



## National University-Sudan

### Faculty of Graduate Studies and Scientific Research

#### M.Sc. by Research in Medical Laboratory Sciences Program

##### **Introduction**

Medical Laboratory researchers play a pivot role in health care. They provide invaluable information for diagnosis, treatment and prevention of diseases. Though so important, the Medical Laboratory sector in Sudan experiences an acute shortage in qualified staff complying with the continuous advances and innovations in medical technologies vis-à-vis instrumentations and procedures. The gap in MLS qualified staff and skillful researchers is clearly seen in health facilities, in universities and by the many aspects related to MLS which require continuous searching to comply with standards in the field.

For this, the faculty of Medical Laboratory Sciences of the National University-Sudan provides by research M.Sc. programs in:

- Clinical Chemistry.
- Microbiology.
- Immunology.
- Histopathology and Cytology.
- Hematology and Immunhematology.
- Parasitology and Medical Entomology.

##### **The programs target to provide:**

- In depth understanding of normal physiology and pathophysiology of diseases
- Knowledge on the impact of genetic and external factors on human health
- Accurate laboratory diagnosis and management of diseases in populations and patients
- Methods for designing and evaluating new therapeutic interventions and health economics.

##### **General objective**

Qualify critical mass of Medical Laboratory staff to work in universities, research centers and in health care facilities.

##### **Specific Objectives**

- Empower the MLS students' technical competence in the area of specialization.
- Enable candidates to identify problems and conduct research.
- Help candidates to acquire skills in scientific writing.
- Alert students' awareness to new laboratory-related technologies.



**Duration of the program:**

- **M.Sc.** 12-24 months.

**Thesis assessment will be run by three assessors:**

- (1) External examiner in the specialization (Professor / Associate Professor).
- (2) Internal examiner from the university.
- (3) Supervisor or co-supervisor (Internal examiner).

**Admission Requirements**

1. Hold Bachelor (Honors) in the concerned specialization with grade Good (Second Class) at least from the University or from any other accredited university or a college.
2. Hold Bachelor (General) in concerned specialization with grade Good (Second Class) at least plus Postgraduate Diploma in the concerned specialization with grade Good at least or Pass a qualifying examination with grade Good at least after one year of study
3. Hold Bachelor (General) in the concerned specialization with grade Pass (Third Class) plus a Postgraduate Diploma in the concerned specialization.
4. Not be registered for a degree in another program in the University or in any other institution during the period specified for the study and should sign an undertaking
5. Meet the requirements of the targeted program
6. Holders of B.Sc. Honors in relevant disciplines from the University or from any other accredited university or a college can be accepted based on a recommendation from concerned faculty or institute and that is without prejudice to Faculty of Graduate Studies and Scientific Research General Regulations.

**Resources and Facilities:**

**Laboratories:**

**Available Laboratories:**

- **University Labs:**

<b>Lab code and name</b>	<b>Capacity/ Students</b>
GF3 Microbiology lab	80
GF6 Hematology lab	80
FF11 Parasitology and Entomology lab	40
FF5 Clinical Chemistry	40
SF3 Microbiology	50
SF11 Histopathology	30



- Al-Ragi University Hospital Lab: Clinical Chemistry- Hematology- Microbiology- Routine
- National University Research Institute (NURI) lab.

**Instruments:**

**Instruments available in the:**

- **University Labs:**

<b>Instrument</b>	<b>Number</b>
Microscope	152
Ordinary Centrifuge	40
Colorimeter	35
Water Bath	2
Autoclave	3
Hot Air Oven	4
Microtome	1
Tissue processor	1
Embedding center	1
Floating water bath	1
Wax Dispenser	1
Refrigerator up to -8C	4
Safety Cabin	2
Semi-Automated ELISA	1
Spectrophotometer	1
Flame Photometer	1
Incubator	2
Hematocrit Centrifuge	2
Automatic Cell Counter	1
Distiller	1

- **Al-Ragi Hospital Lab:**

<b>Instrument</b>	<b>Number</b>
Biota 560-Haematology Analyzer. 5 Parts Differential.	1
Sysmex Xp 300-Haematology Analyzer.	1
Coagulometer 3003-Slamed.	1
Chemistry Autoanalyzer-Awareness.	1
Ise-Easy Lite-Medica.	1
Elizea-Stat-Fax-2600.	1
Janway 6300 Spectrophotometer.	1
Pcr-Prime.	1
Large Incubator-Electro-Mag. M6040 P.	1
Large Oven-Electro-Mag M6040 P.	1
Large Autoclave.	1
Laboratory Fridge-Focchetti.	1
Up Right Freezer-Focchetti.	1
Blood Bank Refrigerator-Haier.	1
Microscope-Kruss.	3
Haematocrit 210-Hettich.	1
Centrifuge-Eba 20-Hettich	2
Centrifuge-Electro-Mg.	2
Water Still-Electro-Mg.	1
Water Bath.	1
Balance-Kern.	1
Colony Counter-Stuart.	1
Rotator-Orbital Shaker-Stuart.	1
Heat- Stir- Stuart.	1
Full Automated ELISA	1

- **National University Research Institute (NURI):**

<b>Instrument</b>	<b>Number</b>
PCR Machine	2
ELISA Machine	2
Gel Documentation System	1
Electrophoresis Apparatus	2
Cold Centrifuge	1
Hood	1
Water Bath	2
Sensitive Balance	1
Incubator	2
Refrigerators	2
pH Meter	1
Microwave	1
Distiller	1
Microscope	2
UV/workstation	1
Vortex	1
Autoclave	1
Real Time-PCR	1

**Libraries:**

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

**Accreditation:**

- The National University-Sudan is accredited by
  - ISO 2008:9001
  - British Accreditation Council (BAC) since 2015.
- National university research institute is accredited as lab of excellent by Ministry of Higher Education and Scientific Research.

**International Cooperation:**

The National University-Sudan has twining with University of Putra Malaysia (UPM) since 2016.

**Supervisors:**

<b>Supervisor</b>	<b>Position</b>	<b>Specialty</b>	<b>Type of contract</b>
Prof . Alsir Ali Abugroon	Professor	<b>Microbiology.</b>	Part time
Prof. Shamsoon Khamis Kafi	Professor	<b>Microbiology.</b>	Part time
Prof. Adam Ahmed Adam	Professor	<b>Microbiology.</b>	Part time
Prof Motamed Ahmed Amin	Professor	<b>Parasitology and Medical Entomology.</b>	Part time
Prof.Hamid Suliman Abdalla	Professor	<b>Parasitology and Medical Entomology.</b>	Part time
Prof .Ehssan Mohammed Osman	Professor	<b>Hematology and Immunhematology.</b>	Permanent
Prof.Nazik Elmalaekh Obied Sid Ahmed	Professor	<b>Histopathology and Cytology.</b>	Part time
Prof. Moawia Mohammed Mukktar	Professor	<b>Immunology.</b>	Part time
Prof. Ahmed Mudawi Musa	Professor	<b>Immunology.</b>	Part time
Dr. Nasir Eldin Mohammed Sharief	Professor	<b>Clinical Chemistry</b>	Part time
Dr. Ammar Ahmed Ismail	Associate Professor	<b>Clinical Chemistry</b>	Part time
Dr. Omer Balla Ibrahim	Associate Professor	<b>Clinical Chemistry</b>	Part time
Dr.Muzamil Mahdi Abdalhamid	Professor	<b>Immunology.</b>	Part time
Dr .Abualgasim Abbas Awad Elkarim	Associate Professor	<b>Histopathology and Cytology.</b>	Part time

Dr. Mubarak Saeed Elkarsani	Associate Professor	<b>Hematology and Immunhematology.</b>	Part time
Dr. Elamin Mohammed Ibrahim	Associate Professor	<b>Microbiology.</b>	Part time
Dr.Mohammed Eldai Hammad	Associate Professor	<b>Microbiology.</b>	Part time
Dr.Rehab Ali Omer	Associate Professor	<b>Microbiology.</b>	Permanent
Dr. Mohammed Abdelgadir Mahdi	Associate Professor	<b>Clinical Chemistry</b>	Permanent
Dr. Rehab Alkasha Mohammed	Assistant Professor	<b>Clinical Chemistry</b>	Part time
Dr,Musa Abdallah Ali	Assistant Professor	<b>Microbiology.</b>	Part time
Dr.Sofia Bashir Ali	Associate Professor	<b>Microbiology.</b>	Permanent
Dr.Mohammed Elmobarak Abdalla	Assistant professor	<b>Parasitology and Medical Entomology.</b>	Part time
Dr. Awad Allah Hamza Osman	Assistant professor	<b>Parasitology and Medical Entomology.</b>	Part time
Dr. Mohammed Eltoum Elhag Ramadan	Assistant professor	<b>Parasitology and Medical Entomology.</b>	Part time
Dr. Amjad Gaffer Mustafa	Assistant professor	<b>Hematology and Immunhematology.</b>	Part time
Dr. Enaam Hussein Mohamed Ahmed	Assistant professor	<b>Hematology and Immunhematology.</b>	Partial
Dr. Niessren Osman Mohammed Osman	Assistant professor	<b>Hematology and Immunhematology.</b>	Part time
Dr. Osman Mohammed Elmahi	Assistant Professor	<b>Histopathology and Cytology.</b>	Part time

Dr.Ibrahim Bakkit Elemam	Assistant Professor	<b>Histopathology and Cytology.</b>	Part time
Dr. Alsadig Ahmed Adam	Assistant Professor	<b>Histopathology and Cytology.</b>	Part time
Dr. Ahmed Omer Elmobark	Assistant Professor	<b>Histopathology and Cytology.</b>	Part time
Dr.Moahmmed Elfatih Abdallatif	Assistant Professor	<b>Histopathology and Cytology.</b>	Permanent
Dr.Ali Eltayb Ali	Assistant Professor	<b>Histopathology and Cytology.</b>	Permanent
Dr.Amira Ahmed Khalid	Assistant Professor	<b>Histopathology and Cytology.</b>	Permanent
Dr.Imtethal Elsaïd Ibrahim	Assistant Professor	<b>Histopathology and Cytology.</b>	Permanent

**Application:**

- The candidate submits M.Sc. research proposal, following the set guidelines, to the post graduate coordinator.
- The research proposal will be assessed by the concerned department and by the faculty research board.
- Successful candidates will be assigned to qualified supervisors.



### Books and References:

No.	Title of Book	Number of Copies
1	Haematology: An Illustrated Colour Text	1
2	Handbook of Forensic Analytical Toxicology	2
3	Illustrated Haematology: a Clinic-pathological Approach	1
4	Laboratory Biosafety Guidebook: for BSL 1 and BSL 2 Clinical and Research Laboratories in Pakistan	1
5	MCQs in Medical Laboratory Technology	1
6	Medical Genetics at a Glance	1
7	Medical Histology	2
8	Medical Laboratory Technology: Methods and Interpretation: Volume 1	5
9	Medical Laboratory Technology: Methods and Interpretation: Volume 2	5
10	Medical Parasitology	2
11	Microbiology Theory for MLT: Medical Laboratory Technology	1
12	Practical Manual of Haematology	1
13	Principle of Molecular Biology	1
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15	Synopsis of Forensic Medicine and Toxicology	1
16	Textbook of Anatomy and Physiology for Nurses and Allied Health Sciences	5

17	Textbook of Clinical Haemodynamics	1
18	The Short Textbook of Medical Laboratory for Technicians	2
19	USMLE step 1 Biochemistry and Medical Genetics: Lecture Notes	1
20	Vertigo and Disequilibrium: a Practical guide to Diagnosis and Management	1

**Important Targeted Research Areas:**

- Cancer and Benign Tumors.
- Chronic Diseases.(e.g. Diabetes Mellitus, Hypertension, Chronic Renal Failure)
- Acute Diseases.(e.g. Acute Myocardial Infarction, Acute Renal Failure)
- Toxicology.
- Antimicrobial Agents.(e.g. Mecesllin Resistance, Vancomycin Resistance )
- Viral Diseases. (e.g. HIV, Hepatitis)
- Bacterial Diseases.(e.g. UTI, Septicemia, Pneumonia)
- Mycology.
- Quality Control in Medical Labs.
- Tropical Diseases.(e.g. Malaria, Lieshmania. Trypansomiasis)
- Hematological Diseases such as: Leukemia, Anemia, Bleeding Disorders .... etc.
- Medical Entomology.
- Nutritional Assessment.
- Immunological Disorders in Human Body.
- Molecular Biology.

**National University-Sudan**

**Faculty of Graduate Studies and Scientific Research**

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- Empower the MLS students' technical competence in the area of specialization.
- Enable candidates to identify problems and conduct research.
- Help candidates to acquire skills in scientific writing.
- Alert students' awareness to new laboratory-related technologies.

### **Duration of the program:**



- PhD. 24-36 months.

**Thesis assessment will be run by three assessors:**

- (1) External examiner in the specialization (Professor / Associate Professor).
- (2) Internal examiner from the university.
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**Admission Requirements :**

1. Hold Master degree in the specialization from the University or from any accredited university or a college.
2. Meet the requirements for obtaining the Master in accordance with the provisions of Faculty of Graduate Studies and Scientific Research General Regulations .If the master obtained from a university other than the National University
3. Holders of Masters in similar specializations may be accepted based on a recommendation from the concerned faculty or institute without prejudice to Faculty of Graduate Studies and Scientific Research General Regulations .
4. Holders of Master degrees from other universities or colleges should submit recommendations from two academic staff members, who know the applicant, from the University and/or from another university or a college
5. Applicants should not be registered for a degree in any program in the University or in any other institution during the period specified for the study and should sign an undertaking
6. Meet the requirements of the targeted program.

**Resources and Facilities:**

**Laboratories:**

**Available Laboratories:**

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<b>Lab code and name</b>	<b>Capacity/ Students</b>
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Ise-Easy Lite-Medica.	1
Elizea-Stat-Fax-2600.	1
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Large Autoclave.	1
Laboratory Fridge-Focchetti.	1
Up Right Freezer-Focchetti.	1
Blood Bank Refergrator-Haeir.	1
Microscope-Kruss.	3
Haematocrit 210-Hettich.	1
Centrifuge-Eba 20-Hettich	2
Centrifuge-Electo-Mg.	2
Water Still-Electro-Mg.	1
Water Bath.	1
Balance-Kern.	1
Colony Counter-Stuart.	1
Rotator-Orbital Shaker-Stuart.	1
Heat- Stir- Stuart.	1
Full Automated ELISA	1



- **National University Research Institute (NURI):**

<b>Instrument</b>	<b>Number</b>
PCR Machine	2
ELISA Machine	2
Gel Documentation System	1
Electrophoresis Apparatus	2
Cold Centrifuge	1
Hood	1
Water Bath	2
Sensitive Balance	1
Incubator	2
Refrigerators	2
pH Meter	1
Microwave	1
Distiller	1
Microscope	2
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Vortex	1
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