2).*
3. *Apply statistical packages to data collected (P2).*
4. Explain how to present results and discuss findings (C2).

#### S12: Variables

1. Describe research variables and their types (C2)
2. Describe how to assess or measure each variable (P2)

#### S13: Sampling

1. Define sampling and discuss rationales of using research sampling (C2).
2. Discuss the different types of study sample (C2).
3. Show understanding about how to select a study sample (C2)

#### S14: Methods of data collection

1. Describe the methods of data collection (C1)
2. Describe the tools of data collection (C1).
3. *Practice on how to develop the tools of data collection (P2).*

**S15: Data management**

1. Discuss the process of data management (C2).
2. Explain the data analysis process (C2).
3. Apply statistical packages (P2).
4. *Present findings in figures and tables (P2)*

**S16: Quality in research**

1. Define the general concept of research quality (C1) .
2. Identify the basic criteria of research quality (C2).
3. *Practice the steps to ensure the quality of research study (P1)*

**S17: Referencing**

1. *Present how to cite or write a reference from a journal, book or website (P2).*
2. *Describe the two main styles of citation and referencing (p2)*

**S18: Writing research report**

1. Determine the steps of report writing (C2).
2. Describe how to publish research findings (C1).
3. Describe how to find impact factor of journal (C1).
4. List five journals with high impact factor (C1).

**Reading material:**

- PowerPoint notes.
- Hutchisons Clinical Methods

**Educational strategies and methods (lecture, seminar, practical....etc):**

1. Interactive lectures
2. Research skills sessions



## Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Seminar/Presentation= 20%	MCQs= 20%	MCQs = 40%
Practical/Clinical/Visits= 0%	SQs= %	SSQs= 10%
Assignments/Tutorials=0%	Essays/ Short notes=	Essays/ Short notes= non
Others= 0% (e.g. peer)	Others OSPE/OSCE= -----0%	Others OSPE/OSCE= 10%
<b>Total= 20%</b>	<b>Total= 20%</b>	<b>Total= 60%</b>

MCQs: Multiple Choice Questions, SQs: Structured Questions.

### \*Grade Descriptors (Rubrics):

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the skill
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the skill
Good (B)	≥ 65 to <75%	Intellectually competent Factually very sound High degree of attaining the skill learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound skill performance
Acceptable (C)	≥ 50 to <60%	Minimal acceptable level of intellectual engagement and skill performance with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement and skill performance level

\*Ref. Academic Course policy (SC- PP 09)

## Required Resources

### Premises

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Dissection room, museum, laboratories

### Staff

- All research staff

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

## Graduation Project (ME-EPID-215) - 3 CHs, a 3-week block and longitudinal for 3 se- mesters 5, 6 and 7.

TITLE: Graduation Project	CODE: ME-GRAD-215	DURATION/CREDITS: block and longit in 5,6,7 /2 CHs - 3-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

This starts in semester 5, with a 3-week block, and continues longitudinally through 6 and 7. It includes the practical part of research following the theoretical part covered in Research Methodology course. The first week includes lectures, seminars and group work to come up with research proposals. The second and third weeks are information about field work, data management, data analysis and drafting reports. The outcome of these three weeks give idea about the first research draft. Each group of 10-20 students is assigned a selected research topic that covers a major health problem in the country and is community oriented. Students will then go to their designated fields to collect data. Supervisors are selected from the pool of NUSU-FOMS staff. Content, methods experts and part-timer supervision are to be invited if needed. Supervisors will meet with students for 2 hours every week. By semester 7 students should submit their final report and present in front of an audience of their peers and supervisors.

### Rationale

Health in general and medicine specifically are among the fastest growing fields of sciences. Everyday new knowledge is gained through research. The practice of medicine and health sciences are expected to be evidence-based. Conduction and utilization of research need skills that have to be built at earlier stages of studentship. Research conduction becomes one of the essential competencies gained in medical schools. The vision of this module goes in line with the NUSU vision. It regards med-

ical graduates as researchers who are able to scientifically identify, define and assess the common health problems of the health system and community.

## General Learning Outcomes

At the end of this course the student should be able to:

1. Show understanding of the basics of research methodology.
2. Adopt the culture of research
3. Conduct a research project and present a final report.

## Intended (specific) Learning Outcomes (ILOs)

At the end of this course the student should be able to:

1. *Identify, select, describe and state research priority topics within the public health and medicine domains (P2).*
2. *Show understanding of the ethical issues in research, and consider all during the conduct of project.*
3. *Review and present the literature relevant to the research topic (P2).*
4. *Select appropriate scientifically sound research design (P2).*
5. *Select, formulate and use specific data collection instruments (P2).*
6. *Estimate the sample size (P2).*
7. *Draw estimated sample through the standard sampling techniques (P2).*
8. *Conduct analysis of the collected data through the usage of appropriate statistical packages (P2).*
9. *Present systematically and methodically the research findings and results (P2).*
10. *Interpret and discuss comprehensively the research findings and results (P2).*

## Assessment

Student present their research in a report paper, and is discussed by a minimum of two examiners, giving a grade. The faculty may decide on grade descriptors for undergraduate research. Student need the same support in other courses. Considerations in selection of topic and field work should be given to student with disabilities.

### Recommended reading material

- Research supervision guidelines

# Urinary System

## (ME-URO-313) - 5 CHs, Block 5 weeks

TITLE: Urinary System	CODE: ME-URO-313	DURATION/CREDITS: block /5 CHs - 5-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

This is a four-week block, on the structural details of (1) the structure of the kidney, ureters, urinary bladder and urethra, and the adjacent posterior abdominal wall and related genital organs, (2) functional aspects of the kidney in the production of urine, excretion of metabolic end products, regulation of blood pressure, body fluids osmolarity and acid base balance, (3) urinary symptoms of renal (urinary) colic, hematuria, dysuria, etc., (4) common diseases like urinary calculi, renal failure, urine retention, neoplasms and their definite or possible etiology, pathogenesis, clinical features (5) common investigative procedures applied in urinary tract problems (e.g. urine and blood examination, ultrasonography, radiology, cystoscopy etc., (6) common operative procedures, and (7) essential drugs used in common and serious urinary problems.

### Rationale

In this block the aim is that the students will be able to learn the scientific basis of various conditions affecting the genitourinary system so that a better clinical management of the patients can be done. Developmentally and anatomically the genital and urinary systems are close to each other. The genital system has an important role in reproduction and will be considered in Reproduction course.

The organs of urinary system consist of the kidneys, ureters, urinary bladder and urethra. The prostate gland, although not an organ of the urinary system, is considered as part of it because the diseases affecting it usually results in urinary problems.

Many urinary problems like infections, lithiasis and tumors affect a large number of population although they are preventable and can be easily diagnosed and treated

early. Ignoring early treatment may lead to renal failure which has a lot of economic and social stress for the family, community and country.

The weather conditions in the Sudan with its hot summers, favor stone formation. Recurrent urinary tract infections, hypertension, and bladder reflex are other common problems. Early identification and treatment of these problems is desired to reduce the mortality and morbidity of urinary diseases.

Students should, therefore, be well equipped with the basic knowledge of these health problems and their underlying mechanisms and with the skills of tackling them both at the level of the individual and the level of the family/community.

## General learning outputs

At the end of this course, the students should be able to:

1. Understand the anatomy of urinary system and its relation to other systems.
2. Study the development of urinary system and its congenital malformations.
3. Recognize the microscopic structure of different parts of urinary system and its relation to function and disease.
4. Study the functions of the kidney, in relation to: (a) fluid osmolarity and volume, (b) acid-base balance and (c) excretion of metabolites and foreign substances, (d) production of erythropoietin and hydroxylation of vit. D.
5. Discuss the pathogenesis of common diseases affecting the urinary system including parasitic infections and outline their management including prevention.
6. Discuss the pharmacology of: (a) drugs used in the treatment of renal diseases, (b) diuretics and (c) drugs causing renal disorders
7. Discuss the prevention of common renal diseases and care of patients with renal failure.

## Intended (specific) outcomes (ILOs)

At the end of this course the student should be able to:

### S1: Introduction to the course

1. Show understanding of the general structure of the course
2. Show list of the outcomes and specific objectives of the course.
3. Explain the bases and contents of the assessment and feedbacks
4. Appoint or elect a student coordinator
5. List hard and soft reading material
6. Explain attendance regulations and consequences of absenteeism

7. Indicate the role of students in evaluation of the course and instructors.

## **S2: Anatomy of the posterior abdominal wall**

1. Identify the posterior abdominal wall muscles, the nerves and vascular supply, and their function (C1).
2. Describe the vertebral level for all branches of the abdominal aorta and the inferior vena cava (C1).
3. Describe the formation of the lumbar plexus and its relationship to the posterior abdominal wall muscles (C1).

## **S3: PRACTICAL-1: Anatomy of the posterior abdominal wall**

1. Identify the posterior abdominal wall muscles (C1).
2. Identify all branches of the abdominal aorta and the inferior vena cava (C1).
3. Identify the branches of the lumbar plexus and its relationship to the posterior abdominal wall muscles (C1).

## **S4: Anatomy of the kidney and ureter**

1. Describe the anatomical features, position and relations of the kidney and ureter (C1).
2. Describe the location and function of the renal artery, renal vein, afferent arteriole, glomerular capillaries, efferent arteriole, peritubular capillaries, and vasa recta (C1).

## **S5: Functional anatomy of the kidney**

1. List and describe the parts of the nephron (C1).
2. Name the function of the corpuscle, distal and proximal tubules and the loop of Henle (C1).
3. Describe the functions of the juxtaglomerular apparatus (C1).

## **S6: Kidney functions**

1. List the functions of the kidney, in relation to: (a) fluid osmolarity and volume, (b) acid-base balance and (c) excretion of metabolites and foreign substances (C1).
2. Discuss the role of kidney in control of blood pressure (C2).

## **S7: PRACTICAL-2: Anatomy of the upper urinary tract**

1. Describe the position and relations of the kidney (C1).
2. Describe the blood supply and venous drainage of the kidneys (C1).
3. Identify the ureter and notice its formation, passway, constrictions, and terminations (C1).

### **S8: Anatomy of the urinary bladder and urethra**

1. Identify the position of the urinary bladder and recognize the internal orifices of the bladder and differentiate the trigone region from the rest of the bladder lining (C1).
2. Define the relationships of the bladder to other pelvic organs in both sexes (C1).
3. Identify the urethra and differentiate between male urethra and female urethra (C1).
4. *Recognize the histological features of the urinary bladder and urethra (P2).*

### **S9: Blood supply of the urinary system**

1. Identify the renal artery, renal vein, afferent arteriole, glomerular capillaries, efferent arteriole, peritubular capillaries, and vasa recta (C1).
2. Identify the blood supply and venous drainage of the ureter, urinary bladder and urethra (C1).

### **S10: Basic renal processes**

1. List and describe the factors that influence filtration pressure and the rate of filtrate formation (C1).
2. Describe the formation of urine (C1).
3. Describe the abnormal renal transport (C1).

### **S11: PRACTICAL-3: Anatomy of the lower urinary tract**

1. Observe the urinary bladder in either its expanded or contracted position, and determine the extent of its peritoneal covering (C1).
2. Recognize the internal orifices of the bladder and differentiate the trigone region from the rest of the bladder lining (C1).
3. Define the relationships of the bladder to other pelvic organs in both sexes (C2).
4. Identify the urethra and differentiate between male urethra and female urethra.

### **S12: Histology of the urinary system**

1. Describe the microscopic structure of different parts of kidney ureter, urinary bladder and urethra (C1).
2. Discuss the suitability of structure to function and disease (C2).

### **S13: PRACTICAL-4: Histology of the urinary system**

1. *Recognize the microscopic structure of kidney and differentiate parts of renal parenchyma and collecting system (P2).*
2. *Identify the histological features of the ureter, urinary bladder and urethra (P2).*



**S14: GFR**

1. Analyze the glomerular filtration rate and its regulation (C1).
2. Explain factors that influence glomerular filtration (C2).

**S15: Tubular reabsorption and secretion**

1. Explain the types of transport mechanisms found along the nephron (C2).
2. Explain how ADH and aldosterone influence the volume and concentration of urine (C2).

**S16: Renal clearance**

1. *Presented with a result of a general urine test, interpret the findings and report what they indicate giving reasons (P2)*
2. List the tests for renal function and their significance (C1).

**S17: Development of the urinary system**

1. Describe the development of primitive urinary system from the pronephros and mesonephros (C1).
2. Describe the development of the urinary system from the metanephros (C1).
3. Describe the development of the urinary bladder and urethra (C1).
4. Discuss the congenital malformations of the urinary system (C2).

**S18: Control of renal hemodynamics**

1. List the renovascular disorders (C1).
2. Describe the renal hemodynamics (C1).

**S19: Renal handling of Na<sup>+</sup> and water**

1. Outline the mechanisms of tubular reabsorption (C1).
2. Discuss the role of the sodium-potassium ATPase pump (C2).

**S20: Renal handling of K<sup>+</sup>**

1. Outline the mechanisms of tubular secretion (C1).
2. Discuss the mechanism of the control of potassium and hydrogen ions (C2).

**S21: Tubular functions**

1. Outline the mechanism of countercurrent multiplication on nephron function (C1).

**S22: Physiology of micturition**

1. Explain the micturition reflex, including the muscles and nerves involved (C2).

**S23: Role of the kidney in acid-base balance**

1. Explain the role of the kidney in the regulation of acid-base balance and elec-

trolyte of the body and how renal failure affects this role (C2).

#### **S24: WARD ROUND-1: History taking, examination and investigations of renal disease**

1. *Handle patient and family with respect and honesty and preserve dignity and privacy(A).*
2. *Look in the history of a patient for bloody urine, concentrated and frothy urine, polyuria, nocturia, evidence of familial polycystic kidney or hereditary nephropathy (P2).*
3. *Inspect urinary system for abdominal masses, pallor, hyperpigmentation, petechial hemorrhage, external genitalia (P2).*
4. *Listen for abdominal bruit (renal artery stenosis, pericardial or pleural friction rub (uremia) (P1)*
5. *Palpate and percuss the flanks (P2)*
6. *Request urinalysis and interpret the results (P1)*

#### **S25: Interstitial renal diseases**

1. Outline the etiology, symptoms and signs of interstitial renal diseases (C1).
2. Outline distinguishing features of acute tubular necrosis (C1).

#### **S26: UTI Clinical assessment and management**

1. List factors predisposing urinary tract infection (UTI) (C1).
2. List most common signs and symptoms present in infection of lower part of UTI (cystitis) (C1).
3. Describe methods of laboratory diagnosis of UTI (C1).
4. Describe methods of collecting urine specimens for urine analysis (C1).
5. *Given a patient (real, simulated or written case) with a UTI problem, identify the problems; interpret the results of urine test provided, suggest the most common agent causing the disease, and how; and outline management, follow up and prognosis (C3,P2).*

#### **S27: SEMINAR-1: Hyper- and hyponatremia and hyper- and hypokalemia**

#### **S28: Tumors of the urinary tract**

1. List the tumors of the urinary tract, and explain their epidemiology and locations (C1).
2. Describe the investigations used to diagnose urinary tract tumors (C1).

#### **S29: Endocrine function of the kidneys**

1. Describe the mechanism of excretion of metabolic products (C1).

### S30: Urinary calculi and obstructive uropathy

1. List the causes and symptoms of renal calculi (C1).
2. List the investigations to diagnose renal calculi and their complications (C1).
3. Outline management of urinary calculi (C2).

### S31: Acute and chronic glomerulonephritis

1. List the causes of glomerulonephritis (C1)
2. Outline the etiology, symptoms, signs, investigations, and management of glomerulonephritis in children and adults (C2).

### S32: WARD ROUND-2: Hematuria

*Given a problem (real or simulated patient or written case) on renal colic, identify the problem and explain the mechanism and type of pain, outline the causes of haematuria, interpret the radiological and laboratory findings in renal calculi, describe the mechanism of formation and types of renal calculi, describe complications of renal calculi outline management options and prevention of renal calculi (C3,P2)*

### S33: WARD ROUND-3; Diseases of the prostate

*Presented with a urine retention male patient (real, simulated or written case) identify most possible cause; outline the underlying mechanisms and pathophysiology including stricture, function and infection of the prostate, benign prostatic hyperplasia and carcinoma of prostate and outline management and follow up (C3,P2)*

### S34: SEMINAR-1: Glomerulonephritis

### S35: UTI and nephrotic syndrome in children

1. List the primary and secondary causes of nephrotic syndrome (C1).
2. Outline the symptoms, sign, pathogenesis, gross microscopic features and fate of the common cases of primary nephrotic syndrome (C1).
3. Enumerate the lines of therapy for minimal change disease with explanation of the role of diuretics and corticosteroids in the management of nephrotic syndrome (C2).

### S36: Renal failure

1. Describe the etiology, pathogenesis and pathological changes seen in renal failure (C1).
2. List drugs that precipitate renal failure (C1).
3. Outline care given to renal failure patients and describe the renal replacement therapy options (C2).

### **S37: Acute and chronic renal failure**

1. Differentiate between and outline clinical and laboratory features of ARF and CRF (C1).
2. List the major pre-renal, renal and post-renal causes of ARF and CRF in children and adults (C1).
3. List the diagnostic tests used to investigate ARF and CRF (C1).
4. *Identify the imaging features of renal failure (P2).*
5. *Outline the management and prognosis of ARF and CRF, including renal replacement therapy (P2).*

### **S38: Urinary tract infection (UTI)**

1. List the causes and the symptoms and signs of upper and lower UTI (C1).
2. Outline the features of acute and chronic pyelonephritis (C1).
3. Describe how to diagnose UTI (C1).
4. List the drugs used in UTI (C1).

### **S39: Epidemiology of renal diseases**

1. Discuss the epidemiology of urinary tract infection and obstructive uropathy (C1).
2. Outline the epidemiology of cystic kidney disease (C1).
3. Outline the epidemiology of renal failure (C1).

### **S40: Prevention and control of renal disease**

1. Discuss the pathogenesis of common diseases affecting the urinary system including parasitic infections and outline their management including prevention (C2).
2. Discuss the prevention of common renal diseases and care of patients with renal failure (C1).

### **S41: SEMINAR-3: Tropical nephrology**

#### **S41: Drugs in the urinary system**

1. Describe the pharmacological mechanisms of drugs used in the treatment of renal diseases (C1).
2. Describe the types and indications of diuretics (C1).
3. List the drugs causing renal disorders (C1).

#### **S42: Imaging of the urinary system**

1. *List the imaging modalities used in investigating renal disorders (P2).*
2. *Describe the normal anatomical structures seen in plain x-ray, IVU and CT (P2).*
3. *List the disorders that can be detected by: (a) plain x-ray, (b) IVU, (c) CT, and (d) radionuclide imaging (P2).*

4. *Identify the structures seen in cross sectional imaging of the posterior abdominal wall (P2).*
5. *Observe and suggest solutions for a poor patient seeking imaging investigations*

### Recommended reading material:

- Snell R. Clinical Anatomy, ISBN 078174315x.
- Young, Whether's Fncional Histology, Churchill Livingstone, ISBN 0443056188 [IE]
- Guyton. Human Physiology and Mechanism of Disease, WB Saunders, ISBN 0808920030 [IE]
- Yotis/Friedman, Appleton and Lange Review of Microbiology and Immunology, ISBN 007137177x.
- Kumar, Robbins and Cotran Pathological Basis of Disease, WB Saunders, ISBN 808923021 [IE]
- Rang, Pharmacology, Churchill Livingstone, ISBN 0443072027[IE].
- Patel, Lecture Notes on Radiology, Blackwell, ISBN 0632047585..

### Educational strategies and methods (lecture, seminar, practical....etc):

1. Interactive lectures
2. Practical sessions
3. Hospital: inpatients, outpatients, ER, OR / Tutorials
4. Assignments

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Seminar/Presentation= 10%	MCQs= 20%	MCQs = 30%
Practical/Clinical/Visits= 0%	SQs= 10%	SSQs= 10%
Assignments/Tutorials=0%	Essays/ Short notes=	Essays/ Short notes= non
Others= 0% (e.g. peer)	Others OSPE/OSCE= -----10%	Others OSPE/OSCE= 20%
<b>Total= 10%</b>	<b>Total= 30%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

Ref. Academic Course policy (SC- PP 09)

**Required Resources****Premises**

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Skills laboratory, dissection room, museum, laboratories
- Hospital inpatients, outpatients, OR/ER

**Staff**

- Basic medical scientists (anatomists, physiologists, biochemists)
- Pathologists, microbiologists, physicians/ surgeons/ nephrologists

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

## Reproductive System (ME-REPRO-314) – 5 CHs, Block 5 weeks

TITLE: Reproductive System	CODE: ME-REPRO-314	DURATION/CREDITS: block / 5 CHs - 5-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

This is a five-week-block, on the structural details of (1) the structure of the male and female reproductive systems (including embryogenesis and fetal growth and mammary gland), and the adjacent posterior and anterior abdominal and pelvic walls, and related urinary organs, (2) functional aspects of the reproductive systems (e.g. menstrual cycle, physiology of pregnancy and lactation, puberty and age-related changes, and hypo- and hypersecretion of male and female gonads), (3) reproductive problems including infertility, bleeding in early or late pregnancy, abnormal and complicated pregnancy, normal and abnormal labor etc., (4) community aspects of reproduction, antenatal care, assisted pregnancy, family health, (5) common investigative procedures applied in reproductive problems (e.g. urine and blood examination, ultrasonography, etc..), (6) common operative procedures, and (7) essential drugs used in common and serious reproductive problems.

### Rationale

The structure and function of the reproductive system is responsible for preservation and continuation of the creatures including human. In humans, it is the basis of obstetrics and gynecology. Recognition of issues in maternal and neonatal health is associated with the physiology and complications of pregnancy and labor. Maternal and neonatal morbidity and mortality are important indicators of status of health care in the country. The Sudan is one of the countries which has to do more to reduce both indicators, through education and professional excellence of health staff.

## General Learning Outcomes

At the end of this course the student should be able to:

1. Describe structure and functions of the male and female genital organs and the breast.
2. Give an account on neoplastic and non-neoplastic pathologies of the male and female reproductive organs and the breast.
3. Discuss infectious agents and pharmacology of therapeutic agents used for management of male and female reproductive disorders.
4. List the steps in process of pregnancy and hormones controlling the process, classify abortion and contraceptives, and describe pathologies of the conceptus

## Intended (specific) Learning Outcomes (ILOs)

At the end of this course the student should be able to:

### S1: Introduction to the course

- 1- Show understanding of the general structure of the course
- 2- Show list of the outcomes and specific objectives of the course.
- 3- Explain the bases and contents of the assessment and feedbacks
- 4- Appoint or elect a student coordinator
- 5- List hard and soft reading material
- 6- Explain attendance regulations and consequences of absenteeism
- 7- Indicate the role of students in evaluation of the course and instructors

### S2: Male and female pelvis

- 1- Enumerate bones forming the wall of the pelvic cavity, pelvis outlet and inlet and name muscles and ligaments attached to them (C1).
- 2- Explain the differences between male and female pelvis (C1).
- 3- Indicate, on a specimen, demarcation of the true and false pelvis (C1).

### S3: Male reproductive anatomy

1. Describe the anatomy components of the male genital system (C1).

### S4: Female reproductive anatomy

1. Enumerate components of the female external genitalia (C1).
2. Describe the blood supply, innervation and lymphatic drainage of the female external genitalia (C1).
3. Outline steps in developments of the female reproductive tract and major anomalies (C1).
4. Describe development of the female external genital organs and associated



anomalies (C1).

### **S5: WARD ROUND-1: Testicular anomaly**

*Presented with a patient (real, simulated or written case) with a common developmental problem of the testis, identify the problem, explain development of the testis and route of its descent; list layers of the scrotum from outside inwards and outline management (C3,P2).*

### **S6: Testicular anatomy and physiology**

1. Describe through illustration the arterial supply and venous drainage of the testis (C1).
2. Enumerate components of the spermatic cord (C1).
3. Describe through illustration the arterial supply and venous drainage of the testis (C1).
4. Name the lymph nodes draining the testis (C1).
5. Given a result of semen analysis, interpret findings and report his/her evaluation (C1).

### **S7: Testicular histology**

1. Describe the main histological features of the testis (C1).
2. Identify components of the seminiferous tubules in a microscope slide and indicate functions of Sertoli cells (C1).
3. Name components of the blood/testis barrier (C1).
4. Identify Leydig cells under the microscope and name their function (C1).
5. Describe the route taken by sperms from the seminiferous tubules to the epididymis (C1).
6. Make an illustration of a cross section of the ductus epididymis (C1).
7. Identify in a dissected specimen the vas deferens, seminal vesicle, ejaculatory duct, prostate and Cooper's gland (C1).

### **S8: Reproductive development**

1. List derivatives of mesonephric and paramesonephric ducts in the male and female (C1).
2. Name common anomalies of the male external genitalia and define phymosis, epispadias and hypospadias (C1).
3. Draw an illustration of tissue layers of the vas deferens (C1).

### **S9: Anatomy of the pelvis**

1. Describe gross features, blood supply, innervation and lymphatic drainage of the penis (C1).

2. Describe histology of penile corpora cavernosa (C1).
3. Give a brief account on the mechanism of erection (C2).

### **S10: Reproductive hormones**

1. List hormones produced by the testis, ovaries and placenta (C1).
2. List hormones involved in gametogenesis and steroidogenesis (C1).
3. Write the steps involved in the synthesis of sex hormones (C1).
4. Mention the regulatory enzymes that participate in synthesis of sex hormones (C1).
5. Enumerate the metabolites of male and female sex hormones (C1).
6. Explain the mechanism of action of steroid hormones on target organs (C1).
7. Explain the metabolism of androgens and their excretion from the body (C1).
8. Indicate functions, serum and urine levels of HCG (C1).

### **S11: PRACTICAL-1: Male reproductive organs**

#### **S12: Anatomy and physiology of the ovary**

1. Describe anatomical relations, peritoneal dispositions, blood supply, innervation, lymphatic drainage and ligaments of the ovary (C1).
2. Make an illustration of tissue components of the ovarian cortex and medulla (C1).
3. Describe the process of follicular development, atresia, and formation of the corpus luteum (C1).
4. Identify, on slide, cells of the ovarian interstitium, mature ovarian follicle and corpus luteum indicating functions of each (C1).
5. Give a brief account on the female reproductive cycles (C1).
6. Enumerate common cysts and tumors of the ovary (C1).

#### **S13: Summary to reproductive physiology**

2. Outline the physiology of coitus (C1).
3. List the hormones of reproduction (C1).
4. List the actions of each hormone (C1).
5. Describe the disorders associated with abnormal hormones (C1).
6. Describe the disorders associated with abnormal genetic constitution.
7. Explain the control of testicular function (C2).

#### **S14: The breast**

1. Enumerate the structures lying deep to the breast (C1).
2. Explain the arrangement and significance of the suspensory ligament of Cooper (C1).
3. List the blood supply and lymphatic drainage of the breast (C1).
4. Describe the structure of the areola and nipple (C1).

5. State the tissue organization of the breast (C1).
6. Differentiate under the microscope between active and nonactive mammary glands (C1).
7. Explain hormonal regulation of lactation (C2).
8. Differentiate benign and malignant tumors of the breast (C2).
9. Define mastitis (C1).

### **S15: PRACTICAL-2: Female reproductive organs**

#### **S16: Genital tract infections**

1. List infections of the male genital tract (C1).
2. Define syphilis, gonorrhoea and LGV (C1).
3. Enumerate viral infections of the reproductive system (C1).
4. Name four bacteria, other than Treponema and Neisseria, causing infection of the reproductive system (C1).
5. List three parasites affecting the reproductive system (C1).
6. List causative organisms of common, sexually transmitted diseases (STD) (C1).
7. Define pelvic inflammatory disease (PID) (C1).

#### **S17: Reproductive pathology**

1. Enumerate lesions affecting the testis, epididymis and scrotum (C1).
2. Describe inflammatory lesions of the female genital mucosa (C1).
3. Enumerate common tumors of the female genital tract (C1).

#### **S18: Fertilization**

1. Describe transport and union of gametes, and implantation (C1).
2. Define in-vitro fertilization (C1).
3. Mention causes of ectopic pregnancy (C1).
4. Describe structure and functions of the placenta (C1).

#### **S19: WARD ROUND-1: Bleeding in early pregnancy**

1. List the common causes of bleeding in early pregnancy (C1).
2. List common causes of miscarriage (C1).
3. Enumerate common trophoblastic diseases

#### **S20: Reproductive system skills**

1. *Attend male and female catheterization (P1).*
2. *Attend PV examination (P1).*
3. *Perform or attend prostatic massage (P2).*
4. *Perform or attend a hysterosalpingogram (P2)*

### S21: Imaging of the reproductive system

1. Identify the bony parts of the human pelvis in anteroposterior x-ray (P2).
2. Identify the uterus, urinary bladder, rectum, prostate, pelvic wall seen in suitable CT axial (transverse) sections of the pelvis (P2).
3. Identify the external iliac, internal iliac and uterine arteries in a pelvic angiogram (P2).
4. Identify the structures demonstrated in midsagittal and transverse suprapubic sonograms (P2).
5. Name the diameters measured in a lateral x-ray pelvimetry (P2).
6. Identify the parts of the genital tract visualized in hysterosalpingogram (P2).

### S22: Menopause

1. Explain mode of action reproductive hormone replacement therapy (C2).
2. Define Male and female reproductive life-span and menopause (C1).

### S23: Ovulation drugs

1. Describe the ovulatory drugs taking into account their contraindications and side effects (C1)
2. Explain the mode of action of oral contraceptives (C2).

### S24: Ethical considerations

1. Explain the ethical issues associated with abortion, assisted reproduction, surrogate mothers, semen banks etc. (A)

### Reading material:

- Snell R. Clinical Anatomy, ISBN 078174315x.
- Qurashi and Tahir, Functional Human Anatomy [Bilingual].
- Young, Whether's Functional Histology, Churchill Livingstone, ISBN 0443056188 [IE]
- Guyton. Human Physiology and Mechanism of Disease, 6e, WB Saunders, ISBN 0808920030 [IE] Abbas, Basic Immunology WB Saunders, ISBN 0808922998 [IE].
- Yotis/Friedman, Appleton and Lange Review of Microbiology and Immunology, ISBN 007137177x.
- Kumar, Robbins and Cotran Pathological Basis of Disease, WB Saunders, ISBN 808923021 [IE]
- Wheater's Basic Histopathology- Churchill Livingstone, ISBN 044307024
- Rang, Pharmacology, Churchill Livingstone, ISBN 0443072027 [IE].
- Patel, Lecture Notes on Radiology, Blackwell, ISBN 0632047585

### Educational strategies and methods (lecture, seminar, practical....etc):

1. Interactive lectures

2. Practical sessions
3. Tutorials /PBL sessions
4. Assignments

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Seminar/Presentation= 10%	MCQs= 20%	MCQs = 30%
Practical/Clinical/Visits= 0%	SQs= 10%	SSQs= 10%
Assignments/Tutorials=0%	Essays/ Short notes=	Essays/ Short notes= non
Others= 0% (e.g. peer)	Others OSPE/OSCE= -----10%	Others OSPE/OSCE= 20%
<b>Total= 10%</b>	<b>Total= 30%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

### Grade Descriptors (Rubrics):

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to <75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to <60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

## Required Resources

### Premises

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Skills laboratory, dissection room, museum, laboratories
- Hospital inpatients, outpatients, OR/ER

### Staff

- Basic medical scientists (anatomists, physiologists, biochemists)
- Pathologists, microbiologists, physicians/ surgeons/ obstetricians/gynecologists

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

## Endocrine System (ME-ENDOC-315), 4 CHs, Block 4 weeks

TITLE: Endocrine System	CODE: ME-ENDO-315	DURATION/CREDITS: block /4 CHs - 4-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

The 4-weeks course is concerned with endocrine glands and metabolism and their problems, it consists of objectives of basic sciences integrated with clinical sciences and skills. It covers the anatomy, histology, development and secretions of these glands, their functions, diseases occurring as a result of reduced or increased production, diagnostic tests and management. The course included related normal metabolic functions and the abnormalities causing diseases like diabetes mellitus, their diagnosis, management and prevention of individual and community.

### Rationale

Endocrine glands constitute one of the important communication systems sending chemical messages to various organs of the body. These messages not only control various systemic effects but also metabolic pathways in the target organs. Thus, endocrines are ultimately and intimately related to metabolism and homeostasis.

The thyroid, adrenal cortex (ziff), and gonads are controlled by the pituitary and hypothalamus by feedback mechanisms. The pancreas, parathyroid and Z.G of adrenal gland are controlled respectively by glucose, Ca, Na (K) levels in the blood. The adrenal medulla and pineal gland are mainly controlled by neural mechanisms.

Any organic or functional abnormality in these organs or in their control mechanisms produces various metabolic and systemic derangements constituting various syndromes and disease states. Diabetes is the leading endocrine disorder which causes not only significant morbidity but also mortality. Thyroid disorders are also common including goiters related to iodine metabolism. Fast air travels and shift systems in

industries may produce disturbances in circadian rhythms related to pineal gland.

## General Learning Outcomes

By the end of this course the student is expected to:

1. Describe the anatomy, histology, and development of individual endocrine glands.
2. Explain biosynthesis, regulation of secretion, mechanism of action and functions (metabolic and systemic) of individual hormones
3. Explain the pathophysiological changes that affect the endocrine glands.
4. Describe the clinical features of endocrine disorders.
5. Explain the physiological, anatomical, developmental and genetic basis of various signs and symptoms in endocrine and metabolic disorders
6. Given lab results on functions of endocrine glands, interpret findings and suggest diagnosis of the conditions and outline their general management.
7. Describe pharmacological uses of hormones and drugs used in common endocrine and metabolic disorders, their administration, dose, degradation, complications, interactions and toxicity.
8. Describe various control mechanisms and their clinical significance.
9. Be aware of the prevalence of various metabolic and endocrine problems in the community.

## Intended (specific) Learning Outcomes (ILOs)

By the end of this course the students are expected to:

### S1: Introduction to the course

- 1- Show understanding of the general structure of the course.
- 2- Show list of the outcomes and specific objectives of the course.
- 3- Explain the bases and contents of the assessment and feedbacks.
- 4- Appoint or elect a student coordinator
- 5- List hard and soft reading material.
- 6- Explain attendance regulations and consequences of absenteeism.
- 7- Indicate the role of students in evaluation of the course and instructors

### S2: General aspects of endocrine system

- 1- Define endocrinology and the function of the endocrine system (C1).
- 2- Describe the mechanism of hormone release (C1).
- 3- List the endocrine system elements (C1).



### S3: Anatomy of thyroid gland

- 1- Describe the basic anatomy of thyroid and para thyroid gland (C1).
- 2- List the relations of thyroid gland (C1).
- 3- Describe its blood supply (C1).
- 4- Describe the metabolism and mechanism of action of thyroid hormone (C1).
- 5- Discuss the role of iodine in the thyroid hormone synthesis (C2).

### S4: Histology of the thyroid and parathyroid

- 1- Describe the basic histology of thyroid and para thyroid gland (C1).
- 2- Describe the relations of the gland (C1).
- 3- Detail the blood supply of the thyroid (C1)

### S5: Physiology of the thyroid gland

- 1- Describe the chemical nature and the steps of thyroid hormone synthesis (C1).
- 2- Discuss the physiologic effect of T3 and T4 (C2)
- 3- Explain the role of hypothalamic anterior pituitary axis in regulation of T3 and T4 (C2).
- 4- Explain the features of hypo and hyperthyroidism and their physiologic effect (C2)

### S6: Hyper and hypothyroidism

1. Define hypo and hyperthyroidism, and list the causes of each (C1).
2. Describe the symptoms, signs and laboratory finding of hypo and hyperthyroidism (C1).
3. List the complications and treatment of hypo and hyperthyroidism (C1)

### S7: Pathology of the thyroid gland

- 1- Describe the etiology, pathology and clinical features investigation and management of common conditions resulting from hyper or hypothyroidism (C1).
- 2- List the different thyroid tumors, their etiology pathophysiology symptoms, signs, investigations and outline management (C1).

### S8: Hypothalamo-hypophyseal axis

- 1- List the hormones of the anterior lobe of pituitary hormones (C1) .
- 2- Demonstrate understanding of the mechanism of action and physiologic effect (C1).
- 3- Explain hypothalamic regulation of anterior pituitary gland (C2)..

### S9: Types of hormones

- 1- Define hormones and classify them (C1).
- 2- Describe their biological function (C1).

**S10: Hormone receptors and action**

- 1- Define receptors and list their different types (C1).
- 2- Explain hormonal signal transduction and discuss their mechanism of action (C2).

**S11: Anatomy of pancreas**

- 1- Describe the basic anatomy of the pancreas (C1).
- 2- Describe the blood supply of the pancreas (C1)

**S12: Histology of pancreas**

- 1- Describe the normal histology of the pancreas (C1).
- 2- Describe the histological appearance of the islets of pancreas? (Langerhans) (C1).

**S13: Hormones of anterior lobe of pituitary**

- 1- List the hormones of the anterior lobe of pituitary gland (C1).
- 2- Discuss the mechanism of action and the physiologic effect of anterior pituitary hormones (C1).
- 3- Describe the hypothalamic regulation of anterior pituitary hormones (C1).
- 4- Relate the features of hyper secretion of pituitary hormones to their physiologic effect (C1).

**S14: Hormones of posterior pituitary**

1. List the hormones of posterior pituitary gland (vasopressin & oxytocin) (C1).
2. Discuss mechanism of action and physiologic effect of posterior pituitary hormones (C2).
3. Describe the role of hypothalamus in synthesis of vasopressin and oxytocin (C1).

**S15: Hypoactivity of pituitary gland**

1. List the causes of pituitary hormones deficiencies (C1).
2. List the main clinical disorders related to pituitary gland hormones (C1).
3. Explain the physiological basis of signs and symptoms of pituitary disorders (C2).
4. Outline the main therapeutic approaches for hypopituitarism (C1)
5. Outline the etiology, clinical features, investigations and management of common conditions resulting from hypo- and hyperpituitarism (C2)

**S16: Hyperactivity of pituitary gland**

1. Explain the physiologic basis of signs and symptoms of pituitary disorders (C2).
2. List the main therapeutic approaches for hyperpituitarism (C1).

**S17: Anatomy and histology of the suprarenal (adrenal) gland**

1. Describe position and relations of adrenal gland (C1).
2. Describe the blood supply and innervation of adrenal gland (C1).

3. Describe histological structure of adrenal gland (C1).
4. Identify, in a histological section, the cells that produce the hormones (C1).

### **S18: Physiology of adrenal gland: cortex and medulla**

1. Describe the chemical nature & synthesis of glucocorticoids and mineralocorticoids (C1).
2. Discuss the physiologic effect of each (C2).
3. Describe the pathophysiology of Cushing Cons and Addison diseases (C1)
4. Describe steps of synthesis of Catecholamine (C1).
5. Discuss the physiologic effect adrenaline and nor adrenaline and dopamine (C1).
1. Describe adrenergic receptors (alpha1, alpha2, beta1, beta2) (C1).

### **S19: Pathology of adrenal gland**

2. List the condition and explain the etiology, pathophysiology, investigations and outline management of adrenal gland disorders (C1).

### **S20: Hormonal control of calcium and phosphorus metabolism**

1. List the steps of vitamin D synthesis and activation (C1).
2. Describe the physiologic effect of calcitriol parathyroid hormone and calcitonin in calcium metabolism. Discuss the regulation and secretion of parathyroid hormone (C1).
3. Outline manifestation of deficiency and hypersecretion of these hormones (C1).

### **S21: Parathyroid and calcium-related disorders**

1. Define hyper and hypocalcemia and list the causes and describe the clinical features (C1).
2. Describe the morphology of parathyroid hyperplasia, adenoma and carcinoma (C1).
3. Discuss the types of hyperparathyroidism by laboratory investigations (C2).
4. Contrast between primary, secondary and tertiary hyperparathyroidism by laboratory investigations (C2).
5. Describe pseudo hyperparathyroidism and its clinical features (C1).

### **S22: Pancreatic hormones**

1. Describe the structure, synthesis and site of secretion of pancreatic hormones (C1).
2. Discuss the mechanism of action and physiologic effect of pancreatic hormones (C2).
3. List the stimulatory and inhibitory factors that regulate insulin and glucagon secretion (C1).
4. Discuss the pathophysiology of DM (C2).

**S23: Pathology of the endocrine pancreas**

1. Describe pathogenesis of pancreatic hormones disorders (C1).
2. Outline causes and clinical features of DM and complications of DM (C1)

**S24: Diabetes mellitus**

1. Define the types and causes of DM (C1).
2. Describe the pathophysiology of each type of DM (C1).
3. Outline complications of DM (C1).
4. Outline management of DM (C1).
5. Outline management of diabetic ketoacidosis (C2).

**S25: Development of endocrine glands**

1. Name the embryological tissues that give rise to the various endocrine glands (C1).
2. Describe the developmental changes and events occurring during the development of the endocrine gland (C1).
3. Explain the link between specific adult conditions and developmental defects (C2).

**S26: Multiple endocrine disorders (acromegaly, gigantism, dwarfism)**

1. Define causes of acromegaly gigantism and dwarfism (C1).
2. Identify types of dwarfism (C1).
3. Describe the pathophysiology, clinical findings and management of complications of acromegaly (C2).

**S27: Multiple endocrine disorders (Addison's, Cushing syndrome and Conn's syndrome)**

1. Define and describe causes and types of Addison, Cushing and Conns syndrome (C1).
2. Describe the pathophysiology, symptoms, signs and laboratory finding of Addison, Cushing and Conns syndrome (C2).

**S28: SEMINAR-1:**

***Given lab. results of thyroid function tests, comment on function in relation to the presenting symptoms and signs of the patient and explain the synthesis, regulation of secretion, mechanism of action and functions of thyroid hormones (P2).***

**S29: SEMINAR-2:**

***Given a problem (real or simulated patient or written case) with Cushing syndrome, pheochromocytoma or Addison's disease, identify the condition and explain an etiology, pathophysiology and lines of investigation, and outline management including prevention (P2).***

### Recommended reading material:

- Snell R. Clinical Anatomy, ISBN 078174315x.
- Qurashi and Tahir, Functional Human Anatomy [Bilingual].
- Young, Whether's Functional Histology, Churchill Livingstone, ISBN 0443056188 [IE]
- Guyton. Human Physiology and Mechanism of Disease, 6e, WB Saunders, ISBN 0808920030 [IE]
- Abbas, Basic Immunology WB Saunders, ISBN 0808922998 [IE].
- Yotis/Friedman, Appleton and Lange Review of Microbiology and Immunology, ISBN 007137177x.
- Kumar, Robbins and Cotran Pathological Basis of Disease, WB Saunders, ISBN 808923021 [IE]
- Wheater's Basic Histopathology- Churchill Livingstone, ISBM 044307024 Rang, Pharmacology, Churchill Livingstone, ISBN 0443072027[IE].
- Patel, Lecture Notes on Radiology, Blackwell, ISBN 0632047585

### Educational strategies and methods (lecture, seminar, practical....etc):

1. Interactive lectures
2. Practical sessions
3. Tutorials
4. Assignments

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Seminar/Presentation= 10%	MCQs= 20%	MCQs = 30%
Practical/Clinical/Visits= 0%	SQs= 10%	SSQs= 10%
Assignments/Tutorials=0%	Essays/ Short notes=	Essays/ Short notes= non
Others= 0% (e.g. peer)	Others OSPE/OSCE= --- 10%	Others OSPE/OSCE= 20%
<b>Total= 10%</b>	<b>Total= 30%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required Resources****Premises**

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Skills laboratory, dissection room, museum, laboratories
- Hospital inpatients, outpatients, OR/ER

**Staff**

- Basic medical scientists
- Physicians/ surgeons/ endocrinologists/ pathologists

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

## Structure of Head and Neck (ME-HAN322) - 2 CHs, Block 3 weeks

TITLE: Structure of Head and Neck	CODE: ME-HAN-322	DURATION/CREDITS: block /2 CHs - 3-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

A three-week block during semester 5 or 6, concerned with the detailed anatomical description of the head and neck, including the face, orbit, eye, mouth, nose, ear, surface and inside of the cranial cavity, and all common injuries affecting them. It details the position of the anatomical relations of the neck muscles, nerves. Vessels, organs and actions, with special emphasis on larynx and pharynx-their cavities, muscles, nerves, muscle actions and common lesions affecting them.

### General Learning Outcomes

By the end of this module the student should be able to:

1. Describe the anatomical features of the face and cranial cavity
2. Discuss the structural relationships and functional significance of the eye and orbit
3. Identify the various bones, muscles, facial planes and viscera in the neck, and trace the course of nerves and vessels.
4. Describe the various parts, structure, relations of the pharynx and larynx
5. identify the boundaries and contents of the infratemporal and pterygopalatine fossa, nose and mouth.

### Intended (specific) learning outcomes

By the end of this module the student should be able to:

#### S1: Introduction to the course

1. Show understanding of the general structure of the course Show list of the

- outcomes and specific objectives of the course.
2. Explain the bases and contents of the assessment and feedbacks.
  3. Appoint or elect a student coordinator
  4. List hard and soft reading material.
  5. Explain attendance regulations and consequences of absenteeism.
  6. Indicate the role of students in evaluation of the course and instructors

## **S2: Introduction to the anatomy of head and neck**

1. Describe the anatomical features of the face and cranial cavity (C1).
2. Discuss the structural relationships and functional significance of the eye and orbit (C2).
3. Identify the various bones, muscles, facial planes and viscera in the neck, and trace the course of nerves and vessels (C1).
4. Describe the various parts, structure, relations of the pharynx and larynx (C1).
5. Identify the boundaries and contents of the infratemporal and pterygopalatine fossa, nose and mouth (C1).

## **S3: PRACTICAL-1: Cervical vertebrae**

1. **Identify the cervical vertebrae (P2).**
2. **Identify the various parts and their articulations and connections with each other (P2).**
3. Describe the types and ranges of movements possible at various levels (C1).

## **S4: PRACTICAL-2: External features of the skull**

1. **Identify the bony parts of the face and cranium (on skull or images), including the foramina (P2).**
2. **Identify structures passing through foramina (P2),**
3. Outline the types and complications of facial and cranial bone injury, particularly in road traffic accidents (RTA) (C2).

## **S5: PRACTICAL-3: Internal features of skull**

1. **Trace the arterial supply, to the head and neck, name the various components and interconnections, and follow the venous drainage from within the cranial cavity (P2).**
2. **Identify the layers of the scalp (P2).**
3. **Identify the meninges, the spaces between them, their reflections and the lesions associated with them (P2).**
4. **Identify the dural venous sinuses, and trace the direction of blood in each sinus (P2).**
5. **Identify the roots of cranial nerves and points of exit (or entry) from (or into) the cranial cavity (P2).**



### S6: PRACTICAL-4: Posterior triangle of the neck

1. Identify triangles of the neck, their boundaries and contents (C1).
2. Identify the muscles of the neck and describe their nerve supply and actions (C1).
3. Identify the facial planes in the neck, and their relationships to muscles and viscera (C1).
4. Trace the arterial supply, venous drainage and lymphatic passages and nodes in the head and neck (C1).

### S7: Cervical plexus

1. Trace the source, course and functions of nerves and nerve a plexus in the neck noting specially the location and relations of:
  - a. the portions of the cervical and brachial plexuses (C1).
  - b. branches of cranial nerves IX-XII, (C1).
  - c. the sympathetic trunk, (C1) and
  - d. the functional deficits resulting from damage to any of the above (C2).

### S8: Root of the neck

1. Name the muscles of the neck and describe their nerve supply and actions (C1).
2. Describe the facial planes in the neck, and their relationships to muscles and viscera (C1).

### S9: Fascia of the neck

1. Describe the fascia of the neck, its parts, attachment and function (C1).
2. Outline clinical application of knowledge of facial planes (C1).

### S10: PRACTICAL-5: Anterior triangle of the neck

1. Identify triangles of the neck, their boundaries and contents (C1).
2. Identify muscles of the neck and describe their nerve supply and actions (C1).
3. Identify the facial planes in the neck, and their relationships to muscles and visceram (C1).

### S11: Face and scalp

1. Name the facial muscle terminology and identify the muscles surrounding the orbit and mouth (C1).
2. **Identify the layers of the scalp (P2).**
3. Name and trace the source and distribution of the sensory and motor branches of nerves in the face and scalp and follow them to their origins (C1).
4. Indicate the major arterial supply and venous drainage of the face and scalp, identify the major vessels (C1).
5. Name and trace the source and distribution of the sensory and motor branches of nerves in the face and scalp (C1).

6. Follow the branches of the nerves to their origins (C1).

### **S13: Temporomandibular joint (TMJ)**

1. Describe the articular parts of the TMJ, its type and capsule (C1).
2. Name the muscles acting on the TMJ, their action and innervation (C1).

### **S14: PRACTICAL-6: Blood supply of head and neck**

1. Trace the arterial supply, to the head and neck (C1).
2. Name the various components and interconnections, and follow the venous drainage from within the cranial cavity (C1).
3. Trace the arterial supply and venous drainage in the head and neck (C1).

### **S15: Lymphatic drainage of head and neck.**

1. Follow lymphatic passages and their nodes in the head and neck (C1).
2. Relate the lymphatic drainage of the head and neck to relevant clinical conditions (C1).

### **S16: PRACTICAL-7: Temporal, infratemporal and pterygopalatine fossae**

1. Locate the three fossae and describe their boundaries and contents (C1).
2. Name and identify the muscles of mastication, detailing their attachments, innervations and actions (C1).

### **S17: Anatomy of the ear**

1. Describe with details the three main parts of the ear: external, middle and internal and their relations (C1)
2. Describe the main features of the parts transmitting sound waves (C1).

### **S18: PRACTICAL-8: Orbit and eye**

1. Name and identify the bones or parts of the bones forming the boundaries and margins of the orbit (in skull or images), outlining the types of fractures common in this region (C2).
2. Describe the relative position of the eyeball in the orbit (C1).
3. Describe the orientation of the extra-ocular muscles, and discuss their nerve supply and actions, detailing the clinical tests for their functional integrity or deficits resulting from nerve injury (C2).
4. Outline the common pathological entities affecting the eye and orbit (C1).
5. Describe the sources, courses and functions of the autonomic supply to the eyeball (C1).

### **S19: PRACTICAL-9: Oral cavity**

- 1. Identify the parts of the nasal and oral cavity, detailing the muscles of the**

***tongue, their innervations, actions and effects of damage to the nerve (P2).***

2. Trace the nerves and vessels supplying the components described in this section (C1).

### **S20: Salivary glands**

1. Identify the salivary glands, describing their position, relations, structure, role and effects of common lesions (C1).
2. Trace the nerves and vessels supplying the components described in this section (C1).

### **S21: Pharynx and esophagus**

1. Name the muscles of the pharynx, identify each, and describe their innervations and actions (C1).
2. Describe the pharyngeal cavities, and how can they be visualized, and what are the expected lesions (C1).

### **S22: Development of head and neck**

1. Describe development of the structures of the head and neck (C1).
2. Describe congenital malformations of the head and neck development (C1).

### **S23: PRACTICAL-10: Nose, nasal cavity and paranasal sinuses**

1. Name and identify the parts of the nasal cavity and paranasal sinuses, their communications, and discuss their functions and common lesions affecting them (C1).
2. Trace the nerves and vessels supplying the components described in this section (C1).

### **S24: Larynx and trachea**

1. Name and identify the cartilages of the larynx, the extrinsic and intrinsic muscles, their nerve supply and the role played by each in the laryngeal movements, noting especially the effects of bilateral and unilateral injury to the external and recurrent laryngeal nerves (C1).
2. Describe the beginning and termination of the trachea its blood supply and innervation

### **S25: WARD ROUND-1: A swelling in the neck**

***Presented with a patient or written scenario of swelling in the neck, use the anatomical knowledge to short list the organs involved, and knowledge of pathology and microbiology to short list the lesions, and clinical skills to examine, investigate, suggest a diagnosis and outline management (C2,P2).***

### S26: Imaging of head and neck

1. Review the techniques used for imaging of the head and neck (P2).
2. *Describe the clinical imaging aspects of head and neck radiography (P2).*
3. *Describe imaging features and diagnosis of CVA, space occupying lesions, metastatic lesions (P2).*

### Reading material:

- Snell R. Clinical Anatomy, ISBN 078174315x.
- Kumar, Robbins and Cotran Pathological Basis of Disease, WB Saunders, ISBN 808923021[IE]
- Wheater's Basic Histopathology- Churchill Livingstone, ISBN 044307024
- Rang, Pharmacology, Churchill Livingstone, ISBN 0443072027[IE].
- Patel, Lecture Notes on Radiology, Blackwell, ISBN 0632047585

### Educational strategies and methods (lecture, seminar, practical....etc):

1. Interactive lectures
2. Practical /Tutorial sessions

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Seminar/Presentation= 10%	MCQs= 0%	MCQs = 20%
Practical/Clinical/Visits= 0%	SQs= 0%	SSQs= 10%
Assignments/Tutorials=0%	Essays/ Short notes=	Essays/ Short notes= non
Others= 0% (e.g. peer)	Others OSPE/OSCE= -----20%	Others OSPE/OSCE= 40%
<b>Total= 10%</b>	<b>Total= 20%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required Resources****Premises**

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Skills laboratory, dissection room, museum, laboratories
- Hospital inpatients, outpatients, OR/ER

**Staff**

- Basic medical scientists (Anatomists)
- Physicians/ general surgeons/ ENT surgeons, ophthalmologists,

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

## Nervous System and Special Senses (ME-CNS-323), 8 CHs, 8 weeks

TITLE: Nervous System and Special Senses	CODE: ME-CNS-323	DURATION/CREDITS: block /8 CHs 8-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

This is an 8-weeks course that covers the basic and clinical sciences of the nervous system including the special senses, all integrated with the necessary skills, around common problems. The content detailed in the comprehensive objectives below includes the anatomy of the central nervous system, peripheral and cranial nerves and plexuses, autonomic nervous system, their histological and developmental features, their functions, common problems, methods of examining the systems, diagnosis, management and prevention.

### Rationale

The nervous system is the master controlling system of the body. It is responsible for all behaviors - indeed every thought, action, and emotion reflect its activity.

Diseases like congenital malformations of brain and spinal cord are prevalent in the Sudan and students should be able to manage such patients and council parents with such children. In the past such diseases were not diagnosed early and the patients were left untreated, but in the present era of modern technology, the presence of highly sophisticated diagnostic techniques has made it possible for the early detection, diagnosis and management. Infectious diseases of the nervous system like poliomyelitis, cerebrospinal meningitis (CSM), encephalitis etc., which cause morbidity and mortality, can be prevented and managed if appropriate measures are taken. Meningitis is a great hazard Appropriate vaccination, awareness programme for the community and other preventive measures are adopted to prevent it. Cerebravascular accidents (CVA) are a major threat to the community and the family. Likewise, are

psychological, psychosocial and behavioral problems resulting from CVA need to be managed and cautiously dealt with. Knowledge of drugs that effectively cross the blood-brain barrier is very vital for the good management of nervous system diseases. Tumors of the brain, benign or malignant are common in this part of the world. There are also systemic diseases which affect the nervous system like diabetes and hypertension etc.

Literally hundreds of disorders affect the nervous system. A neurological examination attempts to trace the source of the problem through evaluation of the sensory, motor, behavioral, and cognitive functions of the nervous system. The doctor of tomorrow should understand how these conditions/problems come about, and understand the structure function, biochemistry and malfunction of the nervous system for proper management. The use of magnetic resonance imaging (MRI), positron emission tomography (PET), digital subtraction angiography (DSA), computerized tomography (CT) scans, electro-encephalography (EEG), etc. have improved the quality of life for many patients.

Most of the doctors in general practice come across patients with disease of the eyes, ears, nose, and throat (ENT). Similarly, the psychological and behavioral disorders are also not very uncommon they need to know the function, biochemistry and malfunction of the nervous system and be able to deal with them.

Blindness and hearing impairment are the topics of the day. Therefore, the training of the students from the beginning should include the relevant material from these specialties with major emphasis on the prevalent problems in the Sudan

#### General Learning Outcomes

By the end of this course, the student should be able to:

1. Review the gross features of the head and neck.
2. Identify and describe structure of the nervous system and its components,
3. Describe and explain various functions of the nervous system components and special senses,
4. Describe common pathological deviations that affect the functions of the nervous system components and consequences of these changes,
5. Explain the underlying pathophysiological basis of common neurological and special sense disorders,
6. Approach a possible neurological and special sense problems in a logical sequence,
7. **Take appropriate history from, and conduct systematic physical examination on a patient with nervous system complaint.**
8. **Perform and request some basic neurological and special senses tests and investigations necessary in diagnosis of common disorders of the nervous system, and**

9. Outline clinical management plans for common neurological and special sense disorders,
10. Identify psychological, social and economic impacts of some common neurological disorders in the community.
11. Identify drugs used in the management of common neurological disorders,

## **Intended (specific) Learning Outcomes (ILOs)**

At the end of this course, the student should be able to:

### **S1: Introduction to the course**

1. Show understanding of the general structure of the course.
2. Show list of the outcomes and specific objectives of the course.
3. Explain the bases and contents of the assessment and feedbacks.
4. Appoint or elect a student coordinator.
5. List hard and soft reading material.
6. Explain attendance regulations and consequences of absenteeism
7. Indicate the role of students in evaluation of the course and instructors..

### **S2: Topography of the CNS**

1. List the basic functions of the nervous system (C1).
2. Explain the anatomical and functional classification of the nervous system (C2).
3. Define the central nervous system and peripheral nervous system and list the major parts of each (C1).

### **S3: PRACTICAL -1: Topography of CNS**

1. Recognize the major parts of central nervous system and peripheral nervous system in specimens (P3).

### **S4: Histology of CNS**

1. Describe the important anatomical regions of a neuron and relate each to a physiological role (C1).
2. Explain the importance of myelin sheath and describe how it is formed in the central nervous system (CNS) and peripheral nervous system (PNS) (C2).
3. Classify neurons structurally and functionally, and their major functional properties (C2).
4. Differentiate between a nerve and tract and between a nucleus and ganglion (C2).
5. List the types of supporting cells and cite their functions (C1).
6. Describe the role of astrocytes and nerve cell adhesion molecules (N-CAMS) in neuronal differentiation (C1).
7. Describe the microscopic structure of the components of brainstem (C1).



8. Describe the microscopic structure of the brain (cerebrum) (C1).

### **S5: PRACTICAL-2: Histology of CNS**

1. List the staining methods used to stain the brain (C1).
2. In a stained nervous tissue demonstrate the cells and recognize a neuron from neuroglia (C1).

### **S6: Development of nervous system**

1. Describe the development of neuron and neuroglia (C1).
2. Explain the embryonic development and differentiation of nervous tissue into gray and white matter, and describe the composition of gray and white matter (C2).
3. Explain the epithelial origin of nervous tissue (C2).
4. Describe the embryonic development of spinal cord (C1).
5. Describe the process of brain development, defining the alar and basal laminae and mentioning the prosencephalic, mesencephalic and rhombencephalon derivatives (C1).
6. Indicate several maternal factors that can impair development of the nervous system in an embryo (C1).
7. Enumerate the congenital malformation of NS including anencephaly, spina bifida, meningomyeloceles, meningo-encephalocele, Arnold – Chiari malformations, microcephaly, polymicrogyria, etc.... (C1).
8. Describe the developmental relationship between the segmented arrangement of peripheral nerves, skeletal muscles, and skin development (C1).

### **S7: WARD ROUND-1: Hydrocephalus**

***Presented with a child with a large head or similar verbal or written scenario; use relevant history, physical examination to explain the underlying mal-development, suggest a diagnosis and outline management (C3,P2).***

### **S8: Anatomy of spinal cord (external features)**

1. ***Identify the following features of the spinal cord: length, meninges, enlargements, sulci and fissures (P3).***
2. Describe the segments and roots (C1).
3. Describe the blood supply of the spinal cord (C1).

### **S9: Anatomy of spinal cord (internal features)**

1. Describe the internal structure of the spinal cord. Identify and explain the ratio of gray to white matter at various levels (C2)..
2. Locate 3 ascending and 3 descending tracts (C1).

**S10: Sensory receptors**

1. List the type of general sensory receptors and describe the functions of each type (C1).
2. List the three levels of sensory integration (C1).
3. Describe the role of receptors in sensory processing (C1).

**S11: Sensory modalities**

1. Name sensory modalities (C1).
2. Describe common patterns of neuronal organization and processing (C1).
3. Distinguish in general sense between serial and parallel processing (C2).

**S12: Anatomy of the ascending tracts**

1. Describe the origin, course, destination, functions and lesions of each of spinothalamic tract (C1).
2. Describe the origin, course, destination, functions and lesions of each of spinocerebellar tract (C1).
3. Describe the origin, course, destination, functions and lesions of each of dorsal column tracts (C1).

**S13: Physiology of sensory tracts and sensory cortex**

1. Describe the structure and function of myelin and the significance of demyelination (C1).
2. Describe the process of neurotransmission, list the important transmitters and outline the chemical structure of each (C1).
3. Compare and contrast specific and non-specific, ascending somatosensory pathways (C2).
4. Describe the main features of perceptual processing of sensory inputs (C1).

**S14: Physiology of pain**

1. Explain the theory and transmission of pain (C1).
2. Discuss the types of pain and thermal sensation (C2).

**A15: Anatomy of descending tracts**

1. Describe the origin, course, destination, functions and lesions of pyramidal tracts (C1).
2. Name the origin, course, functions, and lesions of the extrapyramidal tracts (C1).

**S16: PRACTICAL-3: Anatomy of vertebral column and spinal cord**

1. Identify the vertebral canal at each level, name its boundaries and list the anatomical causes of cord compression (C2).

2. *Given a human spinal cord, or model, describe its length, meninges, enlargements, sulci and fissures, segments and roots, and blood supply (P3).*

### S17: Anatomy of the brainstem

1. *Identify three major regions of the brain stem and note the general features of the brain stem (P3)..*
2. Describe the external features of the medulla oblongata, particularly its relations, the exits of cranial nerves and the fissures and sulci (C1).
3. Describe the internal structure of the medulla oblongata, particularly its principal nuclei and pathways including the pyramids, cranial nerve nuclei, gracile and cuneate nuclei and the arcuate fibers, in two sections: one across the lower, and the other across the upper half (C1).
4. Describe the external features of the pons, particularly its relations, cerebellar peduncles, blood vessels and cranial nerves (C1).
5. Describe the internal structure of the pons, particularly its principal nuclei and pathways, including pontine and cranial nerve nuclei, and the ascending, pyramidal and pontocerebellar fibers, one across the lower, and the other across the upper half (C1).
6. Describe the external features of the midbrain, particularly its relations, cerebral peduncles, tectum, cranial nerves and blood vessels (C1).
7. Describe the internal structure of the midbrain, particularly its principal nuclei and pathways including cranial nerve nuclei, tectum, tegmentum, red nucleus, substantia nigra, and the ascending and corticospinal fibers, one across the lower, and the other across the upper half (C1).

### S18: WARD ROUND-2: Brain stem lesions

*Presented with a patient with lateral medullary syndrome, or similar verbal or written scenario: use his/her basic and clinical sciences to explain the underlying mechanisms (pathophysiology) causing loss of function of certain tracts and nuclei (C2, P2).*

### S19: Reflexes and muscle spindle

1. Define reflex arc and list its elements (C1).
2. Distinguish between autonomic and somatic reflexes (C2)
3. Define the stretch reflex (C1).
4. Compare and contrast stretch, flexor, and crossed extensor reflexes (C2).

### S20: Superficial spinal reflexes

1. Draw and label the dermatological map of the anterior and posterior aspects of the body (P2).
2. Shade the systems commonly used in testing sensory level, and those involved in tendon reflexes (P2).

### S21: Paraplegia and spinal cord lesions

1. Define the sensory and motor level, and describe the effects of hemi section of the spinal cord, and of lower motor neuron lesions (C1).
2. Describe the cortical evoked responses, pyramidal and extrapyramidal functions, and the effects of upper motor neuron lesions (C1).
3. Distinguish between flaccid and spastic paralysis and between paralysis and paresthesia (C1).
4. Suggest diagnosis of cord compression from trauma, Pot's disease, disc prolapse (P2).

### S22: WARD ROUND-3: Spinal cord lesions

*Presented with a patient with inability to move the lower limbs (or similar verbal or written scenario), use basic and clinical science to explain the region of the cords involved and the nerve tracts affected, and use relevant history, clinical examination and investigations to suggest a diagnosis and outline management (C2,P2).*

### S23: Anatomy of the cerebellum

1. Describe the external features of the cerebellum, particularly its relations, lobes and fissures, phylogeny, peduncles and blood supply (C1).
2. Describe the internal structure of the cerebellum, its nuclei, connections, and cortical architecture, and explain the importance of the cerebellum to motor system (C1).

### S24: Physiology of the cerebellum

1. Describe the role of various parts of the brain in the functions of equilibrium and maintenance of upright posture (C1).
2. Explain the role of each of the parts and nuclei of the cerebellum in motor functions (C2).

### S25: Anatomy of the diencephalon

1. Describe the gross features, nuclei and connections and functions of the diencephalic structures including thalamus, hypothalamus, metathalamus (medial and lateral geniculate bodies), epithalamus and subthalamic structures (C1).
2. Describe the functions of the hypothalamus including vegetative and endo-

crine control, and the functional connections with the limbic system (C1).

### **S26: PRACTICAL-4: Brainstem, cerebellum and diencephalon**

1. *Identify the gross features of the brainstem, cerebellum and diencephalon (P2).*
2. *Identify the parts visible in axial, coronal and sagittal cut on each of the structures above (P2).*
3. *Perform in a patient or simulator testing for cerebellar functions (P2).*

### **S27: Anatomy of the cerebrum and functional cortical areas**

1. Name the major regions of the adult brain (C1).
2. List the major lobes, sulci, gyri of the cerebrum. Explain lateralization of hemisphere functions (C1).
3. Name and localize the functional areas of the cerebral cortex, and enumerate the specific functions of each. Draw diagrams to illustrate the main motor, sensory, visual, auditory and speech centers, mention the numbers designated to these areas (C1).

### **S28: Anatomy of the cerebral white matter**

1. Name commissural association and projection fibers (C1).
2. Differentiate between commissural, association and projection fibers (C1).

### **S29: SEMINAR-1: Viral encephalitis**

### **S30: Anatomy of basal ganglia**

1. *Identify the various components of the basal ganglia. Describe their relations, connections, and functions (P2).*
2. List areas involved in common diseases particularly Parkinsonism, and Huntington's chorea (C1).

### **S31: Physiology of basal ganglia**

1. Explain the functions of the cerebellum and basal nuclei in somatic sensory and motor integration (C2).
2. *Describe symptoms of cerebellar and basal nuclear diseases, giving specific examples (P2).*

### **S32: CNS tumors**

1. *Classify CNS tumors, indicate common sites and types of tumors,*
2. *Outline the clinical features, diagnosis including imaging of meningioma, astrocytoma, medulla-blastoma, craniopharyngioma, neurofibroma, ependymoma (P2).*

### S33: SEMINAR-2: Toxoplasmosis

#### S34: Functions of upper and lower motor neurons

1. Describe the levels of the motor control hierarchy (C1).
2. Define central pattern generator and command neurons (C1).
3. Compare the roles of the direct and indirect systems in controlling motor activity (C1).

#### S35: PRACTICAL-5: Cortical functional areas and basal ganglia

1. List the major lobes, sulci, gyri of the cerebrum (C1).
2. Explain lateralization of hemisphere functions (C2).
3. Observe and describe in specimens the gross features, of the diencephalic structures including thalamus, hypothalamus, metathalamus (medial and lateral geniculate bodies), epithalamus and subthalamic structures (C1).
4. *Identify the basal ganglia, and show their relations to other cortical structures (P2).*

#### S36: Anatomy of the ventricular system

1. Define the term ventricle and indicate the location of the ventricle of the brain (C1).
2. Describe the ventricular system, stating the mechanism of production, the circulation, the absorption and functions of the cerebrospinal fluid (CSF) (C1).
3. Name the common sites of obstruction to flow and its consequences and explain the blood- brain barrier (C1).

### S37: SEMINAR-3: Physiology of the CSF

#### S38: Meninges and the blood supply of CNS

1. Review the meninges, their reflections and the meningeal real and potential spaces (C1).
2. *Name the locations of blood collection in these spaces and outline the clinical presentation of each (P2).*
3. Review the blood supply of the brain and describe the mechanism of auto regulation of blood flow (C1).

#### S39: PRACTICAL-6: Ventricular system, meninges and blood supply

1. *Observe, name and describe the parts of the ventricular system (P3).*
2. *Identify the meninges related to the ventricular system and blood vessels (P3).*
3. *Identify the blood vessels (arteries and veins) of the brain (P3).*

**S40: Meningitis and brain abscess**

1. List the bacterial, fungal, protozoal and helminthic parasites that are involved in common CNS infections, and name the resulting disease (C1).
2. Describe the epidemiology of meningitis, river blindness (onchocerciasis), cerebrovascular disease, and list the environmental hazards that may affect the eye and/or ear. Explain the structural and functional basis of emotion, cognition and behavior (C1).
3. Outline the causes and presentation of brain abscess and meningitis (C1).
4. **Perform lumbar puncture on mannequin in skills lab (P1).**

**S41: Pathogenesis and pathology of meningitis**

1. Describe the source, route of transmission of infective agents of bacterial meningitis, and outline the diagnostic procedures and appropriate management for each infective agent (C1).

**S42: SEMINAR-4: Cerebral malaria (C1)****S43: Functional components of cranial nerves**

1. Describe briefly the origin, course, distribution, destinations and functions and cranial nerves (C1).
2. **Outline the methods of testing cranial nerves and diagnosis of cranial nerves' lesions (P2).**

**S44: Orbit and eyeball**

1. Describe the gross and functional anatomy of the orbit (C1).
2. Identify the extra-ocular muscles, and outline their attachments, nerve supply, actions (C1).
3. **Test for action of extraocular muscles and diagnose the effects of lesions (C1).**
4. Describe the eyeball, and lacrimal apparatus (C1).
5. Enumerate the tumors affecting the orbit and eye, and eyeball pressure disorders (C1).
6. **Recognize the anatomical parts of the orbit and orbital contents in CT and MRI cuts (P3).**

**S45: Cranial nerves 1,2**

1. Describe in detail the origin, course, distribution, destinations and functions of cranial nerves 1 and 2 (C1).
2. **Perform the methods of testing cranial nerves 1 and 2, and diagnose lesions of these two nerves (P2).**
3. List the environmental hazards that may affect the eye and/or ear. Explain the structural and functional basis of emotion, cognition and behavior (C1).

**S46: Physiology and biochemistry of vision**

1. Describe the physical principles of light waves and path of light beam through the eye and explain refractive disorders (C1).
2. Discuss the structure and functions of the retina (receptors, receptor potential, color vision, light adaptation), identify pathways of vision from retinal to cortex and draw visual field defects in various pathway lesions (C1).
3. Describe the biochemical basis of the function of photoreceptor cells, and explain the occurrence of light blindness in vitamin A deficiency (C1).
4. Outline the biochemical basis of color blindness (e) state the cause and consequences of stigmatism, cataract, glaucoma, hyperopic, and myopic states (C1).

**S47: Cranial nerves 3,4,6**

1. Describe in detail the origin, course, distribution, destinations and functions of cranial nerves 3,4 and 6 (C1).
2. *Describe the methods of testing cranial nerves 3,4 and 6, and diagnose lesions of these three nerves (P2)*

**S48: Anatomy of the ear and cranial nerve 8**

1. Describe the gross and functional anatomy of the outer, middle and inner ears (C1).
2. Describe the origin, course, distribution, destination and functions of the 8<sup>th</sup> cranial nerve (C1).
3. *Carry out hearing tests (P2)*
4. *Recognize the anatomical parts of the ear and temporal bone in CT and MRI sections (P2).*

**S49: Cranial nerves 5 and 7**

1. Describe in detail the origin, course, distribution, destinations and functions or cranial nerves 5 and 7 (C1).
2. *Describe the methods of testing cranial nerves 5 and 7, and diagnose lesions of these three nerves (P2)*

**S50: Physiology of hearing and equilibrium**

1. Describe the mechanism of conduction of sound, along the auditory pathway from organ of Corti to cortex (C1)..
2. Describe the physical principles of sound waves (C1).
3. Outline the major effects of infection in the temporal bone (C2).
4. List the posterior fossa tumors and nerve injuries on hearing and equilibrium (C1).

**S51: Cranial nerves 9, 10 and 11**

1. Describe in detail the origin, course, distribution, destinations and functions or cranial nerves 9,10 and 11 (C1).



2. *Perform the methods of testing cranial nerves 9,10 and 11, and diagnose lesions of these three nerves (P2)*

### **S52: Physiology of smell and taste**

1. *Discuss the smell and taste sensations (C1).*
2. *Examine in a patient or peer for smell and taste (P3)*

### **S53: Cranial nerve 9,10,11 and 12**

1. Describe in detail the origin, course, distribution (C1), destinations and functions of cranial nerves 9,10 and 11 (C1).
2. *Perform the methods of testing cranial nerves 9,10,11 and 12 and diagnose lesions of these three nerves (P2)*

### **S54: WARD ROUND-4: Stroke**

### **S55: Anatomy of the autonomic nervous system (ANS)**

1. Define ANS, and give examples of its functions (C1).
2. Compare the somatic and autonomic nervous system relative to effectors, efferent pathways and neurotransmitters released (C2).
3. Compare and contrast the general functions of sympathetic and parasympathetic divisions (C2).
4. Describe the sites of CNS origin, locations of ganglia, and general fiber pathways of the sympathetic and parasympathetic divisions (C2).
5. State the effects of parasympathetic and sympathetic divisions on the following organs: heart, blood vessels, GIT, lungs, adrenal medulla and external genitalia (C1).

### **S56: Physiology of the autonomic nervous system**

1. Describe the levels of control of autonomic nervous system functioning (C1).
2. Explain the relationship of some types of hypertension, Raynaud's disease and the mass reflex reaction to disorders of autonomic functioning (C2).
3. Define cholinergic and adrenergic fibers, and list the different types of cholinergic and adrenergic receptors (C1).
4. Briefly describe the clinical importance of drugs that mimic and inhibit adrenergic or cholinergic effects (C2).
5. Describe the effect of aging on the autonomic nervous system (C1).

### **S57: Peripheral nervous system (PNS)**

1. Define the PNS and list its components (C1).
2. Classify sensory receptors according to body location, structure, and stimulus detected describe receptor potentials and define adaptation (C1).

3. Define nerve and describe the general structure of nerve (C1).
4. Distinguish between sensory, motor, and mixed nerves (C2).
5. Define ganglion and indicate the general location of ganglia in the body regarding PNS (C1).
6. Differentiate between autonomic (sympathetic and parasympathetic) and somatic ganglia.
7. Describe the process of nerve fiber regeneration (C1).
8. Compare and contrast the motor endings of somatic and autonomic nerve fibers (C2).
9. Describe the formation of a spinal nerve and distinguish between spinal roots and rami (C1).
10. Describe the general distribution of ventral and dorsal rami (C1).
11. Define plexus, name the major plexuses, their origin, sites and the major nerves arising from each, and describe the distribution and function of the peripheral nerves (C1).

#### **S58: SEMINAR-4: Muscle diseases- myasthenia gravis**

#### **S59: Physiology of EEG**

1. Define EEG and distinguish between alpha, beta, theta and delta waves (C2).
2. Compare and contrast the events and importance of slow wave and rem – sleep and indicate how their pattern changes through life (C2).
3. Describe consciousness clinically (C1).

#### **S60: WARD ROUND-4: Sciatica**

***Presented with a patient with low back pain shooting down back of the thigh, or similar verbal or written scenario: use relevant history, clinical examination and imaging investigations to suggest a diagnosis, and outline management (C3,P2).***

#### **S61: Imaging in neurology**

1. ***Name the imaging techniques used to investigate the spinal cord lesions (P2).***
2. ***Identify the anatomical structures seen in plain radiographs of the spine, CT and MRI of the spine (P2).***
3. ***Identify the parts of the brain stem in CT and MRI cuts (P2).***

#### **S62: Anatomy of the limbic system and reticular formation**

1. Localize the limbic system, name its parts and note its functions (C1).
2. Localize and name parts and functions of the reticular formation (C1).
3. Describe the components and connections of the reticular formation and list its functions (C1).

### S63: Physiology and pathogenesis of degenerative disorders

1. Describe the pathogenesis, mode of transmission, methods of diagnosis and management of neurosyphilis due to *T. pallidum*, conjunctivitis due to *Chlamydia trachomatis*, and otitis media due to *H. influenzae* (C2).
2. Explain the pathogenesis, and outline diagnosis, management and prevention of poliomyelitis and rabies (C2).
3. Describe briefly the pathogenesis, transmission, methods of diagnosis and management of African sleeping sickness (C2)

### S64: SEMFINAR-5: Stroke and CVA

#### S65: Assignments

- Parkinson and Parkinson-like diseases
- Pathology of demyelinating diseases
- Cerebellar disorders and abnormal movements
- Fits and epilepsy
- Motor neuron disease
- Peripheral and autonomic neuropathy

#### S66: Drugs acting on CNS

1. Enumerate the pharmacological effects of morphine on pain perception, and other organs, state its comparison with other analgesics (C1).
2. List the clinical uses and side effects of aspirin and paracetamol, and those of non-steroidal anti-inflammatory drugs (C1).
3. List commonly used anesthetics, outline their pharmacological properties, and list the properties of an ideal anesthetic (C1).
4. Outline the use and side effects of levodopa (in Parkinson's disease), tricyclic antidepressants (in depression), benzodiazepines (in insomnia), antipsychotic drugs (in schizophrenia), antiepileptics (in seizures), muscarine antagonists, anti-cholinesterase, sympathomimetics and beta blockers (C2).

#### S67: Review of CNS-related skills

1. Take full history of a CNS condition in a patient, or a simulation.
2. Conduct proper physical examination of the nervous system, in the appropriate manner, sequence and comprehensiveness, and write it as clear as possible for others to read and understand.
3. Conduct proper examination of the eyes.
4. Conduct proper ENT examination.
5. List the common eye and ear conditions seen at the primary health care level. describe the management and referral policies (in your country) for ophthalmic and ENT patients

### **S68: WARD ROUND-5: CNS problems**

*Presented with a patient with one of the following problems/conditions or similar, verbal or written scenarios: use his/her knowledge of basic and clinical sciences to explain the underlying mechanisms (structural, functional, pathophysiological processes) and his/her clinical skills to suggest a diagnosis and outline management of: headache, trigeminal neuroglia, epilepsy, stroke, peripheral neuropathy, subarachnoid hemorrhage, cerebral contusion, cerebral edema. Presented with a patient with the following problems/conditions, or similar verbal or written scenarios: use his/her knowledge of basic and clinical sciences to explain the underlying mechanisms (including structural, functional, microbiological and pathophysiological processes), and use suitable diagnostic methods to suggest diagnosis and outline management including health promotion, protection, prevention, treatment and rehabilitation: meningitis, encephalitis, cerebral malaria, cerebrovascular disease (C2,P2)*

### **Recommended reading material:**

- Snell R. Clinical Anatomy, ISBN 078174315x.
  - Young, Whether's Functional Histology, Churchill Livingstone, ISBN 0443056188 [IE]
  - Guyton. Human Physiology and Mechanism of Disease, 6e, WB Saunders, ISBN 0808920030 [IE] Abbas,
  - Neurological Anatomy: QM Ali
  - Patel, Lecture Notes on Radiology, Blackwell, ISBN 0632047585.
1. Interactive lectures
  2. Practical sessions/ Ward rounds
  3. Tutorials

## Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Seminar/Presentation= 10%	MCQs= 20%	MCQs = 30%
Practical/Clinical/Visits= 5%	SQs= 5%	SSQs= 0%
Assignments/Tutorials=0%	Essays/ Short notes=	Essays/ Short notes= non
Others= 0% (e.g. peer)	Others=OSPE/OSCE --- ---10%	Others= OSCE/ OSPE=20%
<b>Total= 15%</b>	<b>Total= 35%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

### \*Grade Descriptors (Rubrics):

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

## Required Resources

### Premises

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Dissection room, museum, laboratories
- Hospital inpatients, outpatients, OR/ER with neurosurgery and neurology departments

### Staff

- Basic medical scientists
- Physicians/ neurologists, neurosurgeons/psychiatrists

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

## Tropical Medicine (ME-TROP -324) - 4 CHs, Block 4 weeks

TITLE: Tropical Medicine	CODE: ME-TROP-324	DURATION/CREDITS: block /4 CHs 4-week-
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Rationale

In spite of the great improvement and tremendous advances in science, medicine, public health and sanitation, there are huge setbacks in the 319. The challenges of tropical diseases, some of which have been for centuries, remain high in poor communities. There is emergence of new diseases(AIDS), and resurgence of older ones: tuberculosis. The rise of resistance to antimicrobials have placed additional burden. International travel, being easier today like it has never been, contributed the presence of tropical diseases all over the world. The Sudan being one of the tropical and poor countries in the world is a special harbor of most of the tropical diseases. Fighting tropical diseases starts first and foremost with people committed to prevention care and cure, who need access to the best tools and information available. This course, together with previous courses in parasitology and the clerkships in internal medicine, pediatrics, obstetrics and gynecology, surgery and pharmacology are to provide the students with skills to use in this field when they are practicing as curative and preventive doctors and community leaders.

### Outline

A two-week block during semester 6, to include: (1) epidemiology and pathogenesis of tropical diseases, and (2) diagnosis, treatment, prevention and control of tropical diseases, knowledge, skills and attitudes.

## General Learning Outcomes

By the end of this module the student should be able to:

1. Show understanding of the epidemiology and pathogenesis of tropical diseases, and vector/patient relationship.
2. Deal appropriately with a patient with febrile illness using rational scientific methods of diagnosis and management.
3. Show knowledge and skills and proper attitude in the diagnosis, treatment, prevention and control of tropical illnesses especially: (1) bacterial infections common in tropical regions, (2) fungal infections endemic in the tropics, (3) protozoal infections, (4) helminthic infestations, (5) arthropod ectoparasites, (6) sexually-transmitted infections, (7) human immune deficiency virus (HIV) and AIDS.

## Intended (specific) learning outcomes

By the end of this module the student should be able to:

### S1: Introduction to the course

1. Introduce the various aspects of the course and outline assessment
2. Show understanding of the general structure of the course.
3. Show list of the outcomes and specific objectives of the course.
4. Explain the bases and contents of the assessment and feedbacks.
5. Appoint or elect a student coordinator.
6. List hard and soft reading material.
7. Explain attendance regulations and consequences of absenteeism.

### S2: Vector-patient relationship

1. Discuss the vector-patient relationship (C1).
2. Discuss this relationship in relation to the treatment, prevention and control of tropical diseases (C2).

### S3: Fever of unknown origin (FUO)

1. Define FUO (C1)
2. List the possible causes of fever of unknown origin (C1).
3. Outline its management (C1).

### S4: Malaria

1. Discuss the etiology and environmental causes of malaria (C1).
2. Describe the clinical and laboratory diagnosis (C1).
3. Discuss the prevention and control of malaria (C2)



4. List complications of malaria (C1).
5. Outline management of malaria (C1).

### **S5: Schistosomiasis**

1. Discuss the etiology and epidemiology of schistosomiasis (C2).
2. Describe the clinical and laboratory diagnosis, prevention and control of schistosomiasis (C2).
3. List complications of schistosomiasis (C1).
4. Outline management of schistosomiasis (C1).

### **S6: Meningitis and meningococcal septicemia**

1. Discuss the etiology meningitis (C1).
2. Outline the diagnosis and management of meningitis and meningococcal septicemia (C1)
3. List complications of meningitis (C1).

### **S7: Tuberculosis**

1. Discuss the etiology and types of tuberculosis (C2).
2. Describe the clinical, serological and radiological diagnosis of pulmonary and spinal tuberculosis (C1).
3. List complications of tuberculosis (C1).
4. Outline the management of tuberculosis (C1).

### **S8: Cholera and diarrheal diseases**

1. Discuss the etiology and epidemiology of cholera and diarrheal diseases (C2).
2. Discuss the clinical presentation, diagnosis and management of cholera and diarrheal diseases (C1).
3. List the steps of prevention and control of cholera (C1).

### **S9: Enteric fever**

1. Discuss the etiology and epidemiology of enteric fever (C2).
2. Describe the clinical presentation, diagnosis, prevention and control of enteric fever (C1).
3. List complications of enteric fever (C1).
4. Outline management of enteric fever (C2)

### **S10: Brucellosis**

1. Discuss the etiology and epidemiology of brucellosis (C2)
2. Describe the diagnosis, prevention and control of brucellosis (C2).
3. Outline management of brucellosis (C2)

**S11: Anthrax**

1. Discuss the etiology and epidemiology of anthrax (C2)
2. Describe the diagnosis, prevention and control of anthrax (C1).
3. Outline management of anthrax (C1).

**S12: Amoebiasis**

1. Discuss the etiology and epidemiology of amoebiasis (C2).
2. Describe the clinical presentation, diagnosis, prevention and control of amoebiasis (C1).
3. Outline management of amoebiasis (C1)

**S13: Giardiasis**

1. Discuss the etiology and epidemiology of giardiasis (C2).
2. Describe the diagnosis, prevention, control and outline management of giardiasis (C1)

**S14: Leprosy**

1. Discuss the etiology of leprosy (C2).
2. Describe the clinical features and diagnosis of leprosy (C1).
3. Outline the management of leprosy (C2).

**S15: Leishmaniasis**

1. Discuss the etiology and epidemiology of leishmaniasis (C2).
2. **Identify the organism on stained specimen (P2).**
3. Describe the diagnosis, prevention, control and outline management of leishmaniasis (C1).

**S16: Trypanosomiasis**

1. Outline the etiology and epidemiology of trypanosomiasis (C1).
2. **Identify the organism on stained specimen (P2).**
3. Outline the diagnosis, prevention, control and outline management of trypanosomiasis (C2).

**S17: Toxoplasmosis**

1. Outline the etiology and epidemiology of toxoplasmosis (C1)..
2. List the organs affected by this disease (C1).

**S18: Rheumatic fever**

1. Discuss the etiology and epidemiology of rheumatic fever (C1).
2. Describe the clinical, and serological diagnosis of rheumatic fever (C1).
3. List complications of rheumatic fever (C1).

4. Outline the management of rheumatic fever and its complications (C1)

### S19: Filariasis

1. Discuss the etiology and epidemiology of filariasis (C1).
2. **Identify the organism on stained specimen (P2).**
3. Describe the diagnosis, prevention, control and outline management (C1)

### S20: Ascariasis

1. Outline the epidemiology of ascariasis (C1).
2. **Identify the worm on a slide or photograph(P2).**
3. Outline the diagnosis, management, prevention and complications of ascaris infestation (C2)

### 21: Hook worm

1. Outline the epidemiology of hook worm (C1).
2. **Identify the worm on a slide or photograph(P2).**
3. Outline the diagnosis, management, prevention and complications of hook worm infestation (C2).

### S22: Taenia worm

1. Outline the epidemiology of taenia (C1).
2. **Identify the worm on a slide or photograph(P2).**
3. Outline the diagnosis, management, prevention and complications of taenia infestation (C2).

### S23: Thread worm

1. Outline the epidemiology of thread worm (C1).
2. **Identify the worm on a slide or photograph(P2).**
3. Outline the diagnosis, management, prevention and complications of thread worm infestation (C2)

### S24: Strongyloidiasis

1. Outline the epidemiology of strongyloidiasis (C1).
2. **Identify the worm on a slide or photograph(P2).**
3. Outline the diagnosis, management, prevention and complications of strongyloidiasis (C2)

### S25: Hydatid disease

1. Discuss the etiology and epidemiology of hydatid disease (C1).
2. Describe the clinical, serological and radiological diagnosis of hydatid cyst in internal organs (C1).

3. List complications of hydatid disease (C1).
4. Outline the management of hydatid disease (C1).

### **S26: Gonorrhoea / Chlamydia**

1. Discuss the etiology and epidemiology of gonorrhoea and chlamydia (C1)
2. Describe the diagnosis, prevention, and complications of gonorrhoea and chlamydia (C1).
3. Outline management of gonorrhoea and chlamydia (C2)

### **S27: Syphilis**

1. Discuss the etiology and epidemiology of syphilis (C1).
2. Describe the diagnosis, management, prevention and complications of syphilis (C1).

### **S28: Relapsing fever**

1. Discuss the etiology and epidemiology of relapsing fever (C1).
2. Outline the diagnosis, prevention, control and outline management of relapsing fever (C1)

### **S29: Hepatitis**

1. Discuss the types, etiology and epidemiology of hepatitis (C2).
2. Describe the diagnosis, prevention, control and outline management of hepatitis (C1)

### **S30: Herpes virus**

1. Discuss the etiology and epidemiology of herpes virus (C2).
2. Describe the diagnosis, prevention, control and outline management of herpes virus (C1)

### **S31: Scorpion sting and snake bite**

1. Describe the management of scorpion stings and snake bites (C1)
2. List the effects and complication of scorpion sting and snake bites (C1).

### **S32: SEMINAR-1: Hemorrhagic fevers**

### **S33: SEMINAR-2: Aspergillosis**

### **S34: HIV/AIDS**

1. Discuss the etiology and epidemiology of HIV/AIDS (C2).
2. Describe the diagnosis, prevention, control and outline management of HIV/AIDS (C1)

### Reading material:

- Manson's Tropical Medicine.
- Staff PowerPoint and website uploaded lectures

### Educational strategies and methods (lecture, seminar, practical....etc):

1. Interactive lectures
2. Practical sessions
3. Tutorials
4. Assignments

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Seminar/Presentation= 10%	MCQs= 20%	MCQs = 30%
Practical/Clinical/Visits= 5%	SQs= 5%	SSQs= 0%
Assignments/Tutorials=0%	Essays/ Short notes=	Essays/ Short notes= non
Others= 0% (e.g. peer)	Others=OSPE/OSCE ----- -10%	Others= OSCE/ OSPE=20%
<b>Total= 15%</b>	<b>Total= 35%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required Resources****Premises**

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Hospital inpatients, outpatients, health center

**Staff**

- Family physicians
- Physicians
- Parasitologists/microbiologists

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

# Clinical Pharmacology

## (ME-CPHARM -325) - 4 CHs, Block 4 weeks

TITLE: Clinical Pharmacology	CODE: ME-cPHARM-325	DURATION/CREDITS: block /4 CHs 4-week-
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Outline

A four-week block during semester 6, to include: (1) definition of a drug, (2) development of a drug, (3) drug dynamics, (4) rational use of drugs in the management of emergency and common problems, including drug prescription.

### Intended learning outcomes (ILOs)

By the end of this module the student should be able to:

#### S1: Introduction to the course

1. Introduce the various aspects of the course and outline assessment
2. Show understanding of the general structure of the course.
3. Show list of the outcomes and specific objectives of the course.
4. Explain the bases and contents of the assessment and feedbacks.
5. Appoint or elect a student coordinator.
6. List hard and soft reading material.
7. Explain attendance regulations and consequences of absenteeism.

#### S2: Definitions

1. Define pharmacology and therapeutics (C1).
2. Define pharmacokinetics and pharmacodynamics (C1).
3. Define pharmacogenetics (C1).

#### S3: Adherence to drug regimes

1. Define compliance or adherence (C1).
2. List causes of non-compliance (C1).

3. List effects of non-compliance (C1).

#### **S4: Drug errors**

1. List the types of patient -related, doctor-related, and pharmacist-related errors (C2).
2. Discuss the consequences of drug errors on patient health (C2).

#### **S5: Interactions and toxicity**

1. Explain the term “drug interaction” and give examples of drug-drug and drug-nutrient interaction (C2).
2. List the undesired effect of interaction on therapeutic results (C1).
3. Define drug toxicity and give examples (C1).

#### **S6: Pharmacogenetics**

1. Define pharmacogenetics (C1).
2. Explain the interaction of genes with drugs (G-6-PD and sulphonamides and malaria drugs) (C1).
3. Give other examples (C1).
4. Discuss the harmful effect of genetic environment on serious drug responses (C1).

#### **S7: Placebos**

1. Define a placebo and indications for using it (C1).
2. List the causes of symptomatic anticipation of patients (C1).
3. List situations where placebos can be prescribed for treatment (C1).

#### **S8: Drug development**

1. Indicate the role of institutions in drug development (C1).
2. List the steps of drug development and approval (C1).

#### **S9: Pharmacokinetics**

1. Define pharmacokinetics (C1).
2. Explain the parameters and formulae of absorption, bioavailability, distribution, metabolism and elimination of drug (C2).
3. Outline the effect of age on pharmacokinetic outcomes (C2).

#### **S10: Pharmacodynamics**

1. Define pharmacodynamics (C1).
2. Explain drug-receptor interaction.
3. Explain the dose response relationships (C2).



### S11: Bacteria and antibacterial drugs

1. List the common pathogenic bacteria (C1).
2. Outline the mechanism of action of antibacterial drugs (C1).
3. List the common antibiotic interactions with other drugs, namely: warfarin, theophylline, phenytoin and digoxin (C1).

### S12: Tuberculosis and DOTS

1. List the first-line drugs used in tuberculosis (C1).
2. List the second-line drugs for tuberculosis (C1).
3. Discuss drug resistance (C1).
4. Outline the special management of tuberculosis in the children and elderly (C1).
5. Describe the DOTs (C1).

### S13: Introduction to autonomic nervous system pharmacology

1. Outline the distribution of the autonomic nervous system (C1).
2. Name the drugs used for autonomic neuropathy (C1).
3. List drugs used in multiple system atrophy and pure autonomic failure (C1).
4. Define and list sympathetic and parasympathetic agonists (C1)

### S14: Acute and chronic renal failure

1. List drugs that may cause ARF/CRF (C1).
2. List drugs that may be used in treatment of ARF/CRF (C1).
3. Name the major drugs metabolized in the kidneys or/and excreted by kidneys (C1)
4. Discuss the drug doses used in patient with ARF or CRF (C2)

### S15: Hypertension

1. List the indications used in the choice of antihypertensive drug classes (C1).
2. List the antihypertensives for high-risk patients (C1).
3. List the combination drugs used for hypertension (C1)

### S16: Congestive heart failure

1. List the drugs used in congestive heart failure in the Sudan (C1).
2. Describe the actions and adverse effects of digoxin and diuretics (C1).

### S17: Cardiac arrhythmias and conduction disorders

1. List the types of arrhythmias (C1).
2. Outline the classification of anti-arrhythmia drugs (C1).
3. List the devices and procedures used for management of arrhythmias (C1).

**S18: Ischemic heart disease**

1. List the drugs used for angina (C1).
2. List the fibrinolytic drugs used for myocardial infarct (C1).

**S19: Sedatives and hypnotics**

1. List the main sedatives and hypnotics used in the Sudan (C1).
2. List the complications of acute use and abuse of sedatives and hypnotics (C1).

**S21: Antipsychotics**

1. List the antipsychotic drugs commonly used in Sudan (C1).
2. List the complication of antipsychotic disorders (C1).

**S22: GIT drugs**

1. List the drugs used in acute abdominal pain (C1).
2. List the drugs used for gastritis, helicobacter and peptic ulcer (C1).
3. List the drugs used for constipation and diarrhea (C1).

**S23: Respiratory system**

1. List the drugs used for common cold, acute bronchitis, pneumonia (C1).
2. Discuss the long-term management of bronchial asthma (C1).

**S24: Anti-epileptics**

1. List the common drugs in seizures disorders in the Sudan (C1).
2. Describe the therapeutic actions of three drugs used in epilepsy (C1).
3. List the adverse effects of common antiepileptic drugs (C1).

**S25: Anti-depressants**

1. List the common antidepressants used in Sudan (C1).
2. Describe the adverse effects of antidepressants (C1).

**S26: Diabetes mellitus**

1. List the oral anti hyperglycemic used in the Sudan (C1).
2. Describe the treatment of diabetic ketoacidosis (C1).

**S27: Aspirin, Panadol and NSAID**

1. List the non-opioid analgesics used in Sudan (C1).
2. Discuss the actions and adverse effects of Aspirin, Paracetamol and NSAID (C1).

**S28: Other drugs**

1. Outline the use and side effects of levodopa in Parkinson's disease (C1).
2. Outline the use tricyclic antidepressants in depression (C1).

3. Outline the use of benzodiazepines (in insomnia (C1).
4. Outline the use of antipsychotic drugs in schizophrenia (C1).
5. Outline the use of antiepileptics in seizures (C1).
6. Outline the use of muscarine antagonists, anticholinestrases, sympathomimetics and beta blockers (C1).

### Reading material:

- Rang, Pharmacology, 5e, Churchill Livingstone, ISBN 0443072027[IE].

### Educational strategies and methods:

1. Interactive lectures
2. Practical sessions
3. Tutorials
4. Assignments

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Seminar/Presentation= 0%	MCQs= 30%	MCQs = 40%
Practical/Clinical/Visits= 0%	SQs= 0%	SSQs=0%
Assignments/Tutorials=0%	Essays/ Short notes=	Essays/ Short notes= non
Others= 0% (e.g. peer)	Others= -OSPE/PSCE-- ---10%	Others= OSCE/ OSPE=30%
<b>Total= 0%</b>	<b>Total= 30%</b>	<b>Total= 70%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required Resources:****Premises:**

- Lecture theatres equipped with audiovisual aids
- Tutorial rooms for small group discussions
- Samples of drugs and pharmaceutical preparations

**Staff:**

- Clinical pharmacologists
- Physicians

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

# PHASE III CLINICAL SCIENCES





# Organization of Semesters

## 7-10 Clerkships

### General organization of the clerkships

The general outcomes of the clerkships, are as follows:

1. Show responsible. Ethical, professional and compassionate behavior with the patient and family considering the cultural, social and economic background, and dealing with all levels of education and abilities.
2. Master the required communication skills for appropriate history taking and medical examination and patient management
3. Appreciate the role of perfect understanding of basic sciences (anatomy, physiology, and biochemistry) and the underlying pathophysiological processes relevant to medical practice in diagnosis and management of common illnesses in a patient and community.
4. Be acquainted with the epidemiological profile of the population and society, their heritage and cultural, social, geographic and economic characteristics, and relationship of all those to medical (surgical, obstetrical, gynecological, pediatric) disease etiology and management.
5. Have the knowledge and skills necessary to identify and manage the health problems of a patient:  
emergency situations, common endemic or epidemic diseases, injuries and disabilities, including health promotion, prevention, treatment, rehabilitation and follow up.
6. opt for the wise selection of the most appropriate and cost-effective investigations to reach the proper diagnosis, considering the patient rights and abilities and the capabilities of the health system.
7. Interact effectively with the health team (and appreciate the role of others) in providing medical services.
8. Continue independent learning and pursue postgraduate studies IMPORTANT!!!

A clerkship booklet is provided to students in the first session of each clerkship. It is the students' responsibility to work towards achieving the objectives included, irrespective of the educational activities offered during the block. The objectives represent the minimum required competences for these clerkships.

## Integrated Medical Clerkships [Internal Medicine, Emergency Medicine, Dermatology]

### *General organization of the clerkships*

The General Objectives of the clerkships, are as follows: Specific Objectives should be included in the details using the Course Format as previous courses

- 1. Show responsible, ethical, professional and compassionate behavior with the patient and family considering the cultural, social and economic background, in dealing with all levels of education and abilities.**
2. Master the required communication skills for appropriate history taking and medical examination.
3. Appreciate the role of perfect understanding of basic sciences (anatomy, physiology, and biochemistry) and the underlying pathophysiological processes relevant to medical practice in diagnosis and management of common illnesses in patient and community.
4. Be acquainted with the epidemiological profile of the population and society, their heritage, cultural, social, geographic and economic characteristics, and relationship of all those to medical (surgical, obstetrical, gynecological, pediatric) disease etiology and management.
5. Have the knowledge and skills necessary to identify and manage the health problems of a patient: emergency situations, common endemic or epidemic diseases, injuries and disabilities, including health promotion, prevention, treatment, rehabilitation and follow up.
6. Opt for the wise selection of the most appropriate and cost-effective investigations to reach the proper diagnosis, considering the patient rights and abilities and the capabilities of the health system.
7. Interact effectively with the health team (and appreciate the role of others) in providing medical services.
8. Attend and document all clinics, duties and procedures.
9. Continue independent learning and pursue postgraduate studies

### **IMPORTANT!!!**

A clerkship booklet is provided to students in the first session of each clerkship. It is the students' responsibility to work towards achieving the objectives included, irrespective of the educational activities offered during the block. The objectives represent the minimum required competences for these clerkships.



## Internal Medicine (ME-MED411), 12 CHs, 12 weeks,

TITLE: Internal Medicine	CODE: ME-MED-411	DURATION/CREDITS: block 12 CHs 14-week-
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES: Years 1,2 and 3 courses		

### Outline

This is a 12 week (12 CHs) -block, which is integrated with longitudinal clerkships in emergency medicine, [see below]. The students: (1) demonstrate good attitudes, ethics and professional behavior in the practice of internal medicine (2) obtains full history relevant to the medical problem in general practice, perform appropriate physical examination, requests informative and cost-effective investigations, synthesizes information to reach (or suggest differential) diagnosis, select (or suggest) proper treatment, health promotion, prevention, protection, follow up and rehabilitation, including problems seen in emergency situations, epidemic and endemic diseases, common respiratory, cardiovascular, gastrointestinal, renal, endocrine, rheumatic, and nervous system problems, (3) demonstrate knowledge of basic and clinical sciences , relevant to internal medicine and general practice, (4) recognize urgent and emergency medical conditions, (5) analyze community problems related to medical disease, and (6) essential drugs used in common medical problems (headache/migraine and various types of pains and colics, seizures, meningitis/encephalitis, malaria, typhoid fever, schistosomiasis, leishmaniasis, hypertension, stroke, dementia, disorders of the motor systems. coronary heart disease, congestive heart failure, arrhythmias, pneumonia, asthma, causes of dyspepsia, nephritis and renal failure, diabetes, worm infestations, vomiting diarrhea, constipation, dehydration, nutritional deficiencies, anemias, hematological malignancy, bleeding disorders, thyroid disease, obesity, adrenal insufficiency, Cushing syndrome, osteoarthritis, rheumatoid arthritis, SLE, gout and others.

### Rationale

The basic aim of health care is that patients, irrespective of all their gender, age, colors, religion, socioeconomic background etc., receive the physician's kind care and full at-

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tention and be treated humanely, with due respect of their own dignity. The physician should have the required knowledge, skills and professionalism, to carry out his/her duties to help them. Modern educational philosophies assume that a medical student is an active learner and emphasize independent learning and teamwork attitudes.

Studying internal medicine is the cornerstone of medical practice. Knowledge and skills learned in internal medicine enable the students to deal with the majority of problems related to other specialties and subspecialties. Most of the training in this clerkship is focused on secondary and tertiary levels of health care, which have to complement, rather than replace, the primary level.

The study of internal medicine helps the students adopt a wholistic approach to patient problems. The subspecialties within the medical clerkship are neurology, cardiology, dermatology and oncology etc., which view in depth aspects of the rapidly expanding areas within the medical practice.

### **General Learning Outcomes (this is repeated here to show its importance)**

By the end of the medical clerkship the student should:

- 1. Show responsible and compassionate behavior with the patient and family considering the cultural, social and economic background, and in dealing with all levels of education and abilities.***
2. Master the required communication skills for appropriate history taking and medical examination.
3. Appreciate the role of perfect understanding of basic sciences (anatomy, physiology, and biochemistry) and the underlying pathophysiological processes relevant to medical practice in diagnosis and management of common illnesses in patient and community.
4. Be acquainted with the epidemiological profile of the population and society, their heritage and cultural, social, geographic and economic characteristics, and relationship of all those to medical disease etiology and management.
5. Have the knowledge and skills necessary to identify and manage the health problems of a patient: emergency situations, common endemic or epidemic diseases and disabilities, including health promotion, prevention, treatment, rehabilitation and follow up.
6. opt for the wise selection of the most appropriate and cost-effective investigations to reach the proper diagnosis, considering the patient rights and abilities and the capabilities of the health system.
- 7. Interact effectively with the health team (and appreciate the role of others) in providing medical services.***

8. Attend and document all clinics, duties and procedures.
9. Continue independent learning and pursue postgraduate studies.

### **Intended (specific) Learning Outcomes (ILOs)**

*By the end of this clerkship, the student should achieve the objectives listed under the following subtitles:*

#### **S1: Introduction to the clerkship**

1. Introduce the various aspects of the course and outline assessment
2. Show understanding of the general structure of the course.
3. Show list of the outcomes and specific objectives of the course
4. Explain the bases and contents of the assessment and feedbacks.
5. Appoint or elect a student coordinator.
6. List hard and soft reading material.
7. Explain attendance regulations and consequences of absenteeism

#### **S2: Taking History**

1. *Given any patient with any complaint/s: take full medical history, with appropriate sequence and comprehensiveness, and write it as clear as possible for others to read and understand (P3).*
2. *Recognize urgent problems and emergency and critical conditions (P3)*

#### **S3: Performing medical examination and investigations**

1. *Asked to examine a patient: prepare the appropriate setup for physical examination; carry out the examination in the appropriate manner, sequence and comprehensiveness attending all systems relevant to the medical problem, and write his/her notes as clear as possible for others to read and understand (P3).*
2. *Select the laboratory investigations relevant to the problem of the patient, considering limitations of the patient, the health system and/or hospital routine, and issuing clear directives to the patient on how and where to do these investigations P3).*
3. *Write an informative referral letter asking help on a particular patient problem (P2).*
4. *Show ability and enthusiasm to promote health through health education and support and provision of primary health care programs (P2).*

### **S4: Attitude, ethics and professionalism**

1. Reflect, through attitudes, responsible and serious concern to the patient's problems and his/her family, taking into account the moral and cultural characteristics of the society (A).
2. Comply with the hospital system regarding uniform attendance, team work and ethical and responsible behavior (A).
3. Work effectively and harmoniously with member of the health team, taking sometimes leadership responsibilities (A).
4. Explain population dynamics in his/her area or country, population-related factors affecting health and disease in adults, and the effects of disease on these dynamics, and use this approach in counselling and case management (A).
5. Demonstrate ability of independent and life-long learning, initiate research methodologies relevant to clinical medicine, disease etiology, management and prevention (A).
6. Deal effectively, efficiently and ethically, with patients of various adult age groups presenting with chronic and malignant diseases, disabilities and life-threatening illnesses taking into account the burden on the family and community and the psychological, social and economic dimensions as well as health promotion and rehabilitation in management (A,P3). Such disorders include: A mentally retarded adult, congenital and physical disabilities, asthma and other chronic respiratory diseases (bronchiectasis, emphysema, pulmonary fibrosis), hepatitis, and other chronic gastrointestinal diseases (peptic ulcer, irritable bowel syndrome), cardiac (rheumatic and ischemic) diseases, chronic urinary tract infections, renal failure, anemia and cancer

### **S5: Suggesting diagnosis**

1. *Use the skills stated in Sessions 2,3, and 4 to reach a diagnosis or suggest a differential diagnosis of the problem presented (P3)*
2. *Select the laboratory investigations relevant to the problem of the patient, considering limitations of the patient, the health system and/or hospital routine, and issuing clear directives to the patient on how and where to do these investigations (P3).*

### **S6: Referral to health promotion**

1. Write an informative referral letter asking help on a particular patient problem (P2)
2. Show ability and enthusiasm to promote health through health education and support and provision of primary health care programs (P2)

### S7: Cardiovascular anatomy

1. Review the position, relations, chambers, valves and layers of heart wall (C1)
2. Review blood supply and innervation of the heart, particularly the conduction system (C1).
3. Review the anatomical basis of cardiac pain (C2).

### S8: Approach to patient with cardiac disease

1. Describe the steps to follow in response to patient complaint of chest pain, breathlessness, with or without effort (C1).
2. Describe the clinical features, investigations and management of each (C2).

### S9: ECG and common cardiac arrhythmias

*Given an ECG, detect normal and abnormal changes (especially in arrhythmias and ischemic heart disease), giving the pathophysiological explanations (C2, C3), mention and justify the steps to follow in patients presenting with chest pain, cough with blood in sputum, and palpitations (C3,P3).*

### S10: Infective endocarditis

1. Define endocarditis and list the common causative organism (C1).
2. Outline the etiology, clinical feature, diagnosis, treatment and prognosis (C1).

### S11: Myocarditis and cardiomyopathy

1. Define myocarditis and cardiomyopathy (C1).
2. List the causes and types of cardiomyopathy (C1)
3. List the symptoms and signs (C1).
4. Outline diagnosis and management (C3)

### S12: WARD ROUND-1: Infective endocarditis, myocarditis, pericarditis and cardiomyopathy

*Presented with any of the following real, verbal or written problems/conditions of endocarditis, pericarditis and cardiomyopathy: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function and pathophysiological processes) and his/her, basic clinical skills to reach a diagnosis and suggest appropriate management (including health promotion, protection, prevention, treatment and rehabilitation) (C2, P2).*

### S13: Cardiovascular imaging

1. Review heart and mediastinal borders in PA chest image (P2).
2. Recognize cardiomegaly (P3).
3. Identify specific chamber enlargement and suggest diagnosis (P2).

### S14: Anatomy and physiology of respiratory system

1. Review the anatomy of the airways and explain the protective mechanisms against environmental factors (C1).
2. Review lung function and volumes, and expected changes in restrictive and obstructive lung disease (C1).

### S15: Approach to patient with respiratory disease of upper respiratory tract

1. Describe the steps to follow in response to patients complaint of cough, with and without fever (C1).
2. Define common cold, acute bronchitis, tonsillitis, diphtheria, sinusitis, influenza (C1).
3. Describe the clinical features of each (C1).
4. Outline management options (C2).
5. List complications of each (C1).

### S16: Pneumonia

1. List the causes and causative organisms of pneumonia (C2)
2. Describe the clinical symptoms (C1).
3. **Recognize the imaging appearance in PA chest and CT (P2).**
4. Describe management, and follow up (C2).

### S17: Tuberculosis and sarcoidosis

1. List the types, cause and complications of tuberculosis (C1).
2. **Recognize the causative organism when illustrated P2).**
3. List the symptoms and signs of sarcoidosis, pulmonary and extrapulmonary tuberculosis (C1).
4. Outline management, prevention, and prognosis of tuberculosis and sarcoidosis (C2).

### S18: WARD ROUND-2: Pneumonia and tuberculosis

**Presented with any of the following real, verbal or written problems/conditions of pneumonia and tuberculosis: use his/her basic and clinical sciences to explain the underlying mechanisms (including structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest management including health promotion, and protection, prevention, treatment, rehabilitation and follow-up (C3,P3):**

### S19: Asthma, status asthmaticus and bronchospasm

1. List causes of status asthmaticus or bronchospasm (C1).
2. Outline immediate life-saving actions (C2).
3. Outline long term management, prognosis and prevention (C2).

## **S20: Parenchymal lung disease: emphysema, bronchiectasis, chronic bronchitis, interstitial disease, occupational lung diseases**

1. List the direct cause of each of the types of the parenchymal lung disease (C1).
2. Outline the symptoms, signs, diagnosis and management (C2).

## **S21: WARD ROUND-3: Asthma and parenchymal lung disease**

*Presented with any of the following real, verbal or written respiratory problems/ conditions of asthma or parenchymal lung disease: use his/her basic and clinical sciences to explain the underlying mechanisms (including structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest management including health promotion, and protection, prevention, treatment, rehabilitation and follow-up. The student should see cases of deep thrombosis (pulmonary embolism risk) or bronchial carcinoma (C2,P2).*

## **S22: Deep vein thrombosis and pulmonary embolism**

1. List causes of deep vein thrombosis and risk factors (C1).
2. Suggest immediate actions (C2).
3. Discuss complications and their diagnosis and management (C3)..

## **S23: Pneumothorax and pleural effusion**

1. List the causes of pneumothorax and pleural effusion (C1).
2. Describe the symptoms and signs expected (C1).
3. Outline procedures and treatment (C2)

## **S24: Respiratory imaging**

1. *Identify the normal boney chest, lung fields and pleural spaces (P2).*
2. *Recognize pneumonia, pleural effusion and pneumothorax (P2)*
3. *Attend diagnosis of, lung collapse, emphysema, fibrosis, bronchial carcinoma, metastasis (P1)*

## **S25: Gastrointestinal anatomy and physiology**

1. Review the applied gross anatomy of gastro-intestinal tract, pancreas, liver and biliary system, including their blood supply, innervation and developmental anomalies (C1).
2. Describe the gastrointestinal secretions, and explain their functions and disorders and the disorders of motility of the gastrointestinal tract (C1).

**S26: Jaundice**

1. Describe the steps you follow in response to patient complaint of yellow eyes or your own observation (C3, P3).

**S27: Acute and chronic diarrhea and dysentery**

1. List causes of acute and chronic diarrhea and dysentery (C1).
2. Suggest immediate life-saving actions (C2).
3. Outline long term management and prevention (C2).

**S28: Upper and lower GIT bleeding (esophageal varices, peptic ulcer, gastric cancer)**

1. List the causes of the upper and lower gastrointestinal bleeding (C1).
2. Suggest immediate life-saving actions (C2).
3. Follow up the suitable investigations to realize the cause of bleeding or its complications (C1).
4. Outline definitive management of causes and complications (C1).

**S29: Cholecystitis and gallstones**

1. List the causes and presentation of cholecystitis and cholelithiasis (C1).
2. Outline investigations for reaching a diagnosis (C2).
3. Outline management (C2).

**S30: Chronic liver disease: jaundice, ascites, liver cirrhosis, periportal fibrosis**

1. List the causes and presentation of jaundice (C1).
2. List the manifestations of chronic liver disease (C1).
3. Describe the normal histology of the liver and the appearance of cirrhosis or periportal fibrosis (C2).
4. Outline diagnosis and management of hepatitis (C2).
5. List complications of hepatitis, jaundice, cirrhosis, and fibrosis (C2).

**S31: WARD ROUND-4: GIT bleeding, gastric, hepatic and gall bladder disease**

***Presented with any of the following real, verbal or written problems/conditions of gastrointestinal bleeding, ulcers, tumors, gallstones or liver disease: use his/her basic and clinical sciences to explain the underlying mechanisms (including structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest management including health promotion, and protection, prevention, treatment, rehabilitation and follow-up (C3,P3).***



### S32: Colonic masses and anorectal problems

1. List the types and epidemiology of colonic masses (C1).
2. List the common anorectal conditions (C1).
3. Describe the presentations of ca colon (C1).
4. Describe the presentations of anorectal conditions (C1).
5. Outline management (C2)

### S33: Malabsorption and inflammatory bowel disease

1. List the types and causes of malabsorption (C1).
2. Define inflammatory bowel disease (C1).
3. Describe the etiology, presentation and management of irritable bowel disease (C1).

### S34: WARD ROUND-5: Colonic disease:

*Presented with any of the following real, verbal or written problems/conditions of malabsorption, colonic masses, and inflammatory bowel disease: use his/her basic and clinical sciences to explain the underlying mechanisms (including structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest management including health promotion, and protection, prevention, treatment, rehabilitation and follow-up (C2, P2).*

### S35: GIT imaging

1. *Review the normal appearance of the esophagus, stomach, small and large bowel in contrast images.*
2. *Review the appearance of the liver, gall bladder and pancreas in ultrasound and CT images.*
3. *Recognize, in contrast studies, esophageal varices, esophageal narrowing, gastric and duodenal ulcer, gastric masses, large bowel narrowing and suggest diagnosis*

### S36: Renal anatomy and physiology

1. Review the gross features of the kidney, renal histology, blood supply and developmental anomalies (C1).
2. Describe urine formation and explain other aspects of renal function, including blood pressure regulation (C1).

### S37: Hematuria (urinary stones, renal tumors..)

1. List the causes of hematuria (C1).
2. Describe the diagnosis, management and complication of urinary stones (C3).

**S38: Parenchyma renal disease: nephrotic syndrome, Glomerulonephritis**

1. Define nephrotic syndrome and glomerulonephritis and describe the methods of diagnosing them (C1).
2. Outline the management and complications of nephrotic syndrome and glomerulonephritis (C2)

**S39: WARD ROUND-6: Renal problems**

Presented with any of the following real, verbal or written problems/conditions of hematuria, parenchymal renal disease and acute and chronic renal failure: use his/her basic and clinical sciences to explain the underlying mechanisms (including structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest management including health promotion, and protection, prevention, treatment, rehabilitation and follow-up (C3, P3).

**S40: Urinary tract infections: pyelonephritis**

1. List the predisposing causes and causative organism in urinary tract infection (C1).
2. Describe the presentations and management of urinary tract infections (C2).
3. **Outline the diagnosis, management and complications of pyelonephritis (C3)**

**S41: Hyper-and hyponatremia: hyper-and hypokalemia: hyper-and hypocalcemia**

1. Define the electrolyte states of Na, K and calcium (C1).
2. Discuss the metabolic consequences of each of change in each of these electrolytes (C2).
3. Outline the significance of these electrolyte in the management of renal failure (C1).

**S42: Renal imaging**

1. *Review the normal imaging anatomy of the renal parenchyma and collecting systems in plain x-ray, ultrasound, IVU and CT (P2).*
2. *Recognize renal parenchymal disease in ultrasound images (P1).*
3. *Recognize renal stones, hydronephrosis, large and small renal size and suggest diagnosis (C2, P2)*

**S43: WARD ROUND-7: Urinary tract infection, pyelonephritis, electrolyte changes**

***Presented with any of the following real, verbal or written problems/conditions of urinary tract infection, pyelonephritis and electrolyte changes: use his/her basic and clinical sciences to explain the underlying mechanisms (including structure, function and pathophysiological processes) and his/her basic clinical skills to reach***

***a diagnosis and suggest management including health promotion, and protection, prevention, treatment, rehabilitation and follow-up (C3,P3).***

#### **S44: Endocrine anatomy and physiology**

1. Review the position, relations, blood supply, innervation and internal structure of the endocrine glands (C1).
2. Review the sources, synthesis and functions of hormones (C1).

#### **S45: Diabetes mellitus: diabetic emergencies and complications**

1. List the etiology, epidemiology and disease load of diabetes mellitus (C1).
2. Discuss the presentation, management and prevention (C2).
3. Discuss the complications of diabetes mellitus (C1)

#### **S46: Thyroid and parathyroid diseases**

1. Review the morphology, structure and function of the thyroid and parathyroid glands (C1).
2. Discuss the etiology and management of endemic goiter (C2)
3. Discuss the presentation and management of thyrotoxicosis (C2).
4. Discuss the presentation and management of hypothyroidism (C2).
5. Outline the investigations, management and prognosis of a thyroid nodule (C1).
6. Outline the management and complications of hyper and hypoparathyroidism (C1).

#### **S47: WARD ROUND-8: Diabetes mellitus, thyroid disease**

Presented with any of the following real, verbal or written problems/conditions of diabetes mellitus and thyroid and/or parathyroid glands: use his/her basic and clinical sciences to explain the underlying mechanisms (including structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest management including health promotion, protection, prevention, treatment, rehabilitation and follow-up (C3, P2).

#### **S48: Adrenal disease**

1. Review the morphology, structure and function of the adrenal gland (C1).
2. Discuss the presentation, investigations and complication of adrenal tumors (C1).
3. Discuss the presentation and management of Addison's disease (C2).
4. Discuss the presentation and outline management of Cushing's disease (C2).

**S49: Pituitary disease**

1. Review the morphology, structure and function of the pituitary gland (C1).
2. Discuss the presentation, investigations and complication of pituitary tumors (C1).
3. Discuss the presentation and management of acromegaly disease (C2).
4. Discuss the presentation and management of diabetes insipidus (C2).

**S50: WARD ROUND-9: Pituitary and adrenal disease**

*Presented with any of the following real, verbal or written problems/conditions of pituitary Or adrenal glands: use his/her basic and clinical sciences to explain the underlying mechanisms (including structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest management including health promotion, protection, prevention, treatment, rehabilitation and follow-up (C2,P2)*

**S51: Endocrine imaging**

1. Review appearance of normal pituitary fossa, in skull x-rays (P2).
2. Review the appearance of thyroid, and adrenal glands in CT and MRI (P1).
3. Recognize thyroid nodules in CT and radionuclide scan (P1).
4. Recognize adrenal or sympathetic masses in CT and MRI (P1)

**S52: HIV/AIDS**

1. Discuss the etiology and epidemiology of HIV/AIDS (C1).
2. Describe the diagnosis, prevention, control and outline management of HIV/AIDS (C2)

**S53: Gonorrhoea, urethritis**

1. Discuss the etiology and epidemiology of gonorrhoea, urethritis and syphilis (C1).
2. Describe the diagnosis, prevention, control and outline management of gonorrhoea, urethritis and syphilis (C1).

**S54: Anemia, bleeding disorders, thrombosis, leukemia**

1. Describe the components of blood, origin, count, explain the functions of blood cells and the techniques and risks of blood transfusion (C2).
2. Describe the mechanism of coagulation and list the defect in each of the bleeding disorders (hemophilia, thrombocytopenia, disseminated intravascular coagulation, Von Willebrand's disease) and outline its management (bleeding disorders and thrombosis (C1)).
3. Classify anemias and describe the clinical features and management of iron deficiency anemia (C1).

4. Classify leukemias and describe their clinical features, management and prognoses) (C1).

### **S55: WARD ROUND-10: Anemia, bleeding disorders, thrombosis and leukemia**

*Presented with any of the following real, verbal or written problems/conditions of anemia, bleeding disorders, thrombosis or leukemia: use his/her basic and clinical sciences to explain the underlying mechanisms (including structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest management including health promotion, and protection, prevention, treatment, rehabilitation and follow-up (C3,P3)*

### **S56: Fever, septicemia**

1. List the causes of septicemia (C1).
2. Discuss the effects pancytopenia and neutropenia (C1).
3. Discuss the management and complications of septicemia (C2)

### **S57: Lymphadenopathy and lymphoma**

1. Describe the types, epidemiology and disease load of lymphoma (C1).
2. Outline the investigations of lymphadenopathy and management of lymphoma (C2)

### **S58: Multiple myeloma**

1. Describe the epidemiology of multiple myeloma (C1).
2. Describe the clinical features, investigations, management and prognosis of multiple myeloma (C2).

### **S59: Anatomy and pathology**

1. Describe the components of a synovial joint (C1).
2. Explain the mechanism of antigen antibody reactions (C1)

### **S60: WARD ROUND-11: Multiple myeloma**

*Presented with any of the following real, verbal or written problems/conditions of multiple myeloma: use his/her basic and clinical sciences to explain the underlying mechanisms (including structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest management including health promotion, and protection, prevention, treatment, rehabilitation and follow-up (C2,P2)*

**S61: Rheumatoid arthritis, osteoarthritis, ankylosing spondylitis**

1. Discuss the epidemiology and presentation of rheumatoid arthritis, osteoarthritis and ankylosing spondylitis (C1).
2. Outline the imaging features and diagnosis of each (C1)
3. Outline the management and complications of each (C2)

**S62: Gout and pseudogout**

1. Discuss the epidemiology and presentation of gout and pseudogout (C1).
2. Outline diagnostic features, management and prognosis (C2)

**S63: WARD ROUND-12: Rheumatoid arthritis and osteoarthritis**

*Presented with any of the following real, verbal or written problems/conditions of rheumatoid arthritis, osteoarthritis, or gout: use his/her basic and clinical sciences to explain the underlying mechanisms (including structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest management including health promotion, and protection, prevention, treatment, rehabilitation and follow-up (C2, P2)*

**S64: Osteoporosis, osteomalacia**

1. Define osteoporosis and osteomalacia, and discuss the presentation of each (C1).
2. Outline diagnosis, management and complications of each (C2).

**S65: SLE and the C.T diseases, including vasculitis, polyarteritis nodosa, Behcet disease, Reiter's syndrome, scleroderma**

1. Define SLE and list connective tissue diseases (C1).
2. Outline the presentation of SLE, vasculitis, and the connective tissue diseases (C1).
3. List the diagnostic features of SLE (C1).
4. Outline management and complications of SLE and vasculitis (C2).

**S66: WARD ROUND-13: SLE and connective tissue diseases**

*Presented with any of the following real, verbal or written problems/conditions of osteoporosis, SLE or vasculitis: use his/her basic and clinical sciences to explain the underlying mechanisms (including structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest management including health promotion, and protection, prevention, treatment, rehabilitation and follow-up (C2,P2)*

**S67: CNS anatomy and physiology**

1. Review the ascending and descending tracts (including the pyramidal and extrapyramidal systems) (C1).

2. Review the motor and sensory functions of the various parts of the brain (C1).
3. Review the vascular anatomy of the brain (C1).
4. Review peripheral nerve plexuses, myotomes and dermatomes (C1)
5. Review evoked brain responses (C1).

### S68: Headache and migraine

1. List the etiology of headache, and migraine (C1).
2. Describe the investigations used to discover the cause of the problem (C1).
3. Outline the management and follow up (C2)

### S69: Epilepsy

1. List the causes and types of epilepsy (C1).
2. Describe the diagnostic presentation and investigations (C1).
3. Outline the management and prognosis (C2)

### S70: WARD ROUND-14: Headache and epilepsy-

**Presented with any of the following real, verbal or written problems/conditions of headache or epilepsy: use his/her basic and clinical sciences to explain the underlying mechanisms (including structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest management including health promotion, and protection, prevention, treatment, rehabilitation and follow-up (C3,P3)**

### S71: Bell 's palsy

1. Recognize Bell's palsy in a patient (P2).
2. Explain the etiology and presentation of the condition (C2).
3. Outline management, risks and prognosis (C2)

### S72: Stroke and cerebrovascular accidents

1. Recognize a patient with stroke (P2).
2. Describe the immediate life-saving actions.
3. Describe the investigations to reach the underlying diagnosis.
4. Outline management, complications and prognosis

### S73: WARD ROUND-15: Bell's palsy and stroke

**Presented with any of the following real, verbal or written problems/conditions of Bell's palsy or stroke: use his/her basic and clinical sciences to explain the underlying mechanisms (including structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest management including health promotion, and protection, prevention, treatment, rehabilitation and follow-up (C3,P3).**

**S74: Intracranial hemorrhage**

1. List causes and types of intracranial hemorrhage (C1).
2. Describe the clinical features and imaging appearance of extradural, subdural, subarachnoid, parenchymal and intraventricular hemorrhage (C1).
3. Outline management, risks and prognosis (C2)

**S75: Meningitis and encephalitis**

1. List the etiology of meningitis and encephalitis (C1).
2. Outline clinical features and diagnostic criteria (C1).
3. Outline management and complications (C2)

**S76: Peripheral and autonomic neuropathy**

1. Define peripheral and autonomic neuropathy (C1).
2. List the causes of each, and explain the clinical presentations (C1).
3. Outline management and prevention (C2).

**S77: Abnormal gait and involuntary movements**

1. List and explain the causes of involuntary movements (C2).
2. Describe the clinical features and outline management of chorea and Parkinson disease (C2).

**S78: Guillain-Barre syndrome and multiple sclerosis**

1. Describe the clinical features, diagnosis, management and prognosis of Guillain-Barre syndrome (C2).
2. Outline the presentations, management and prognosis of multiple sclerosis (1)

**S79: WARD ROUND-16: Meningitis, intracranial hemorrhage and peripheral neuropathy**

***Presented with any of the following real, verbal or problems/conditions of meningitis, intracranial h'ge or peripheral neuropathy: use his/her basic and clinical sciences to explain the underlying mechanisms (including structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest management including health promotion, and protection, prevention, treatment, rehabilitation and follow-up (C3,P3).***

**S80: WARD ROUND-17: Guillain-Barre syndrome and multiple sclerosis**

***Presented with any of the following real, verbal or problems/conditions of Guillain-Barre syndrome or multiple sclerosis: use his/her basic and clinical sciences to explain the underlying mechanisms (including structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest***



**management including health promotion, protection, prevention, treatment, rehabilitation and follow-up (c2,P2)**

### **S81: Myasthenia gravis and myopathies**

1. List the common myopathies and outline diagnosis and management (C1).
2. Describe the etiology, presentation, diagnosis and management of myasthenia gravis (C1)

### **S82: Cerebellar ataxia**

1. Review the functions of the cerebellum (C1).
2. Outline the diagnosis and management of cerebellar ataxia (C2)

### **S83: Transverse myelitis**

1. List the causes and presentation of transverse myelitis (C1).
2. Outline diagnosis and management (C2)

### **S84: WARD ROUND-18: Myasthenia gravis, cerebellar ataxia and transverse myelitis**

**Presented with any of the following real, verbal or problems/conditions of cerebellar ataxia, myasthenia gravis or transverse myelitis: use his/her basic and clinical sciences to explain the underlying mechanisms (including structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest management including health promotion, protection, prevention, treatment, rehabilitation and follow-up (C2, P2).**

### **S85: CNS imaging**

1. Review the normal appearance of skull and vertebral column in plain x-ray (P2).
2. Review the normal appearance of brain and spinal cord in CT and MRI (P2).
3. Recognize cerebral hemorrhage, hydrocephalus and brain tumors in CT or MRI (P2)

### **S86: MISCELLANEOUS WARD AND CLINIC OPD:**

Tropical and microbial problems: malaria, leishmaniasis, schistosomiasis, brucellosis, amoebiasis (amoebic and bacillary dysentery), ascariasis/ taeniasis/ strongloides, echinococcosis, trypanosomiasis, leprosy. Giardiasis, filariasis, candidiasis

**Presented with any of the above real, verbal or written bacterial, parasitic infections and worm infestation problems/conditions: use his/her basic and clinical sciences to explain the causative organisms, life cycle of helminths and parasites and explain the pathogenesis and use presentation and clinical skills to reach a definite diagnosis and suggest management including health promotion, protection, prevention, treatment, rehabilitation and follow-up (C2.P2)**

### List of Essential Drugs (see attached (WHO) list)

Log Book Requirements (Essential Skills) the satisfactory completion of which is indicated by signature of a senior staff (P1=observe, P2=assist, P3= do under supervision, and P4= do independently).

### SPECIFIC BASIC SKILLS:

1. **COMMUNICATION SKILLS:** Establish and maintain good relationships with patient and family, counsel them and effectively add health concepts and show concern for their economic and social abilities in management choices (A).
2. **HISTORY TAKING:** Record a full history (minimum 12 patients) with relevant details of familial and social background (P3).
3. **GENERAL PHYSICAL EXAMINATION:** Conduct and record a complete physical examination (minimum of 12 patients), using clinical and laboratory skills relevant to the patient's problem, and considering suitable techniques for various age groups (P3).
4. Artificial respiration and resuscitation. CPR (cardiopulmonary resuscitation) including BLS (basic life support), ACLS (advanced cardiac life support) (P3).
5. Underwater seal, thoracic tube (P1).
6. Putting a urethral catheter (P3).
7. Lumbar puncture (P2)
8. Lung biopsy (P1)
9. Pleural and peritoneal taping (P1).
10. Venous puncture, section, take blood sample from veins, finger tips, arteries (P4).
11. Give intradermal, intramuscular and intravenous injections and infusions, parenteral nutrition (P4).
12. Introduce nasogastric tube, endotracheal tube (P2).
13. Examine the eye and use ophthalmoscope, examine acuity and field of vision (P4).
14. Examine the ear and use auroscope (P4).
15. Examine the larynx and use the laryngoscope (P2).
16. Using naked eye, microscope and/or other known methods, examine stools and urine (twice each), estimate hemoglobin (twice), do blood grouping (once), count white blood cells (once), and find out erythrocyte sedimentation rate (ESR) (once) (P4).
17. Make blood film and recognize malaria parasite (once) (P4)
18. Make a stools preparation to diagnose amebic dysentery, schistosomiasis,

*ankylostoma, ascaris, taenia (P4). S19= Make urine examination for Schistosoma hematobium (P4) S20= Bone marrow aspiration (P2).*

- 19. Recognize under the microscope the various types of normal and abnormal blood and bone marrow cells (P4).*
- 20. Take a skin snip or/and make a skin scraping to confirm diagnosis of dermatological conditions (P4).*
- 21. Take a throat swab to confirm the diagnosis of tonsillitis, diphtheria and candida infections (P4).*
- 22. Perform bone marrow, lymph node puncture or skin snip and prepare films for examination for leishmaniasis (P3).*
- 23. Master the methods of learning and instructional techniques used in clinical settings, and in health education, adopting problem – based and independent learning approaches in all activities (signed by tutor following audiovisual presentation) (P4).*
- 24. Deliver one session of health education (P4).*

### Reading material:

- Kumar PJ. Clinical Medicine. WB Saunders 0702026069 [IE]
- Munroe J. Mcleods Clinical Examination. Churchill Livingstone ISBN 0443061866 [IE]
- Swash P. Hutchison Clinical Methods, ISBN 0702025313[IE].

### Educational strategies and methods

- Work plan/Students' Rotation
- 12 weeks general medicine
- Overview of Timetable:
  - Morning (grand) round in medical wards- 7:30-9:00, daily (5 days/week).
  - Daily (if possible) clinical teaching assignments in medical wards and out-patient
  - Three or Four days weekly tutorials in medical topics, theoretical medical topics, clinico-pathological conferences, clinical meetings, presentations of research work or journal club materials and discussions- 1:00-4:00

## Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Seminar/Presentation= 5%	MCQs= 10%	MCQs = 20%
Practical/Clinical/Visits= 0%	SQs= 0%	SSQs=0%
Assignment/Seminar/Log-book=5%	Essays/ Short notes=	OSCE= 20
Others= 0% (e.g. peer)	Others= - Clin+ OSPE/ PSCE-----10%	Others= Clini+ / =20%
<b>Total= 10%</b>	<b>Total= 20%</b>	<b>Total= 70%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**Remedial for 'F' students:** by repeating course through approved independent supervision by full-time or honorary staff member during holidays or the following semesters and re-sit exam with the batch to follow.

Clerkship evaluation:

Through student and staff discussions and questionnaire carried out before examination.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required Resources****Premises**

- Lecture room for 100-150 students, with multimedia and x-ray viewing boxes
- 36 tutorial rooms (OSCE) with similar arrangement.
- Skills laboratory
- Hospital: inpatients and outpatients

**Staff**

- General physicians
- Gastroenterologists
- Neurologists/ neurosurgeon
- Nephrologists
- Oncologists

- Radiologists

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

## Emergency Medicine (ME-EMERG-412) – 4 CHs-

TITLE: Emergency Medicine	CODE: ME-EMERG-412	DURATION/CREDITS: block 4 CHs 4-week-
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES: <b>Years 1,2 and 3 courses</b>		

### PREREQUISITES:

### Outline

A four-week block during medical clerkship semester designed to contain common medical and surgical emergencies seen in Emergency Department, mostly undifferentiated cases, that require life-saving management including prioritization, resuscitation and stabilization, simultaneous management of more than one patient, appropriately-focused history and physical examination, working differential diagnosis and quick investigations, courageous attitude, adequate basic clinical skills, organization skills and documentation habits, recognition of importance of pre-hospital or onsite emergency care, psychological care, ethical issues in emergency. Emergency conditions include: trauma resuscitation, poisoning, cardiac dysrhythmias, myocardial infarction, epilepsy, status epilepticus and seizures, coma, status asthmaticus, urine retention, acute abdomen. The essential skills are: basic life support (BLS), advanced cardiac life support (ACLS), venipuncture, intravenous lines, arterial puncture, local anesthetic infiltration, urinary catheter insertion, application of bandage, splints and casts, wound suturing.

### General Learning Outcomes

At the end of this course, the students should be able to:

1. Show responsible and compassionate behavior with the patient and family considering the cultural, social and economic background, and in dealing with all levels of education and abilities.

2. Master the required communication skills for appropriate history taking and medical examination.
3. Appreciate the role of perfect understanding of basic sciences (anatomy, physiology and biochemistry) and the underlying pathophysiological processes relevant to medical practice in diagnosis and management of common illnesses in patient and community.
4. Be acquainted with the epidemiological profile of the population and society, their heritage and cultural, social, geographic and economic characteristics and relationship of all those to medical, surgical, obstetrical, gynecological and pediatric disease etiology and anagement.
5. Have the knowledge and skills necessary to identify and manage the health problems of a patient's emergency situations, injuries and disabilities.
6. Opt for the wise selection of the most appropriate and cost-effective investigations to reach the proper diagnosis, considering the patient rights and abilities and the capabilities of the health system.
7. Interact effectively with the health team (and appreciate the role of others) in providing medical services.
8. Continues independent learning and pursue postgraduate studies.

### **Intended (specific) learning outcomes**

*At the end of this course, the students should be able to:*

#### **S1: Introduction to the course**

1. Introduce the various aspects of the course and outline assessment
2. Show understanding of the general structure of the course.
3. Show list of the outcomes and specific objectives of the course.
4. Explain the bases and contents of the assessment and feedbacks.
5. Appoint or elect a student coordinator.
6. List hard and soft reading material.
7. Explain attendance regulations and consequences of absenteeism.

#### **S2: Taking history**

1. *Given any patient with any complaint/s: take full medical history, with appropriate sequence and comprehensiveness, and write it as clear as possible for others to read and understand (P2).*
2. *Recognize urgent problems, emergency and critical conditions (P2).*

#### **S3: Performing medical examination and investigations**

1. *Asked to examine a patient: prepare the appropriate setup for physical*



*examination; carry out the examination in the appropriate manner, sequence and comprehensiveness attending all systems relevant to the medical problem, and write his/her notes as clear as possible for others to read and understand (P2).*

- 2. Select the laboratory investigations relevant to the problem of the patient, considering limitations of the patient, the health system and/or hospital routine, and issuing clear directives to the patient on how and where to do these investigations (P2).*
- 3. Write an informative referral letter asking help on a particular patient problem (P2)*
- 4. Show ability and enthusiasm to promote health through health education and support and provision of primary health care programs (P2)*

#### **S4: Ethics and professionalism**

- 1. Reflect, through attitudes, responsible and serious concern to the patient's problems and his/her family, taking into account the moral and cultural characteristics of the society (A).*
- 2. Comply with the hospital system regarding uniform attendance, team work and ethical and responsible behavior (A).*
- 3. Work effectively and harmoniously with members of the health team, accepting leadership responsibilities (A).*
- 4. Explain population dynamics in his/her area or country, population-related factors affecting health and disease in adults, and the effects of disease on these dynamics, and use this approach in counselling and case management (A).*
- 5. Demonstrate ability of independent and life-long learning, initiate research methodologies relevant to clinical medicine, disease etiology, management and prevention (A).*
- 6. Deal effectively efficiently and ethically, with patients of various adult age groups presenting emergency conditions,, disabilities and life threatening illnesses taking into account the burden on the family and community and the psychological, social and economic dimensions as well as health promotion and rehabilitation in management (P3).Emergency condition may affect mentally retarded adult, patients with congenital and physical disabilities, asthma and other acute episodes of chronic respiratory diseases (bronchiectasis, emphysema, pulmonary fibrosis), hepatitis, and other gastrointestinal diseases (peptic ulcer, irritable bowel syndrome), cardiac (rheumatic and ischemic) diseases, chronic urinary tract infections, renal failure, anemia and cancer (A).*

### S5: Basic medical emergencies

1. Draw a detailed plan of onsite management, transfer, resuscitation and list criteria of observing and monitoring a critically ill patient (C1).
2. Prescribe suitable fluid and electrolyte therapy, giving reasons and considering the acid-base balance of the body(C2).
3. Describe the components or contents of blood, origin, count and functions of blood cells and the technique and risks of blood transfusion (C1).

### S6: Chest pain

1. List the causes of chest pain (C1).
2. Describe the clinical features of angina pectoris (C1).
3. Discuss the etiology, presentation, diagnosis and management of myocardial infarction (C3,P3).
4. Outline prevention and prognosis of myocardial infection (C2).

### S7: Cardiac arrest and CPR

1. List diagnostic features and diagnose cardiac arrest (C1).
2. Perform or attend CPR (P2).
3. Outline management of cardiac arrest

### S8: WARD ROUND - 1: Medical emergencies ER

**Presented with any of the following real, verbal or written emergency problems/ conditions: perform (or suggest urgent) life-saving procedures, and diagnose (or pose diagnostic criteria) of such problems/conditions & explain the causes. The conditions are: chest pain, cardiac arrest and CPR (C3,P3)**

### S9: Asthma and status asthmaticus and bronchospasm

1. List causes of status asthmaticus and bronchospasm (C1).
2. Outline immediate life-saving actions (C1).
3. Outline long term management, prognosis and prevention (C2)

### S10: Pneumothorax

1. List causes of pneumothorax (C1).
2. Outline immediate management (C2).
3. Suggest follow up, prevention and prognosis (C2)

### S11: Deep vein thrombosis and pulmonary embolism

1. List causes of deep vein thrombosis and risk factors (C1).
2. Suggest immediate actions (C2).
3. Discuss complications and their diagnosis and management (C2)

**S13: WARD ROUND-2: Asthma emergencies- ER/**

*Presented with any of the following real, verbal or written emergency problems/ conditions of Asthma and other emergencies (dyspnea, status asthmaticus, bronchospasm, pneumothorax, pulmonary embolism, deep vein thrombosis. perform (or suggest urgent) lifesaving procedures, and diagnose (or suggest diagnostic criteria) of such problems/conditions and outline management, prognosis and prevention (C3,P3)*

**S14: Diabetic ketoacidosis**

1. List the causes of diabetic ketoacidosis (C1).
2. Discuss the management of diabetic ketoacidosis (C2)

**S15: WARD ROUND-3: Diabetic ketoacidosis-ER/**

Presented with real, verbal or written emergency problem of diabetic ketoacidosis: perform (or suggest urgent) lifesaving procedures, and diagnose (or suggest diagnostic criteria) of such problem/condition & explain the causes and management (C3, P3).

**S16: Upper and lower gastrointestinal bleeding**

1. List the causes of the upper and lower gastrointestinal bleeding (C1).
2. Suggest immediate life-saving actions (C1).
3. Follow up the suitable investigations to realize the cause of bleeding or its complications (C1).
4. Outline definitive management of causes and complications (C2).

**S17: Severe headache**

1. List causes of headache (C1).
2. Suggest the relevant investigations and images for each cause (C2)
3. Outline immediate and long-term management of severe headache (C2).

**S18: Convulsions/seizures**

1. List the causes of convulsions/seizures (C1).
2. Perform the correct immediate life-saving actions (C1)
3. Suggest the suitable investigation and images (C1).
4. Prescribe the long-term management and prevention (C2).
5. Discuss prognosis of epilepsy (C1)

**S19: WARD ROUND -4: Convulsions/seizures-ER/**

*Presented with real, verbal or written emergency problem of convulsions/seizures: perform (or suggest urgent) lifesaving procedures, and diagnose (or suggest diagnostic criteria) of such problem/condition & explain the causes and management (C3, P3).*

### S20: Stroke and cerebrovascular accidents

1. List the causes of stroke and cerebrovascular accidents (C1).
2. Perform the correct immediate life-saving actions (P1)
3. Suggest the suitable investigation and images (C1).
4. Prescribe the long-term management and prevention (C2).
5. Discuss prognosis of stroke and cerebrovascular accidents (C1)

### S21: WARD ROUND-4: Stroke and cerebrovascular accidents- ER/

*Presented with real, verbal or written emergency problem of: stroke and cerebrovascular accidents perform (or suggest urgent) life-saving procedures, and diagnose (or suggest diagnostic criteria) of such problem/condition & explain the causes and management (C3, P3).*

### S22: Shock, coma and brain death

1. Define shock, coma and brain death (C1).
2. Suggest immediate actions in the ER (P1).
3. Outline ethical and professional issues in end of life care (A).

### S23: Generalized or laryngeal edema

1. List the causes of generalized and laryngeal edema (C1).
2. Suggest the immediate life-saving actions (C2).
3. Outline long term management, prevention and prognosis (C2)

### S24: Poisoning

1. List the causes of accidental poisoning in young children (C1).
2. List the types of poisoning inflicted in criminal act for killing, sedative or amnestic purposes (C1).
3. Describe the clinical features of food poisoning (C1).
4. Outline diagnosis and management of poisoning (C2).
5. Counsel self-harming patients and their families (A)

### S25: Bee and scorpion stings and snake bites

1. Describe the chemical nature of bee, scorpion or snake venoms (C1).
2. Describe the clinical presentations of each (C1).
3. Outline management and complication of each (C2).

### S26: Critically ill patient

1. Draw a plan of onsite management of a critically ill patient (C1).
2. Describe precautions for transfer of such patient (C1).
3. List criteria for observing and monitoring a critically ill patient (P2)

## Reading material

- Oxford Handbook of Accident and Emergency Medicine, Oxford University Press
- Laurance Clinical Pharmacology, Churchill Livingstone
- Davidson Principles and Practice of Medicine, 4 Kumar Clinical Medicine
- Manual of Emergency Medicine, Michael Ihatstau
- Lecture Notes on Emergency Medicine, Chris Moulton and David Yates, Blackwell Science

## Educational strategies and methods

- Morning (grand) round in ER: Duties in ER

## Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Seminar/Presentation= 5%	MCQs= 10%	MCQs = 20%
Practical/Clinical//ER= 10%	SQs= 0%	SSQs=0%
Assignment/Seminar/Log-book=5%	Essays/ Short notes=	OSCE= 20
Others= 0% (e.g. peer)	Others= - Clin+ OSPE/ PSCE-----10%	Others= Clini+ / =20%
<b>Total= 20%</b>	<b>Total= 10%</b>	<b>Total= 70%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**Remedial for 'F' students:** by repeating course through approved independent supervision by full-time or honorary staff member during holidays or the following semesters and re-sit exam with the batch to follow.

### Clerkship evaluation:

Through student and staff discussions and questionnaire carried out before examination.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required resources****Premises**

- Lecture room , with multimedia and x-ray viewing boxes §
- 36 tutorial rooms (OSCE) with similar arrangement.
- Skills laboratory
- Hospital ER

**Staff: The same as in medical clerkship**

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

## Dermatology (ME-DERM-413) - 2 CHs-

TITLE: Dermatology	CODE: ME-DERM-413	DURATION/CREDITS: block / 2 CHs each - 2-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES: Years 1,2 and 3 courses		

### Outline

A two-week block, just after or in integration with internal medicine clerkship, to include: (1) description of the histological features of the skin, and explain the causes of variations in skin color, texture and thickness, (2) outlining the basics of dermatologic terminology, (3) presented with any of the following real, verbal or written dermatologic problems/conditions or a slide/picture of a lesion: The student uses his/her basic and clinical sciences to explain the underlying mechanisms (including structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest management including health promotion, and protection, prevention, treatment, rehabilitation and follow-up, the conditions are (a) acne and related disorders: acne, rosacea and perioral dermatitis, (b) eczema (endogenous and exogenous) and atopic and seborrheic dermatitis, (c) papulosquamous diseases: psoriasis, lichen planus, pityriasis rosea, (d) pigmentary disorders: vitiligo, melanoma, (e) common skin infections: furuncle, carbuncle, impetigo, cellulites, dermatophytosis, candidiasis, viral wart, herpetic infections, molluscum, scabies, leishmaniasis, (f) bul- lous diseases: pemphigus, bullous pemphigoid, dermatitis herpetiformis, (g) connec- tive tissue diseases: lupus, dermatomyositis, scleroderma, (h) drug reactions.

### General Learning Outcomes

At the end of this course, the students should be able to:

1. Show responsible and compassionate behavior with the patient and fami- ly considering the cultural, social and economic background, and in dealing with all levels of education and abilities.
2. Master the required communication skills for appropriate history taking and

- medical examination.
3. Appreciate the role of perfect understanding of basic sciences (anatomy, physiology and biochemistry) and the underlying pathophysiological processes relevant to medical practice in diagnosis and management of common skin diseases in patient and community.
  4. Be acquainted with the epidemiological profile of the population and society, their heritage and cultural, social, geographic and economic characteristics and relationship of all those to medical, surgical, obstetrical, gynecological and pediatric disease etiology and management.
  5. Have the knowledge and skills necessary to identify and manage the health problems of patients emergency situations, injuries and disabilities.
  6. Opt for the wise selection of the most appropriate and cost-effective investigations to reach the proper diagnosis, considering the patient rights and abilities and the capabilities of the health system.
  7. Interact effectively with the health team (and appreciate the role of others) in providing medical services.
  8. Continues independent learning and pursue postgraduate studies.

### **Intended (specific) learning outcomes**

At the end of this course, the students should be able to

#### **S1: Introduction to the course**

1. Introduce the various aspects of the course and outline course assessment
2. Show understanding of the general structure of the course.
3. Show list of the outcomes and specific objectives of the course.
4. Explain the bases and contents of the assessment and feedbacks.
5. Appoint or elect a student coordinator.
6. List hard and soft reading material.
7. Explain attendance regulations and consequences of absenteeism.

#### **S2: Introduction to skin histology and terminology**

1. Review the histological features of the skin (C1).
2. Explain the causes of variations in skin color, texture and thickness (C2).
3. Outline the basics of dermatologic terminology (C1).

#### **S3: Acne and related disorders: Acne, rosacea and perioral dermatitis**

1. Define acne and dermatitis (C1).
2. Differentiate between acne and perioral dermatitis (C1).
3. Outline the management of acne (C1).



**S4: Eczema, endogenous, exogenous and atopic seborrheic dermatitis**

1. Describe the presenting features of eczema and seborrheic dermatitis (C1).
2. Outline management (C1).

**S5: Papulosquamous diseases: psoriasis, lichen planus, pityriasis rosea**

1. Recognize and diagnose psoriasis, lichen planus and, pityriasis (C1).
2. Outline the management of each (C1).

**S6: Pigmentary Disorders; vitiligo**

1. **Recognize and diagnose vitiligo (P2)**
2. Outline management of pigmentary disorders (C1).

**S7: Recognize common skin infections:**

*furuncle, carbuncle, impetigo, cellulites, dermatophytosis, candidiasis, viral wart, herpetic infections, molluscum, scabies, leishmaniasis dermatophytosis, candidiasis, viral wart, herpetic infections, molluscum, scabies, leishmaniasis (P1).*

1. Outline management of common skin infections (C1).

**S8: Connective tissue disease, lupus, dermatomyositis, scleroderma,**

1. Name skin manifestations of connective tissue disease (C1).
2. Identify the lesions of lupus erythematosus and scleroderma

**S9: WARD ROUND-1: Skin problems**

*Presented with any of the following real, verbal or written dermatologic problems/conditions or a slide/picture of a lesion: use his/her basic and clinical sciences to explain the underlying mechanisms (including structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest management including health promotion, and protection, prevention, treatment, rehabilitation and follow-up including: Acne and related disorders and rosacea, endogenous and exogenous) and atopic and seborrheic dermatitis, Papulosquamous diseases: psoriasis, lichen planus, pityriasis rosea, Pigmentary disorders: vitiligo (C2,P2)*

**S10: WARD ROUND-2: Skin problems**

*Presented with any of the following real, verbal or written dermatologic problems/conditions or a slide/picture of a lesion: use his/her basic and clinical sciences to explain the underlying mechanisms (including structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest management including health promotion, and protection, prevention, treatment, rehabilitation and follow-up including: Skin infections: furuncle, carbuncle, impe-*

*tigo, cellulites, dermatophytosis, candidiasis, viral wart, herpetic infections, molluscum, scabies, leishmaniasis, Bullous diseases: pemphigus, bullous pemphigoid, dermatitis herpetiformis, Connective tissue diseases: lupus, dermatomyositis, sclerodema (C2,P1)*

### S11: Skin reactions to drugs

1. Name the drugs which stimulate skin reactions (C1).
2. Outline the management of drug reactions (C1)

### Reading material

- Hunter, Clinical Dermatology
- Odom, Andrew's Diseases of the Skin, ISBN 0808921959.
- Fitzpatrick et al (Eds). Color Atlas and Synopsis of Clinical Dermatology.
- Freeberg et al (Eds). Fitzpatrick's Dermatology in General Medicine 6<sup>th</sup> ed.
- Champion et al (Eds). Rook's Textbook of Dermatology, 7<sup>th</sup> ed.

### Educational strategies and methods

- Morning (grand) round in dermatology

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance /Presentation= 5%	MCQs= 10%	MCQs = 30%
Practical/Clinical/= %	SQs= 0%	SSQs=0%
Assignment/Seminar/Log-book=5%	Essays/ Short notes=	OSCE= 20
Others= 0% (e.g. peer)	Others= - Clin+ OSPE/ PSCE-----10%	Others= Clini+ / =20%
<b>Total= 10%</b>	<b>Total= 10%</b>	<b>Total= 80%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

Remedial for 'F' students: by repeating course through approved independent supervision by full-time or honorary staff member during holidays or the following semesters and re-sit exam with the batch to follow.

**Clerkship evaluation:** Through student and staff discussions and questionnaire car-

ried out before examination.

### \*Grade Descriptors (Rubrics):

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

## Required resources

### Premises

- Lecture room, with multimedia and x-ray viewing boxes.
- Rooms for tutorials and seminars
- Hospital with dermatology patients

### Staff

- Dermatologists
- Physicians,

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

# General Surgery (including anesthesia) (ME-SURG-421) - 10CHs, Block, 12 weeks

TITLE: General Surgery	CODE: ME-SURG-421	DURATION/CREDITS: block 10 CHs 12-week-
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES: Years 1,2 and 3 courses		

## Outline

A twelve-week continuous block, interrupted only by longitudinal courses for one half-day every week, to include: (1) demonstrating good attitudes, ethics and professional behavior in the practice of surgery (2) obtains full history relevant to the surgical problem, perform appropriate physical examination, requests informative and cost-effective investigations, synthesizes information to reach (or suggest differential) diagnosis, select (or suggest) proper treatment, health promotion, prevention, protection, follow up and rehabilitation, including problems seen in emergency situations, (3) demonstrating knowledge of basic and clinical sciences, particularly anatomy, pathology, microbiology and basic skills, relevant to surgery, (4) recognize urgent and emergency surgical conditions, e.g. burns, acute abdomen, head injury, (see also ERM-407, (5) diagnose and manage (or detail description of management) of goiter and thyroid disorders, acute abdomen, breast lump, inguinoscrotal swellings, lymphadenopathy, hematemesis, biliary and liver surgical conditions, peptic ulcer, anorectal disorders, urinary stones and masses, chest trauma, (6) outline diagnostic procedures and management of cardiac surgical problems, brain tumors, abdominal masses, (7) anesthetics for preoperative and postoperative management, (7) basic operative skills, (8) essential drugs used in general surgery.

## Rationale

The basic aim of health care is that patients, irrespective of their gender, age, color, religion, socioeconomic background etc. deserve the physician's kind care and full attention, and to be treated humanely, with due respect to their dignity. The surgeon

should have the required, skills and professionalism, to carry out his/her duties to help them. Modern educational philosophies assume that a medical student is an active learner and emphasize independent learning and team work.

Injuries and road traffic accidents constitute a large share of health problems in any community, particularly in the Sudan. Studying surgery is an essential component of medical training and a daily activity of a practicing physician. Knowledge and skills learned in surgery enable the students to deal with surgical emergencies and life-saving situations as well as with other cold problems (e.g malignant growths, replacing or reconstructing shape or function). Surgical training in subspecialties like orthopedics, ophthalmology and otorhinolaryngology (ENT) helps in facing very specific components of surgery and are dealt with in this clerkship. Most of the training in this clerkship is focused on secondary and tertiary levels of health care, which have to complement, rather than replace, primary level.

While studying surgery the student should adopt a holistic approach to patient problems, which may require attention to medical illnesses while the patient is in the surgical ward. This is why the General Objectives and the Specific Basic Clinical Skills are nearly the same as those in Medical Clerkship. Close consultations and timely referral of medical problems is for the best of the patient.

## General Learning Outcomes

By the end of the surgical clerkship the student should:

- 1. Show responsible and compassionate behavior with the patient and family considering the cultural, social and economic background, and in dealing with all levels of education and abilities.**
2. Describe patterns of surgical disease, in various age groups
3. Use the required communication skills for taking appropriate history and conducting medical examination.
4. Appreciate the role of perfect understanding of basic science (anatomy, physiology and biochemistry) and the underlying pathophysiological processes relevant to surgical practice, in the diagnosis and management of common illnesses in patient and community.
5. Be acquainted with the epidemiological profile of the population and society, their heritage and cultural, social, geographic economic characteristics, and relationship of all those to surgical disease etiology and management.
6. Have the knowledge and skills necessary to identify the health problems of a patient: emergency situations, common endemic or epidemic diseases and disabilities, including health promotion, prevention, treatment, rehabilitation and follow up.
7. Opt for the wise selection of the most appropriate and cost-effective inves-

- tigations to reach the proper diagnosis, considering the patient rights and abilities and the capabilities of the health system, especially when weighing the pros and cons of surgical intervention.
8. Interact effectively with the surgical and other health teams (and appreciate the role of others) in providing medical and surgical services.
  9. Continue independent learning in surgery and pursue postgraduate studies.

## Intended (specific) Learning Outcomes (ILOs)

By the end of this clerkship, the student should achieve the objectives listed under the following subtitles:

### S1: Introduction to the course

- 1- List hard and soft reading material.
- 2- Introduce the various aspects of the course and outline assessment.
- 3- Show understanding of the general structure of the course.
- 4- Show list of the outcomes and specific objectives of the course .
- 5- Explain the bases and contents of the assessment and feedbacks.
- 6- Appoint or elect a student coordinator.
- 7- Explain attendance regulations and consequences of absenteeism

### S2: Ethics and professionalism

1. *Reflect, through good attitudes, responsible and serious concern to the patient's problems and his/her family, taking into account the moral and cultural characteristics of the society, ( A ) .*
2. *Explain to the patient, honestly and in simple terms the surgical concepts of disease and surgical interventions, and show concern for their economic and social abilities in management choices (A,C3) .*
3. *Comply with the hospital system regarding uniform attendance, team work and ethical and responsible behavior (A).*
4. *Deal effectively and efficiently with patients of various adult age groups presenting with chronic, acute and malignant surgical diseases, disabilities and life-threatening illnesses taking into account the burden on the family and community and psychological, social and economic dimensions as well as health promotion and rehabilitation in management. Such disorders include: a mentally retarded patient with a surgical problem, congenital and physical disabilities, chronic gastrointestinal diseases that may affect drug choice, chronic cardio-respiratory problems that may require special anesthetic attention, immunologic or degenerative diseases that may affect patient mobility or recovery from surgical procedures, e.g. renal failure, anemia or cancer (A,P3).*

### S3: History taking

1. *Given any patient with any complaint/s: take full medical and surgical history, with appropriate sequence and comprehensiveness, and write it up as clear as possible for others to read and understand (P3).*
2. *Recognize urgent surgical problems, emergency and critical conditions presented to him/her (P3)*

### S4: Surgical examination and investigations

1. *Asked to examine a patient: prepare the appropriate setup for physical examination, carry out the examination in the appropriate manner, sequence and comprehensiveness of all systems, relevant to the surgical problem, write his/her notes as clear as possible for others to read and understand (P2).*
2. *Select the laboratory investigations relevant to the problem of the patient, considering limitations of the patient, the health system and/or hospital routine, and issuing clear directives to the patient on how and where to do these investigations (P3).*
3. *Use the skills stated in above Sessions 2, and 3 to reach a diagnosis or suggest a differential diagnosis of the problem presented (P3).*
4. *Write an informative referral letter asking help on a particular patient problem (P3).*
5. *Show ability and enthusiasm to promote health through health education and support and provision of primary health programs (P3)*

### S5: Basic surgical emergencies and the critically-ill patient

1. Draw a detailed plan of onsite management, transfer, resuscitation, and list criteria of observing and monitoring a critically ill patient (C1).
2. Describe the causes and types of burns, management protocols including hydration and pain relief, short- and long-term consequences and their management including health promotion, prevention, treatment, rehabilitation and follow up (C1).
3. Prescribe suitable fluid and electrolyte therapy, giving reasons and considering the acid-base balance of the body (C1).
4. Describe the components or contents of blood, origin, count and functions of blood cells, and the techniques and risks of blood transfusion (C1).

### S6: WARD ROUND-1: Specific emergency surgical problems

*Presented with any of the following real, verbal or written emergency problems/ conditions: perform (or suggest urgent) lifesaving procedures, diagnose (or pose diagnostic criteria) of such conditions, and manage (or describe adequate man-*

**agement steps) including health promotion, prevention, treatment, rehabilitation and follow up patients with: multiple injury, shock, seizures, bleeding patient, coma, gastrointestinal bleeding, burns, chest pain, cardiac arrest, generalized or laryngeal edema, food poisoning, abdominal pain or colic, septicemia, intestinal obstruction, diabetic ketoacidosis, headache, status asthmaticus, bronchospasm, pneumothorax, snake and scorpion bites (C3, P4).**

### **S7: Wound and wound healing**

1. Describe the types of wounds (C1).
2. Explain the process of wound healing (C2).
3. List the factors involved, and organisms causing wound infection (C1).

### **S8: WARD ROUND-2:Management of wound-**

**Presented with a real patient with a wound, or verbal or written account of injury: explain the condition, in surgical terms stating site, size, depth, etc., recognize indicators of wound infection, and manage adequately (C3,P3)**

### **S9: WARD ROUND-3: Cysts, ulcers and fistulae-**

**Presented with any of the following real, verbal or written description of the following lesions: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to describe its surgical characteristics: size, site, consistency, attachments etc., and suggest a diagnosis or list of differential diagnoses; cysts, ulcers, sinuses, and fistulae (C2,P2).**

### **S10: Head injuries**

1. Describe the boundaries and contents of the cranial cavity (C1).
2. Enumerate types and causes of head injury (C1).
3. Explain the functional consequences and clinical features for each type (C2)

### **S11: WARD ROUND-4: Head injuries-**

**Presented with a real patient with head injury, or verbal or written scenario of the following presentations:, use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to reach the diagnosis and detail management including health promotion, prevention, treatment, rehabilitation and follow up ; Skull fractures, Extradural hematoma, Subdural hematoma, Parenchymal hemorrhage (C3,P4).**



## S12: Oropharyngeal region

1. Describe the anatomical structures in the mouth and pharynx (C1).
2. List the major types of maxillofacial injuries (C1).
3. Outline their management plan (C1).

## S13: WARD ROUND -5: Oropharyngeal region-

*Presented with a real patient with the following problems/conditions, or verbal or written scenarios: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to reach the diagnosis and detail management including health promotion, prevention, treatment, rehabilitation and follow up: parotid swelling,, rodent ulcer, Ca lip, Ca tongue, Ca pharynx, Ranula.*

## S14: Cervical swellings

1. Describe the anatomical structures and relations in the triangles of the neck (C1).

## S15: WARD ROUND-6: Cervical swellings-

*Presented with a real patient with a cervical swelling (e.g. goiter, thyroid masses and cysts, enlargement of cervical lymph nodes, branchial cyst, cystic hygroma, pharyngeal cleft), or verbal or written scenarios: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to reach the diagnosis and detail management including health promotion, prevention, treatment, rehabilitation and follow up: (C2,P2)*

## S16: Breast

1. Describe the anatomical, histological and developmental characteristics of the breast, relevant to surgical practice (C1).
2. Describe the clinical features and management of mastitis.
3. Give appropriate advice to women on prevention of ca breast and the methodology of self-examination of the breast (P2)

## S17: WARD ROUND-7: Breast

*Presented with a real patient with a mass in the breast, or verbal or written scenarios: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to reach the diagnosis and detail management including health promotion, prevention, treatment, rehabilitation and follow up (C3,P4)*

### S18: CASUALTY ROUND-1: Chest injury

*Presented with a real patient with chest injury, or verbal or written scenario of fractured ribs, flail chest, pneumo- hydro- and hemothorax, ruptured diaphragm, ruptured esophagus, ruptured major blood vessels and thoracic duct, lung lacerations, use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to reach the diagnosis and detail management including health promotion, prevention, treatment, rehabilitation and follow up (C2,P3)*

### S19: Dysphagia

1. List the possible causes of dysphagia (C1).
2. Describe the clinical features, diagnostic criteria and management of common causes of achalasia ca esophagus, reflux esophagitis, and esophageal varices (C1).

### S20: Acute abdomen

1. List causes of acute abdomen (C1).
2. *Use suitable diagnostic approach to the problem of acute abdomen, and explain management choices (P1).*
3. Describe the causes of acute abdomen clinical features and management of appendicitis, cholecystitis, cholelithiasis, pancreatitis, peritonitis, diverticulitis, salpingitis, and pelvic infection, bowel perforation and intestinal obstruction (C1).
4. Differentiate between those and confounders like myocardial infarction, tabes dorsalis and herpes zoster (C2).

### S21: CASUALTY/WARD ROUND-2; abdominal masses

*Presented with any real, verbal or written scenarios of the following conditions: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to elicit the relevant physical signs, suggest a differential list, and outline further steps in diagnosis and management including health promotion, prevention, treatment, rehabilitation and follow up.: abdominal mass in various regions: epigastric (e.g. ca stomach), epigastric hernia, pancreatic or lesser sac mass), right iliac fossa (appendicular mass or abscess, caecal mass, ovarian mass, ectopic pregnancy, Crohn's disease, actinomycosis, and tuberculosis), renal (Wilm's tumor, renal cell carcinoma, hydronephrosis, perinephric abscess or hematoma), rectal (ca rectum, bilharzioma, polyps) (C2,P3).*

**S22: Right hypochondrium and right iliac fossa pain**

1. Describe the differential diagnosis of right iliac fossa (C3)

**S23: Intestinal obstruction**

1. List the causes of intestinal obstruction (C1).
2. Describe the symptoms and signs of intestinal obstruction (C1).
3. Differentiate between small and large bowel obstruction (C2).

**S24: Splenomegaly**

1. Explain the causes of splenomegaly and the indications for splenectomy (C1).
2. Explain the possible complications of splenectomy (C1)

**S25: Postoperative complications**

1. List the postoperative complications of abdominal surgery (C1).
2. Describe management of these complications (C2).

**S26: Gastrointestinal bleeding: gastric ulceration and portal hypertension**

1. List the causes of upper and lower gastrointestinal bleeding (C1).
2. Describe the etiology, presentation, management and complication of gastric ulceration (C2).
3. Describe the etiology, presentations, management and complication of intestinal schistosomiasis (C2)

**S27: CASUALTY ROUND-3: Acute abdomen**

***Presented with a case of acute abdomen, list the differential diagnosis and observe the clinical features and outline the management of appendicitis, cholecystitis, cholelithiasis, pancreatitis, peritonitis, diverticulitis, salpingitis, and pelvic infection, bowel perforation and intestinal obstruction. Differentiate between those and confounders like myocardial infarction, tabes dorsalis and herpes zoster (C3, P4).***

**S28: Inguinal hernia and testicular swelling**

1. List the causes of inguinal and testicular swelling (C1).
2. Review the anatomy of the inguinal canal and scrotum (C1).
3. Describe the clinical observations and investigations to differentiate direct from indirect inguinal hernia (C2).
4. Describe the clinical observations and investigations to differentiate between hydrocele, varicocele and testicular masses (C2).

**S29: WARD ROUND-8: Inguinoscrotal region –**

***Presented with any real patient with an inguinal swelling, or similar verbal or written scenario: use his/her basic and clinical science knowledge to explain the un-***

***derlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to reach the diagnosis and detail management including health promotion, prevention, treatment, rehabilitation and follow up (C3,P4).***

### **S30: WARD ROUND-9: Testicular swelling**

***Presented with any real patient with testicular swelling or pain, or similar verbal or written scenarios, use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to elicit the relevant physical signs, suggest a differential list, and outline further steps in diagnosis and management including health promotion, prevention, treatment, rehabilitation and follow up (C2,P3).***

### **S31: Hematuria**

1. List the causes of hematuria (C1).
2. Discuss the diagnosis, management and complications (C1)

### **S32: Urine retention**

1. List the causes of urine retention (C1).
2. Discuss the management and complications of urine retention (C1)

### **S33: Renal masses**

1. List benign and malignant renal tumors (C1).
2. Describe the diagnostic criteria of Wilm's tumor (C1).
3. Describe the diagnostic criteria of renal cell carcinoma (C1).
4. Describe the management of benign and malignant tumors (C1).

### **S34: WARD ROUND-10: Hematuria-**

***Presented with any real patient with hematuria, or similar verbal or written scenario, use his/her basic and clinical science knowledge to explain the causes (urinary schistosomiasis, urinary stones, renal and vesical malignancy, infections, prostatic mass, injury to urinary tract, drugs and blood dyscrasias) and underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to elicit the relevant physical signs, suggest a differential list, and outline further steps in diagnosis and management including health promotion, prevention, treatment, rehabilitation and follow up (C3,P3).***

### **S35: WARD ROUND-11: Urine retention**

***Presented with any real patient with urine retention, or similar verbal or written***

**scenario: use his/her basic and clinical science knowledge to explain the causes (prostatic enlargement, ca prostate, spinal cord lesions, urethral valves, vesical stones and tumors, cystitis and other inflammatory causes, postoperative retention) and underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to relief the retention, reach the diagnosis and detail management including health promotion, prevention, treatment, rehabilitation and follow up (C3,P4).**

### **S36: WARD ROUND -12: Renal masses**

**Presented with any real patient with renal mass, or similar verbal or written scenario: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to elicit the relevant physical signs, suggest a differential list, and outline further steps in diagnosis and management including health promotion, prevention, treatment, rehabilitation and follow up (C3, P3).**

### **S37: Varicose veins and deep vein thrombosis**

1. Describe the causes, presentations, management and complications of varicose veins (C1).
2. Describe the causes, presentations, management and complications of deep vein thrombosis (C1).

### **S38: WARD ROUND-13:Varicose veins and deep vein thrombosis**

**Presented with any real, patient with varicose veins, deep vein thrombosis, or similar verbal or written scenarios: use his/her basic and clinical science knowledge to explain the causes and underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to relief the retention, reach the diagnosis and detail management including health promotion, prevention, treatment, rehabilitation and follow up (C3, P4).**

### **S39: WARD ROUND-14: Lower limb swelling**

**Presented with any real patient with lower limb swelling, or similar verbal or written scenarios: use his/her basic and clinical science knowledge to explain the causes and underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to elicit the relevant physical signs, suggest a differential list, and outline further steps in diagnosis and management including health promotion, prevention, treatment, rehabilitation and follow up (C3,P3).**

### S40: Pediatric surgery

1. Describe the embryological etiology and explain the presentations of the following: tracheo-esophageal fistulas, pyloric stenosis, anal atresia, duodenal and intestinal atresia, umbilical hernia, testicular torsion, maldescended testis, hydrocele, hare lip and cleft palate, epispadias, hypospadias (C1, C2).
2. Outline the clinical features and management of tracheoesophageal fistula (C1).
3. Explain the steps of investigating foreign body inhalation (C2).

### S41: WARD ROUND-15: Pyloric stenosis

*Presented with any real, patient with pyloric stenosis, or maldescended testis, or similar verbal or written scenarios: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to reach the diagnosis and detail management including health promotion, prevention, treatment, rehabilitation and follow up (C3,P4).*

### S42: WARD ROUND-16: Intestinal obstruction

*Presented with any real patient with intestinal obstruction, or similar verbal or written scenario: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to elicit the relevant physical signs, suggest a differential list, and outline further steps in diagnosis and management including health promotion, prevention, treatment, rehabilitation and follow up (C3,P3).*

### S43: Colonic masses

1. List the types of colonic masses (C1).
2. Describe the etiology, presentation, management and complications of carcinoma of the colon (C1).

### List of Essential Drugs (see attached (WHO) list)

### Log Book Requirements

(Essential Skills)- completion indicated by signature of a senior staff (P1=observe, P2=assist, P3= perform under supervision, and P4= perform independently).

1. **COMMUNICATION SKILL: Establish and maintain good relationships with patient and family, counsel them effectively (including health promotion**

- and healthy life-style) and show concern for their economic and social conditions in management choices (P3).*
- 2. HISTORY TAKING:** *Record a full history (minimum 12 patients) with relevant details of familial and social backgrounds (P3).*
  - 3. GENERAL PHYSICAL EXAMINATION:** *Conduct and record a complete physical examination (in 12 cases), using clinical and laboratory skills relevant to the patient's problem, and considering suitable techniques for various age groups and specifically detailing examination of masses and wounds (P3) SPECIFIC SKILLS:*
    - 4. Perform artificial respiration and resuscitation (P3)**
    - 5. Put a urethral catheter (P4)**
    - 6. Suture a wound (P4)**
    - 7. Drain an abscess (P3)**
    - 8. Lumbar puncture (P2)**
    - 9. Perform male circumcision (P2)**
    - 10. Do peritoneal tabbing (P1).**
    - 11. Use an ophthalmoscope (P3)**
    - 12. Venous puncture, section, take blood sample from veins, finger tips, arteries (P3).**
    - 13. Give intradermal, intramuscular and intravenous injections and infusions (P3).**
    - 14. Introduce nasogastric tube, endotracheal tube (P3)**
    - 15. Examine the ear and use otoscope, torch, tongue blade (P3)**
    - 16. Observe using tonsillectomy, tracheostomy (P1).**
    - 17. Observe (or assist) in operations (hernia, laparoscopy, laparotomy, cholecystectomy, lymph node biopsy, resection and anastomosis, splenectomy, etc. (P1)**
    - 18. Use of Snellen's chart, Tambling E, Allen's figures (P3), Pinhole disc.**
    - 19. Observe an ophthalmic optician doing refraction test (P1)**
    - 20. Attend corneal foreign body removal (P1)**
    - 21. Examine the larynx and use the laryngoscope (P3)**
    - 22. Using naked eye, microscope or other known methods, examine stools and urine (twice each), estimate hemoglobin (twice), do blood grouping (once),**

*count white blood cells (once), and find out erythrocyte sedimentation rate (ESR) (once) (P4).*

**23. Immobilize common fractures, using bandage, casts, plaster, slabs, Thomas splint, and application of tractions (P3).**

**24. Recognize under the microscope the various types of normal and abnormal blood cells (P3).**

**25. Identify under the microscope common pathogenic parasites in blood urine and stools (P3)**

**26. Use effective instructional methods in clinical settings, and in health education, adopting problem-based and independent learning approaches (signed by tutor following audiovisual presentation) (P4).**

**27. Deliver one session of health education (P4).**

### Reading material

- Argenta, Basic Science for Surgeons, ISBN 0721690742.
- Adams, Surgical Clerkship Guide, ISBN 0323018572
- Burkitt, Essential Surgery Problems Diagnosis and Management, ISBN 0443064083
- Lawrence PF. Essentials of General Surgery
- Scott. An Aid to Clinical Surgery
- Williams (ed) Bailey and Love, Short Practice of surgery. Chapman

### Educational strategies and methods

- Morning (grand) round in surgical wards- 7:30-9:00 daily (5 days/week).
- Daily clinical teaching assignments in surgical wards and outpatient – 9:00-12:00 including attending every week in operation room, observing patient preparation, surgical operation, anesthesia, recovery, and postoperative follow up.
- Four days' weekly tutorials in surgical topics, theoretical surgical topics, clinico-pathological conferences, clinical meetings, presentations of research work or journal club materials and discussions - 1:00-4:00.
- Hospital night duties-1- 2 days/week.



## Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance /Presentation= 5%	MCQs= 10%	MCQs = 20%
Practical/Clinical/ OR= 5%	SQs= 0%	SSQs=0%
Assignment/Seminar/Log-book=%	Essays/ Short notes=	OSCE= 20
Others= 0% (e.g. peer)	Others= - Clin+ OSPE/ PSCE-----10%	Others= Clini+ / =30%
<b>Total= 10%</b>	<b>Total= 20%</b>	<b>Total= 70%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**Remedial for 'F' students:** by repeating course through approved independent supervision by full-time or honorary staff member during holidays or the following semesters and re-sit exam with the batch to follow.

### Clerkship evaluation:

Through student and staff discussions and questionnaire carried out before examination.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required resources****Premises**

- Lecture room, 100-150 capacity with multimedia and x-ray viewing boxes.
- Rooms for tutorials and seminars
- Hospital with inpatients, outpatients OR and ER

**Staff**

General surgeons  
Anesthesiologists

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

## Orthopedics (ME-ORTOP-422) - 4 CHs, 4 weeks

TITLE: Orthopedics	CODE: ME-ORTOP-422	DURATION/CREDITS: block / 4 CHs 4-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES: Years 1,2 and 3 courses		

### Outline

A four-week block, just after or in integration with the general surgery clerkship to include: (1) reviewing the gross anatomic features of the musculoskeletal system, bone development, identification of parts in xrays, bone metabolism, and pathophysiological bases of common orthopedic problems, (2) taking adequate history of trauma and other cold orthopedic problems, performing proper physical examination, and request the appropriate and cost-effective investigations, (3) management of emergency and trauma in orthopedics (multiple injuries after road traffic and other accidents, (4) principles of fracture management, (5) management of common and serious fractures, shoulder dislocation, pyogenic and chronic bone and joint infections, osteoarthritis, (6) recognize, diagnose and outline subsequent steps in the management of back pain, mechanical knee disorders, a limping child, peripheral nerve injuries, spinal injuries, congenital dislocation of hip, lytic or sclerotic bone lesion in an x-ray, and (7) essential drugs used in orthopedic problems.

### Rationale

The basic aim of health care is that patients, irrespective of their gender, age, color, religion, socioeconomic background etc. deserve the physician's kind care and full attention, expect to be treated humanely, with respect to their dignity. The surgeon should have the required skills and professionalism, to carry out his/her duties to help them. Modern educational philosophies assume that a medical student is an active learner and emphasize independent learning and team work.

Injuries and road traffic accidents constitute a large share of health problems in any community. Studying orthopedic surgery is an essential component of medical training and a daily activity of a practicing physician. Most of the training in this clerkship is focused on secondary and tertiary levels of health care, which have to complement, rather than replace, primary level.

While studying orthopedic surgery, the student should adopt a holistic approach to patient's problems, which may require attention to medical illnesses while the patient is in the orthopedic ward. The General objectives and the Specific Basic Clinical Skills in this block are nearly the same as those in Medical clerkship. Close consultation and timely referral of medical cases is for the benefit of the patient.

### General Learning Outcomes

By the end of the surgical clerkship the student should:

- 1. Show responsible and compassionate behavior with the patient and family considering the cultural, social and economic background, and in dealing with all levels of education and abilities.***
2. Use the required communication skills for taking appropriate history and conducting medical examination.
3. Appreciate the role of perfect understanding of basic science (anatomy, physiology and biochemistry) and the underlying pathophysiological processes relevant to orthopedic practice, in the diagnosis and management of common illnesses in patient and community.
4. Be acquainted with the epidemiological profile of the population and society, their heritage and cultural, social, geographic and economic characteristics, and relationship of all those to orthopedic disease etiology and management.
5. Have the knowledge and skills necessary to identify the health problems of a patient: emergency situations, common endemic or epidemic diseases and disabilities, including health promotion, prevention, treatment, rehabilitation and follow up.
6. Opt for the wise selection of the most appropriate and cost-effective investigations to reach the proper diagnosis, considering the patient's rights and abilities and the capabilities of the health system, especially when weighing the pros and cons of surgical intervention.
7. Interact effectively with the orthopedic and other health teams (and appreciate the role of others) in providing medical and surgical services.
8. Continue independent learning in surgery and pursue postgraduate studies.

## Intended (specific) Learning Outcomes (ILOs)

By the end of the orthopedic clerkship the student should be able to:

### S1: Introduction to the course

- 1- Introduce the various aspects of the course and outline assessment
- 2- Show understanding of the general structure of the course.
- 3- Show list of the outcomes and specific objectives of the course.
- 4- Explain the bases and contents of the assessment and feedbacks.
- 5- Appoint or elect a student coordinator.
- 6- List hard and soft reading material.
- 7- Explain attendance regulations and consequences of absenteeism.

### S2: Ethics and professionalism

- 1. Show responsible and compassionate behavior with the patient and family considering the cultural, social and economic background, and dealing with all levels of education and ability (A).*

### S3: Range of orthopedic disease

- 1- Describe patterns of orthopedic disease, in various age groups, and recognize urgent orthopedic problems and emergency and critical conditions (C1).
- 2- Explain the meaning of orthopedic terms (genu, hallux, cubitus, coxa, varus, valgus, scoliosis, kyphosis, lordosis, malunion, non-union, delayed union, malrotation, pes planus, pes cavus, equinovarus, osteopenia, osteoporosis, lytic lesions, sclerotic lesions, mono- di- para- tri- tetra-, hemiplegia, bone resorption, bone destruction, epiphysis, metaphysis, diaphysis) (C1).
- 3- Deal effectively and efficiently with patients of various age groups presenting with chronic and malignant surgical/orthopedic diseases, disabilities and life-threatening illnesses taking into account the burden on the family and community and the psychological, social and economic dimensions as well as health promotion and rehabilitation in management. Such disorders include: mental retardation, congenital and physical disabilities, chronic musculoskeletal diseases, chronic gastrointestinal diseases affected by orthopedic treatment, genetic and hereditary diseases, chronic urinary tract infections associated with orthopedic diseases, renal failure, anemia and cancer, and/or those related to geriatric care (P3).

### S4: History and physical examination

- 1- Given any patient with any complaint/s: take full medical and surgical/orthopedic history, with appropriate sequence and comprehensiveness, and write it up as clear as possible for others to read and understand (P3).*

**2- Adopt the department routine in physical examination of bones and joints (e.g. look, feel, move, do or any other routine) (P3).**

### **S5: Back**

- 1- Describe the morphological anatomy of the vertebral column in various regions, especially those relevant to mechanical disorders of the spine (C1).
- 2- List the causes of backache including disc prolapse, degenerative, inflammatory and neoplastic diseases of the vertebral column and sacroiliac joints (C1).

### **S6: WARD ROUND-1: Back-disc prolapse and Pott's disease-**

***Presented with any real patient with back pain due to disc prolapse or Pott's disease, or similar verbal or written scenario, use his/her basic and clinical science knowledge to explain the underlying mechanisms (structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest appropriate management including health promotion, protection, prevention, treatment, rehabilitation an follow-up (C3,P4).***

### **S7: WARD ROUND-2: Back-spinal injury and metastasis-**

***Presented with any real patient with backache due to spinal injury or metastasis, or similar verbal or written scenario, use his/her basic and clinical science knowledge to explain the underlying mechanisms (structure, function and pathophysiological processes) and his/her basic clinical skills to suggest a differential list and outline further steps in diagnosis and management including health promotion, protection, prevention, treatment, rehabilitation an follow-up (C3,P3).***

### **S8: Musculoskeletal injuries**

- 1- Name the individual bones and joints (C1)
- 2- Classify fractures and describe the process of bone growth and healing (C1)
- 3- Describe the classification of joint, structure of a synovial joint, specially the aspects related to joint pathology (C1).

### **S9: WARD ROUND-3: Bone fractures and infections-**

***Presented with any real patient with long bones and pelvic fractures particularly: humeral neck, mid-shaft and supracondylar fractures, Collis's fracture, femoral neck, mid-shaft and lower end fractures, tibial and fibular fractures, or fractures around the ankle, or similar verbal or written scenarios: use his/her basic and clinical science knowledge to explain the underlying mechanisms (structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest appropriate management including health promotion, protection, prevention, treatment, complications, rehabilitation an follow-up (C3,P4).***

**S10: WARD ROUND-4: Osteomyelitis and bone tumors-**

*Presented with any real patient with bone infection (osteomyelitis) or primary bone tumor (osteosarcoma), or similar verbal or written scenarios: use his/her basic and clinical science knowledge to classify the condition and explain the underlying mechanisms (structure, function and pathophysiological processes), and his/her basic clinical skills to reach a diagnosis and suggest appropriate management including health promotion, protection, prevention, treatment, complications, rehabilitation and follow-up (C3,P4).*

**S11: WARD ROUND-5: Joint degenerative and bone metabolic diseases-**

*Presented with any real patient with joint degenerative disease (osteoarthritis), immunologic disease (rheumatoid arthritis), or metabolic bone disorders (rickets and osteomalacia, hyperparathyroidism, osteoporosis), or similar verbal or written scenarios: use his/her basic and clinical science knowledge s (structure, function and pathophysiological processes), and his/her basic clinical skills to suggest a differential list and outline further steps in diagnosis and management including health promotion, protection, prevention, treatment, complications, rehabilitation and follow-up (C3,P3).*

**S12: WARD ROUND-6: Joint dislocation-**

*Presented with any real patient with shoulder, elbow, hip and knee dislocation. or similar verbal or written scenarios: use his/her basic and clinical science knowledge to explain the underlying mechanisms (structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest appropriate management including health promotion, protection, prevention, treatment, complications, rehabilitation and follow-up (C3, P4).*

**S13: WARD ROUND-7: Joint infection-**

*Presented with any real patient with joint infection (septic, tuberculous, brucellosis arthritis), or similar verbal or written scenarios: use his/her basic and clinical science knowledge to classify the condition and explain the underlying mechanisms (structure, function and pathophysiological processes), and his/her basic clinical skills to suggest a differential list and outline further steps in diagnosis and management including health promotion, protection, prevention, treatment, complications, rehabilitation and follow-up (C3,P3).*

**S14:WARD ROUND-8: Bone tumors**

*Presented with any real patient with a bone mass, or similar scenarios, use his her basic and clinical sciences (structure, function and pathophysiological processes),*

***and his/her basic clinical skills to suggest a differential list and outline further steps in diagnosis and management including health promotion, protection, prevention, treatment, complications, rehabilitation and follow-up (C3,P3).***

### **S15: WARD ROUND-9: Neuromuscular conditions**

***Presented with any real patient with neuromuscular conditions (cerebral palsy, spina bifida, poliomyelitis), or similar verbal or written scenarios: use his/her basic and clinical science knowledge to classify the condition and explain the underlying mechanisms (structure, function and pathophysiological processes), and his/her basic clinical skills to suggest a differential list and outline further steps in diagnosis and management including health promotion, protection, prevention, treatment, complications, rehabilitation and follow-up (C3,P3).***

### **Reading material**

McRae, Orthopedics and fractures

Educational strategies and methods

- Morning (grand) round in surgical wards- 7:30-9:00 daily (5 days/week).
- Daily clinical teaching assignments in orthopedic wards and outpatient – 9:00-12:00 including e every week in attending operation room, observing patient preparation, surgical operation, anesthesia, recovery, and postoperative follow up.
- Four days' weekly tutorials in orthopedic topics, theoretical surgical topics, clinico-pathological conferences, and clinical meetings, presentations of research work or journal club materials and discussions - 1:00-4:00.
- Hospital night duties-1- 2 days/week.



## Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance /Presentation= 10%	MCQs= 10%	MCQs = 20%
Practical/Clinical/ visits= 10%	SQs= 0%	SSQs=0%
Assignment/Seminar/Log-book=%	Essays/ Short notes=	OSCE= 20
Others= 0% (e.g. peer)	Others= - Clin+ OSPE/ PSCE-----10%	Others= Clini+ / =20%
<b>Total= 20%</b>	<b>Total= 20%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**Remedial for 'F' students:** by repeating course through approved independent supervision by full-time or honorary staff member during holidays or the following semesters and re-sit exam with the batch to follow.

**Clerkship evaluation:** Through student and staff discussions and questionnaire carried out before examination.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required resources****Premises**

- Lecture room, with multimedia and x-ray viewing boxes
- Tutorial rooms with similar arrangement.
- Hospital with operating room and inpatients

**Staff**

- Orthopedic surgeons
- Neurosurgeons
- General surgeons
- Anesthesiologist

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

# Ophthalmology

## (ME-OPTAL423) - 2 CHs, Block 2 weeks

TITLE: Ophthalmology	CODE: ME-OPTAL-423	DURATION/CREDITS: block / 2 CHs 2-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES: Years 1,2 and 3 courses		

### Outline

A two-week block, just after or in integration with the general surgery clerkship to include: (1) taking history, performing physical examination, carry out the visual acuity and refractive tests, and request the necessary investigation for an eye problem, (2) recognize the critical role of the primary care physician in preventing visual loss through prompt and appropriate treatment and timely referral, (3) manage ocular emergencies and trauma, (4) recognize, diagnose and outline subsequent steps in management of the common ocular conditions: red eye, impaired vision, painful eye, cataract, glaucoma, exophthalmos, retinopathy or eye manifestations of systemic diseases, abnormal ocular mobility, (5) the use of the ophthalmoscope, and (6) essential drugs used in ophthalmology.

### General Learning Outcomes

By the end of the surgical clerkship the student should:

- 1. Show responsible and compassionate behavior with the patient and family considering the cultural, social and economic background, and dealing with all levels of education and abilities.**
2. Use the required communication skills for taking appropriate history and conducting medical examination.
3. Appreciate the role of perfect understanding of basic science (anatomy, physiology and biochemistry) and the underlying pathophysiological processes relevant to surgical practice, in the diagnosis and management of common illnesses in patient and community.
4. Be acquainted with the epidemiological profile of the population and society,

- their heritage and cultural, social, geographic and economic characteristics, and relationship of those to surgical disease etiology and management.
5. Have the knowledge and skills necessary to identify the health problems of a patient:  
emergency situations, common endemic or epidemic diseases and disabilities, including health promotion, prevention, treatment, rehabilitation and follow up.
  6. Opt for the wise selection of the most appropriate and cost-effective investigations to reach the proper diagnosis, considering the patient rights and abilities and the capabilities of the health system, especially when weighing the pros and cons of surgical intervention.
  7. Interact effectively with the surgical and other health teams (and appreciate the role of others) in providing medical and surgical services.
  8. Continue independent learning in surgery and pursue postgraduate studies.

## Intended (specific) Learning Outcomes

By the end of this clerkship the student should:

### S1: Introduction to the course

1. Introduce the various aspects of the course and outline assessment
2. Show understanding of the general structure of the course.
3. Show list of the outcomes and specific objectives of the course.
4. Explain the bases and contents of the assessment and feedbacks.
5. Appoint or elect a student coordinator.
6. List hard and soft reading material.
7. Explain attendance regulations and consequences of absenteeism.

### S2: Ethics and professionalism

1. *Show responsible and compassionate behavior with the patient and family considering the cultural, social and economic background, and dealing with all levels of education and abilities*

### S3: Anatomy of the orbit and eyeball

2. Describe the anatomy of the eye and orbit, including the innervation and action of the extraocular muscles and explain the clinical effects of paralysis of each of the extraocular muscles (C1, C2).
3. Draw the visual pathway and explain how other organs are likely to encroach on the visual pathway (C1, C2).
4. Describe the lacrimal apparatus, and explain the mechanisms and malfunction of lacrimation (C1, C2)).

#### S4: Physiology and pathology

1. Explain the causes and presentation of the major errors of refraction and methods of correction (C2).
2. Explain the involvement of the eye in various systemic diseases mainly hypertension, diabetes and increased intracranial pressure (C2).

#### S5: WARD ROUND-1: Cataract, trachoma and glaucoma

**Presented with a real patient with cataract, trachoma, or glaucoma, or similar verbal or written scenarios: use his/her basic and clinical science knowledge to explain the underlying mechanisms (structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest appropriate management including health promotion, protection, prevention, treatment, complications, rehabilitation and follow-up (C3,P4).**

#### S6: WARD ROUND-2: Orbital and eyeball masses

**Presented with a real patient with an orbital or eyeball mass, or similar verbal or written scenarios: use his/her basic and clinical science knowledge to classify the condition and explain the underlying mechanisms (structure, function and pathophysiological processes), and his/her basic clinical skills to suggest a differential list and outline further steps in diagnosis and management including health promotion, protection, prevention, treatment, complications, rehabilitation and follow-up (C3,P3).**

#### Reading material

- Berson F. Basic Ophthalmology for Medical Students and Primary Care Residents, American Academy of Ophthalmology Letman M. Manual of Eye Examination and Diagnosis. Blackwell Scientific Publications. Kensky. Ophthalmology

#### Educational strategies and methods

- Morning (grand) round in surgical wards- 7:30-9:00 daily (5 days/week).
- Daily clinical teaching assignments in surgical wards and outpatient – 9:00-12:00 including sometime every week in attending operation room, observing patient preparation, surgical operation, anesthesia, recovery, and postoperative follow up.
- Four days' weekly tutorials in orthopedic topics, theoretical surgical topics, clinico-pathological conferences, and clinical meetings, presentations of research work or journal club materials and discussions - 1:00-4:00.

## Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance /Presentation= 10%	MCQs= 0%	MCQs = 30%
Practical/Clinical/ visits= 0%	SQs= 0%	SSQs=0%
Assignment/Seminar/Log-book=10%	Essays/ Short notes=	OSCE= 30
Others= 0% (e.g. peer)	Others= - Clin+ OSPE/ PSCE-----0%	Others= Clini+ / =30%
<b>Total= 10%</b>	<b>Total= 0%</b>	<b>Total= 80%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**Remedial for 'F' students:** by repeating course through approved independent supervision by full-time or honorary staff member during holidays or the following semesters and re-sit exam with the batch to follow.

**Clerkship evaluation:** Through student and staff discussions and questionnaire carried out before examination.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required resources****Premises:**

- Lecture room for 100-150 students, with multimedia and x-ray viewing boxes
- 8 tutorial rooms with similar arrangement.
- Hospital with operating room and inpatients

**Staff:**

- Ophthalmologists

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

## Ear, Nose and Throat (ME-ENT-424) - 2 CHs Block 2 weeks

TITLE: Ear, Nose and Throat	:CODE ME-ENT-424	DURATION/CREDITS: block / 2 CHs 2-week-
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES: Years 1,2 and 3 courses		

### Outline

A two-week block, just after or in integration with the general surgery clerkship semester, addressing clinical activities in the ENT department, such as taking history and performing examination on ENT patients, using knowledge of basic sciences, pathophysiological processes to explain disorders, and use clinical sciences and skills, and investigations to reach differential diagnosis, and recommend or observe management done by senior members of the ENT health team. Details of disorders include, common cold, sinusitis, tonsillitis, laryngitis, otitis media, and neoplasia. The skills include: examination of the mouth, use of auroscope and laryngoscope in examination of the ear and larynx, recognize an audiometry machine and interpret results and an audiogram.

### General Learning Outcomes

By the end of the surgical clerkship the student should:

- 1. Show responsible and compassionate behavior with the patient and family considering the cultural, social and economic background, and in dealing with all levels of education and abilities.**
2. Use the required communication skills for taking appropriate history and conducting medical examination.
3. Appreciate the role of perfect understanding of basic science (anatomy, physiology and biochemistry) and the underlying pathophysiological processes relevant to surgical ear practice, in the diagnosis and management of common illnesses in patient and community.
4. Be acquainted with the epidemiological profile of the population and society,



- their heritage and cultural, social, geographic and economic characteristics, and relationship of those to surgical ENT disease etiology and management.
5. Have the knowledge and skills necessary to identify the health problems of a patient:
    - emergency situations, common endemic or epidemic diseases and disabilities, including health promotion, prevention, treatment, rehabilitation and follow up.
  6. Opt for the wise selection of the most appropriate and cost-effective investigations to reach the proper diagnosis, considering the patient rights and abilities and the capabilities of the health system, especially when weighing the pros and cons of surgical intervention.
  7. Interact effectively with the surgical and other health teams (and appreciate the role of others) in providing medical and ENT surgical services.
  8. Continue independent learning in ENT surgery and pursue postgraduate studies.

### Intended (specific) Learning Outcomes (ILOs)

By the end of this clerkship the student should be able to:

#### S1: Introduction to the course

1. Introduce the various aspects of the course and outline assessment
2. Show understanding of the general structure of the course.
3. Show list of the outcomes and specific objectives of the course.
4. Explain the bases and contents of the assessment and feedbacks.
5. Appoint or elect a student coordinator
6. List hard and soft reading material.
7. Explain attendance regulations and consequences of absenteeism.

#### S2: Ethics and professionalism

1. *Show responsible and compassionate behavior with the patient and family considering the cultural, social and economic background, and in dealing with all levels of education and abilities (A)..*

#### S3: History, examination and other skills

1. *Take appropriate history from a patient with head and/or neck problem (P4)*
2. *Perform basic head and neck examination using equipment available to the primary care practitioner (flashlight, tongue blade, otoscope) (P4), observed, but not necessarily proficient, with a mirror, or fiberoptic examinations of the larynx, tympanometry, binocular microscope (P1).*
3. *Observe a tonsillectomy, a tracheostomy, fitting a tracheostomy tube and audiology examination (P1).*

#### **S4: WARD ROUND-1: Trauma and emergencies**

*Presented with a patient with one of the following emergency conditions: or similar verbal or written scenarios: use his/her basic and clinical science knowledge to explain the underlying mechanisms (structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest appropriate management including health promotion, protection, prevention, treatment, complications, rehabilitation and follow-up (C3,P4). The conditions are: airway obstruction, inspired or ingested foreign body, sore throat or difficulty of swallowing, epistaxis, acutely ruptured ear drum, head and neck infection, laryngeal or tracheal trauma, or facial trauma*

#### **S5: WARD ROUND-2: Subacute presentations**

Presented with a real patient with the following, or similar verbal or written scenarios: use his/her basic and clinical science knowledge to explain the underlying mechanisms (structure, function and pathophysiological processes) and his/her basic clinical skills to reach a diagnosis and suggest appropriate management including health promotion, protection, prevention, treatment, complications, rehabilitation and follow-up (C3,P4). The conditions are: otitis media, tonsillitis, allergic rhinitis, sinusitis,

*laryngitis, deafness, or vocal cord paralysis,*

#### **S6: WARD ROUND-3: Other ENT problems**

*Presented with a real patient with the following, or similar verbal or written scenarios: use his/her basic and clinical science knowledge to classify the condition and explain the underlying mechanisms (structure, function and pathophysiological processes), and his/her basic clinical skills to suggest a differential list and outline further steps in diagnosis and management including health promotion, protection, prevention, treatment, complications, rehabilitation and follow-up (C3, P3). The conditions are: deviated nasal septum, mass in the region of the head and neck.*

### **Reading material**

- A synopsis of otolaryngology.

### **Educational strategies and methods**

- Morning (grand) round in surgical wards- 7:30-9:00 daily (5 days/week).
- Daily clinical teaching assignments in surgical wards and outpatient – 9:00-12:00 including sometime every week attendance in operation room, observing patient preparation, surgical operation, anesthesia, recovery, and postoperative follow up.

- Four days' weekly tutorials in orthopedic topics, theoretical surgical topics, clinico-pathological conferences, and clinical meetings, presentations of research work or journal club materials and discussions - 1:00-4:00.

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance /Presentation= 10%	MCQs= 0%	MCQs = 30%
Practical/Clinical/ visits= 0%	SQs= 0%	SSQs=0%
Assignment/Seminar/Log-book=10 %	Essays/ Short notes=	OSCE= 30
Others= 0% (e.g. peer)	Others= - Clin+ OSPE/ PSCE-----0%	Others= Clini+ / =30%
<b>Total= 20%</b>	<b>Total= 0%</b>	<b>Total= 80%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**Remedial for 'F' students:** by repeating course through approved independent supervision by full-time or honorary staff member during holidays or the following semesters and re-sit exam with the batch to follow.

**Clerkship evaluation:** Through student and staff discussions and questionnaire carried out before examination.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

Ref. Academic Course policy (SC- PP 09)

**Required resources****Premises**

- Lecture room for 100-150 students, with multimedia and x-ray viewing boxes
- 8 tutorial rooms with similar arrangement.
- Hospital with operating room and inpatients

**Staff**

- Otorhinolaryngologists

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

# Psychiatry

## (ME-SYC-512) - 4 CHs, Block - 4 weeks

TITLE: Psychiatry	CODE: ME-SYC-5 12	DURATION/CREDITS: block / 4 CHs 4-week-
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES: Years 1,2 and 3 courses		

### Outline

A four-week block, anytime during semester 9, preferably after ME-MED 411 and/or ME-SURG 421, to include: (1) demonstrating professional ethics and attitudes appropriate for psychiatric practice, (2) establishing a rapport with a variety of patients and families, and taking comprehensive history of a patient problem in an emphatic environment, being aware of own emotional responses and family concerns on raising certain appropriate questions, (3) conducting physical examination of whole body and mental status including, cognitive testing and assessment of suicidal or homicidal risks, (4) requesting suitable, and cost-effective investigations, (5) being aware of the various relevant biological, psychological and social factors related to the etiology and management and rehabilitation of a psychiatric patient, (6) managing psychiatric emergencies (e.g. hostile or aggressive patient), depression, schizophrenia (7) recognizing, diagnosing (or steps in diagnosis and management of) mood disorders (e.g. mania), anxiety (e.g. panic, obsessive-compulsive, phobias), personality disorders, cognitive impairment and substance (chemical, alcohol, drug) abuse disorders, dementia, delirium, psychoses, human sexuality problems, (8) essential drugs used in psychiatric practice.

### Rationale

Mental health (psychiatric) disorders represent disturbance in thinking, emotion and behavior. They result from a complex of, physical, social, cultural and hereditary influences. Because of this complex etiology, and the increasing burden of this group of diseases, a move has developed to bring mentally ill patients, out of the health institutions, back into the families and society i.e. deinstitutionalization, where the family and some self-help groups are active in the community. This is for patients who are

not a danger to themselves or society. Therefore, the patients are coming back to the primary health care level, where a general physician is expected to deal with them, and follow up and monitor the daily, life-long prescriptions and their complications.

Rapid advances are going on in knowledge of the intricate mechanisms in the structure and function of the human brain, the relationship of certain parts of the brain or its chemicals with mental illness and in the classification and diagnostic criteria of disease. These have expanded the pure medical component of the specialty, added to similar advances in psychology and behavior. Medical students and practitioners find themselves in need of understanding complex background of scientific material that has to be simplified to help practice and boost the special clinical skills needed in psychiatry.

Studying psychiatry and caring for mental health is absolutely necessary, not only because of the evident psychiatric illnesses, which require consulting a specialized physician, but because many patients, arriving at the primary care level, present organic complaints that can only be explained on the bases of psychological disturbance.

## General Learning Outcomes

At the end of this course, the student should be able to:

1. Use the standard classification and terminology known in mental health care.
2. Appreciate the comprehensiveness of care, and wholistic approach in psychiatry where behavior and somatic illness are very much related to underlying psychological abnormalities.
3. Utilize his/her knowledge of family and society to understand psychiatric illness, and use family bonds and society helpers in management and rehabilitation.
4. Find the epidemiology and burden of mental illness in his/her country, and the contributing factors to increasing or decreasing tendencies.
5. Obtain relevant history, elicit physical sign and request informative investigations to reach a suitable diagnosis for the mental condition, aware of the implications of misdiagnosed or underestimated danger of a mentally ill patient on the society, and, at the same time, considering the consequences on his/her misdiagnosis on the individual and family.
6. Appreciate the role of health team in mental health, where non-medical staff are involved, accepting, leadership responsibilities.

## Intended (specific) learning outcomes

By the end of this course the student should be able to:

### S1: Introduction to the course

1. Introduce the various aspects of the course and outline assessment
2. Show understanding of the general structure of the course
3. Show list of the outcomes and specific objectives of the course.
4. Explain the bases and contents of the assessment and feedbacks.
5. Appoint or elect a student coordinator.
6. List hard and soft reading material.
7. Explain attendance regulations and consequences of absenteeism

### S2: Ethics and professionalism

1. *Show responsible and compassionate behavior with the patient and family considering the cultural, social and economic background, and dealing with all levels of education and abilities (A).*

### S3: General approach to psychiatry

1. Describes the classification of mental illnesses according to the WHO's international classification of disease, 9<sup>th</sup> revision, Clinical Modification (ICD-9-CM) (C1).
2. Explain the terms: antidepressant drugs, antipsychotic drugs, electroconvulsive therapy, psychotherapy, hypnotherapy (C2).

### S4: Psychosomatic disorders

1. Explain the terms: conversion symptoms/disorders, malingering, Munchausen syndrome, hypochondriasis (C2).
2. *Presented with a real or written case of a patient with hypochondriasis, use history, physical examination and investigations to reach diagnosis and management (C3,P3)*

### S5: Anxiety disorders

1. Explain the terms: anxiety, acute or posttraumatic stress disorder, panic, phobic disorders (agoraphobia, social phobias, specific phobias), obsessive-compulsive disorder (C2).
2. *Presented with a real or written case of a patient with anxiety: take appropriate history, conduct physical examination and select investigations to reach a diagnosis, determine the underlying cause, predict the disease course and suggest management including prevention of future episodes (C3,P3)*

### S6: Depression and mania (general terms)

1. Explain the terms: depression, mania, hypomania, manic-depressive illness (bipolar disorder), situational depression, endogenous depression, vegetative depression, agitated depression, psychotic depression, suicide gestures, suicide attempts and complete suicide (C2).

### **S7: WARD ROUND-1: Depression and mania**

*Presented with a real or written case of a patient with depression or mania: take appropriate history, conduct physical examination and select investigations to reach a diagnosis, determine the underlying cause, predict the disease course and suggest management including prevention of future episodes (C3,P4).*

### **S8: WARD ROUND-2: Depression and mania**

1. *Presented with a real or written case of a patient with suicidal behavior: take appropriate history, conduct physical examination and select investigations to reach the diagnosis, determine the underlying cause or high risk factor for completed suicide, predict the patient's behavior regarding the suicide tendencies and suggest management plan, including the effort by family and community in the prevention e.g.(suicide intervention or crisis hot lines) of similar future episodes (C3,P3).*
2. List the indications and side effects of antidepressants (from the Essential Drugs List – Appendix) and how they work (C1).

### **S9: Schizophrenia and delusional disorders (definitions and classification)**

1. Define schizophrenia and describe its classification including paranoid, disorganized, catatonic and undifferentiated types (C1).
2. Explain the term: delusion and illusion(C2).
3. List the indications and side effects of antipsychotic drugs (from the Essential Drugs List – Appendix) and how they work (C1).

### **S10: WARD ROUND-3: Schizophrenia and delusional disorders**

*Presented with a real or written case of a patient with schizophrenia or delusional disorder: take appropriate history, conduct physical examination and select investigations to reach a diagnosis, determine the underlying cause, predict the disease course and suggest management including prevention of future episodes (C3,P4).*

### **S11: Drug dependence (general aspects)**

1. Explain the terms: addiction, physical dependence, psychological dependence, withdrawal symptoms (C2).
2. List the drugs, or substances, that may lead to physical or psychological dependence (C1).
3. List the effects of prolonged alcohol use (C1).

### **S12: WARD ROUND-4: Drug dependence**

*Presented with a real or written case of an alcoholic, a narcotic, a marijuana, a cocaine, a hallucinogen or an inhalant addict: take appropriate history, conduct*



***physical examination and select investigations to reach a diagnosis, determine the substance of addiction, show understanding of the underlying psychosocial causes, predict the disease course and suggest management including prevention of future episodes, or complications (C3,P4).***

### **S13: Eating disorders**

1. Explain the terms: anorexia nervosa, bulimia nervosa, binge eating disorder (C2).

### **S14: Psychosocial and sexuality disorders**

1. Explain the terms: masturbation, homosexuality, heterosexuality, gender identity disorders:  
Transsexuality, paraphilias (fetishism, transvestism, pedophilia, exhibitionism, voyeurism, masochism and sadism (C2).
2. Explain the terms: desire, arousal, orgasm, resolution, premature ejaculation, retarded ejaculation, inhibited orgasm, dyspareunia, and vaginismus (C2).

### **S15: WARD ROUND-4: Psychosexual disorders**

***Presented with a real or written case of a patient with premature ejaculation: take appropriate history, conduct physical examination and select investigations to reach a diagnosis, determine the underlying organic or psychosocial cause, predict the disease course and suggest management (C3,P4)***

### **S16: Personality disorders**

1. Explain the terms: personality traits, paranoid personality, histrionic personality, schizoid personality, antisocial personality, narcissistic personality, dependent personality, borderline personality, avoidant personality, obsessive-compulsive personality and passive aggressive personality (C2).

### **S17: Dissociative disorders**

1. Explain the terms: dissociative amnesia, dissociative identity disorder, dissociative fugue, depersonalization disorder (C2).

### **Reading material**

- Stoudemire. Clinical Psychiatry for Medical Students. Lippincott.
- Diagnostic and Statistical Manual of Psychiatric Disorders. American Psychiatric Association.

### **Educational strategies and methods**

- Morning rounds in mental health wards in hospital.
- Outpatient clinics.

- Student tasks and assignments (health centers, courts, prisons, addiction treatment centers, young offenders' reform centers).
- Films on certain psychiatric presentations, crimes, investigations and management innovations.
- Meetings with certain human resources: local community leaders 'coroners', police authorities, toxicologists etc.

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance /Presentation= 10%	MCQs= 10%	MCQs = 20%
Practical/Clinical/ visits= 10%	SQs= 0%	SSQs=0%
Assignment/Seminar/Logbook=%	Essays/ Short notes=	OSCE= 20
Others= 0% (e.g. peer)	Others= - Clin+ OSPE/PSCE----10%	Others= Clini+ / =20%
<b>Total= 20%</b>	<b>Total= 20%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**Remedial for 'F' students:** by repeating course through approved independent supervision by full-time or honorary staff member during holidays or the following semesters and re-sit exam with the batch to follow.

**Clerkship evaluation:** Through student and staff discussions and questionnaire carried out before examination.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required Resources****Premises**

- Lecture room and 3-4 small tutorial rooms
- Psychiatry hospital or clinics
- Text books, atlases, films, simulated computer software.
- Field visits (transportation).

**Staff**

- Psychologists
- Psychiatrists
- Social workers

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

## Family Medicine (ME-FAM-513) - 4 CHs Block 4 weeks

TITLE: Family Medicine	CODE: ME-FAM-513	DURATION/CREDITS: block / 4 CHs e - 3-week-
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES: Years 1,2 and 3 courses		

### Outline

This four-week block, can be implemented longitudinally, if need be. Ideally the student should be attached to a known family in the vicinity of the Faculty of Medicine early on in the curriculum (semesters 4-6), the last four weeks consolidate his/her activity during the attachment. Alternatively the following components should be covered: basic interviewing, communication skills and examination skills, genetic counseling, nutritional counseling, approach to management of headache, backache, dyspepsia, a febrile child, vaccination, bronchial asthma, hypertension, diabetes mellitus, sore throat, iron deficiency anemia, irritable bowel syndrome, intestinal worms, otitis media, depression, anxiety and other psychiatric problems, obesity, smoking habit, alcoholism, drug addiction, ischemic heart disease, arthritis.

### Rationale

Over the past 30 years family physicians have provided personal health care in the context of family, influenced medical education and changed the nature of health care in North America, Canada, England and many other countries. Family medicine is now a recognized specialty in many countries of the world requiring intense residency training programme ranging from 2 to 4 years. In the US Family Medicine gained recognition as a distinct specialty in 1969. It is the discipline that provides holistic and comprehensive health care in the context of the family and its environment.

In the developing countries, family medicine is an evolving specialty. Trained family practitioners to provide holistic and comprehensive care are still not available. Therefore, such care is often provided by general practitioners (GPs) with varying training

background. The GPs are often the first level of care givers (primary care physicians) and because of the lack in appropriate training, their competencies and skills do not match the expectations of the clients.

A trained family physician is an expert in dealing with the common problems. He/she recognizes the conditions that need referral for appropriate level of care, maintains linkage of the referred patients with the referral sites and health personnel and has the skills to provide follow-up care; thus, ensuring continuity of care. He/she is also well versed with the bio-social factors influencing health and his/her training in communication skills provides him/her an edge over other colleagues in gaining confidence of the family and community.

The emphasis of family practice is broad-based care of the person and family with a humanistic approach integrated with evolving new technologies for provision of longitudinal health care. Family practice is a health-oriented, comprehensive and holistic approach rather than a narrow disease-oriented focus.

The role of family physicians can be summarized in continuity of care, coordination of care, comprehensiveness of approach and community orientation. They are committed to providing care to patients and their families over time whether in hospital or in ambulatory (out-patient) setting. The practice includes well-patient visits, acute care, follow-up for chronic disease monitoring and management, and palliative care when intervention is no longer indicated. This long-term contact allows for the development of a relationship with individuals and their families which improves medical care. The family physician identifies other practitioners and health resources that are needed to care for the patient and coordinates the care and services which they provide. Thus, family physicians work within a broader system of health care which meets the needs of patients. They do not only view patients from the biological perspective, but also from a psychological point of view. The bio-psycho-social model influences how we interact with our patients and what we expect the outcome of a successful interaction to be. This patient-centered approach strengthens the possibility that the patients' health improves over time. They are oriented to the individual's psychological state, but also to their social context, as well as, considering their occupation, community, family and cultural issues. This may involve sometimes informing the health department when the physician suspects a new epidemic of a disease, notifying the employer of potential health problems at a work site, or utilizing community resources to support patient care. The family physician thus assumes an important role in acting as a bridge between the community and health and other resources for the benefit of the individual, family, and community.

Many infections (e.g. AIDS) and chronic diseases are not totally curable at this stage of prevailing knowledge. Thus, prevention assumes an important role and family phy-

sicians, being most close to the family and community, carry this responsibility most cost-effectively and efficiently.

This rotation introduces the students to the principles and practice of family medicine. The core content is determined by the common problems that present to family physicians.

## General Learning Outcomes

At the end of this course, the student should be able to:

1. Explain the basic principles and philosophy of family practice.
2. Describe the differentiating characteristics of family medicine and internal medicine.
3. Provide holistic and comprehensive health care in the context of continuity of care and promotive, preventive, curative and rehabilitative care through an organized team approach
4. Give the rationale for trained family physicians at the primary health care level for improved health care
5. Explain the extended role of family physician in providing care to individuals, families and communities

## Intended (specific) learning outcomes (ILOs)

By the end of this course the student should be able to

### S1: Introduction to the course

1. Introduce the various aspects of the course and outline assessment
2. Show understanding of the general structure of the course.
3. Show list of the outcomes and specific objectives of the course.
4. Explain the bases and contents of the assessment and feedbacks.
5. Appoint or elect a student coordinator.
6. List hard and soft reading material.
7. Explain attendance regulations and consequences of absenteeism.

### S2: General PHC principles

1. Apply the principles of PHC in the context of provision of health care to improve health status of individuals, families and communities (P2).
2. **Provide evidence-based cost-effective and efficient care for common problems (listed in appendix) (C3,P3).**
3. **Make appropriate referrals to appropriate referral sites (P2)**
4. **Apply basic principles and guidelines of communication skills in dealing with patients P2).**

5. *Incorporate social, psychological, environmental and other factors in management plans (P2).*
6. *Use health management information system for informed decision making (P2).*
7. Apply effective communication skills for conflict resolution.
8. Describe basic principles of office practice (C1).

### **S3: Clinical and communication skills**

1. Identify and relate the presenting problems to the pathophysiology of the organ system (C3).

### **S4: Application of knowledge/ judgement**

1. Formulate assessment according to the clinical setting (C3)
2. Identify significant issues in patients presenting with undifferentiated problems, including differentiation of serious illness from minor or self-limiting problems (C3).
3. Apply bio-psycho-social model of diseases and plans intervention accordingly (C3).
4. Formulate strategies to deal with uncertain clinical situations (C3).
5. Formulate patient-centered, health-oriented, pharmacological and non-pharmacological management plans that take into account physical, social, and psychological dimensions (C3).
6. Ensures continuity of care (C3).

### **S5: Ethics and professionalism**

1. *Demonstrate empathy for the patient (A).*
2. *Work as an effective member of the team (A).*
3. *Practice on internationally accepted ethical standards (A).*
4. *Respects patients' right to confidentiality and respect (A).*
5. *Demonstrate respect for patients' autonomy and involves people in taking responsibility for their own health (A).*
6. *Accepts and discharges responsibilities with sense of accountability to individual, family, community, team members (A).*

### **S6: List of log diary cases: show hands-on ability to outline management of cases:**

Upper respiratory tract infections, Anxiety and depression, Urinary tract infections, Headache,

Fever, Dyspepsia, Diabetes mellitus, Ischemic heart disease, Hypertension, arthritis, abdominal pain,

Jaundice, diarrhea, Dysentery, Constipation, Acne vulgaris and other skin conditions, Sexually transmitted diseases (STDs), Red eye, Trachoma.

### Reading material

- Frazer RC. Clinical Methods: A General Practice Approach
- Mead M, Patterson HR. Tutorials in General Practice. Churchill Livingstone.

### Educational strategies and methods:

- PHC: 4 clinical sessions/ week in PHC center: observation and discussion with PHC physicians while consulting their patients. Making notes about what they observe. Interviewing selected patients alone. Group discussion in PHC centers.
- Family Medicine Department: rest of the time, participating in its daily activities including case presentation and discussion, clinical meetings: design health education material for a given common problem. Whole class or small group interactive tutorials on topics known to students beforehand.

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance /Presentation= 5%	MCQs= 0%	MCQs = 20%
Practical/Clinical/= 5%	SQs= 0%	SSQs=0%
Assignment/Seminar/Log-book=10%	Essays/ Short notes=	OSCE= 40
Others= 0% (e.g. peer)	Others= - Clin+ OSPE/PSCE- ----0%	Others= Clini+ / =20%
<b>Total= 20%</b>	<b>Total= 0%</b>	<b>Total= 80%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**Remedial for 'F' students:** by repeating course through approved independent supervision by full-time or honorary staff member during holidays or the following semesters and re-sit exam with the batch to follow. 1

**Clerkship evaluation:** Through student and staff discussions and questionnaire carried out before examination.



**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\* Ref. Academic Course policy (SC- PP 09)

**Required resources****Premises**

- Lecture room, 100-150 capacity with multimedia and x-ray viewing boxes.
- Rooms for tutorials and seminars
- Health centers and Hospital for referral

**Staff**

- Family physicians
- Health Center staff

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

# Obstetrics and Gynecology

## (ME-OB/GYN-511)-12 CHs, Block 10 weeks

TITLE: Obstetrics and gynecology	CODE: ME-OB/GYN-511	DURATION/CREDITS: block / 12 CHs - 12-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES: Years 1,2 and 3 courses		

### Outline

During the 10-week clerkship, the student (1) demonstrate good attitudes, ethics and professional behavior in the practice of ob./gyn, (2) obtains full history relevant to ob./gyn practice, perform appropriate physical examination, requests informative and cost-effective investigations, synthesizes information to reach (or suggest differential) diagnosis, select (or suggest) proper treatment, health promotion, prevention, protection, follow up and rehabilitation, including problems seen in antenatal care, contraception, infertility, bleeding in early or late pregnancy, pregnancy complicated with systemic disease, high risk pregnancy, disorders of menstrual cycle, (3) demonstrate knowledge of basic and clinical sciences , relevant to obstetrics and gynecology, (4) recognize urgent and emergency ob./gyn conditions, (5) analyze community problems related to women health, (6) labor progress and monitoring, (7) genital infections and tumors, and (8) essential drugs used in ob./gyn problems.

### Rationale

The basic concept in health care is that patients, irrespective of their gender, age colors, religions and socioeconomic background etc., deserve the physician's kind care and full attention, expect to be treated humanely, with due respect to their dignity to have adequate knowledge, skills and professionalism, to carry out his/her duties to help them. Modern educational philosophies assume that a medical student is an active learner and emphasize independent learning and team work.

Family is the social unit of the community. Family health concerns include: the reproductive process, child rearing, nutrition, infectious diseases, health education and environmental hygiene. The role and responsibilities of a physician in this spectrum are crucial. Women health, if guaranteed, will assure achieving important requirements of a healthy functioning family. The provision and evaluation of maternal health requires knowledge of the reproductive processes. This requires basic knowledge of structure and function of the female genital system, the role played by endocrine organs, the issues of fertility and infertility. During conception and child bearing, the health of the mother is subjected to numerous risks, which can be reduced by intervention by the health profession if the latter adopts a multidisciplinary approach sharing the burden with other disciplines concerned with population studies, economics, social behavior, and equity in distribution of resources.

Studying obstetrics and gynecology is an important activity in preserving the human race. The discipline is expanding rapidly and student has to have basic knowledge and readiness to add on from the daily discoveries in this field. Reproductive health is the area of controversies where cultures intersect and contradict. The family and motherhood have a very special place in medicine. The obstetrician and gynecologist have a lot to offer to world wisdom and knowledge on philosophies and ethical limits of reproductive biology. These issues will be touched upon in this course and in the course on professionalism and communication skills.

### General Learning Outcomes

The student should develop the attitudes and acquire knowledge and skills which qualify him/her to:

- 1. Show responsible and compassionate behavior with the patient with an obstetrical or gynecological problem and her family considering the cultural, social and economic background, and in dealing with all levels of education and abilities.**
2. Use the required communications skills for taking appropriate history and conducting physical examination.
3. Appreciate the role of perfect understanding of basic science (anatomy, physiology, biochemistry) and the underlying pathophysiological processes relevant to obstetrical and gynecological practice, and the diagnosis and management of pregnancy, its complications and other illnesses and ill-health in individual and community.
4. Be acquainted with the epidemiological profile of the population and society, their heritage and cultural, social, geographic, legislative and economic characteristics, and relationship of all those to obstetrical and gynecological

practice.

5. Have the knowledge and skills necessary to identify the obstetrical and gynecological problems of a patient and their management, including emergency situations, normal and abnormal pregnancy, and gynecological diseases including health promotion, prevention, treatment, rehabilitation and follow up.
6. Opt for a wide selection of the most appropriate and cost-effective investigation to reach the proper diagnosis, considering the patient rights and abilities and the capabilities of the health system.
7. Interact effectively with the obstetrical and gynecological health team, and other health teams, providing family or reproductive health services.
8. Continue independent learning in family and reproductive sciences and practice, and pursue postgraduate studies, in the field of his/her choice..

### **Intended (specific) Learning Outcomes (ILOs)**

At the end of this clerkship, the student should achieve the objectives listed under the following subtitles:

#### **S1: Introduction to the course**

- 1- Introduce the various aspects of the course and outline assessment
- 2- Show understanding of the general structure of the courses.
- 3- Show list of the outcomes and specific objectives of the course.
- 4- Explain the bases and contents of the assessment and feedbacks.
- 5- Appoint or elect a student coordinator.
- 6- List hard and soft reading material.
- 7- Explain attendance regulations and consequences of absenteeism.

#### **S2: Ethics and professionalism**

- 1- Reflect, through good attitudes, responsible and serious concern to the patient's problems and her family, taking into account the positive moral and cultural characteristics of the society, observing the ethical and legal implications of dealing with a female patient at all levels of interventions (A).**
- 2- Maintain good relationship with patient and family and counsel them effectively to help them take the right decisions on the management of their problems and secure their consent taking into account their local culture, economic abilities and social conditions (A).**
- 3- Comply with the hospital system regarding uniform, attendance, peer and team work and ethical and responsible behavior in his/her relationship professional, technical and administrative staff (A).**
- 4- Work effectively and harmoniously with members of the health team, accepting leadership responsibilities, considering the difficult decisions to**

*take, affecting all sectors, in the area of reproductive health in the community (A, P3).*

- 5- Explain the population dynamics in his/her area or country, the population-related factors affecting health and disease in all patients and the effects of disease in these dynamics, and use this approach in counselling and patient management in family and reproductive health (C3, P3).*
- 6- Demonstrate ability of independent and life-long learning, initiate research methodologies relevant to obstetrics and gynecology practice, health system, disease etiology, management and prevention*

### **S3: Reproductive anatomy and physiology**

- 1- Review the gross features and development of the male and female pelvis and genital organs (C1).
- 2- Describe the menstrual cycle, ovulation, fertilization, implantation and early embryogenesis, and explain the abnormalities of each and their clinical consequences (C1, C2).
- 3- List the hormonal changes during pregnancy and lactation, mention the origin and control of the operating hormones (C1)
- 4- List the adaptation changes that takes place in the body in response to pregnancy

### **S4: History taking, physical examination and investigations**

- 1- Received a female patient, take full medical and obstetrical history, with appropriate manner, sequence and comprehensiveness, and write it up as clear as possible for others to read and understand (C3).
- 2- Demonstrate basics of counselling and identify high risk patients
- 3- Asked to examine a female patient: prepare the appropriate setup for physical examination, carry out the examination in the appropriate manner, sequence and comprehensiveness, and write it up as clear as possible for others to read and understand, noting the special aspects of history to be included if the lady is pregnant (P4).*
- 4- Select the laboratory investigations relevant to the problem of the patient considering limitations of the patient, the health system and/or hospital routine, and issuing clear directives to the patient on how and where to do these investigations (C3, P4)*
- 5- Use the skills staked above to reach a diagnosis or suggest a differential diagnosis of the problem presented (P4).*

### **S5: OB/GYN basic skills**

- 1- Identify the instruments used in the practice and surgery in obstetrics and gynecology, and explain the indication for using each (P3, C2).*

- 2- Show ability and enthusiasm to promote health through health education and support and provision of primary health programs (A)

### S6: Diagnosis of pregnancy

- 1- Describe the signs of pregnancy, methods of diagnosis of pregnancy (C1).
- 2- Explain the need for antenatal care, how frequent in normal and abnormal pregnancies (C2).
- 3- Explain the role of ultrasound in early pregnancy (C2)
- 4- Discuss high risk pregnancy (2).

### S7: WARD ROUND-1: Diagnosis of pregnancy

**Presented with a lady who missed her period, or a similar verbal or written scenario: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to reach the diagnosis and detail management including health promotion, prevention, treatment, rehabilitation and follow up particularly if the lady is pregnant, give advice on antenatal care to such lady for the remaining gestation time(C3,P4).**

### S8: Antenatal imaging and assessment of fetal wellness

- 1- Identify the parts of the ultrasound machine used by the obstetrician (C2).
- 2- List fetal abnormalities detectable by ultrasound (C1)..
- 3- List the risk factors, their etiology and management (C1).
- 4- List the fetal growth deviations (C1).

### S9: Problem of early pregnancy

- 1- Discuss the causes and management of bleeding in early pregnancy (C2).
- 2- Describe common sites, presentation and management of ectopic pregnancy (C1).
- 3- List the causes, presentation and management of hydatidiform mole (C1).
- 4- Deal ethically with a lady presenting with unwanted pregnancy (A).

### S10: WARD ROUND-2 CASUALTY: Bleeding in early pregnancy

**Presented with a lady who had vaginal bleeding after two months of amenorrhea, or similar verbal or written scenario: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to reach the diagnosis and detail management including health promotion, prevention, treatment, rehabilitation and follow up. Note that the management plan has to be detailed for each of the possibilities (missed abortion, incomplete abortion, complete abortion, ectopic pregnancy, hydatidiform mole) (C3,P4)**

**S11: Multiple pregnancy**

- 1- Discuss the antenatal complications of multiple (twin) pregnancy (C2).
- 2- Discuss ante natal care plan of twins (C2).
- 3- Describe the indication of C/S in multiple pregnancy (C1).

**S12: Diabetes with pregnancy**

- 1- Explain the causes of diabetes mellitus during pregnancy (C2).
- 2- Explain the complications of diabetes mellitus during pregnancy; the maternal and fetal risk (C2).
- 3- Describe the treatment options, and involve a diabetologist or general physician (C1)

**S13: Malaria with pregnancy**

- 1- Explain the causes of malaria during pregnancy. Explain the complications of malaria during pregnancy; the maternal and fetal risks (C2).
- 2- Describe the treatment options, and involve a tropical internist (C1).

**S14: Anemia with pregnancy**

- 1- Explain the cause of anemia during pregnancy (C2).
- 2- Explain the complications of anemia during pregnancy; the maternal and fetal risks (C2).
- 3- Describe the treatment options and involve a hematologist or general physician (C1).

**S15: Heart disease with pregnancy**

- 1- Explain the cause of heart disease during pregnancy (C2).
- 2- Explain the complications of heart disease during pregnancy; the maternal and fetal risks (C2).
- 3- Describe the treatment options, and involve a cardiologist or general physician (C1).

**S16: Hypertension with pregnancy**

- 1- Explain the cause of hypertension during pregnancy (C2).
- 2- Explain the complications of hypertension during pregnancy; the maternal and fetal risks (C2).
- 3- Describe the treatment options, and involve a cardiologist or general physician (C1).

**S17: Jaundice with pregnancy**

- 1- Explain the cause of jaundice during pregnancy (C2).
- 2- Explain the complications of jaundice during pregnancy; the maternal and fetal risks (C2).
- 3- Describe the treatment options, and involve a gastroenterologist or general physician (C1).

**S18: Thyroid disease with pregnancy**

1. Explain the cause of thyroid disease during pregnancy (C2).
2. Explain the complications of thyroid disease during pregnancy; the maternal and fetal risks (C2).
3. Describe the treatment options, and involve an endocrinologist or general physician (C1).

**S19: Seizures with pregnancy**

1. Explain the cause of seizures during pregnancy
2. Explain the complications of seizures during pregnancy; the maternal and fetal risks.
3. Describe the treatment options, and involve a neurologist or general physician (C1)

**S20: Renal disease with pregnancy**

1. Explain the cause of renal disease during pregnancy (C2).
2. Explain the complications of renal disease during pregnancy; the maternal and fetal risk (C2).
3. Describe the treatment options, and involve a nephrologist or general physician (C1).

**S21: Hepatitis and HIV/AIDS with pregnancy**

1. Explain the cause of hepatitis and HIV/AIDS during pregnancy (C2).
2. Explain the complications of Hepatitis and HIV/AIDS during pregnancy; the maternal and fetal risk (C2).
3. Describe the treatment options and involve a virologist/gastroenterologist or general physician (C1).

**S22: Psychiatric illness with pregnancy**

1. Explain the cause of psychiatric illness during pregnancy (C2).
2. Explain the complications of psychiatric illness during pregnancy; the maternal and fetal risk (C2).
3. Describe the treatment options, and involve a psychiatrics or general physician (c1).



### S23: Contraindications of pregnancy

1. List the contraindications of pregnancy (C1).
2. Discuss the steps taken if pregnancy occurred (C2).

### S24: WARD ROUND-3: Diseases with pregnancy

*Presented with a pregnant lady who has one or more of the following: malaria, anemia, thyroid disease, jaundice, heart disease, diabetes, or hypertension, or similar verbal or written scenarios: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to reach the diagnosis and detail management including health promotion, prevention, treatment, rehabilitation and follow up. Note that the management plan has to be detailed for each of the abovementioned diseases and their complications (C3, P4).*

### S25: WARD ROUND-4: Seizures and hypertension with pregnancy

*presented with a pregnant lady in her third trimester with seizures and high blood pressure, or similar verbal or written scenario: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to stop the seizures, safe her life, reach the diagnosis and detail management including health promotion, prevention, treatment, rehabilitation and follow up (C3,P4).*

### S26: Late pregnancy

1. Describe the normal and abnormal development of the placenta (C1).
2. Explain the sonographic and other methods of fetal monitoring, and the diagnosis and management of intrauterine growth retardation (C2).
3. Describe the normal presentation of the fetus, enumerate the types of abnormal position and presentation of the fetus, (transverse lie, breech presentation, face presentation, brow presentation, and cord presentation) and explain the management protocol of each (C1, C2).

### S27: Antepartum hemorrhage (APH)

1. List the causes of APH (C1).
2. Describe the management (C1).
3. Discuss complications (C2).

### S28: Postpartum hemorrhage (PPH)

1. Describe the magnitude and seriousness of the problem of PPH (C1).
2. Show awareness of sense of emergency (C1).
3. Outline management (C2).

### S29: WARD ROUND-5: Late pregnancy

*Presented with a pregnant lady who had severe bleeding in the third trimester, or similar verbal or written scenario: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to reach the diagnosis and detail management including health promotion, prevention, treatment, rehabilitation and follow up (C3,P4).*

### S30: WARD ROUND-6: Cephalopelvic disproportions

*Presented with a pregnant lady with cephalopelvic disproportions, or similar verbal or written scenario: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to reach the diagnosis and detail management including health promotion, prevention, treatment, rehabilitation and follow up (C3,P4).*

### S31: WARD ROUND-7: Oligohydramnios and polyhydramnios

*Presented with a pregnant lady with oligohydramnios, polyhydramnios, or twin pregnancy, or similar verbal or written scenarios: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to elicit the relevant physical signs, ultrasound appearance, suggest a differential list and outline further steps in diagnosis and management including health promotion, prevention, treatment, rehabilitation and follow up (C3,P3).*

### S32: Normal and abnormal labor

1. Describe the stages of normal labor (C1).
2. Describe how to manage abnormal labor (C1).
3. Describe the indications, procedure and complications of caesarean section (C1).
4. List the complications of grand multiparity (C1)
5. Discuss the causes and consequences of RH-incompatibility (C1)
6. Discuss the complications of puerperium (C1).

### S33: WARD ROUND-8: Normal and abnormal labor

*Presented with a lady in labor, or similar verbal or written scenario: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to diagnose the stage of labor, explain uterine action, and detail management including health promotion, prevention, treatment,*

**rehabilitation and follow up, especially the indications and methods of induction of labor (C3,P4).**

### **S34: Induction of labor**

1. List the indications for induction of labor (C1)
2. Describe the methods of induction (C1).
3. Counsel the couple and patient about induction (P2)

### **S35: Instrumental delivery**

1. List the indications of instrumental delivery (C1).
2. Discuss the criteria (prerequisite) and contraindications of instrumental delivery (C2).

#### **3. Identify instruments used (P2)**

### **S36: WARD ROUND-9: Premature labor**

Presented with a lady in labor, at thirty weeks of gestation, or similar verbal or written scenario: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to reach the diagnosis and detail management including health promotion, prevention, treatment, rehabilitation and follow up (C3,P4), and explain especially the causes and management of premature labor, and outline care for premature babies (C2,P2).

### **S37: WARD ROUND-10: Prolonged labor**

**Presented with a pregnant lady with prolonged labor, or similar verbal or written scenario: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to reach the diagnosis and detail management including health promotion, prevention, treatment, rehabilitation and follow up, stating management of complications like ruptured uterus and/or postpartum hemorrhage (C3,P4) .**

### **S38: Preterm labor**

1. Define preterm labor, PROM, PPRPM (C1).
2. Describe the causes, presentation, management and prevention of preterm labor (C2).

### **S39: Rh-iso immunization**

1. Review the physiological basis of Rh disease (C1).
2. Discuss the indications of anti-D (C2).

3. List the complications of Rh iso immunization (C1).

#### **S40: Intrauterine fetal death (IUFD) and intrauterine growth retardation (IUGR)**

1. Describe the presentations of IUFD and IUGR (C2).
2. Describe the methods of monitoring abnormal fetal growth (C1)..
3. **Breaking bad news and counseling of couple and patient (A)**

#### **S41: Oligohydramnios and polyhydramnios**

1. Review the functions of amniotic fluid (C1)..
2. List the causes of oligohydramnios and polyhydramnios (C1)..
3. Outline the diagnosis and management (C2,P2)
1. List complications (C1).

#### **S42: WARD ROUND-11: Emergency obstetrics**

***Diagnose and manage emergency conditions in a female patient, with particular attention to bleeding in early pregnancy (abortion and ectopic pregnancy), antepartum hemorrhage, eclampsia, ruptured uterus, postpartum hemorrhage.***

#### **S43: Caesarean section**

2. Describe the indications of CS (C1).
3. List the types, and describe the procedure,preoperative, operative and post-operative precautions (C1).
4. List complications (C1).

#### **S44: Contraception**

1. List the indications of contraception (C1).
2. List the contraceptive methods and the efficacy and indications for each (C1).
3. Describe the pharmacodynamic of contraceptive pills (C1).
4. Discuss the complications of contraceptive methods (C2).

#### **S45: Infertility**

1. List the types of infertility (C1)..
2. Describe how to take history and carry out examination and investigation to detect the causes (C1).
3. Outline management options of infertility (C2).
4. **Counsel couples on causes and management of infertility (A).**

#### **S46: The normal menstrual cycle and amenorrhea**

1. Review the physiology (normal) of menstrual cycle (C1).
2. Review the importance of normal cycle in pregnancy (C1).
3. List the causes and types of amenorrhea (C1).

4. Outline the approach to management of abnormal menstrual cycle (C2,P2)

### **S47: Gynecologic disease**

1. *Show ability and enthusiasm to promote family and reproductive health, through health education and support and provision of primary health programs, including antenatal care (A, P3).*

### **S48: WARD ROUND-12: Gynecologic disease**

*Presented with a patient with one of the following problems/conditions: (amenorrhea, dysmenorrhea, dysfunctional uterine bleeding, uterine fibroids, dyspareunia, pelvic inflammatory conditions, genital prolapse, urine incontinence, or vesico-vaginal or rectovaginal fistulae), or similar verbal or written scenarios: use his/her basic and clinical science knowledge to explain the causes and underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to elicit the relevant physical signs, suggest a differential list, and outline further steps in diagnosis and management including health promotion, prevention, treatment, rehabilitation and follow up (C3,P3).*

### **S49: Genital tract infection (GTI) and pelvic inflammatory disease (PID)**

1. Outline management of these conditions (C2).
2. List the causes of genital tract infections (GTI), and PID (C1)
3. Describe the causes from sexually transmitted diseases (C1).
4. Describe management and prevention of GTI (C2,P2)

### **S50: Condition affection vulva and vagina**

1. List causes of vulva and vaginal conditions (C1).

### **S51: General issues in reproductive health**

1. Explain the role of physician and that of the paramedical staff in reproductive health, family planning and contraception, following the ethical national policies and scientific and reasonable views of international organizations (C2).
2. Discuss the population dynamics, and vital statistics of the population in the Sudan, showing extreme concern with information on maternal and neonatal death, and outline policy of reducing the figures to the lowest possible, and recognize and discuss population-related factors affecting maternal and child health and the effects of sound family health on these dynamics (C2).
3. *Demonstrate ability of independent learning, and outline research methods relevant to family practice, reproductive biology and health, and etiology, management and prevention of common diseases (P3).*

**S52: Menopause & postmenopausal bleeding**

1. List the symptoms and hormonal causes of menopause (C1).
2. Describe management of menopausal symptoms (C1).
3. Describe management of post-menopausal bleeding (C2,P2).

**S53: Endometriosis and adenomyosis**

1. Define endometriosis and adenomyosis (C1).
2. Outline the presentations and management (C2)

**S54: Urogenital prolapse**

1. List the causes of uterovaginal prolapse (C1).
2. Outline the management, prognosis and complications (C2,P2)

**S55: Urine incontinence**

1. Discuss the causes of urine incontinence in a female (C2).
2. Outline management (C2).
3. Discuss complications and social impact on quality of life (C2).

**S56: Benign tumors of ovary and genital tract**

1. List the benign tumors of the genital tract and ovary (C1).
2. Outline management and prognosis (C2).

**S57: Malignant tumors of the uterus**

1. List the malignant tumors of the uterus and cervix (C1)..
2. Outline management and prognosis and complications (C2,P2).

**S58: Carcinoma of the ovary and fallopian tube**

1. Describe the presentation and diagnosis of ca ovary (C1).
2. Outline management and prognosis (C2)

**S59: WARD ROUND-13: Ovarian tumors**

***Presented with a patient with ovarian tumor, or genital cancer, or similar verbal or written scenarios: use his/her basic and clinical science knowledge to explain the causes and underlying mechanisms (including structure, function, and pathophysiological processes) and his/her basic surgical knowledge and skills to elicit the relevant physical signs, suggest a differential list, and outline further steps in diagnosis and management including health promotion, prevention, treatment, rehabilitation and follow up (C3,P3).***

*List of Essential Drugs (see (WHO) list)*

## Log Book

Requirements (Essential Skills)- completion indicated by signature of a senior staff (P1=observe, P2=assist, P3= perform under supervision, and P4= perform independently).

1. **COMMUNICATION SKILL:** *Establish and maintain of good relationships with patient and family, counsel them effectively (including health promotion and healthy life-style) and show concern for their economic and social conditions in management choices (A, P3).*
2. **HISTORY TAKING:** *Record a full history (minimum 10 patients) with relevant details of familial and social backgrounds (P3).*
3. **GENERAL PHYSICAL EXAMINATION:** *Conduct and record a complete physical examination (in 10 patients), using clinical and laboratory skills relevant to the patient's problem, in considering suitable techniques for various age groups and specifically detailing examination of masses and wounds (P3)*

### SPECIFIC SKILLS:

4. *Examine 6 patients in a health center (antenatal care) (P3).*
5. *Perform (or actively assist) 5-10 normal labors (P3 or P2).*
6. *Attend and actively assist in 5-10 D and Cs (P1 or P2).*
7. *Attend 5-10 patientss of abortion in emergency department (P1).*
8. *Attend and/or assist in 5-10 caesarean section operation (P1, or P2), 1 fibroid operation (P1, or*
9. *P2), 1 ovarian tumor operation (P1, or P2), 1 hysterectomy (P1, or P2), 1 premature labor (P1, or*
10. *P2), management of a patient of eclampsia (P1 or P2),*
11. *Use correctly the speculum, and observe the use of an obstetrical forceps in difficult labor (P3).*
12. *Putting a urethral catheter in a female (P3)*
13. *Using naked eye, microscope or other known methods, examine stools and urine (twice each), estimate hemoglobin (P4), do blood grouping (P4), count white blood cells (P4), and find out erythrocyte sedimentation rate (ESR) (P4).*
14. *Master the methods of learning and instructional techniques used in clinical settings, and in health education, adopting problem-based and independent learning approaches in all activities (signed by tutor following audiovisual presentation) (P3)*
15. *Deliver one session of health education (P3).*

## Reading material

- Haker and More. Essentials of Obstetrics and Gynecology. WB Saunders.
- McKay N. Gynecology Illustrated. Churchill Livingstone.
- Campbell and Lee. Obstetrics by Ten Teachers.
- Campbell and Monaga> Gynecology by Ten Teachers

## Educational strategies and methods

- Antenatal care clinic, at health centers once every week.
- Daily (4-5 days/week) morning (grand) round in OB/GYN wards- 7:30-9:00.
- Daily clinical teaching in OB/GYN wards or outpatient – 9:00-12:00
- Four days' weekly tutorials in OB/GYN topics- basic clinical skills, theoretical OB/GYN topics- 1:00-4:
- Night duties in casualty and obstetric wards twice/week throughout clerkship §
- A log book to assure that the above skills have been fulfilled.

## Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance /Presentation= 5%	MCQs= 10%	MCQs = 20%
Practical/Clinical/ OR= 5%	SQs= 0%	SSQs=0%
Assignment/Seminar/Log-book=5%	Essays/ Short notes=	OSCE= 20
Others= 0% (e.g. peer)	Others= - Clin+ OSPE/ PSCE-----10%	Others= Clini+ / =30%
<b>Total= 15%</b>	<b>Total= 20%</b>	<b>Total= 65%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

Remedial for 'F' students: by repeating course through approved independent supervision by full-time or honorary staff member during holidays or the following semesters and re-sit exam with the batch to follow.

Clerkship evaluation: Through student and staff discussions and questionnaire carried out before examination.



**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required resources****Premises**

- Lecture room, 100-150 capacity with multimedia and x-ray viewing boxes.
- Rooms for tutorials and seminars
- Health Center
- Hospital with inpatients, outpatients, labor rooms, OR and ER

**Staff**

- Obstetricians and gynecologists
- Physicians

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

# Pediatrics

## (ME-PED-521) -12 CHs, Block 12 weeks

TITLE: Pediatrics	CODE: ME-PED-512	DURATION/CREDITS: block 12 CHs - 12-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES: Years 1,2 and 3 courses		

### Outline

A ten-week continuous block, some of the contents are more relevant to FAMED-509, to include: (1) demonstrating professional ethics and attitudes appropriate for pediatric practice, (2) review the developmental anatomy and disorders encountered at birth and following childhood years, (3) taking a comprehensive pediatric history from child/adolescent or their immediate care giver, perform and record proper physical examinations, and select the most appropriate and cost effective investigations relevant to the child's problem, (4) recognizing and managing emergency pediatric conditions (convulsions, fever, dehydration, respiratory distress, etc.), common neonatal problems, child nutritional problems, (5) recognizing, diagnosing (or carry necessary steps in diagnosis), and outline subsequent steps in the management of nephritis, renal failure, obstructive uropathy, IDDM and other endocrine disorders in childhood, congenital and acquired heart disease, childhood malignancies (6) analyzing community problems related to child health, immunization and disorders of immunity, and (7) essential drugs used in pediatric practice.

### Rationale

The basic concept in health care is that patients, irrespective of their gender, age, colors, religion, socioeconomic background etc., receive the physician's kind care and full attention, to be treated humanely, with due respect to their own dignity. The physician should have the required, knowledge, skills and professionalism, to carry out his/her duties to help them. Modern educational philosophies assume that a medical student is an active learner and emphasize independent learning and team work attitudes.

Children constitute over 50% of the population and they suffer from almost the same  
 SC-curriculum/Med, Issue/Rev. (04/00)

medical and surgical illnesses as do adults, in addition to specific childhood illnesses, which are mainly due to vulnerability to infections, poverty, malnutrition, congenital malformations, metabolic diseases, neonatal problems or abuse. Studying pediatrics is essential because management and prevention of childhood diseases decreases the rates of morbidity and mortality in children, which are important indicators of development and quality of life. Knowledge and skills learned in pediatric training enable the students to deal with the majority of problems related to other specialties and subspecialties. Most of the training in this clerkship is exposure to secondary and tertiary levels of health care, which have to complement, rather than replace, primary level of care. In pediatrics primary care is exceptionally important, because most of the origin or consequences of childhood diseases are in the community.

The study of pediatrics requires the student to adopt holistic approach to patient problems, looking at other members of the family, school and community at large. The subspecialties within the medical clerkship (neurology, cardiology, dermatology and oncology etc.) are important in pediatrics.

## General Learning Outcomes

The student should develop the attitudes and acquire knowledge and skills which qualify him/her to:

- 1. Show responsible and compassionate behavior with the child and family considering the cultural, social and economic background, and in dealing with all levels of education and abilities.**
2. Use the required communication skills for taking appropriate history and conducting medical examination.
3. Appreciate the role of perfect understanding of basic science (e.g. anatomy, physiology and biochemistry) and the underlying pathophysiological) relevant to pediatric practice in the diagnosis and management of common child illnesses.
4. Be acquainted with the epidemiological profile of the population and society, their heritage and cultural, social, geographic and economic characteristics, and relationship of all those to child health and disease etiology and management.
5. Have the knowledge and skills which help him/her to observe and maintain the healthy physical, psychological and educational development of the child.
6. Have the knowledge and skills necessary to identify the problems of child health and their management, including emergency situations, common child diseases of endemic or epidemic etiologies, and disabilities, including

- health promotion preventions, treatment, rehabilitation and follow up.
7. Opt for the wise selection of the most appropriate and cost-effective management and the capabilities of the health system.
  8. Interact effectively with the child health team and other teams (and appreciate the role of others) in providing child health services.
  9. Continue independent learning in pediatric sciences and practice, and pursue postgraduate studies.

## Intended (specific) learning outcome

At the end of this clerkship, the student should achieve the objectives listed under the following titles:

### S1: Introduction to the course

1. Introduce the various aspects of the course and outline assessment Show understanding of the general structure of the course.
2. Show list of the outcomes and specific objectives of the course.
3. Explain the bases and contents of the assessment and feedbacks.
4. Appoint or elect a student coordinator.
5. List hard and soft reading material.
6. Explain attendance regulations and consequences of absenteeism.
7. Describe general differences between pediatrics and adult.
8. Determine Educational Strategies and methods of assessment and evaluation.
9. Describe general ideas and important steps for assessment and interviewing of sick child.
10. Describe log book requirements.
11. List the references and useful web material.

### S2: Ethics and professionalism

1. *Maintain good relationship with patient and family and counsel them effectively to help them take the right decisions on management of their problems and secure their consent taking into account their economic abilities and social status (A).*
2. *Comply with the hospital system regarding uniform, attendance, peer and team work and ethical and responsible behaviour in his/her relationship with professional, technical and administrative staff (A).*
3. *Work effectively and harmoniously with members of the child health team, and other teams, accepting need-be leadership responsibilities (A).*
4. *Explain the population dynamics in his/her area or country, and the population-related factors affecting health and disease in all patients, and the*

*effects of disease in these dynamics, and use this approach in counselling and case management in children (A).*

- 5. Demonstrate ability of independent and life-long learning, initiate research methods relevant to paediatrics, family health, disease etiology, management and prevention (A).*
- 6. Reflect, through good attitudes, responsible and serious concern to medical problems in the child, family and community, and to the positive moral and cultural characteristics of the society (A).*
- 7. Explain to the patient, honestly and in simple terms the medical concepts of disease and interventions, and show concern for their economic and social abilities in management choices (C3).*
- 8. Promote health through health education and provision of primary health programs (P3).*

### **S3: Approach to pediatrics**

1. Describe the patterns of child disease, in various age groups, recognize urgent ones
2. problems and emergency and critical conditions (C1, C2).
3. Show ability to follow child health, in various age groups (C3).

### **S4: History taking, physical examination, investigation and diagnosis**

1. Given any child/adolescent patient with any complaint: take full medical history from a child or adolescent and his/her parent or care giver, with the appropriate sequence and comprehensiveness, and write it as clear as possible for others to read and understand (C3).
- 2. Asked to a examine a child/adolescent patient: prepare the appropriate setup for physical examination, taking the necessary steps to make the child and care giver cooperative, and perform a thorough examination, with the appropriate sequence and comprehensiveness of all systems, relevant to the pediatric problem, and write notes as clear as possible for others to read and understand (P4).*
- 3. Select the laboratory investigations relevant to the problem of the patient, considering child apprehension, limitations of parent/care giver abilities, hospital or health system routine and issuing clear directives to the parents or care giver on how and where to do these investigation (C3, P3).*
- 4. Use the skills stated in objectives to reach a diagnosis or suggest a list of differential diagnoses of the problem presented P4).*

### S5: Growth and development

1. Describe the normal growth curves for infant and preschool age, normal variations in growth and how to plot it in the centile charts and development, and examples for causes of abnormal development (C2).
2. Describe the milestones with examples according to the age, also examples for causes of developmental (C1).

### S6: Puberty

1. Describe the normal pattern of physical and psychological development during adolescence (C1).
2. Describe normal physical and physiological changes during puberty for both male and female (C1).
3. Discuss the definition, etiology, complication and plan of management of delay and precocious puberty (C2).

### S7: WARD ROUND-1: Precocious puberty

***Presented with a real patient with precocious puberty, or similar verbal or written scenario: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes), and clinical skills to diagnose (or suggest a list of differential diagnoses) and outline management (C3, P3).***

### S8: Breast feeding and infant feeding

1. Describe the nutritional requirements during infancy and preschool age (C1).
2. Prescribe the breast milk and list components, advantages and contraindications (C1).
3. Discuss how we can advise the mother about method and consequences of weaning (C2).

### S9: Malnutrition

1. Define the malnutrition and risk factors (C1).
2. Describe the causes, classification, pathophysiology, clinical features and complications (C1).
3. Discuss the clinical features of malnutrition (C1)
4. Describe diagnosis, management, prevention, rehabilitation and follow up of malnourished child (C1)

### S10: WARD ROUND-2: Malnutrition

***Presented with a real patient with malnutrition or similar verbal or written scenario: use his/her basic and clinical science knowledge to explain the underlying***

***mechanisms (including structure, function, and pathophysiological processes), and clinical skills to reach a diagnosis and manage each condition including health promotion, prevention, treatment, rehabilitation and follow up (C3,P4).***

### **S11: Neonatal and resuscitation**

1. Describe history and examination during neonatal period and how to pick up congenital anomalies during neonatal examination (C1).
2. List the common problem in the neonatal period (C1).
3. Describe APGAR score and its importance (C1).
4. Demonstrate how we can do resuscitation for neonate with detailed plan according to advance basic life support program (P1).

### **S12: WARD ROUND-3: Cyanotic newborn**

***Presented with a real patient (a cyanotic newborn), or similar verbal or written scenario: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes), and clinical skills to diagnose (or suggest a list of differential diagnoses) and outline management for each (C3, P3).***

### **S13: WARD ROUND-4: Neonatal jaundice, pre-maturity, respiratory distress syndrome and congenital anomalies, infant of a diabetic mother**

***Presented with any of the following real, verbal or written neonatal conditions: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes), and clinical skills to diagnose (or suggest a list of differential diagnoses) and outline management for each. The conditions include: neonatal jaundice, prematurity, respiratory distress syndrome and congenital anomalies, infant of a diabetic mother (C3, P3).***

### **S14: Neonatal convulsions & bleeding**

1. Define seizure, and describe the types and classifications during neonatal period (C2).
2. Outline the causes, risk factors and expected complications of neonatal convulsion (C2).
3. Describe the immediate resuscitation and intervention steps for emergency (convulsion) (C2).
4. Outline the causes of neonate with bleeding tendency, differential diagnosis, investigations, complications and management. (C2)

### S15: Neonatal jaundice

1. Define the neonatal jaundice and list its types (C1).
2. Explain the underline mechanism, pathophysiology (C2).
3. List the causes, differential diagnosis and clinical presentation accordingly (C1).
4. Outline management plan according to cause and possible complications (C2).

### S16: Neonatal infections& sepsis

1. Define the neonatal sepsis and describe its pathogenesis (C1).
2. Describe risk factors, etiology, clinical presentation (C1).
3. Discuss the protocol of investigation and septic screening to reach a diagnosis, select treatment, avoid complications and follow up (C2).
4. Discuss common infections during neonatal period like TORCH (C2).

### S17: Prematurity & respiratory problems during neonatal period

1. Define prematurity and list risk factors (C1).
2. Identify the major complications of prematurity, and discuss how to avoid and manage (C2).
3. Describe the main causes of respiratory problems during neonatal period for term and preterm babies (C1)
4. Describe the importance of surfactant in lung maturation (C1)
5. Discuss the management and resuscitation steps of respiratory problems during neonatal period (C2).

### S18: The child with disability

1. Define the etiology, and describe the type and clinical presentation (C1).
2. Outline differential diagnosis with plan of management (C2).
3. Discuss role of multidisciplinary team, counseling and follow up (C2).
4. Determine more features about autism, attention deficit hyperactivity syndrome and enuresis (C2).

### S19: Diphtheria, tetanus and Rota virus

1. Describe the etiology, epidemiology and pathogenesis of diphtheria, tetanus and rota virus infections (C2).
2. Discuss the clinical features and complications, investigations, plan of management and prevention (C2).
3. Prescribe the importance of vaccination and revise the vaccination schedule in the Sudan (C1).

### S20: WARD ROUND-5: Diphtheria, tetanus and rota virus

**Presented with a real patient with diphtheria, tetanus or whooping cough, or similar verbal or written scenarios: use his/her basic and clinical science knowledge**



***to explain the underlying mechanisms (including structure, function, and pathophysiological processes), and clinical skills to reach a diagnosis and manage each condition including health promotion, prevention, treatment, rehabilitation and follow up (C3, P4). and follow up (C3, P4).***

### **S21: Polio, measles and pertussis**

1. Describe the etiology, epidemiology and pathogenesis of poliomyelitis, measles and pertussis (C1)..
2. Discuss the clinical features, complications, investigations, plan of management and prevention of each (C2).
3. Prescribe the importance of vaccination and revise the vaccination schedule of the Sudan (C2).

### **S22: Typhoid & brucellosis**

1. Define the epidemiology, high risk people and describe pathogenesis (C1).
2. Determine clinical presentation (symptoms and signs) (C1).
3. Describe acute and chronic complications, investigations, plan of management and prevention (C2).

### **S23: Malaria**

1. Describe the epidemiology, high risk people and discuss pathogenesis (C1).
2. Describe the clinical presentation (symptoms and signs) of malaria according to age of the patients (C1).
3. Define severe malaria, discuss the criteria for diagnosis and identify complications (cerebral malaria, hypoglycemia (C2).
4. Describe in details plan of management for uncomplicated and severe malaria according to the protocol of Sudan and prevention (C2).

### **S24: Schistosomiasis and portal hypertension**

1. Define the epidemiology, high risk people and discuss pathogenesis (C1).
2. Determine clinical presentation (symptoms and signs) (C1).
3. Describe acute and chronic complications, investigations, plan of management and prevention (C1).
4. Define portal hypertension, describe its pathophysiology, clinical presentation, investigations and diagnosis and plan of management (C2).

### **S25: Leishmaniasis**

1. Describe the epidemiology, etiology and pathogenesis (C1).
2. Determine clinical presentation (symptoms and signs) (C1).
3. Describe acute and chronic complications, investigations, plan of manage-

- ment and prevention (C1).
4. Prescribe drugs that are used according to protocol of management (SudanL, listing side effects (C2).

### **S26: HIV/AIDS**

1. Define the epidemiology, high risk people and discuss pathogenesis of HIV (C1).
2. Determine clinical presentation (symptoms and signs) (C1).
3. Describe acute and chronic complications, investigations, plan of management and prevention (C1).

### **S27: Tuberculosis**

1. Define the epidemiology, high risk people and discuss pathogenesis of tuberculosis (C1)
2. Determine clinical presentation (symptoms and signs) (C1).
3. Describe acute and chronic complications, investigations, diagnosis, plan of management and prevention (C1).
4. Discuss the importance of vaccination (BCG) (C2).
5. Prescribe in details protocol of treatment in the Sudan and describe the side effect of drugs. and strategies for follow up (C2).

### **S28: Intestinal worms**

1. Describe the epidemiology, etiology and pathogenesis of intestinal worms (C1)
2. Determine clinical presentation (symptoms and signs) and risk factors (C1).
3. Describe acute and chronic complications, investigations, diagnosis, plan of management and prevention (C2).

### **S29: Meningitis and encephalitis**

1. Describe the epidemiology, high risk people and pathogenesis for each one separately (C1).
2. Identify clinical presentation (symptoms and signs) of meningitis according to age of the patients (C1).
3. Describe acute and chronic complications, investigations, diagnosis, plan of management and how to deal with emergency cases such as convulsing babies (C2).
4. Prescribe specific procedure for diagnosis and intervention (e.g. lumbar puncture): and discuss its indication and contraindication in meningitis and encephalitis (C3)

### **S30: WARD ROUND-6: Meningitis and encephalitis**

***Presented with a real patient with meningitis, or similar verbal or written scenario: use his/her basic and clinical science knowledge to explain the underlying mecha-***

*nisms (including structure, function, and pathophysiological processes), and clinical skills to reach a diagnosis and manage each condition including health promotion, prevention, treatment, rehabilitation and follow up (C3, P4)*

### **S31: Hepatitis and hepatic coma**

1. Describe the pathogenesis and list high risk people (C1).
2. Discuss clinical presentation (symptoms and signs) (C2).
3. Describe acute and chronic complications, investigations, diagnosis, plan of management and prevention (importance of vaccine) (C1).
4. Define hepatic coma, pathophysiology, clinical presentation, investigations, diagnosis and plan of management (include how to resuscitate and deal with coma as emergency case) and follow up (C2).

### **S32: Congenital heart disease**

1. Review basic anatomy and physiology of the heart (C1).
2. Describe the classifications of congenital heart disease (C1).
3. Describe the clinical features, pathophysiology, investigations and diagnosis (C3)
4. Outline plan of management and complications (C2)

### **S33: Myocarditis and cardiomyopathy**

1. Define myocarditis and cardiomyopathy (C1).
2. Name the causes, and types of cardiomyopathy in pediatrics (C1).
3. Discuss the clinical presentation, investigations, diagnosis, plan of management, complications and follow up (C2).

### **S34: Infective endocarditis**

1. Define infective endocarditis, list risk factors and describe pathogenesis (C1).
2. Describe clinical presentation and important sings that are characteristic for diagnosis (C1).
3. Discuss the relevant investigations and diagnosis according to Duke's criteria (C1).
4. Describe the plan of management, complications and follow up according to above criteria (C1).

### **S35: Heart failure**

1. Define the pathophysiology of heart failure (C1).
2. List risk factors and causes, and describe clinical features, according to the age (C1).
3. Discuss the relevant investigations, and diagnose and plan management (C2).
4. Discuss the value of early intervention and urgent resuscitation (C1)

**S36: Rheumatic fever (RF) rheumatic heart disease**

1. Describe the pathogenesis and etiology of RF (C1).
2. Describe clinical presentations according to Jone's criteria for diagnosis (C2).
3. Discuss the relevant investigations, and the differential diagnosis (C2).
4. Describe the plan of management (both medical and surgical) and discuss complications and follow up (C2).

**S37: WARD ROUND-7: Heart failure**

***Presented with a real patient with heart failure, or similar verbal or written scenarios: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes), and clinical skills to reach a diagnosis and manage each condition including health promotion, prevention, treatment, rehabilitation and follow up (C3,P4)***

**S38: Cerebral palsy**

1. Define cerebral palsy and describe the etiology (C1).
2. Define classifications and clinical presentation (C2).
3. Identify the investigations, diagnosis and complications (acute and chronic) (C2).
4. Discuss plan of management (the importance of multidisciplinary team and the role of each disciplinary in details) and rehabilitation (C2)

**S39: Epilepsy**

1. Define seizure and epilepsy (C1).
2. Describe classification and clinical presentation of epilepsy according to types (C2).
3. Identify the possible causes and risk factors (C1).
4. Discuss the importance of clinical diagnosis and list other investigations that help to confirm it like EEG (C2).
5. ***Prescribe the treatment and note side effect of drugs (P2).***
6. Describe how to resuscitate a baby and management of a convulsing child (C2).
7. Detail strategies for management of status epileptics (C2).

**S40: WARD ROUND-8: Epilepsy**

***Presented with a real patient with epilepsy or similar verbal or written scenarios: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes), and clinical skills to reach a diagnosis and manage the condition including health promotion, prevention, treatment, rehabilitation and follow up (C3,P4)***

### S41: Febrile convulsions

1. Define febrile convulsions and other different forms of epilepsy (C1).
2. Describe criteria that make clinical diagnosis (C2).
3. Identify the possible causes and risk factors (C1).
4. Describe how to resuscitate baby and manage a convulsing child and follow up (C1).

### S42: Acute flaccid paralysis

1. List the causes, and describe the clinical presentation of flaccid paralysis (C1).
2. Discuss the differential diagnosis (C2).
3. Discuss the investigations, diagnosis, plan of management, complications and follow up for each differential diagnosis separately in details and how to manage the emergency cases (C2).
4. Discuss the strategies of surveillance in the Sudan for patients of acute flaccid paralysis (C2)

### S43: Coma

1. Define coma (C1).
2. Describe the etiology, clinical assessment according to GCS and the modified one according to age (C1).
3. Describe how to resuscitate baby and plan for management (C2).
4. Describe investigations and long-term management, according to the cause (C2).

### S44: Diarrheal disease

1. Describe the definition, etiology, classifications, clinical presentation, investigations, diagnosis, complications and plan of management of diarrhea (C2).
2. Describe the classification of dehydration according to assessment (C1).
3. **Prescribe suitable fluid and electrolyte therapy in a child with gastroenteritis and detailed plan of resuscitation (P2).**

### S45: WARD ROUND-9: Gastroenteritis

**Presented with a real patient with gastroenteritis, or similar verbal or written scenarios: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes), and clinical skills to reach a diagnosis and manage each condition including health promotion, prevention, treatment, rehabilitation and follow up (C3,P4).**

### S46: Chronic liver disease

1. Describe the etiology, pathogenesis identify high risk people for chronic liver disease (C1).

2. Determine the clinical presentation (symptoms and signs) and include stig-mata of chronic liver disease (C1).
3. Describe investigations, diagnosis, plan of management and follow up (C1).
4. Review the causes of Wilson's disease, hepatitis and metabolic diseases that cause chronic liver disease (C1)

#### **S47: Inflammatory bowel disease**

1. Describe the etiology, pathogenesis according to the causes (C1).
2. Describe clinical presentation (symptoms and signs) of inflammatory bowel disease, and include Crohn's disease and ulcerative colitis (C1).
3. Describe investigations, diagnosis, plan of management and follow up ac-cording to the cause (C2)

#### **S48: Malabsorption**

1. Describe the causes, etiology and pathogenesis (C1).
2. Describe clinical presentations, relevant investigations, and differential diag-nosis (C2).
3. Describe the plan of management, complications and follow up (C2).
4. Discuss more details about important diseases such as celiac disease (C1)

#### **S49: Diabetes mellitus**

1. Define diabetes mellitus and describe its pathophysiology (C1).
2. Describe types, clinical presentation and criteria for diagnosis (C1).
3. Discuss associated disease and risk factors (C2).
4. Determine the investigations and plan of management and the role of multi-disciplinary team) (C2).
5. Describe the acute and chronic complications with plan of management (C2).
6. Discuss the types of insulin, its storage, and planning doses (C2).

#### **S50: DKA and hypoglycemia**

1. Define DKA and hypoglycemia, and describe etiology, classifications, clinical presentations, investigations, diagnosis and child resuscitation (C3).
2. Outline complications and prognosis (C1)

#### **S51: WARD ROUND-10: Diabetes mellitus**

***Presented with a real patient with diabetes mellitus or similar verbal or written sce-narios: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes), and clinical skills to reach a diagnosis and manage each condition including health promotion, prevention, treatment, rehabilitation and follow up (C3,P4).***

### S52: Adrenal diseases

1. Review basic anatomy and physiology of adrenal gland (C1).
2. Describe the etiology of hypoadrenalism and hypoadrenalism, and discuss pathophysiology, clinical presentation, investigations, diagnosis complications and plan of management (C1).
3. **Determine ambiguous genitalia (P1).**
4. **Determine adrenal crises as emergency and discuss how to deal with a critically ill patient (P1)**

### S53: Thyroid disease

1. Review basic anatomy and physiology of thyroid gland (C1).
2. Describe the etiology of (hypopituitarism and hyperthyroidism) pathophysiology, clinical presentation, investigations, diagnosis, complications and plan of management (C2).
3. Explain congenital hypothyroidism and Hashimoto's disease (C2).

### S54: Pituitary diseases

1. Review basic anatomy and physiology of pituitary gland (C1).
2. Describe the common disorders of pituitary hormones), pathophysiology, clinical presentations, investigations, diagnosis and plan of management (C2).
3. Discuss ADH hormonal disorders (C1).
4. Discuss growth hormone actions including effects on stature (C2).

### S55: Rickets

1. Review basic biochemistry and physiology bone metabolism (C1).
2. Describe, etiology, classifications, clinical presentation, investigations, diagnosis, complications and plan of management (C2)

### S56: WARD ROUND-11: Rickets

***Presented with a real patient with rickets, or similar verbal or written scenarios: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes), and clinical skills to reach a diagnosis and manage each condition including health promotion, prevention, treatment, rehabilitation and follow up (C3,P4)***

### S57: Nephrotic syndrome

1. Revise normal anatomy and physiology of the urinary system, of the kidney and structure of the glomeruli (C1).
2. Define nephrotic syndrome, etiology pathophysiology, clinical presentation, investigations, diagnosis, complications, plan of management for disease and

- complications (C2).
3. List the side effect of the drugs that used in the treatment (C1).
  4. Discuss the indications and finding of renal biopsy (C2)

### **S58: Glomerulonephritis**

1. Define glomerulonephritis (C1).
2. Describe the etiology, pathophysiology and clinical presentation (symptoms and signs) (C1).
3. Describe the presentations, complications and management (C2).

### **S50: Urinary tract infection (UTI)**

1. Describe the etiology, pathogenesis, clinical presentation (symptoms and signs) of UTI, according to age and risk factors (C1).
2. Describe acute and chronic complications, investigations, plan of management and prevention (C3).
3. Describe vesicoureteral reflux grades and management (C2).

### **S60: WARD ROUND-12: Nephrotic syndrome, glomerulonephritis, UTI**

***Presented with a real patient with IDDM, acute glomerulonephritis, nephrotic syndrome and/or urinary tract infections, or similar verbal or written scenarios: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes), and clinical skills to reach a diagnosis and manage each condition including health promotion, prevention, treatment, rehabilitation and follow up (C3, P4).***

### **S61: Acute and chronic renal failure**

1. Review normal fluid and acid base balance in the body (C1).
2. Review normal structure of the urinary system, normal function of the kidney (C1).
3. Define acute and chronic kidney disease (C1).
4. Describe the etiology, clinical features, investigations, diagnosis and plan of management (C2).
5. Discuss indications of dialysis and transplantation (C1).
6. Discuss the prognosis of acute and chronic renal failure (C1).

### **S62: WARD ROUND-13: Renal failure**

***Presented with a real patient with renal failure, or similar verbal or written scenarios: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes), and clinical skills to reach a diagnosis and manage the condition including health promotion, prevention, treatment, rehabilitation and follow up (C3, P4)***



### S63: Bleeding disorders

1. Describe the components of blood (origin, count and functions of blood cells) (C1).
2. Discuss the normal homeostasis (C2).
3. Explain the underlying mechanisms of bleeding disorders, including structure, function and pathophysiological processes and clinical features and investigations to reach diagnosis and managements (C2).
4. Describe the diseases related with bleeding disorders and how to resuscitate and manage (C2).
5. Discuss prognosis of bleeding disorders (C2).

### S62: Anemia in pediatrics

1. Describe the components of blood,( origin, count and functions of blood cells) (C1).
2. Define anemia and describe the etiology of anemia in pediatrics (C1).
3. List the types of anemia (iron deficiency anemia, hemolytic anemia and others) (C1).
4. Describe the genetic background and consequences of hemoglobinopathies affecting children (C1).
5. Describe details of clinical presentation, investigations, diagnosis, complications and plan of management of common types of anemia (C1).
6. Detail management of sickle cell crises and how to deal with this emergency (C2).

### S63: Bronchial asthma

1. Describe the risk factors, clinical features and pathophysiology of bronchial asthma (C1).
2. ***Draw detailed plan of resuscitation and list the criteria of observing and monitoring critically ill child with respiratory distress e.g. status asthmaticus (P2).***
3. Discuss classification of asthma and drugs that are used in managements (C2)
4. List the differential diagnosis (C2)

### S64: Pneumonia and bronchiolitis

1. Describe the etiology and pathogenesis of pneumonia and bronchiolitis (C1).
2. Describe the clinical presentation (symptoms and signs (C1).
3. according to age), investigations, diagnosis, plan of management and prevention of pneumonia and bronchiolitis (C1).
4. Describe acute and chronic complications of pneumonia and bronchiolitis (C1).
5. Discuss the management of respiratory distress as emergency (C2).

### S65: WARD ROUND-14: Respiratory tract infections

*Presented with any of the following real, verbal or written neonatal and post-neonatal conditions: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes), and clinical skills to reach a diagnosis and manage each condition including health promotion, prevention, treatment, rehabilitation and follow up. The conditions include: respiratory tract infections, febrile convulsions, diarrhoea, febrile illnesses specifically malaria (C3, P4).*

### S66: Solid tumors

1. Describe the clinical features, laboratory findings and management of lymphoma, Wilm's tumor and neuroblastoma (C1).
2. Describe the imaging diagnosis of solid tumors (C2).

### S67: Connective tissue disease

1. Define the etiology of connective tissue diseases (C1)
2. Describe clinical presentation (symptoms and signs), differential diagnosis, (e.g. juvenile rheumatoid arthritis and SLE), investigations, diagnosis (C2).
3. Plan management and list complications and follow up strategy in each disease (C2).

### S68: Vaccination

1. Review the concept of innate immunity (C1).
2. Define vaccination and list the types of vaccines (C1).
3. Describe the timing and sequences of vaccination (C1).
4. Discuss counselling for vaccination (C2).
5. Discuss the side effects, complications, and contraindications of vaccination (C2).
6. Discuss the Sudan schedule of vaccination (C2)

### S69: Genetic disorders in pediatrics

1. Review the basic genetic disorders and give examples in pediatrics (e.g. Dawn's syndrome, Turner syndrome) (C1).
2. *Communicate effectively and humanely with those who are having genetic problems and their parents (P3)*
3. Describe the management and role of multidisciplinary team work and follow up (C2)..

### S70: WARD ROUND-15: Sickle cell anemia, G6PD deficiency, thalassemia

*Presented with a real patient with sickle cell disease, G6PD deficiency or thalassemia, or similar verbal or written scenarios: use his/her basic and clinical science*

**knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes), and clinical skills to reach a diagnosis and manage each condition including health promotion, prevention, treatment, rehabilitation and follow up (C3, P4)**

### **S71:: Puberty**

**Presented with a real patient with precocious puberty, or similar verbal or written scenario: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes), and clinical skills to diagnose (or suggest a list of differential diagnoses) and out-line management (C3, P3)**

### **S72: Poisoning**

1. Describe the causes, clinical presentation, investigation, early intervention and management of poisoning (C1).
2. Explain the actions of antidote and how used (C2)

### **S73: Leukemia**

1. Define etiology and types of leukemia's (C1)
2. Describe the clinical features, laboratory findings and management of acute lymphoblastic leukemia (C2).

### **S74: Snake bites and scorpion sting**

1. Describe the pathophysiology, clinical features and management of snake bite and scorpion or bee sting (C2).

### **S74: WARD ROUND-16: Child tumors**

**Presented with real patient with acute lymphocytic leukemia, lymphoma, Wilms tumor and neuroblastoma, or similar verbal or written scenarios: use his/her basic and clinical science knowledge to explain the underlying mechanisms (including structure, function, and pathophysiological processes), and clinical skills to reach a diagnosis and manage each condition including health promotion, prevention, treatment, rehabilitation and follow up (C3, P4)**

**List of Essential Drugs (see WHO list, attached)**

## **Log Book Requirements**

*(Essential Skills)- completion indicated by signature of a senior staff.*

- 1. COMMUNICATION SKILL:** Establish and maintain good relationships with patient and family, counsel them effectively (including health promotion and healthy life-style) and show concern with their economic and social conditions in management choices (P3)
  - 2. HISTORY TAKING:** Record a full history (minimum 10 patients) with relevant details of familial and social backgrounds (P3).
  - 3. GENERAL PHYSICAL EXAMINATION:** Conduct a complete physical examination (10 patients), using clinical and laboratory skills relevant to the patient's problem, considering suitable techniques for various age groups (P3)
- SPECIFIC SKILLS:** (P1=observe, P2=assist, P3= do under supervision, and P4= do independently)
- 4. Artificial respiration and resuscitation. CPR (cardiopulmonary resuscitation) including BLS (basic life support), ACLS (advanced cardiac life support) – (P2).**
  - 5. Underwater seal (P1).**
  - 6. Putting a urethral catheter (P3)**
  - 7. Lumbar puncture (P3)**
  - 8. S9= Pleural and peritoneal taping (P3).**
  - 9. Venous puncture, section, take blood sample form veins, finger tips, (C3,P4).**
  - 10. Give intradermal, intramuscular and intravenous injections and infusions, parenteral nutrition (P4).**
  - 11. Introduce nasogastric tube, endotracheal tube (P4)**
  - 12. Examine the eye and use ophthalmoscope (P4)**
  - 13. Examine the ear and use autoscope (P4)**
  - 14. Examine the larynx and use the laryngoscope (P3)**
  - 15. Using naked eye, microscope or other known methods, examine stools and urine (twice each), estimate hemoglobin (twice), do blood grouping(once), count white blood cells (once), and find out erythrocyte sedimentation rate (ESR) (once) (P4).**
  - 16. Make a blood film and recognize malaria parasite (once) (P4)**
  - 17. Make a stools preparation to diagnose amoebic dysentery (P4).**
  - 18. Bone marrow aspiration (P1)**
  - 19. Recognize under the microscope the various types of normal and abnormal blood and bone marrow cells (P3).**

**20. Master the methods of learning and instructional techniques used in clinical settings, and in health education, adopting problem – based and independent learning approaches in all activities (signed by tutor following audio-visual presentation) (P4).**

**21. Deliver one session of health education (P4).**

## Reading material:

- Diseases of Children by Jolly
- Hutchison Clinical Methods by Swash
- Nelson Textbook of Pediatrics: Ed: Behrman 17e
- Textbook of Pediatrics, Forfar and Arneils

## Educational strategies and methods

- Daily (5 days/week) morning (grand) round in paediatric wards- 7:30-9:00\*.
- Daily clinical teaching in paediatric wards or outpatient – 9:00-12:00
- Four days' weekly /lecture/tutorial/seminar sessions in paediatric topics- basic clinical skills, theoretical paediatric topics- 1:00-4:00\*

\* The timing of these sessions depends on Hospital Department routine, some departments prefer early tutorial/lecture time, and late ward rounds.

## Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance /Presentation= 10%	MCQs= 10%	MCQs = 20%
Practical/Clinical/ = 5%	SQs= 5%	SSQs=0%
Assignment/Seminar/Log-book0=%	Essays/ Short notes=	OSCE= 20
Others= 0% (e.g. peer)	Others= - Clin+ OSPE/ PSCE-----10%	Others= Clini+ / =30%
<b>Total= 15%</b>	<b>Total= 15%</b>	<b>Total= 70%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**Remedial for 'F' students:** by repeating course through approved independent supervision by full-time or honorary staff member during holidays or the following semesters and re-sit exam with the batch to follow.

**Clerkship evaluation:** Through student and staff discussions and questionnaire carried out before examination.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

**\*Ref. Academic Course policy (SC- PP 09)**

**Required resources****Premises**

- Lecture room with multimedia and x-ray viewing boxes.
- Rooms for tutorials and seminars
- Hospital with inpatients, outpatients, labor rooms and neonates ER

**Staff**

- Pediatricians
- Family physician
- An oncologist

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

## Medical Professionalism and Communication Skills (ME-ETHIC-514) -2 CHs, 2 weeks' block

ITLE: Medical Professionalism & Communication Skills	CODE: ME-ETHIC-514	DURATION/CREDITS: block / 2 CHs - 2-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES: Years 1 ,2 and 3 courses		

### Outline

This two-week block or longitudinal, to introduce professionalism as a basis for sound practice of medicine. This is an important course that gives the ideas of distinction between the medical profession and others. The values introduced in previous courses on ethics and social sciences are emphasized. The course defines a recommended training strategy for medical students. Attitudes, knowledge and skills in the field of professionalism that are critical to the medical students will be attained through longitudinal learning experiences in several specified areas. Most of the student's knowledge will be gained by dealing with ambulatory patients. Structured didactic lectures, tutorials, seminars and assignments will be included in the course with an emphasis on outcomes-oriented, evidence-based studies that delineate common ethical dilemmas faced by practitioners.

### Rationale

As health care has become more highly technical and impersonal, many medico-ethical problems have emerged and posed themselves as complex and difficult to resolve. Physicians, in their positions as personal physicians and long-term patient advocates, have an important role to play in helping patients and their families deal with those problems. Physicians must be compassionate and empathic in caring for patients, and must be trustworthy and truthful in all of their professional dealings. They must bring to the study and practice of medicine those character traits, attitudes, and values that underpin ethical and beneficent medical care.

The decision-making process is at the core of ethics and medicine. Graduates are expected to make decisions with, for and about patients and their health care. Most of these daily decisions have potential ethical implications. Competent physicians must be able to recognize the ethical considerations in the care of patients in both in- and out-patient settings. Physicians should understand that there are multiple influences on both patients and health care providers, such as culture, education, religion, personal and family values and social individual experiences. The ultimate concern of the physician must be the welfare of each patient in the context of family, culture and belief.

Physicians must understand the history of medicine, the nature of medicine's social contract, the ethical precepts of the medical profession, and their obligations under the law. At all times they must act with integrity, honesty, respect for patients' privacy, and respect for the dignity of patients as persons. In all of their interactions with patients they must seek to understand the meaning of the patients' stories in the context of the patients' beliefs, family and cultural values. They must avoid being judgmental when the patients' beliefs and values conflict with their own. They must continue to care for dying patients even when disease-specific therapy is no longer available or desired.

The demonstration of appropriate attitudes by new medical graduates, as shown by their professional behavior, is a key area of concern for educators and employers alike and is obviously also of great importance to patients and the public in general, even if it is sometimes more difficult to define what we mean by this in comparison to some of the other outcomes. A firm grasp of ethical principles and appropriate application must be gained before graduation. The legal responsibilities of new graduates are numerous and relate to all aspects of practice.

## General Learning Outcomes

The student should develop the attitudes and acquire knowledge and skill which quality him/her to:

1. Introduce the medical students through active discussion to professionalism as a basic foundation in the practice of medicine.
2. Clarify the various concepts of professionalism.
3. Encourage the medical students to reflect professionalism in their current learning environment.
4. It aims to get the medical students to practice professionalism as a habit for their present and future medical career.
5. Communicate effectively with patients, families, colleagues and other professionals



6. Deal with difficult issues and situations encountered in clinical practice
7. Show appreciation to interpersonal and situational dynamics of medical encounters

## Intended (specific) Learning Outcomes (ILOs)

Upon completion of the course, learners should be able to:

### S1: Introduction to the course

1. Show understanding of the general structure of the course.
2. Introduce the various aspects of the course and outline assessment.
3. Show list of the outcomes and specific objectives of the course.
4. Explain the bases and contents of the assessment and feedbacks.
5. Appoint or elect a student coordinator.
6. List hard and soft reading material.
7. Explain attendance regulations and consequences of absenteeism

### S2: Ethics and professionalism

1. *Apply the principles of moral reasoning and decision making to conflict within and between ethical, legal and professional issues including those raised by economic constraints, commercialization of healthcare, and scientific advances (A)*
2. *Discuss the concept and value of medical bioethics (A)*
3. *Describe the essential elements of the medical profession, including moral and ethical principles and comply with legal responsibilities underlying the profession (A)*
4. *Define professional values which include excellence, altruism, responsibility, compassion, empathy, accountability, honesty and integrity, and a commitment to scientific methods (A)*

### S3: Role of Medical Council:

1. *Describe the essential role of the Sudan Medical Council (A).*
2. *Discuss the Sudan Medical Council Act (A).*

### S4: Good medical practice

1. *Describe the dimensions of professional self-regulation and express the need for continuous self-improvement admitting personal limitations including limitations of one's medial knowledge;*
2. *Explain the need for respect of colleagues and other healthcare professionals and the positive collaborative relationship with them (A)*
3. *Make a self-evaluation of his/her limitations in knowledge and clinical skills, and show a commitment to continuously improve one's knowledge and abilities (A).*

**S5: Social accountability:****S6: Breaking bad news**

1. *Develop and improve students' communication skills (A).*
2. *Use appropriate approaches for breaking sad news (A).*
3. *Develop and improve students' communication skills (A).*
4. *Use appropriate approaches for breaking sad news (A).*

**S7: Research ethics**

1. *Discuss the role of informed consent in the enrollment of participants in research (A).*
2. *Discuss ethical issues in the enrollment of patients in clinical trials (A).*

**S8: Challenges to medical professionalism**

1. *Explain the threats to medical professionalism posed by the conflicts of interest inherent in various financial and organizational arrangements of the practice of medicine (A)*
2. *Express moral obligation to provide end-of-life care, including palliation of symptoms; recognition of ethical and medical issues in patient documentation, plagiarism, confidentiality and ownership of intellectual property (A).*
3. *Describes the theories and principles that govern ethical decision-making, and of the major ethical dilemmas in medicine, particularly those that arise at the beginning and end of life and those that arise from the rapid expansion of knowledge of genetics (A).*

**S9: HIV/AIDs**

1. *Discuss ethical issues related to HIV patients; including confidentiality, access, respect and lessons learned to pass to young generations...etc. (A).*

**S10: Informed consent**

1. *Define consent and implied consent (A).*
2. *Describe and apply in practice the principles of patient consent including relation of capacity, competence and respect for autonomy, criteria for consent to be valid and legal, criterial for ordinate refusal of consent, implied consent, age of legal capacity, advance directives and statements and consent for research (A).*
3. *Discuss elements and valid and legal criteria of informed consent in research (A).*
4. *Explain situations of waiving the consent (A).*

### **S11: Confidentiality**

- 1. Enumerate situations where patient confidentiality should be observed at any cost (A).*
- 2. Describe the circumstances under which the breaking of confidentiality can and should occur (A).*
- 3. Define autonomy and give examples of situations where autonomy is applied (A).*

### **S12: Counseling**

- 1. Define counselling and list its indications or applications in healthcare (A).*
- 2. Outline the steps of counseling and how to interact with patients responses (A).*
- 3. Explain to the patient and family as much as you can (A).*

### **S13: Law and ethics**

- 1. Define and describe contemporary medical ethics and the main ethical principles of autonomy beneficence, non-maleficence and justice (A).*
- 2. Understand difference between law and ethics (A).*
- 3. Observe legal compliance (A).*

### **S14: Doctors wellbeing**

- 1. Explain the ways and means of planning effectively and managing efficiently one's own time and activities to cope with stress and uncertainty (A).*
- 2. Adapt to change (A).*
- 3. Take personal responsibility for the care of individual patient (A).*
- 4. Refrain from non-ethical and irresponsible lifestyle that reflects bad on his own health and reputation (A).*

### **S15: Inter-professional Relations**

- 1. Use appropriate approaches for establishing trust with, and showing respect, to patients and colleagues (A).*
- 2. Establish and maintain respect and considerations for the co-patients and family members of patients (A).*

### **S16: Communication**

- 1. Show awareness to communication skills of a medical students and physician (A).*
- 2. Explain the ways of effective communication with patients and colleges (A).*
- 3. Observe group dynamic in small and large group discussion (A).*

### S17: Group dynamics

1. List the principles of group dynamics (C1).
2. *Show practical experience of good group dynamics (A).*

### Reading material

- Understanding Medical Professionalism 1st Edition, American Board of Internal Medicine American Board of Internal
- Professionalism and the Medical Association. World Medical Association.
- Clinical Communication Skills for Medicine 4th Edition. Authors: Margaret Lloyd, Robert Bor, Lorraine Noble

#### Educational strategies and methods

1. The teaching program has to be clinically relevant and should therefore focus on ethical issues confronted daily in practice. To this end it should be:
  - 1.1. Integrated as much as possible into existing clinical training.
  - 1.2. Developed in parallel with a faculty development program, so that teachers of medicine can effectively accomplish this integration.
  - 1.3. Provided in a multi-disciplinary context.
2. The inter-dependent objectives of this program should include:
  - 2.1. The teaching of behaviors which reflect the values, attitudes and character traits required of a good physician. Such teaching would emphasize empathy, compassion, caring and critical selfreflection as fundamental attributes of a physician.
  - 2.2. The teaching of interpersonal communication skills to:
    - 2.2.1. Reflect those values and attitudes; as the most important part of health professional education.
    - 2.2.2. Promote an effective physician – patient relationship, community responsibility; and facilitate conflict resolution.
  - 2.3. The teaching of analytical skills in a systematic and comprehensive manner suitable to the identification and resolution of ethical issues inherent in practice.
  - 2.4. The teaching of a knowledge base of the relevant bioethics and medical-legal literature pertaining to ethical issues inherent in medical practice.
3. The implementation of the programme may be best achieved through different methods of teaching and learning, which may include:
  - 3.1. Role play
  - 3.2. Problem-based learning
  - 3.3. Surgical (formal and bedside) teaching sessions which are patient-based clinical mentoring

- 3.4. Individual tutoring through specialized rotations
- 3.5. 3.6. Direct observation and feedback, and
- 3.6. Reading assignments and research.

## Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance/Presentation= 10 %	MCQs= 0	MCQs = 20%
Practical/Clinical= --	SQs= 0	SSQs= -----
Assignments/Tutorials= 10%	Essays/ Short notes= 0	Essays/ Short notes=
Others= -- OSCE /report= 20	Others= 0	Others- OSCE=40
<b>Total= 30%</b>	<b>Total= 0</b>	<b>Total= 70%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

### \*Grade Descriptors (Rubrics):

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task. Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent. Factually very sound. High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement. Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

## Required resources

### Premises

- Lecture room, 100-150 capacity with multimedia and x-ray viewing boxes.
- Rooms for tutorials and seminars
- Hospital with inpatients, outpatients, labor rooms and neonates ER

### Staff

- Clinical and community physician
- Family physician
- Legal advisor

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

## Forensic Medicine and Law (ME-LAW-522) – 2 CHs, Block 2 weeks.

TITLE: Forensic Medicine and Law	CODE: ME-LAW-522	DURATION/CREDITS: block / 2 CHs - 2-week-
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES: Years 1,2 and 3 courses		

### Outline

A two-credit hour – 2 week-block module on the importance social accountability aspects, which is **legal compliance** to include: (1) recognition of death and identify age and race of a dead person, and identification of cause of criminal death ( gunshot, physical agents, electric contact, burns, asphyxia, drowning etc.) (2) description of postmortem changes, and determination of the time of death, (3) examination of specimens and stains (caused by) blood, semen, milk, excreta etc., (4) definition and classification of wounds from the medicolegal aspects, (5) recognition of types of head injuries and factors affecting them, (6) identification of firearms and firearm injuries, (5) recognition of injuries due to physical agents, (7) recognition of sexual assaults on both sexes, rape and consequences of abortion and miscarriages, (8) identification common types of toxins, poisons and poisoning, and determination of the environmental and criminal causes of common poisoning incidents, (9) giving witness in a court, (10) writing a death certificate.

### Rationale

Forensic science 'Medical Jurisprudence' is a branch of medicine that serves justice by examining material evidence related to civil and criminal context from biomedical aspects. It can be defined as the application of medical knowledge to the administration of law. A lot of questions concerning medicine arise from the administration of law. Among them, cause of death, timing of death, identification of paternity, trauma, abortion, infanticide and asphyxia are the most popular subjects in forensic medicine.

Forensic science makes use of other different medical and non-medical sub-specialties as forensic anthropology, forensic chemistry, forensic entomology, forensic med-

icine 'legal medicine', forensic odontology, forensic osteology, forensic pathology, forensic photography, forensic psychiatry, forensic psychology, forensic radiology, forensic serology, forensic toxicology etc.

The study and subsequent practice of forensic science entails a very successful medical art that utilizes all possible available means 'from simple microscopy to most sophisticated techniques egg DNA techniques.

## General Learning Outcomes

At the end of this course, the students should be able to:

1. Diagnose death.
2. Identify sex and race.
3. Examine using different stains materials e.g. blood stain, semen, milk, and excreta.
4. Classify wounds from the medicolegal point of view.
5. Recognize causes and types of head injuries and factors affecting them.
6. Identify and describe firearm injuries.
7. Recognize and describe injuries due to physical agents.
8. Deal with sexual assaults, abortion, and miscarriage.
9. Diagnose causes of death in different age groups and to describe the post mortem changes.
10. Understand and deal with preventive and environmental toxicology including forensic toxicology.

## Intended (specific) learning outcomes objectives

By the end of this course the student should be able to:

### S1: Introduction to the course

1. Show understanding of the general structure of the course.
2. Introduce the various aspects of the course and outline assessment.
3. Show list of the outcomes and specific objectives of the course.
4. Explain the bases and contents of the assessment and feedbacks.
5. Appoint or elect a student coordinator.
6. List hard and soft reading material.
7. Explain attendance regulations and consequences of absenteeism.

### S2: Death

1. Define the terms: thanatology, somatic death, molecular death, syncope, coma and asphyxia (C1).



2. Classify types of death, and modes of death (C1).
- 3. Presented with cases of death due to syncope, coma or asphyxia, enumerate the causes of each, and describe external and internal features on the dead body due to all of them (C3).**
4. Explain the medicolegal importance of death due to syncope, coma, and asphyxia (C2).

### S3: Postmortem changes

1. Define and classify postmortem changes, postmortem stains, rigor mortis, decomposition, adipocere changes and mummification, stating the external and internal findings and medicolegal significance of each (C2).
2. List postmortem changes in the skin and eyes and describe their medicolegal significance (C1).
- 3. Presented with a dead body, with unknown time of death, or similar verbal or written scenario: use the postmortem changes to determine the time of death (C3,P2)**

### S5: Injuries and their interpretations

1. Define abrasion and contusion (C1).
2. Classify wound injury; abrasion, contusion from medicolegal point of view (C2).
- 3. Presented with a wound injury (abrasion, contusion, incised, chopped, suicidal, defense or lacerated): determine type, cause, time of occurrence, complications, and other medicolegal implications (C3,P2)**

### S6: FORENSIC TRAINING-1: Head injuries-

1. Define and classify head injuries, describe the coup and counter coup effects (C1).
- 2. Presented with a real or written case of a patient/dead body with head injury resulting in the following possibilities: use his/her suitable basic sciences (anatomy, physiology etc..) to explain the underlying morphological and functional changes, and use his/her clinical skills to determine the type of injury, its complications and management including prevention: skull fractures (linear, depressed, comminuted, .etc.), extracranial hematoma, and intracranial hemorrhage (extradural, subdural, subarachnoid and parenchymal) (C3,P3)**

### S6: FORENSIC TRAINING-2: Gunshot and firearm injuries

1. Define and classify types of firearm weapons, and describe range, cartridge case and bullets, propellant and primer used (C1).
- 2. Presented with a real or written case of a patient/dead body with gunshot or firearm injury, describe entry and exit wounds, determine type of firearm, select material sent for chemical analysis and outline technique of analyzing the specimens, and any other medicolegal consequences of the**

**analysis (C3,P3)****S7: FORENSIC TRAINING-3: Injuries due to physical agents**

1. Define and classify burns, define “rule of nine” and describe the causes of burns and the effects of burns that lead to death (C1).
2. ***Presented with a real or written case of patient/dead body with burns, determine the extent and cause of burns, and describe the external and internal features on the body that indicate instantaneous or late death, and any other medicolegal consequences of burns (C3,P3).***

**S8: FORENSIC TRAINING-4: Electrical contact burns**

1. Compare and contrast electrical contact burns and lightning burns (C2).
2. ***Presented with a real or written case of a patient/dead body with an electrical contact burnt mark, determine the extent and cause and the direct effect of electrical contact that lead to death (C3,P3).***

**S9: FORENSIC TRAINING-4: Violent asphyxia**

1. Define asphyxia (C1)
2. Classify asphyxia death including hanging, ligature strangulation, throttling and choking (C2).
3. ***Presented with a real or written case of a body dead as a result of asphyxia, diagnose the means of inflicting asphyxia, the material used, the external and internal findings on the body suggesting asphyxia death, with special emphasis on importance of Burke and Hare, fracture of the greater cornua of hyoid bone in throttling, and also the significance of Café coronary (C3,P3)***

**S10: FORENSIC TRAINING-5: Drowning**

1. Describe Gettler’s classification of fresh water/ salt water drowning (C1).
2. ***Presented with a real or written case of a body dead due to drowning, find out type of drowning, describe the external and internal findings in the body as a result of drowning, and report on the exact effects of drowning that caused death, and any other medicolegal consequences (C3,P3)***

**S11: FORENSIC TRAINING-6: Sexual offences**

1. Define enforced sexual intercourse (rape), and classify sexual offences (C1).
2. ***Presented with a real or written case of a patient/dead body with a sexual assault, take full history and perform appropriate physical examination of both the victim and accused, select the proper material for chemical analysis, to reach a conclusion, and write report, on the actual offence and circumstances, including all forms of deviations like incest sexual act, sodomy, bestiality, tribadism, pederasty, catamite, buccal intercourse, lust***

*murder, masochism, necrophilia etc (C3,P3).*

### **S12: FORENSIC TRAINING-7: Criminal abortion**

- 1. Classify types of abortion and define criminal abortion (C1).**
- 2. Presented with a real or written case of abortion, use forensic techniques to determine the type, the abortifacient drugs used, local material or mechanical instruments attempted, the external and internal findings in criminal abortion in the dead body, select the material to be sent for laboratory chemical and pathological analysis and include in the report any other medicolegal implications of the clinical or laboratory findings (C3,P3)**

### **S13: FORENSIC TRAINING-8: Infant death**

- 1. Presented with a real or written case of a dead infant, use his/her clinical skills and knowledge of forensic medicine to differentiate between accidental and criminal infant death.**
- 2. Presented with a real or written case of an injured baby or child, use his/her clinical skill and knowledge of forensic medicine to determine criminal act or battered baby syndrome, Caffey syndrome or maltreatment syndrome (C3,P3)**

### **S14: FORENSIC TRAINING-9: Chemical toxicology**

- 1. Define the terms: poison, toxicology, forensic toxicology, chelating agents, corrosives, organophosphorus compounds, mercuric chloride, mercurial tremors, vitriolage, xanthoproteic reaction, carboluria, and lead poisoning (C1).**
- 2. Presented with a real or written case of poisoning, use his/her clinical skill and forensic means to diagnose the case, determine the substance of the poison, and prescribe suitable emetics and antidotes (C3,P3).**

### **S15: FORENSIC TRAINING-10: Snake bites as causes of ambiguous death.**

- 1. Classify types of snakes, snake venoms, and describe the origin and composition of venoms (C1).**
- 2. Presented with a real or written case of a patient with a snake bite, elicit the symptoms and signs and determine the type of snake and venom, and manage the immediate and late effects (C3,P3)**

### **S16: FORENSIC TRAINING-11: Alcohol intoxication**

- 1. List the types of alcoholic drinks and describe alcohol absorption, distribution, metabolism, excretion, and action (C1).**
- 2. Presented with a real or written case of a patient/dead body with alcoholic intoxication, elicit the symptoms and signs for diagnosis of the condition, manage the patient or write a report on the direct effects of alcohol that**

*resulted in death, and any other medicolegal implications of alcohol poisoning (C3,P3).*

### **S17: Barbiturate poisoning**

1. Classify barbiturates (C2).
2. Describe external and internal findings on a body of barbiturate poisoning and outline management (C1).
3. List the complications of barbiturate poisoning (C1).

### **S18: Miscellaneous**

1. Classify cannabis Indica, enumerate Run Amok (C1).
2. Define ware gases (C1).
3. Classify ware gases (C2).
4. Discuss findings in judicial hanging, judicial electrocution and judicial execution (C2)

## **Reading materials**

Pariekh's Text book of Medical Jurisprudence, Forensic Medicine and Toxicology.

- Lecture notes of Forensic Medicine, D. J. Gee and A.A. Watson, Blackwell Scientific Publication, Oxford.
- Ministry of Health Policies and Official forms, regarding Death certification and Medico legal Autopsy
- Communication with practicing Forensic Doctors in Al Qassim Province, Saudi Arabia.
- Forensic links on the World Wide Web sites.

## **Educational strategies and methods**

- Small group discussions around related problems (PBL).
- Panel discussions and seminars.
- Student tasks and assignments (Ministry of Health Hospital morgues (mortuary), courts).
- Films on certain forensic investigations.
- Meetings with certain human resources: local forensic doctors 'coroners', pathologists, toxicologists, anatomists, laboratory personnel, etc.
- report writing and acquaintance with official registration forms of Health and Justice authorities.

## Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance/Presentation= 10 %	MCQs= 0	MCQs = 20%
Practical/Clinical= --	SQs= 0	SSQs= -----
Assignments/Tutorials= 10%	Essays/ Short notes= 0	Essays/ Short notes=
Others= -- 0%	Others= OSCE=20%	Others- OSCE=40
<b>Total= 20%</b>	<b>Total= 20%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

### \*Grade Descriptors (Rubrics):

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task. Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent. Factually very sound. High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement. Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

## Required resources

### Premises

- Lecture room, 100-150 capacity with multimedia and x-ray viewing boxes.
- Rooms for tutorials and seminars
- Hospital with mortuary ER

### Staff

- Forensic pathologists
- Family physician
- Legal advisor

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

## Health Economics and Hospital Management (ME-HM-523), 2 CHs, 2 weeks block

TITLE: Health Economics and Hospital Management	CODE: ME-HM-523	DURATION/CREDITS: block / 2 CHs - 2-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES: Years 1,2 and 3 courses		

### Outline

A two- credit-hour (two weeks') block during semesters 9 or 10, to include: (1) the definition and scope of the terms "health economics", "health value", "market equilibrium", (2) the economic factors which influence health, (3) demand for and supply of health care, (4) planning, budgeting and monitoring mechanisms, (5) assure that informatics solutions in health care meet patient' privacy, confidentiality, and security requirements, (6) health informatics as a decision support in management, (7) leadership – doctors as leaders or managers, (8) Sudanese health system, (9) legal responsibilities for health care management, (10) documentation, (11) communication, (12) evidence – based practice, (13) sources of conflict and conflict resolution at work.

### Rationale

The increasing use of information systems in health settings has added a dimension to the role of physicians as analysts and composers of data for their seniors and the public. This information is particularly important if it pertains to cost and coverage. Health economics is a branch of economics concerned with issues related to scarcity of financial resources in the allocation of health care. It is essential for every graduate who may be responsible for leadership and management of health institutions.

Doctors, within few years after graduation, will be responsible for leading a health or managing institutions, with few or large number of employees. They sometimes run public health programme which requires cooperation and interaction with other related sectors to produce output that satisfies the requirements of the programmes sponsors. Knowledge of how to deal with people and manage projects and resources becomes very important.

## General Learning Outcomes

At the end of this course, the students should be able to:

1. Show Understanding of the definitions and scope of relevant health care and related economic terms.
2. Discuss the economic factors affecting health and health care delivery and evaluation.

## Intended (specific) outcomes (ILOs)

By the end of this course the student should be able to:

### S1: Introduction to the course

1. Show understanding of the general structure of the course.
2. Introduce the various aspects of the course and outline assessment.
3. Show list of the outcomes and specific objectives of the course.
4. Explain the bases and contents of the assessment and feedbacks.
5. Appoint or elect a student coordinator.
6. List hard and soft reading material.
7. Explain attendance regulations and consequences of absenteeism

### S2: Introduction to health economics and management

1. Discuss the Importance of management and economics sciences (C2).
2. Define terms like: health, health system, health informatics, health economics, health value, market equilibrium (C1).

### S3: Planning

1. Discuss strategic planning, operational planning and planning cycle (C2).
2. Define budgeting, project management, risk management, contracts and reimbursement (C1)

### S4: Organization

1. Discuss importance of organization in management (C2).
2. Describe functions of organization (C2)

### S5: Influence & Leadership:

1. Define leadership and leadership model (C1).
2. Discuss the Characteristics and trait of leaders (C2)

### S6: Implementation & Supervision

1. Discuss functions of supervision in health care provision (C2).



2. Discuss types of supervision in health care provision (C2).
3. Discuss implementation of plans and projects (C2)

### **S7: Evaluation**

1. Differentiate between monitoring and evaluation (C2).
2. Describe evaluation types (C1).
3. Discuss evaluation plan (C2).

### **S8: Human resources in health**

1. Discuss human resource management, monitoring mechanisms and evaluation (C2).
2. Discuss the legal responsibilities for health care management (C2)

### **S9: Training and development**

1. List members of the health team (C1).
2. Discuss the qualification and training of the members of a health team (C2).
3. Describe the role of each in the management of a health institution (C2).

### **S10: Quality in health**

1. Define quality and quality in health care (C1).
2. Discuss importance of quality in health care (C2).
3. Show understanding of quality control and quality assurance (C2)

### **S11: Performance appraisal**

1. Discuss Importance of performance appraisal (C2).
2. Outline performance indicators of processes and personnel (C1)

### **S12: International health**

1. Discuss international health regulations (C2).
2. Outline Function of international health (C1).
3. Discuss Importance of international health (C2)

### **S13: Health economics**

1. Define health economics, health value, market equilibrium (C1).
2. Discuss the economic factors which influence health and health care: including consumption patterns, income, education, hazards, insurance...etc. (C2)
3. Explain the health seeking behavior, barriers to access (price, time..etc.), relationships between providers and agencies (C2).

### **S14: Health care markets**

1. Describe the elements of supply of health care: including cost of production,

- alternative production techniques, inputs (workforce, equipment's, drugs.. etc.) (C1)
2. Discuss the elements of remuneration methods and incentives (c2).

### **S15: Hospital & team management**

1. Show understanding of organization of hospitals (C2).
2. Outline Function of hospital management (C1\_).

### **S16: Health finance**

1. Define health finance and its functions and importance (C1).
2. Discuss different financing mechanism (pooling, non-pooling) (C2)
3. Discus role of social health insurance in health equity and efficiency (C2)

### **S17: Budgeting**

1. Define budgeting and types of budgeting (C1)..
2. Show understanding of the methodology of budgeting (C2).

### **S18: Economic Evaluation**

1. Outline the microeconomic evaluation at treatment (C1):
2. Include cost effectiveness and cost benefit analysis of alternative of delivering care (P2)

### **S19: The Sudan Health system**

- 1- Define terms like: system health and health system. Description of the Sudan health system and pyramid (C1).
- 2- Show understanding of the importance of documentation and communication of management information (C2).

### **Reading material**

- Hospital Administration Manual, J Syer, Elsevier – ISBN: 978 0 323 0 18432
- Methods for Economic Evaluation of Health Care Programs. Drummond MF 005), Oxford University Press, ISBN: 0-198529457

### **Educational strategies and methods**

- Small group discussions around related problems (PBL)
- Panel discussions and seminars
- Student tasks and assignments (e.g. in Ministry of Health HQ or health institutions)

## Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance /Presentation= 10%	MCQs= 10%	MCQs = 20%
Practical/Clinical/ = 5%	SQs= 0%	SSQs=0%
Assignment/Seminar/Logbook =5%	Essays/ Short notes=	OSCE= 20
Others= 0% (e.g. peer)	Others= - Clin+ OSPE/ PSCE-----10%	Others= Clini+ / =20%
<b>Total= 20%</b>	<b>Total= 20%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

**Remedial for 'F' students:** by repeating course through approved independent supervision by full-time or honorary staff member during holidays or the following semesters and re-sit exam with the batch to follow.

**Clerkship evaluation:** Through student and staff discussions and questionnaire carried out before examination.

### \*Grade Descriptors (Rubrics):

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

## Required resources

### Premises

- Lecture room, 100-150 capacity with multimedia and x-ray viewing boxes.
- Rooms for tutorials and seminars
- 10 Tutorial rooms

### Staff

- Health management and economics specialists

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

## Radiology and Imaging (ME-RAD-414)-2 CHs

**TITLE:** Radiology and Imaging

**CODE:**  
ME-RAD-414

**DURATION/CREDITS:**  
block / 2 CHs - 2-week

**COURSE COMMITTEE:**

**STAFF COORDINATOR: NAME/TEL:**

**STUDENT COORDINATOR; NAME/TEL**

**INTENDED STUDENTS;**

**PREREQUISITES:** Years 1,2 and 3 courses

### Outline

A two-credit-hour , every two-weeks, course during Semesters 7-10, (or a Block at the end of the clerkships) to include: (1) knowing and being familiar with the modalities and techniques used in imaging and outline the basic physics underlying image production and quality control, (2) identifying the normal anatomic structures in routine radiographs of the chest, plain abdomen, pelvis, skull and various segments of the limbs, as well as identifiable structures seen in CT and MR cuts of the normal brain and mediastinum, (3) naming the techniques used in routine plain and contrast radiography of the various parts and systems of the body related to common and/or serious problems, (4) recognizing (or looking for) the reliable diagnostic radiological signs seen in common respiratory problems (pneumonia, emphysema, bronchiectasis, pleural effusion, pneumothorax, ca bronchus), and in life-threatening emergency situations such as chest pain, acute abdominal pain, trauma/fractures, syncope/coma, bleeding, etc., and (5) essential drugs and material used in radiodiagnosis and patient care while in the imaging department.

### Rationale

The science and practice of radiology and imaging have expanded enormously in the last four decades. Almost all diseases require imaging either for diagnosis, staging, routine or interventional management or follow up. All disciplines in medical practice ask the help of radiologists to select an algorithm of the most suitable and prudent imaging modalities to solve a patient's problem. Medical students and in-

terns are faced, in all departments including 'Accident and Emergency', with images of various parts of the body that require knowledge of imaging techniques, imaging anatomy and diagnostic imaging features. The diagnostic decision sometimes has to be prompt and accurate to take the necessary management choices by the clinician. Basic knowledge of imaging methods, indications, anatomy and diagnosis are important for medical students.

## General Learning Outcomes

By the end of this clerkship the student should:

1. Be familiar with the modalities and techniques used in imaging and outline the basic physics underlying image production and quality control.
2. Appreciate the normal anatomic structures in routine radiographs of the chest, plain abdomen, pelvis, skull and various segments of the limbs, as well as identifiable structures seen in CT and MR cuts of the normal brain and mediastinum.
3. Name the techniques used in routine plain and contrast radiography of the various parts and systems of the body related to common and/or serious problems.
4. Look for the reliable diagnostic radiological signs seen in common respiratory problems, and in live-threatening emergency situations such as chest pain, acute abdominal pain, trauma/fractures, syncope/coma, bleeding, etc.

## Intended (specific) Learning Outcomes (ILOs)

The student should achieve the following objectives under each title:

### S1: Introduction to the course

1. Show understanding of the general structure of the course.
2. Introduce the various aspects of the course and outline assessment.
3. Show list of the outcomes and specific objectives of the course.
4. Explain the bases and contents of the assessment and feedbacks.
5. Appoint or elect a student coordinator.
6. List hard and soft reading material.
7. Explain attendance regulations and consequences of absenteeism.

### S2: Introduction: Imaging techniques

1. *Provided with an image, name the imaging technique or procedures (P2).*
2. *Outline the underlying physical background (conventional radiography, contrast media, ultrasound, CT, MRI, interventional and radionuclide imaging) (C2, P3).*

### S3: Chest imaging anatomy

1. List the indications of requesting a routine chest radiograph. What are the emergency situations in which you need an urgent chest x-ray? (C2).
2. Describe the bronchial and segmental anatomy of the lungs (C1).
3. Define the lung acinus and secondary pulmonary lobule (C1).
4. Name the divisions of the mediastinum and the contents of each (C1).

### S4: Routine PA /lateral chest radiograph:

1. *Provided with an imaging investigation used for the respiratory system, name the technique and list the indications for its use (C3, P3).*
2. *Examine a PA film using a reliable sequence (P3).*
3. *Recognize patterns like atelectasis (collapse), consolidation, pleural effusion, pneumothorax, hyperinflation, cystic/cavitary lesions, calcification, widening of mediastinum, hilar/mediastinal lymphadenopathy, solitary nodule, multiple nodules pleural and chest wall masses (C3, P2).*
4. *Recognize the diagnostic features of (or suspect) lobar pneumonia, bronchopneumonia, pulmonary edema, primary, secondary, and miliary tuberculosis, interstitial lung disease, paralysis of the diaphragm (C3, P3).*
5. *Diagnose accurately rib fractures, clavicular fractures, cervical rib hydro-/tension pneumothorax, pulmonary edema, pulmonary embolism, active pulmonary tuberculosis, and Pancoast tumor (C3, P3).*

### S5: Computed tomography (CT) of chest

1. List two indications for requesting a CT scan of the chest (C1).
2. Identify the normal mediastinal structures seen in CT cuts (C2).
3. *Recognize mediastinal/hilar lymphadenopathy, lung masses/ cavities with particular emphasis on carcinoma of lung, bronchiectasis and interstitial lung disease (C3, P2).*

### S6: Cardiac imaging anatomy

1. Identify the structures forming the borders of the mediastinum (C2).
2. Assess the size of the heart, and recognize cardiomegaly (C2).
3. Recognize specific chamber enlargement, dilated unfolded aortic arch, aneurysms of great vessels, valvular or vascular calcifications, rib notching (C3, P2).

### S7: Routine cardiac PA /lateral radiograph

1. *Provided with an image of the cardiovascular system, name the technique (C3) and list the indications for its use (C3, P3).*
2. *Describe the developmental etiology, changes in hemodynamics, and the possible radiographic features seen in ventricular septal defects, atrial*

*septal defects, tetralogy of Fallot, patent ductus arteriosus, coarctation of aorta and transposition of great vessels (C3, P3).*

3. *Differentiate between normal and abnormal lung vasculature (C3, P2).*
4. *Diagnose (or suspect) mitral stenosis/regurgitation, aortic stenosis, cardiomyopathy, aortic aneurysm and pericardial effusion (C3, P3).*
5. List the causes of massive cardiomegaly (C1).

### **S8: Computed tomography (CT) or magnetic resonance (MR) imaging of the heart**

- 1- List two indications for requesting a CT or MR imaging examination (C1).
- 2- Identify the vascular components of the mediastinum seen in CT or MR cuts (C2).
- 3- *Diagnose aortic dissection (C3, P3).*

### **S9: Echocardiography**

- 1- List two indications for requesting an echocardiogram (C1)
- 2- *Recognize long axis, short axis, apical and suprasternal notch views in two-dimensional cardiac ultrasound (C3, P2).*

### **S10: Coronary arteriography and cardiac catheterization**

- 1- Describe the blood supply of the heart (C1)
- 2- *Identify the major vessels of the heart in an arteriogram (C3, P2).*

### **S11: GIT plain abdomen and Barium swallow**

- 1- List the indications of requesting: (1) plain film of abdomen and pelvis- “kidney, ureter and bladder (KUB)”; and (2) emergency erect and supine plain films (C1).
- 2- Identify the normal structures seen a plain film of the abdomen (C2).
- 3- *Recognize intestinal obstruction, perforation and radio-opaque calculi (C3, P3).*
- 4- List the indications for requesting a barium swallow examination, using barium sulphate or other suitable contrast (C1).
- 5- Describe in a normal barium swallow film the normal esophageal contours/ indentations and mucosal pattern (C2).
- 6- *Diagnose (or recognize the radiological features of) esophageal varices, reflux, hiatal hernia, achalasia, stricture and carcinoma of the esophagus (C3, P3).*

### **S13: Barium meal, follow-through and enema**

- 1- List the indications for requesting a barium meal examination, or other suitable contrast medium (C1)
- 2- Identify the various anatomic parts of the stomach and duodenum and recognize the lesser curvature, duodenal cap, duodenal loop and duodenal papilla (C2).
- 3- *Diagnose (or recognize the radiological features of) hiatal hernia, duode-*



***nal ulcer, gastric ulcer and gastric cancer (C3, P3).***

- 4- List the indications for requesting a barium follow through examination, or any other suitable contrast (C1).
- 5- Identify the jejunal and ileal loops, and recognize the terminal ileum and ileocecal valve (C2).

***6- Diagnose (or recognize the radiological features of) Crohn's disease and intersection (C3, P3).***

- 7- List the indications for requesting a barium enema, or other suitable contrast medium (C1).
- 8- Identify the various parts of the colon and rectum, and recognize in particular the caecum, hepatic and splenic flexures and rectosigmoid junction (C2)

***9- Diagnose (or recognize the radiological features of) carcinoma of rectum or other colonic masses, ulcerative colitis and diverticulosis (C3, P3).***

### **S14: Abdominal ultrasound**

- 1- List the indications for requesting ultrasound examination of the abdomen (C1)
- 2- Identify (in a suitable view) the liver, spleen, pancreas, gallbladder, and major abdominal vessels (C3).

***3- Diagnose (or suggest possible features of) gallstones, bile duct obstructions space occupying lesions in liver, spleen or pancreas, other abdominal masses, pseudocyst and congenital pyloric stenosis (C3, P3).***

### **S15: Abdominal CT and other specialized techniques**

- 1- List the indications for requesting a CT abdomen (C1) Identify anatomic structures seen in a CT cut of the abdomen at the level of the pancreas (C2)

***2- Diagnose (or recognize the CT features of) pancreatic malignancy, pseudocyst, and bowel ischemia (C3,P3).***

- 3- Mention one indication for each of the following examinations: sialogram, oral cholecystogram, endoscopic retrograde cholangio-pancreatography (ERCP), percutaneous cholangiography, T-tube cholangio-graphy, celiac and mesenteric arteriography (C1).

### **S16: Plain film of kidney, ureter and bladder (KUB)**

- 1- List the indications for requesting KUB (C1). Identify the anatomical structures (including bony elements) seen in plain films, with special attention to renal system(C1).

- 2- Outline, level of renal pelves, 'imagined' course of ureters and location of bladder, and aortic calcifications (C2, P2).

***3- Diagnose (or recognize plain film radiological features of) a radio-opaque urinary calculus, small or enlarged kidney, renal mass and calcifications (C3, P3)***

### S17: Ultrasonography (US) of the urinary system

- 1- List the indications for requesting US examination of the urinary system (C1).
- 2- Identify the renal parenchyma and pylon in an US image, and recognize the borders and relations of the urinary bladder (C2).
- 3- **Diagnose (or recognize the sonographic features) of simple cysts, polycystic disease, urinary tract obstruction, renal or bladder masses, perinephric abscess, renal trauma, renal infarcts, renal tumors and adrenal masses (C3, P3).**

### Continuous Assessment

### S18: Intravenous urography (IVU), cystography and cystourethrography

- 1- List the indications for requesting an IVU, indicate the contrast medium used (C1).
- 2- Describe the management of the various types of reaction to contrast medium (C1).
- 3- Identify the anatomical features of the kidneys, ureters and bladder as seen in a normal film (C2).
- 4- **Diagnose (or recognize IVU signs) of urinary tract obstruction, space occupying lesions, congenital anomalies of kidneys and urinary tract (C3, P3).**
- 5- List the indications for requesting a retrograde urography examination (C1)
- 6- List the indications for requesting a cystogram, a cystourethrogram or retrograde urethrogram (C1).
- 7- Identify the anatomical features of the bladder and urethra (C2).
- 8- **Diagnose (or recognize the radiological features) of lower UT obstruction (C3, P3).**

### S19: Urinary CT

- 1- Name an indication for requesting CT kidneys or urinary bladder (C1).
- 2- Identify the anatomical structures in the posterior abdominal wall and pelvis seen in CT cuts, including the adrenal gland (C2).
- 3- **Diagnose (or recognize the CT appearance) of renal or bladder masses and masses in the posterior abdominal wall including adrenal masses (C3, P3)**

### S20: Renal arteriography and percutaneous nephrostomy

- 1- Name an indication for requesting a renal arteriogram (C1)
- 2- Identify the renal and adrenal arteries in an arteriogram (C2, P2).
- 3- Diagnose (or recognize the arteriographic appearance) of renal artery stenosis (C3, P3)
- 4- Name an indication for percutaneous nephrostomy (C1)

### S21: Head and neck neuroradiology: plain film

- 1- List indications for requesting a skull or vertebral column plain film. List five major views of skull x-ray films and the parts demonstrated by each (C1).
- 2- Identify the anatomical parts seen in AP, lateral and sinus views of the skull, and the parts of the vertebral column (C2, P2).
- 3- **Diagnose (or recognize the radiological signs) of skull and vertebral fractures, ballooning of sella, bony lytic, sclerotic or expansile masses, with special emphasis on meningioma, multiple myeloma, metastasis (C3, P3).**
- 4- Outline the radiological investigations for the diagnosis of common swellings in the neck, orbital masses, sialolithiasis, and salivary neoplasm, mandible and maxilla masses, nasopharyngeal masses (C2).

### S22: CNS computed tomography (CT) and magnetic resonance (MR) imaging

- 1- List the indications for requesting CT or MR scan of the skull (including temporal bone and orbit) or vertebral column
- 2- Identify various parts of the skull, brain and spinal cord in axial CT cuts and in axial, coronal and sagittal MR cuts.
- 3- Diagnose (or notice changes in anatomic relations in) epidural and subdural hematomas, subarachnoid hemorrhage (C2, P2).
- 4- Given an image, describe shadows seen in vascular malformations, aneurysms, cerebral infarction, neoplastic space occupying lesions -especially adenoma (pituitary), meningioma, astrocytoma, glioblastoma, medulloblastoma, plexus papilloma, ependymoma, neurinoma and schwannoma-, hydrocephalus, multiple sclerosis, disc prolapse and congenital inherited abnormalities (tuberous sclerosis, Dandy-Walker, and Chiari malformations) and SturgeWeber syndrome (C3,P3).

### S23: Cerebral angiography

- 1- List the common indications for requesting cerebral arteriography (C1)
- 2- Identify the major vessels shown in a 4-vessel arteriogram, and in MR angiography (C2, P2)

### S24 Radiopharmaceuticals

- 1- List the radiopharmaceuticals used in thyroid, pulmonary, cardiac, hepatobiliary, renal, testicular and bone scintigraphy (C1).

### S25: Nuclear imaging:

- 2- Explain the significance of finding a cold or hot thyroid nodule (C2).
- 3- **Recognize the most common scintigraphy findings in pulmonary cardiac and renal and bone imaging (pulmonary embolism, myocardial infarction,**

*renovascular hypertension, bone metastasis, osteomyelitis) (C3, P3).*

## Reading material

- Medical Imaging: by Peter Scaly: (problem-based approach) Oxford University Press, Oxford, 1999 (ISBN:0192630563).
- Lecture Notes on Radiology: by PR Patel: Blackwell Science Ltd, Oxford, 1998 (ISBN: 0632047585).
- Textbook of Radiology and Imaging, by: David Sutton, 7<sup>th</sup> Edition, Churchill Livingstone, London, 2001 (ISBN: 0443071098)

## Educational strategies and methods

- Interactive lectures
- Panel discussions and seminars
- Student tasks and assignments
- Visits to imaging departments

## Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance /Presentation= 20%	MCQs= 0%	MCQs = 20%
Practical/Clinical/ =	SQs= 0%	SSQs=0%
Assignment/Seminar/Log-book =20%	Essays/ Short notes=	OSCE= 40
Others= 0% (e.g. peer)	Others= - Clin+ OSPE/ PSCE-----0%	Others= Clini+ / =20%
<b>Total= 40%</b>	<b>Total= 0%</b>	<b>Total= 60%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

Remedial for 'F' students: by repeating course through approved independent supervision by full-time or honorary staff member during holidays or the following semesters and re-sit exam with the batch to follow.

Clerkship evaluation: Through student and staff discussions and questionnaire carried out before examination.

**\*Grade Descriptors (Rubrics):**

Grades	Marks	Criteria
Excellent (A)	≥ 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	≥ 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	≥ 65 to < 75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	≥ 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	≥ 50 to < 60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)

**Required resources****Premises**

- Lecture room, 100-150 capacity with multimedia and x-ray viewing boxes.
- Rooms for tutorials and seminars
- 10 Tutorial rooms

**Staff**

- Radiologists
- Technologists

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.

## Rural Residency (ME-RUR-524), (0+3) Credit Hours, Block, Duration= 2 weeks

TITLE: Rural Residence	CODE: ME-RUR-534	DURATION/CREDITS: block / 2 CHs - 2-week
COURSE COMMITTEE:		
STAFF COORDINATOR: NAME/TEL:		
STUDENT COORDINATOR; NAME/TEL		
INTENDED STUDENTS;		
PREREQUISITES:		

### Rationale:

Rural residency course integrates the clinical and professional training of medical students within the rural community setting. Compared to individuals living in urban locations, those in rural areas may experience different health outcomes, which may contribute to rural-urban disparities is the geographic distribution of population, social and cultural characteristics play major role, therefore the health system structure and functions are changed from urban accordingly. This course provides a supervised training and technical support to the students in order to be able to work in rural setting, address priority needs of communities and contribute to meet those needs.

### Outline:

A 2-week (3 CHs) course, To be able to achieve course objectives students need to spend at least two weeks in a rural hospital and its catchment area to understand responsibilities of health professions, the role of doctor as a health team leader, the common problems that face such a doctor in performing his/her job and how he overcomes them, description of the different types of health care levels, identify the community problems and design appropriate intervention

### General Learning Outcomes:

- 1- Show understanding of community orientation and health services to be able to address the actual needs of the community, family, individuals and overall health system.

## Intended Learning Outcomes (ILOs):

By the end of the course, students are expected to:

### S1: Introduction to the course

1. Show understanding of the general structure of the course.
2. Introduce the various aspects of the course and outline assessment.
3. Show list of the outcomes and specific objectives of the course.
4. Explain the bases and contents of the assessment and feedbacks.
5. Appoint or elect a student coordinator.
6. List hard and soft reading material.
7. Explain attendance regulations and consequences of absenteeism.

### S2: Present the Role of a rural hospital doctor

1. Discuss the role of the doctor and other health professions responsible for a rural hospital and health care area (C2).
2. Identify community assets and interested parties (C2).
3. Conduct a community diagnosis listing local health problems, the environmental and behavioral factors (C2).
4. **Collect, analyze and interpret health data about mortality, morbidity and determinants of health (P2).**
5. **Plan health intervention to deal with the different health problems (P2).**
6. Describe the health activities service setting its structures and organization coverage and efficiency (C1).
7. **Communicate with community members and leaders effectively (P2).**
8. **Show and reflect professional attitude in respecting rural population and deal with cross-cultural differences (A).**
9. **Assemble leadership and teamwork skills (P2).**

### S3: Do and fill the rural skills logbook (P3)

#### Reading material

- K.Park, perpective and social medicine 23<sup>rd</sup> edition
- Principles of epidemiology, 2ed edition

#### Educational strategies and methods (lecture, seminar, practical....etc):

Interactive lectures – before field work

Practical field work ( surveys ,meeting, clerkship, health education, home visit, exhibition) seminars

## Assignments and logbook (Report)

### Assessment

Continuous Assessment		Final Examination
Throughout the course	Mid- Exam	
Attendance /Presentation= 20%	MCQs= 0%	MCQs = 200%
Practical/Clinical logbook= 40%	SQs= 0%	SSQs= 0%
Assignments/Tutorials= ---	Essays/ Short notes= 0%	Essays/ Short notes= 0%
Others=% (report)	Others= 0%	Others= OSCE=20%
<b>Total= 60%</b>	<b>Total= 0%</b>	<b>Total= 40%</b>

**MCQs:** Multiple Choice Questions, **SQs:** Structured Questions.

### \*Grade Descriptors (Rubrics):

Grades	Marks	Criteria
Excellent (A)	<sup>3</sup> 80%	Deep and systemic engagement with assessment task Impressive demonstration of comprehensive mastery of the subject matter
Very good (B <sup>+</sup> )	<sup>3</sup> 75 to < 80%	Very high degree of engagement level with assessment task Demonstration of very high degree of mastery of the subject matter
Good (B)	<sup>3</sup> 65 to <75%	Intellectually competent Factually very sound High degree of attaining the learning outcomes
Satisfactory (C <sup>+</sup> )	<sup>3</sup> 60 to < 65%	Good level of intellectual engagement Factually sound answers
Acceptable (C)	<sup>3</sup> 50 to <60%	Minimal acceptable level of intellectual engagement with the assessment task
Unacceptable (F)	< 50%	Unacceptable intellectual engagement level

\*Ref. Academic Course policy (SC- PP 09)



## Required Resources Ref. Academic Course policy (SC- PP 09)

### Premises

- Lecture theatres equipped with audiovisual aids
- Transportation
- Accommodation for students
- Stationaries and materials for health education and galleries

### Staff

- Rural hospital physicians
- FOMS physicians

It is the responsibility of the Course Coordinator to ensure the implementation of quality standards: (1) availability of resources, (2) assessment framework, (3) academic support with emphasis on considerations for academic supervision and students with disabilities, (4) attendance policy, (5) plagiarism policy, and (6) course evaluation procedures and forms.



# APPENDIX

PHASE II PROBLEMS  
STUDENT VERSION



### **ME-CVS-215-Problem-1**

#### *Scenario*

A 78-year-old female was admitted to the ER with shortness of breath, fatigue and dizziness. She has a past medical history of hypertension and coronary artery disease for 6 years.

On examination; she was dyspneic, with irregular heartbeats, bounding pulse (rate: 93 bpm), BP:

190/96, crepitations in the lower lobes of the lungs bilaterally, and grade 4+ pitting edema in both ankles.

#### **Task Questions:**

1. What condition is this patient suffering from?
2. What data in the history supports this diagnosis?
3. How does this condition occur?
4. What are the explanations behind the patients' signs and symptoms?

### **ME-CVS-215-Problem-2**

#### *Scenario and Task Questions:*

A 77-year-old man is brought to the emergency room by his daughter after he developed weakness in his left upper extremity. She says that he has been ill for the past two weeks with fever, sweats and night chills, losing almost 4.5kg during this time. He attributed these symptoms to the flu but could not move his left arm when he woke up this morning. On further questioning, his general health is good except for poorly controlled hypertension and he underwent aortic valve replacement 2 months ago. Physical examination is remarkable for left upper hemiplegia and the click of his prosthetic valve. Vital signs include a temperature of 38.9 degrees C, blood pressure 144/55 and a pulse rate of 155/min.

1. What is the most likely diagnosis?
2. What tests or image tools can be used to confirm the diagnosis?
3. What are Duke's criteria?
4. What is the main pathogenesis of this condition?
5. What are the indications for prompt surgical intervention?

### **ME-CVS-215-Problem-3**

#### *Scenario and Task Questions:*

A 57-year-old man with a history of hypertension and dyslipidemia presents with dyspnea and lower limb edema for two months. On examination, there is jugular venous distention (9cm), an S3 gallop with apical displacement 6cm left of the midclavicular line in the 6<sup>th</sup> intercostal space. A chest x-rays shows an enlarged cardiac silhouette. His echocardiogram shows a dilated left ventricle with an ejection fraction of 35%.

1. List this patient's problems
2. What is your initial diagnosis?
3. What are the risk factors and causes of this condition?
4. What is the initial line of management?

### ME-RES-213-Problem-1

#### Scenario and Task Questions:

Omer is a three months old boy who was brought to a health center with mild fever and cough. His mother told the doctor that her baby is not feeding well. Omer was breathing with difficulty and crying excessively. The mother was reassured that Omer's problem was not a serious one.

1. List the possible conditions Omer may have
2. What signs of "difficult breathing" did the doctor most likely find?
3. What investigations would you suggest, if any?
4. What treatment options are suitable?
5. What changes in Omers condition would require his mother to bring him back to the hospital?

### ME-RES-213-Problem-2

#### Scenario and Task Questions:

A 37-year-old porter presented with an irritating cough for more than three months and recent episodes of blood-stained sputum. He consulted his family doctor and had little response to multiple courses of empirical antibiotics. He also noticed some night sweats and weight loss

On examination he is unwell, temperature 38.2 degrees with evidence of recent weight loss.

1. What is the most likely diagnosis?
2. What other important questions should be asked to the patient?
3. What are the risk factors for this disease?
4. What investigations could be requested?
5. What complications may arise from this disease?

**ME-MSK-223-Problem-1***Scenario and Task Questions*

A 10-year-old boy was climbing a tree. He misplaced his foot and fell to the ground, landing on his right arm.

On examination, his arm was swollen and very painful. His hand was found to be in an abnormal position

1. Describe how the child would have fallen if the fracture was found to be
  - a) At the lower end of the humerus
  - b) In the mid shaft of the humerus
2. What are the possible nerve injuries that may occur with a fracture of the humerus. For each nerve, describe the abnormality found in the hand (and the rest of the upper limb if applicable)
3. What other structures may be damaged due to a fracture in the humerus?

**ME-MSK-223-Problem-2***Scenario and Task Questions*

A 65-year-old lady presented to the emergency room after slipping in the kitchen. She was unable to stand and on examination, her left leg appeared shorter than the right one. It was also held in an abnormal position.

1. What is the fracture that this lady has most likely sustained?
2. Explain the anatomical reasons for the affected limb being shorter and held in an “abnormal position”
3. What is the most dangerous complication of this type of fracture?

**ME-MSK-223-Problem-3***Scenario and Task Questions*

A 25-year-old male presented to the hospital following a road traffic accident with inability to place his right foot flat on the ground.

1. On an x-rays of this patients’ right lower limb, which bone region is most likely to be fractured?
2. Explain the cause of this patient’s abnormality
3. How would this patients’ walking mechanism differ from that of a normal person to compensate for his foot problem?

**ME-NUT-224-Problem-1***Scenario and Task Questions*

A 1-year-old girl was brought to the hospital by her mother who stated that her daughter had diarrhea and vomiting for the past month. She had lost a significant amount of weight during this time and started to refuse feeding.

On examination, the patient looked severely dehydrated with signs of muscle wasting, weight: 5kg

1. What should the normal weight of this child be at this age?
2. What is your diagnosis?
3. What risk factors for this condition would you expect her to have?
4. What metabolic disturbances would she have due to her diarrhea and vomiting?
5. what is the biochemical/pathological basis of her condition?

**ME-NUT-224-Problem-2***Scenario and Task Questions*

A 4-year-old boy was brought to hospital by his mother because he had been vomiting excessively for the past month. He had a history of seizures (cause unknown) and his mother stated that he had not developed in the same pattern as his siblings.

On examination, his skin and hair were remarkably fair and he seemed underweight. He had a distinct smell.

1. List the problems that this patient has.
2. What is your diagnosis?
3. How is the distinct smell described and why does it occur?
4. Which investigations confirm the diagnosis
5. What is the metabolic basis/deficiency leading to this condition?

**ME-GIT-225-Problem-1***Scenario and Task Questions*

Haj Ali is a 63-year-old man who presented to the outpatient clinic with a lump in his right groin. The swelling started 3 months ago disappearing at times to reappear again. During history taking the patient revealed that he works as a porter in a factory.

1. What is your differential diagnosis?
2. What questions would you like to ask to reach your final diagnosis?

After examination, the doctor explained to Haj Ali that he has an inguinal hernia.

On further questioning to the patient, it turned out he smokes regularly.

3. How does that affect your understanding and management for the patient's problem?
4. What type of inguinal hernia this patient is likely to have and why?

The doctor explained to Haj Ali that he needs an operation to fix the hernia.

Haj Ali was not happy about the idea of surgery. He asked if it will disappear if left alone.

5. If you were the treating doctor, how would you handle Haj Ali's reluctance to have surgery?

### **ME-GIT-225-Problem-1**

#### *Scenario Part (1) and Task Questions*

Hamid is a 32-year-old, young man who presented to the outpatient clinic with an upper abdominal pain for the past two weeks. He had this pain on and off for the past six months. It used to come on when he is hungry and go away when he eats. But lately it is becoming worse and awakening him from sleep early in the morning.

A pharmacist gave him some medicine to drink. It worked for a few days but the pain kept coming back. He has no significant medical history apart from joint pain for which he sometimes uses his mother's arthritis tablets. He gets nauseated at times but he didn't vomit. No change in his bowel habits. Lately the pain is coming more frequently and the medicines he takes are no longer working.

1. What further questions would you like to ask the patient?
2. What points in the patient medical history support your diagnosis?

#### *Scenario Part (2) and Task Questions*

During history taking, Hamid explained that apart from the odd jobs every now and then he is unemployed. He smokes about 15-20 cigarettes a day.

After reaching a diagnosis, the doctor prescribed some medication for Hamid and offered him some advice on diet.

3. How can this information be relevant to his complaint?

Three weeks later, Hamid came back complaining that the pain is getting worse. At times, he could feel it in his back. He took the medicines regularly at first, and they helped take the pain away for a few days. Then it came back worse than before. He mentioned vomiting twice. The last time was this morning. On examination, he looked



pale, sweaty and was obviously in pain. His pulse was 90/min. BP 100/60mm Hg. His abdomen was soft but very tender in the epigastrium. No masses were felt

4. What complication did Hamid develop?
5. What investigations would you request and why?

### **ME-GIT-225-Problem-2**

#### *Scenario and Task Questions*

Hale is a 20-year-old college student who presented to casualty department with a 2-weeks history of feeling generally unwell. Her symptoms began with a sore throat and fever. She then developed nausea and infrequent diarrhoea.

She had vomited on several occasions in the last week and had been eating little. Yesterday a friend noticed that her eyes had turned yellow. On direct questioning she admitted that her urine had turned dark brown but she had not noticed what colour her bowel motions are.

On examination she was thin, looks generally unwell and was jaundiced. She was a febrile. She had no lymphadenopathy.

Her abdomen was soft and there was no ascites. Her liver was palpable 4 cm below the costal margin and is smooth and tender. The spleen was not palpable. There were no signs of chronic liver disease.

1. What is the most likely diagnosis?
2. What questions would you ask to confirm your theory?
3. Where in her body would you check for jaundice?

Her urine was found to be positive for bilirubin and she had no proteinuria or haematuria

- 1) What is this type of jaundice and how can it be differentiated from other types? 2) What other blood tests would you request?

### **ME-GIT-225-Problem-3**

#### *Scenario and Task Questions*

A 40-year-old slightly obese female presented to casualty with spasmodic, colicky pain in her right upper quadrant, with some right shoulder discomfort as well as nausea and vomiting. She reported that she has suffered from fever over the past twenty-four hours

On physical examination, the doctor found a heart rate of 110/min, blood pressure of 110/70 mm Hg, respiratory rate of 20/min, and temperature of 38.5 degrees C. She was noticeably uncomfortable on deep inspiration, and palpation revealed an increase in pain while palpating the RUQ.

1. Using information from the scenario, what condition does this patient most likely have?
2. What are the risk factors for this condition?
3. Explain the basis of this patient experiencing right shoulder pain
4. What are the lines of management that are most suitable for this patient?
5. How can this information be relevant to his complaint?

### **ME-GIT-225-Problem-4**

#### *Scenario and Task Questions*

Hala is a 20-year-old college student who presented to casualty department with a 2-weeks history of feeling generally unwell. Her symptoms began with a sore throat and fever. She then developed nausea and infrequent diarrhoea.

She had vomited on several occasions in the last week and had been eating little. Yesterday a friend noticed that her eyes had turned yellow. On direct questioning she admitted that her urine had turned dark brown but she had not noticed what colour her bowel motions are.

On examination she was thin, looks generally unwell and was jaundiced. She was a febrile. She had no lymphadenopathy.

Her abdomen was soft and there was no ascites. Her liver was palpable 4 cm below the costal margin and is smooth and tender. The spleen was not palpable. There were no signs of chronic liver disease.

1. What is the most likely diagnosis?
2. What questions would you ask to confirm your theory?
3. Where in her body would you check for jaundice?  
Her urine was found to be positive for bilirubin and she had no proteinuria or haematuria
4. What is this type of jaundice and how can it be differentiated from other types?
5. What other blood tests would you request?

### **ME-URO-313-Problem-1**

#### *Scenario and Task Questions*

Ayman is a 45-year-old man who presented to Khartoum teaching hospital with a 3-day history of fever, shivering, headache, nausea and vomiting. His condition started one week prior to admission with back pain, right loin pain and burning micturition. He has a history of recurrent renal stones

On examination, he looked ill with a temperature of 38 degrees. There was tenderness along the right lumbar and iliac regions.

Investigations showed a TWBC of 11,000 and a urine general showed pus cells (15-20 HPF) and uncountable RBCs.

1. What is your clinical diagnosis?
2. What is the relation between his current condition and past history of recurrent renal stones?
3. How are you going to investigate this patient?
4. How are you going to treat him?

### **ME-URO-313-Problem-2**

#### *Scenario and Task Questions*

Ali is 36 years old and has a history of severe diarrhea for 2 days. He then noticed that the amount of urine he passes has decreased. He developed nausea, blurred vision and headache.

Investigations showed: Blood urea: 150, Serum creatinine: 3.1, Na: 130 mmol, K: 6.6 mmol, other biochemical investigations were normal.

1. What is your clinical diagnosis?
2. What are the causes of this condition?
3. What are the complications of this condition?
4. What are the treatment options for this patient?

### **ME-URO-313-Problem-3**

#### *Scenario and Task Questions*

Amna is 65 years old. She is a known case of hypertension for ten years and uncontrolled diabetes for 15 years. She presented to the casualty with vomiting, loss of appetite, fatigability and bone pain. Hb: 6g/dl, Platelets; 60,000, Na: 125 mmol, K: 6.4 mmol, Ca: 8 mmol, she was diagnosed as chronic renal failure.

1. How can you differentiate between acute and chronic renal failure?
2. Why do patients with chronic renal failure develop anemia and bone pain?
3. What other investigations would you like to do?
4. How do diabetes and hypertension affect the kidneys?

### **ME-REP-314-Problem-1**

#### *Scenario and Task Questions*

A 6-year-old girl presented with a one-year history of breast development. She is otherwise very well with no past history of note. On examination she has; Adult breasts, Axillary and pubic hair

1. What are the normal age ranges for the development of pubertal signs in boys and girls?
2. What is the normal physiological sequence for the development of pubertal signs?
3. What could be the causes of this girls' presentation?
4. mention the hormones involved in breast development and their other physiological effects

### **ME-REP-314-Problem-2**

#### *Scenario and Task Questions*

A 68-year-old retired chef initially complained of passing urine more often than normal, and he has to hurry to the toilet, though urine cannot come out immediately and has poor stream. Over the past several weeks, he has reported a few episodes of blood in urine and passing urine involuntarily. In addition to his urologic symptoms, the patient complained of low-grade, constant back pain and bouts of constipation.

1. State one physical examination that you should perform for this patient
2. List four lab investigations you would order
3. State three imaging investigations and the purpose of each.
4. How would you confirm your suspected diagnosis?
5. Regarding the correct diagnosis.
6. What is the commonest type of this disease to occur?
7. What is the clinical basis for the treatment?
8. What are the treatment options?

### **ME-ENDO-315-Problem-1**

#### *Scenario and Task Questions*

A 35-year-old female was admitted to Khartoum Hospital complaining of a swelling in the anterior aspect of her neck

On examination she had; Exophthalmos, A neck swelling that moved with swallowing, PR: 140, BP: 120/90, Investigations showed: high serum free thyroxine: 4.3ng/dl, high T3: 300 ng/dl, RBS: 130mg/dl, S cholesterol: 150 mg/dl

1. What is the diagnosis?
2. What are the mechanisms of synthesis and regulation of the involved hormones?
3. What are the characteristic features of the disease?
4. What are the treatment options?

### **ME-ENDO-315-Problem-2**

#### *Scenario and Task Questions*

A 15-year-old male with no past medical history of note presented to the ER with a hx of intense thirst, excessive urination, increased appetite and marked weight loss. The patient also mentioned that he is tired all day and does not have energy to carry out any activity. Two hours prior to admission the patient developed epigastric pain, vomiting and labored breathing.

On examination: he looks ill, dehydrated not pale, jaundiced or cyanosed, HR: 80/min RR:22/min Temp: 37.2, Systemic examination was unremarkable except for fruity odor on his breath and whitish oral thrush.

1. What is the most likely diagnosis?
2. What are the clinical features of this disease?
3. How would you investigate this patient?
4. Explain the cause of polyuria, polydipsia, polyphagia, labored breathing and weight loss
5. Outline the treatment plan
6. What are the complications of this condition?

### **ME-HAN-322-Problem-1**

#### *Scenario and Task Questions*

An 18-year-old woman went to her physician because she had noticed a swelling in the midline of her neck. She said she had first noticed this swelling 3 years previously, and it had gradually increased in size.

On physical examination, a small swelling was found in the midline of the neck; it measured about (1.25 cm) in diameter. It was situated just below the body of the

hyoid bone, was soft and fluctuant, and moved upward on swallowing. Nothing else abnormal was discovered

1. What are the possible causes of this lady's neck swelling?
2. What further information do you need to reach a diagnosis?

### **ME-HAN-322-Problem-2**

#### *Scenario and Task Questions*

A 60-year-old female was diagnosed with a thyroid tumor for which she had a total thyroidectomy. Immediately after her procedure, she developed respiratory distress and needed emergency intubation.

1. Which nerves are closely related to the arteries supplying the thyroid gland and what do they innervate?
2. Describe the damage that caused this ladies' clinical presentation.
3. How would the injury have differed had she presented with hoarseness of the voice rather than respiratory distress?
4. What are the other post-op complications of a total thyroidectomy?

### **ME-CNS-325-Problem-1**

#### *Scenario and Task Questions*

A 32-year-old male was involved in a road traffic accident where he drove his car head on into a pole. He sustained a fracture of his 9<sup>th</sup> thoracic vertebra.

On examination in the ER he was found to have paralysis of the right lower limb with loss of proprioception and vibration

He had loss of pain and temperature sensation on the left side.

1. Which segment of the spinal cord has been damaged? Explain your answer.
2. State whether this is a complete transection or hemisection of the cord and explain your answer.

### **ME-CNS-325-Problem-2**

#### *Scenario and Task Questions*

You are examining a 67-year-old male who presented with sudden onset left sided weakness.

On examination, there was weakness of the left upper and lower limbs with sparing of the face. The tongue deviated to the right with no ophthalmoplegia. There was also

loss of vibration and proprioception sense in the left upper and lower limbs.

1. What type of neurological condition would cause sudden onset of weakness?
2. Using the information above, localize this patients' lesion to a specific part of the central nervous system and explain your answer.
3. What other lesion may occur in this part of the CNS? Compare the clinical presentation of these two lesions.
4. What are the risk factors for this patients' condition?

### **ME-CNS-325-Problem-3**

#### *Scenario and Task Questions*

A 56-year-old female presented<sup>3</sup> with irregular, swaying gait and a tendency to drift to the right while walking. She had difficulty keeping her balance while standing still; she dealt with this by standing with her feet wide apart.

On examination, she had hypotonia of the right upper and lower limbs. She also had an obvious tremor when she held her arms out in front of her. When asked to touch her nose with her right finger, she either hit or missed it due to irregular muscular contractions.

1. What are the clinical terms used to describe the features this patient presented with?
2. Using the information above, localize this patients' lesion to a specific part of the central nervous system and explain your answer.
3. List the possible causes of this condition
4. What are the other causes of imbalance (ataxia) and how can it be differentiated from this type?

### **ME-CNS-325-Problem-4**

#### *Scenario and Task Questions*

A 49-year-old man woke up one morning with inability to move his facial muscles and slightly slurred speech.

On examination, he was found to have paralysis of the entire right side of his face. This patient is a known case of hypertension.

1. Which cranial nerve is involved in this patients' condition?
2. List the steps used in the physical/clinical examination of this nerve.
3. Explain why and how an UMN and LMN lesion of this nerve would differ.
4. What are the causes of this nerve palsy?

