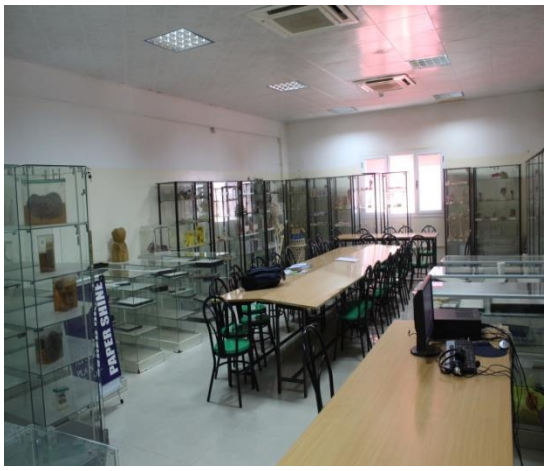
National University-Sudan
Faculty of Graduate Studies and Scientific Research
Faculty of Medicine

M.Sc. Human Clinical Anatomy



M.Sc. Human Clinical Anatomy

Introduction

Human Clinical Anatomy is an advanced postgraduate program desinged for students seeking an in depth understanding of structures and functions of human body using macroscopic, microscopic and radiographic techiques. Sudan witnesisses an acute shortage in qualified staff specialiazed in human anatomy due to a continuous brain drain to the neighbouring counteries. For this the program targets qualifying a critical mass of specialists in Human Clinical Anatomy to work in universities, research centres and in forensic medicine facilities. The program strictly abides by ethics and regulations to conserve the rights and privacies of humans.

General objective

Bridge the gap in qualified staff in the field of Clinical Human Anatomy.

Specific objectives

The program qualifies candidates to:

- Know morphology, organization, and anatomical relations of the human body systems and organs: Gross anatomy.
- Know the structure and development of the human body systems: Histology and embryology
- Identify structures in imaging investigations
- Correlate clinical problems to normal anatomy
- Conduct technical research in human body systems: structures and development.

Expected learning outcomes

By the end of the program, the candidate should be able to:

- Skillfuly dissect human body.
- Interpret and care for anatomical specimens.
- Identify the normal anatomical structures in imaging modalities.
- Identify the histological structures of humans.
- Conduct research, analyze data,organize and interpret results related to human health.
- Follow the development process of the human of critical embryonic period and determine congenital anamolies.

Admission requirements

- Applicant must satisfy the general regulations set by the faculty of graduate studies and scientific research of National University for registration for master degrees.
- Eligible applicants are holders of Bachelors degrees with grade good minmium or cGPA $\geq$ 2.5 from the National University or from any other accredited university or a college in the following:
- MBBS.

- Basic Medical Sciences majoring human anatomy
- Veterinary Medicine
- Dentistry
- Nursing
- Radiography
- Physiotherapy
- All eligible candidates shouled pass an interview an and entry examination.

Study program

Semester One

Code	Course	Credit hours	Contact hours/week	
			Theory	Practical
HCA-611	Principles of Medical Education	2(1+1)	1	4
HCA-612	Cells and Tissues	3(2+1)	2	4
HCA-613	Developmental Anatomy	2(1+1)	1	4
HCA-614	Integumentary System	2(1+1)	1	4
HCA-615	Respiratory System	3(2+1)	2	4

Semester Two

Code	Course	Credit hours	Contact hours/ week	
			Theory	Practical
HCA-621	Musculoskeletal System	3(2+1)	2	4
HCA-622	Cardiovascular and Lymphatic Systems	3(2+1)	2	4
HCA-623	Digestive System	3(2+1)	2	4
HCA-624	Urinary System	2(1+1)	1	4
HCA-625	Reproductive System	2(1+1)	1	4

Semester Three

Code	Course	Credit hours	Contact hours/week	
			Theory	Practical
HCA-631	Endocrine System	2(1+1)	1	4
HCA-632	Head and Neck	2(1+1)	1	4
HCA-633	Nervous System	6(4+2)	4	8
HCA-634	Special Senses	2(1+1)	1	4

Semester Four

Code	Course	Credit hours	Contact hours/week	
			Theory	Practical
HCA-641	Research Methodology	2(1+1)	1	4
HCA-642	Dissection	6(1+5)	1	20
HCA-643	Dissertation	3(0+3)	0	12

Courses Contents

HCA-611 Principles of Medical Education

Principles of learning; Instructional methods and techniques used in university education; Methods of assessment and evaluation of: programs, students and instructors; Problem-based learning; Present lectures in the proper way and observe all aspects mentioned in the seminar evaluation From SC-FR, Issue/Rv. (02/00);_Evaluation: integration of structure, function, dysfunction and rehabilitation; Anatomical and physiological terminologies; Imaging modalities and techniques.

HCA-612 Cells and Tissues

Functions of assigned cell organelles; Major compartments of body fluids; Divisions and components of the body; Four Basic tissues; Structures, features and functions of: epithelial, connective, muscular, and nervous tissues.

HCA-613 Developmental Anatomy

Fertilization and cleavage; Blastocyst: Features and developmental fate; Implantation; Embryogenesis and fate of the three primary germ layers; Embryonic membranes and functions; Placenta formation and function; Changes in maternal anatomy and physiological consequences during pregnancy: teratogenes, congenital and chromosomal abnormalities.

HCA-614 Integumentary System

Organs comprising Integumentary system gross: Histological, ultramicroscopic features and functions; Epidermis layers and cell types; Thick and thin skins; Dermis Structure; Dermal capillary networks; Skin color and pigments; Hair and nails structures.

HCA-615 Respiratory System

Osseous and cartilaginous components of ribs and thoracic vertebrae; Intercostal muscles and intercostal spaces; Intercostal nerves and vessels; Sternum and its ossification; Diaphragm morphology; Respiratory system anatomical divisions and functions; Internal and external nose; Pharynx; Larynx and its cartilages; Trachea; lung lobes and fissures; Bronchial tree; Alveoli; Pleura: reflections, recesses and spaces; Histological changes from nose to alveolus; Lungs

blood and nerve supply ; Lungs lymphatic drainage; Development of respiratory system; Thoracic wall bony landmarks and surface projections.

HCA-621 Musculo-Skeletal System

(a) Bones and Joints : Typical long bone: blood and nerve supply; Histology of compact and spongy bone; Intramembranous and endochondral ossification; Layers of epiphyseal plate; Adjacent nerves and vessels; Common fractures sites; Interstitial and

(b) Appositional Growth; Bone remodeling; Sesamoid and sutural bone; Structural categories of joints; Joint mobility; Simple synovial joints and subcategories; Cartelgenous and fibrous joints; Bones and joint imaging.

(c) Muscles: Functions and properties of muscles tissues; Skeletal muscles: origin and insertion, nerve and blood supply, growth and regeneration; Lever systems; Muscles working in groups; Histology of skeletal, cardiac and smooth muscles.

(d) Vertebral Column: Typical and atypical vertebrae features; Regions of vertebral column; Number of vertebrae in: cervical, thoracic, lumbar, sacral and coccygeal regions; Intervertebral joints; Intervertebral disc; Major ligaments connecting vertebrae; Normal spinal curve; Vertebral column curvatures; Development of vertebral column; Spinal muscles: superficial, deep layers of the back and cervical region; Vertebral column imaging.

(e) Shoulder Girdle and Upper Limb:

Shoulder girdle components; Upper limb Osseous components: Scapula, humerus, radius, ulna, wrist and hand; Shoulder, elbow, wrist and other joints; Rotator cuff components;, Shoulder and pectoral regions: bones, cartilages, and connective tissues; Muscles responsible for shoulder joint movement and their innervations;

Shoulder girdle and upper limb bones surface projections; Axilla and cubital fossa contents; Brachial plexus: roots, trunks, cords and branches; Arm and forearm muscular compartments: Nerve supply actions and disorders; Upper limb blood supply and lymph drainage; Upper limb imaging.

(f) Pelvic Girdle and Lower Limb

Components of pelvic bones; Proximal femur and hip joint with associated ligaments and joint capsule; Osseous components of femur; Tibia, fibula and foot; Male and female pelvis; Arches of foot; Knee joint structures; Muscles groups in gluteal region: thigh, leg and foot; Surface projections of pelvic girdle and lower limb bones; Lower limb blood supply and lymph drainage; Lower limb imaging; Ankle joint; Femoral triangle and popliteal fossa; Foot layers; Lumbar and lumbosacral plexuses.

HCA-622 Cardiovascular System and Lymphatic System

(a) Cardiovascular System

Heart: Position, borders, surfaces , external and internal features; Atria ,ventricles valves and major blood vessels; Heart wall layers; Blood and nerve supply of the heart; Mediastinum

boundaries and divisions; Pericardium: Layers, blood and nerve supply and pericardial sinuses; Major arteries and their branches , large veins and their tributaries , Development and congenital anomalies of heart and major blood vessels and circulation; Histology of heart and blood vessels; imaging of cardiovascular system.

(b) Lymphatic System

Lymphatic system structural components and functions; Thoracic and right lymphatic ducts; Location, structure and function of primary and secondary lymph organs; Lymph nodes, lymphatic nodules and lymphatic organs.

HCA-623 Digestive System

Anterior abdominal wall muscles: division , regions and quadrants; Innervation and action of the anterior abdominal wall muscles; Development and gross features of peritoneum; visceral and parietal peritoneum; Peritoneal folds and spaces seen; Digestive tube layers; Oral cavity: boundaries and contents; Tooth structure and types ; salivary glands; esophagus; stomach; small intestine; large intestine, anal canal and anus; Liver and biliary tree; Pancreas and pancreatic duct system; Development of digestive tract and anomalies; Blood supply and lymphatic drainage of gastrointestinal tract.

HCA-624 Urinary System

Urinary organs: location, relations, coverings, internal and external features, innervations, blood supply; kidneys ; ureters; bladder ; urethra; internal and external urethral sphincters; Histology of urinary system; Development and congenital anomalies of the urinary organs; imaging of urinary system.

HCA-625 Reproductive System

Male and female pelvis; Peritoneal reflections around pelvic cavity; Pelvic diaphragm; , Male internal and external genital organs: gonads, prostate, seminal vesicles, ejaculatory duct, scrotum, spermatic cord, penis; Female internal and external genital organs: gonads, uterus, uterine tubes, vagina; Perineum; Development and congenital anomalies of male and female genital systems; Histology of males and females genital system; Reproductive system imaging.

HCA-631 Endocrine System

Endocrine glands: position, relations, blood supply, nerve supply and structure; Hypothalamus; Pituitary; Pineal; Thyroid; Parathyroid; Adrenal; Endocrine portion of the pancreas; Endocrine portions of the gonads; Development and congenital anomalies of endocrine system; Imaging of the endocrine glands.

HCA-632 Head and Neck

Skull and mandible; Cervical vertebrae; Fascia and Triangles of the neck; Root and viscera of the neck; Face and scalp; Boundaries and contents of : temporal, infra-temporal and pterygopalatine fossae; Oral cavity, TMJ and salivary glands; Pharynx; Larynx; Nose; Para-nasal sinuses; eye; ear; Head and neck: blood vessels and nerves; Lymphatic drainage.

HCA-633 Nervous System

Topography of Nervous system; Divisions of nervous system; Development of Nervous system; Histology of Nervous system; Spinal cord; Ascending and descending tracts; Brain stem; Diencephalon; Cortex and cortical areas; Basal ganglion; Cerebellum; Meninges; CSF and ventricular system; Blood supply of brain and spinal cord; Cranial nerves.

HCA-634 Special Senses

Sensation and perception; Sensory modality; Sensory receptors; General and special senses, Structure of ear; Vestibular and cochlear pathway; Eye, eyeball structures and Visual pathway; olfactory epithelium and olfactory pathway; Taste sensation and gustatory pathway

HCA-641 Research Methodology

Research concepts; Types of research; Literature review; Identifying a research problem; Research hypotheses; Writing a research proposal; Design of experiments; Sampling procedures; Data collection and analysis; Interpretation of results; Writing a research report, dissertation or thesis.

HCA-642 Dissection

In-depth dissection of the head and neck, thorax, abdomen, pelvis and perineum, upper and lower limbs on the cadaver; Detailed dissection of a specific region of human body on cadavers

HCA-643 Dissertation

Write research proposal; Conduct piece of research: Design of experiments, questionnaire, and Data collection: Organization, analyses, interpretation and presentation; Dissertation writing: Abstract, introduction, literature review, materials and methods, results and discussion, conclusions and recommendations references; Dissertation assessment.

Human resources and facilities

Teaching staff: Two professors
Three associate professors
Three assisstant professors
Five lecturers
Two laboratory technologists.

Facilities

Lecture rooms: One lecture room: 40 seats

Laboratories: Histology lab: 100 seats
Dissection room: 100 seats
Museum: 40 seats
Conventional and Advanced Imaging lab: 40 seats

Libraries: University main library: 400 seats.
E-Library: 250 seats.

Duration of the program: 16 months.

Teaching modules

Lectures, practical, seminars, small group discussions, tutorials, assignments, problem-based sessions, journal clubs

Teaching language: English.

Examinations regulations

- Abide by the examinations rules of the general regulations of the graduate studies of the National University-Sudan.
- A student failing any supplementary examination shouled repeat the course.
- Duration of the dissertation is 16 weeks. If need be, an extension of six weeks is allowed on approval of the program cordinator.
- A student scoring less than 60% in the dissertation oral examination will be allowed only one more chance.
- All students shall sit for oral and dissection examinations at the end of semester three.

Assessment: Continuous assessment 30 %
Final examination 70%

Grading system: A^+ (90-100) A (80-89) B^+(75-79) B (70-74) C^+(65-69) C(60-64) F (<60)

Award of the degree

The Scientific Council of the National University, based on the recommendation of the board of the Faculty of Graduate Studies and Scientific Research, shall award
the successful candidate
M.Sc. Human Clinical Anatomy