Better Education
Better World

FACULTY OF MEDICINE & SURGERY

Undergraduate & Graduate

PROSPECTUS

National University - Sudan

nu.edu.sd

National University - Sudan

Welcome

Welcome

Note from The President of NUSU

[www.nu.edu.sd]

01

This is the 5th Edition of the PROSPECTUS of the National University-Sudan (NUSU). In this document registered students will find information about the mission, vision and values of NUSU, and all programme details and activities. This edition includes both UNDERGRADUATE and GRADUATE course outlines. NUSU aims at high-class education in medical, technological and social sciences. This is reflected in this comprehensive outline. It describes the basis of NUSU's educational philosophies, programme objectives including the characteristics of the graduate, strategies and methods, degree structure, semester duration and credit hour load and brief outline of content. This represent a narrow window into the complex organization of NUSU. More information on rationale of modules, behavioural objectives, and assessment can be found in the curriculum of each Faculty. The calendars, year plans and timetables are issued for each semester with the exact dates for teaching sessions, other learning opportunities, assessment, feedback and holidays.

NUSU is now 19 years old. It is still developing, and trying to set traditions of availing all activities in its publications, that may remain relevant for 3-4 years, before new editions are issued. The councils and committees of NUSU, while compiling this, are drawing their experience from local and world-wide, up-to-date educational practices. Concurrently, other documents (Student

Manual, Staff Handbook, Induction packages, and policies and procedures) are re-written and updated, in view of the emerging concerns about student welfare, environment, students with special needs, and virtual online educational resources.

There is strong focus on synergy between modern education, developmental needs and employment market requirements. This has laid down a wide area of maneuvers in the choice of specific disciplines and modules. In each discipline, a detailed career advice has been added in this edition to show students the opportunities available if they chose to be employed or opt to start their own business to employ others.

The reputability of NUSU has attracted students from about 25 countries and all continents. This representation requires quality of premises and services, as well as understanding of diversity, inclusiveness and considerations for non-discrimination in the educational activities and campus life. International students and the Sudanese students whose families are living outside the Sudan, receive special induction, supervision and directives by the Deanship of Student Affairs, and regular courses shown in this prospectus as Sudanese Studies.

It is my pleasure to invite all qualified students to join NUSU's exciting new and innovative educational programmes. Students, parents and sponsors are welcome to visit the campus. The will receive guidance from the HELP DESK at the Main Gate. They will be escorted to buildings and connected with the leadership of the university or faculties. Our primary target is to create guest satisfaction. Your comments and feedback are important for us, to continue improvement to meet our goals.

Last, but not least, we would like to invite our higher education colleagues, inside and outside the Sudan, to read this publication. Our special request: please have a critical look at this and show us our faults. You may suggest means of correcting them, and tell others about the positive and bright spots of this attempt. Your advice will be highly appreciated.

Prof. Qurashi M. Ali PhD, MD, FRCPE
President, National University, Sudan

www.nu.edu.sd

ACKNOWLEGEMENTS

02

World-wide, 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 approval and comments or traces of his educational spirit. His direct and indirect contributions to the curriculum of this University and continuous encouragement are gratefully acknowledged, particularly those related to educational strategies, instruction and evaluation. The following have reviewed and reorganized the final versions of this prospectus: Prof. A/Rahman Eltom MD,PhD, Prof. A Rahman Biri MD FRCP, Prof. Elthami Abdul Mageed PhD, (medicine), Hassan M. Ali PhD, Dr. Ahmed Abusham PhD and Dr. Salah Ibrahim PhD, and Dr. Fatma Mukhtar MSc. (pharmacy), Dr. Kamal Khalil MD.Dr. Elfatih A Mageed MD (physiotherapy), Dr. M. A. Siddiq PhD. Prof. Awad Haj Ali PhD. (computer and health informatics program), Prof. Ibrahim Ghandor and Dr. Abdalla Darous, Dr. Enas Badawi PhD, Dr. Arif Affan (dentistry), Prof. Sayda H. Elsafi MD, PhD and Dr. Nihal Mirza MD, Dr. M. Sirelkhatim, Dr. M. Abdelgadir, Dr. Maha Magoub (medical laboratory sciences), Dr.Abdel Moneim Saeed PhD, Dr. M. A. Elsheikh PhD Dr. Elsir Ali Saeed PhD, Dr. M. Elfadil PhD (imaging technology), Prof. Awatif Ahmed PhD, and Ms. Fatma Bhruddin MSc, Dr. Sumia Ibrahim PhD (nursing and midwifery), Prof. Salih Faghiri PhD, Prof. Omer Elmagli PhD, and Prof. Hassan Kamal PhD, Dr. M. A. Osman, Dr. Mutaz Suliman, Dr. A Azim Almahal PhD, and Prof. A Gadir M. Ahmed PhD (management sciences). The contributions of Dr. Nadir Hasanain {Engineering) , Prof. A Latif Elboni and Dr. Ibrahim Mirghani (International Relations) are outstanding.The list, of those who, knowingly or unknowingly, contributed curricular details or ideas registered in Editor's memory or documents, is exhaustive. Our thanks are to the following professors: A/Hameed Lutfi, M.Y. Sukkar, Elbagir Ali El Faki, Amir El Mubarak, Omar Abdul Aziz, Othman Taha, Othman Khalafalla, Ali Habbour, Omar A. Mirghani, Awadelseed Mustafa, Mubarak Majzoub, M. Awadalla Salih, Hafiz El Shazali, Jaafar M. Malik, Othman Hamour, Ali Karar, A/Alla A/Wahid, El Tayeb Abdul Rahman, Eisa Othman El Amin, Mamoun Homeida, Hassan M. Ahmed, Ali Abdul Rahman Barri, Ibrahim M. A/Rahim, Ahmed A. Muhammadani, Mukhtar El-Khatim, A/Rahman A/Hafeez, Sayed M. Ahmed, Awad A/Rahman El-Awad, M. Elamin El-Sharif, Kamal Zaki, A/Rahman El-Tom, Ghazi Salahuddin, Bakri Osman Saeed, Mohyddin Majzoub, Jamal Suleiman, Abbas ElKarib, ElGamri ElRadi, Salah M. Omer, Majid Mustafa, Muzamil Hassan A/Qadir, M. A/Rahim A/AAl, Khalid Musa, Bakri Musa Abdul Karim, Tahir Othman Ali, Omar Siddiq, Fathel Rahman Ahmed Ali, A.Moneim Sahal, Omar Habbal, Mickell Seefldt, Ara Tekian, Margaret Uguroglu, Saleh A. Al Damegh, Zeinel Abdeen Karar, A/Rahman El-

tom, Ahmed Fahal, Kamal Qurashi, Ammar Khamis, Elamin I. Eneima, Elsheikh A Elobeid, Sara M. Husein, Abubakr Suliman, Elfatih A/Majeed, Mabyua Mustafa, Mustafa Idris, Amin O Sidahmed, Ammar Eltahir, Mr. Suleiman M. Dafa'Alla, Salah Faraj, and many more, we will add them as soon as we are reminded. There is no intention of omission of any effort or opinion.

Most of the "Dentistry Curriculum" has been adapted, with permission, from experts all over the world, mainly deans and heads of departments in the Sudanese dental colleges, and institution in dental sciences. The outstanding effort of professors Ibrahim Ghandour, Yahya Eltayeb, Ibrahim Elkamil, Osman Elgindi, Ahmed Suliman, Abbas Ghariballa, Nadia A. Yahia, Elnur Ibrahim and improved by Enas Badawi, Eman Khair and Suha A/Gadir is gratefully acknowledged.

The Engineering curriculum has been designed by committees headed by Dr. Nadir Hasanain as dean and head of civil department, and valuable contributions by Prof. Seifeldin Sadig. The International Relations and diplomatic studies curriculum has been written first by Dr. Ibrahim Mirghani and has been edited and adapted to the national requirements by Prof. A Latif Albouni and Bakri A/Karim.

The whole idea could not have seen the light without the encouragement of the Investors' Corporation and Board of Trustees of the National University, who spend days every week responding to routine and emerging issues of financing. On their behalf I would like to thank the genius and friendly contribution of Mr. Zahir Twahry for his artistic preparation of the 3rd and 4th editions and other NUSU publications. The final editing of most of the undergraduate manuscript has been skillfully and patiently carried out by Prof. A Rahman Osman Beeri Former Secretary of Academic Affairs. The graduate prospectus has been compiled by Prof. M. M. A. Abulnur, Dean of Graduate Studies and Scientific Research, and Dr. M. Abd Al Kader and Dr. Hatem Al Rufaai.

WHAT IS THE NATIONAL UNIVERSITY?

03

1. MISSION, VISION AND VALUES

The **VISSION** of the National University is to be a world-class leading provider of private higher education in the Sudan, in the aspects of elegance of environment and structures, excellence of curricula and learning strategies, quality of management systems, commitment of investors and employees to customer satisfaction (students, relatives and regulators), distinguished graduates in academic, general ethical standards, and concern with professionalism and original research production.

The **MISSION** is to: (1) constantly strive to provide efficient and best-in-class professionals, in their specialties (2) meet and exceed our customer needs and expectations, and (3) stay ahead of the competition by creating safe and rewarding workplace facilities and innovating new quality output, services and relationships in transparent, honest and fair business.

The **VALUES** are : (1) obligations to treat the public and one another with personal and professional integrity, consideration and mutual respect, (2) commitment to honesty, truthfulness, respect for human dignity, and professional ethical behaviour, (3) fair treatment of all citizens and employees, with no discrimination on the basis of morphology or ideology (4) promotion of democracy values, hard work, perseverance, commitment to success, accepting responsibility and accountability for one's conduct and obligations, and (5) creating and maintaining a respected reputation and positive image in the community as a trusted partner through excellent care of the individual and family, and responsibility towards the community and environmental problems and concerns.

2. DOCUMENTS

The legal documents of the University include: (1) the University Charter, (2) Academic Regulations (3) Rules of Activity and Conduct (4) Study Fees' Regulations, (5) Employment Regulations, (6) National Employment Penalty Regulations, (7) Contracts and Salary Scale, (8) Job Descriptions, (9) Staff Handbook, (10) Students' Manual, (11) Quality Manual, (12) Teaching, Learning and Assessment Policy, (12) Prospectus and Curricula, (13) Organizational Chart, (14) Committee Structure, (15) Logbooks of students' skills and activities, (16) Year Plans, (17) Academic Calendars, (18) Programme Evaluation Forms, (20) Portfolio of Architectural and Structural Designs of Buildings, (21) External Examiners' Appointment, Reporting and Response documents and (22) numerous policies and procedures in areas of quality, safety, and non-discrimination.

3. BOARD OF TRUSTEES

The Board of Trustees (BOT) is formed according to the Charter to include the investors, the academicians, the representative of the Ministry of Higher Education, and public figures of interest in education or eminent in social accountability issues of universities. The current BOT is chaired by Dr. Taha Eltayeb A. Elimam, and includes in its membership: Prof. Qurashi M. Ali, Dr. Amin O. Sidahmed, Dr. M. Sirelkatim Ali, Prof. A-Rahman Osman Beeri, Prof. Osama A-rahman Elamin, Eng. M. Awadelkarim Elgasim, Dr. Saad Subahi, Dr. Elhadi Bakheet, Eng. Yousif A. Yousif, Prof. A-Moneim Algousi, Dr. Ismail Qurashi, Prof. Hassan M. Ali, Deans of faculties, and representatives appointed by the Ministry of Higher Education and approved by the President of the Sudan.

4. RIGHTS

4.1 GENDER RIGHTS

Throughout this manual (and the webpage) every effort has been made to use he/she, 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. Females have been addressed in situations of special concerns, in gender-specific issues, mainly out of respect for their specialized roles.

4.2 EXCLUSION OF LIABILITY AND DISCLAIMER

Throughout this manual (and the webpage) every effort has been made to ensure that expert, accurate and up-to-date guidance has been included. The administrative and academic authority continuously updates the NUSU 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 the University. Accordingly, neither the Ministry of Higher Education, nor the NUSU administration, shall be liable to any person or entity with respect to any loss or damage caused or alleged to be caused by the information contained or omitted from this manual (or the webpage).

4.3 COPYRIGHTS

a. The curriculum timetable and course details resemble many of those (or may contain parts) in other colleges in which the "President of NUSU" has been the main or essential member in the bodies responsible for curriculum design and evaluation. In many an institution he has been one of the driving forces for innovation. These institutions include: University of Gezira (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 University (Sudan), and Al Qassim University (Saudi Arabia). Major innovations have been added to improve on the experience of the above institutions. This manual (and the webpage), in addition to comprehensive compilations in each program document (to be given to each student) is an entity of its own. Therefore, the total set of details, which is not available in any other institution so far, may not be

copied or published without written permission from the National University- Sudan.

b. The teaching material available in the webpage, and other published material in the University notes, 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 "Acknowledgements", are free to use this material because it is all from them, we could not single out what is ours from theirs.

5. ENRANCE REQUIREMENTS

A. Applications must be through the Ministry of Higher Education (Sudan) Admission Directorate, based on passing a fresh Sudan (or equivalent) School Certificate or equivalent qualification (please see relevant booklets provided at that office). Older 5-10 years' School Certificates may be considered, if vacancies are there, and details are approved by the Admission Office. The newly introduced online application dismiss disqualified applicants automatically.

B. Direct applications are welcome, but will be entered online by the University to the Admission Directorate for approval.

C. International applications will be processed similarly, but candidates are advised to follow the application procedure in the webpage, and wait for a response, before arriving in the Sudan. The NUSU Administration takes 5 working days (after receipt of application) to finalize acceptance. Electronic communication is preferred. For security reasons. A student who is granted acceptance by the NUSU will NOT be allowed by the Ministry of Internal Affairs to transfer to any other university after arrival, except after studying and passing, at least, one academic year..

D. Mature students qualified with a previous health science professional degree may be considered. In this case early application is recommended (6 months before national intake in September every year), because of the time it may take for the approval of the School Certificate by Ministries of General Education and Higher Education, Sudan.

E. Final decision on acceptance depends on the results of an interview to confirm if the student has the aptitude to join a specialty, and is free from physical and psychological inabilities that are not compatible with the responsibilities of a specific or hardship profession. But individuals with special needs are welcome and will find NUSU a conducive environment of values against discrimination.

F. Transfer NUSU from other universities may be considered for enrollment in Semesters 2, 3, 4 or 5 only, based on the approval of the General Directorate of Admission in the Ministry of Higher Education.

6. STAFF AND RECRUITMENT

Academic and administrative staff interested in joining the National University-Sudan, may show their intention by filling the e-recruitment form included in the webpage. A response will be sent

by e-mail within 48 hours, and further instructions will follow. Appointment of academic staff is based on academic excellence in the areas of research and teaching. Academic applicants with no research records or grants will not be considered for full-time positions in this university. Full- and part-time staff list may be looked up in Academic Staff section of the webpage.

Applicants interested in joining other private educational institutions in the Sudan can reach them through our web-page. The employment conditions and salary scale are not (currently) available in this manual or website.

7. LOCATION AND MAPS

A. The Country: The best advantage of this National University is that it is located in the Sudan, an AfroArab country with rich human and natural life resources. The inhabitants are either Arabs or Africans.. The Sudan educational institutions are known, worldwide, for their academic excellence, ethical heritage and professional teaching perfection. A Sudanese national, wherever he/she may be is unique in considerateness, courtesy, and hospitality. In almost 80% of the country it is the safest in the world. A single lady can jog in Khartoum, or any other city, in the middle of the night unbothered. Sudanese abide voluntarily by strong moral codes and respect for females as foreigners. The media-nourished concepts of North-South or West-East conflicts have largely exaggerated the reality. The color of people has no significance in this country, may be the only country in the world where color has never and can never

be a real cause of conflict. Media are prototyping other countries' dilemmas on a local setup that has got some developmental problems. It is interesting that the Arabs in this country are mainly non-white, and the non-Arabs are not necessarily black, contrary to what the media have publicized. The luckiest person in the world, any moment, is the one who has been received by a Sudanese host.

B.

The City: The capital is Khartoum, a city made up of three cities striding the White Nile, Blue Nile as they join to form the River Nile. This has given it unique panoramic landscapes and scenery. There are about 4-6 million inhabitants, mostly in traditional houses, known for their spacious yards. Khartoum city 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 be as expensive as in New York or Tokyo, and other areas of modest housing. Therefore students have a wide range of choice. Transportation used to be a problem, now it is quite easy, but still, students are advised to find accommodation as near as possible to the University premises.

C. Premises and Environment : (See map). The National University permanent building is located in the Eastern part of Khartoum called Al Raqi District, near the Khartoum-Medani Highway, in an affluent newly established residential area. This region has an interlacing and frequent network of transport, yet the wide roads give no impression of crowdedness, or noise pollution. This accessibility is an invaluable asset for an educational institution. The University block, a purpose-built structure, assumes a masterpiece of architectural innovation (see pictures). The National University is open for students and staff for 18 hours working days and 6 hours on weekends. The library, self-directed learning facilities are available for registered students and staff. Limited access to research laboratories is allowed for certain students who are involved in staff's research projects. Certain sport facilities (Basket- ball and volleyball) are within the premises. In-door recreational facilities are available in the Cafeteria. The source of proud of the University is the design of beautiful, environment-friendly and heavy duty facilities that serve its mission. Students and employees are expected to respect and work towards achieving that. Directives from them to their visitors are very important to maintain and improve the level of standards of perfection we intend to reach. There are few similar, or near, buildings of excellence of space and quality, so far, in higher education institutions in the Sudan.

A 10-floor building of the teaching hospital stands next the main University block and accommodates over 300 beds with all tertiary care facilities. A 5-floor building accommodate the Faculty of Engineering. NUSU owns a 35000 M2 area in Albagair Suburban Area, in which a new campus is being built. It includes a rural hospital.

8. PROGRAMME FEES

A list of tuition fees is published by the MHESR every year. Private institutions keep updating such list, but a student accepted in one particular academic year will NOT be charged with the fees published for fresh students. Fees cover teaching and administrative activities of the University including laboratories and in-campus training. Accommodation and food subsidies are NOT included. Transportation to and from the University or off-campus training sites is NOT included, but the University tries to provide that for selected activities. Additional fees are variable for compensations of absence or failure. Students pay for all courses Training outside the campus and examinations [substitute or supplementary], scheduled in the Summer or Holidays, based on the credit hour load of the courses. Fees for such compensations are usually not published in Academic Calendar, but requested by students or their sponsors.

VISION, MISSION STATEMENT, AND VALUES OF FOMS

The **VISION** of the NUSU-FOMS is 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.

The **MISSION** of the NUSU-FOMS is 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

The **VALUES** of the NUSU-FOMS 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.

OBJECTIVES OF THE MEDICAL PROGRAMME

Emphasize values 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 com-

ponent of the University's philosophy and message, which emphasizes medical ethics, professionalism, interpersonal and communication skills, and ethical commitment

Graduate practitioners 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.

Contribute to community development 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.

Strengthen medical and health research, 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.

ENTRANCE REQUIREMENTS AND ADMISSION POLICY

A student interested in joining the Faculty of Medicine, has to fulfill the following:

- 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 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 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.
- Students are admitted and allowed to join classes only after 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.
- Pay the fees announced on the university website.

CAREER ADVICE

Students qualified with this bachelor degree [MB BS] pass through the track designated by the Sudan Medical Council, and so are temporarily registered with the Council. After working for a period defined by the Ministry of Health in each discipline/specialization, graduates sit for the licensing exam to obtain permanent registration with the Sudan Medical Council. Qualified graduates serve as general practitioners in the public or private sector. They may upgrade to MD/ PhD or licenses in basic sciences from public view in the public or private sector, and can qualify for doctor's degree programmed or fellowships in basic sciences anatomy, physiology, and biochemistry). They can select clinical sciences (medicine or its sub-disciplines, surgery

and sub-disciplines, obstetrics, gynecology, pediatrics, and oncology). Diagnostic (pathology, immunology, microbiology, radiology and ghost imaging) or community medicine (community medicine and public health, health statistics, and forensic medicine) to qualify as a consultant in any of the mentioned disciplines to work in the healthcare services and/or in university teaching. The graduate may be interested in managerial, commercial, industrial or charity career, related to one of the various specialties in the discipline.

International graduates can follow the same track if they preferred to stay in the Sudan, but may also start their registration and internship in their own countries or residence

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 availed within and near the current learning premises. In-door 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.

COMPETENCY FRAMEWORK AND LEARNING OUTCOMES

A graduate of the Faculty of Medicine and Surgery, National University, will habitually demonstrate the following learning outcomes and will be able to:

Domain 1: Ethics, Professionalism, Communication and Interpersonal Skills

Abide by the values and norms of the Sudan***, adopt*** the articles of ***Charter*** and ***Regulations*** of the University, ***show understanding*** of the University's goals, objectives, and strategies, and ***propagate and follow*** its policies and procedures for good practice.

Observe in his/her study and practice, the basic health professional ethics stated in ***Sudan Medical Council*** documents. Including awareness of confidentiality and patient's privacy, autonomy, and dignity, ***Show appreciation*** for the value of diversity and multi-ethnicity, ***maintain*** 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.

Show 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, ***divide*** labor and ***ensure*** both effectiveness and homogeneity among the members, and across all related sectors, using good communication skills.

Demonstrate work ethical habits of punctuality, altruism, reliability, diligence, flexibility, adaptability, humility, trustworthiness, and ***present*** evidence of responsibility towards the institution and public.

Domain 2: Basic Science, Clinical Skills, Patient Care, and Health Promotion

Demonstrate detailed knowledge of the human body structure, function, and underlying normal life mechanisms at the system, organ, tissue, cellular and molecular levels, ***integrate***, and ***explain*** the scientific structural (anatomical), functional (physiological, biochemical), morbid (microbiological, pathological), and therapeutic (pharmacological) background related to the problems.

Discuss the role of each of the developmental, genetic, microbiologic, autoimmune, metabolic, toxic, neoplastic, degenerative, and traumatic causes of disease, ***describe*** the structural and functional alterations caused by these factors, and ***outline*** preventive and public health measures.

Take detailed medical history and ***perform*** physical examination according to the standard scheme and recording vital signs according to the prescribed procedures.

Request investigations relevant to pediatric, obstetric, gynecologic, medical, and surgical decision-making, ***reach*** a diagnosis or ***suggest*** an appropriate differential, and ***manage*** common conditions in children and adults to relieve pain and prevent complications.

Obtain samples from patients in the proper and timely manner and in a professional way, and ***administer*** or ***give*** medications timely and efficiently, ***demonstrate*** the skills of interpreting common findings of laboratory diagnostic tests of urine, blood and stools and other body fluids or tissues, and ***detect*** alterations in normal parameters.

Outline the physical bases of diagnostic modalities: molecular biology and imaging, and ***discuss*** the biochemical and morphological changes in emergencies, trauma, and complications of chronic illnesses.

Diagnose and ***manage*** cases of endemic and epidemic diseases, and other health problems prevalent at the level of the individual, family, or society, *with special emphasis* on the nutritional and environmental problems, common in both developed and developing countries, and ***play*** an active role in health promotion.

Manage emergency, terminal, and intensive care, and ***decide*** and ***act*** promptly on cases needing referrals to specialized centers or personnel.

Domain 3: Social Accountability, and Informatics

Accepts to work in all settings according to community needs, ***act*** to improve health service delivery systems both quantitatively and qualitatively, and ***encourage*** community participation in planning and providing suitable solutions, recognizing the community beliefs, ethics, and traditional practices., ***Continue*** to consider elements of efficiency, costing, and economic implications in his/her diagnostic and therapeutic choices.

Administer a health "unit" or "center" efficiently according to scientific, medical, statistical, economic, and legal aspects

Use computer efficiently in word processing, statistics, graphics, Learning Management Systems, Open Educational Resources, and ***connect*** with a worldwide network of his/her profession to achieve success in other objectives of his/her career.

Domain 4: Research, Career Ambitions, and Quality and Evidence-based Practice

Carry out health or health-related research, alone or with a health team, using scientific methods known in such activities.

Acquire the skills of teaching, and independent learning from the medical sources and communicate 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

Acquire postgraduate qualification 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.

Apply quality assurance and improvement, and ***show awareness*** to risk management in patient consent and records and legal compliance.

Apply the principles of evidence-based practice, in patients, management, and research.

CURRICULUM MODEL AND PHASES

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 ***PROB-***

LEM-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) problembased 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 1/5th of the timetable, (4) practical sessions (laboratory, clinical) not less than 1/4th of the curriculum timetable, (5) Small bedside teaching, (6) Clinical demonstrations, (7) skill laboratory (weekly) sessions, (8) lectures -not more than 1/3rd 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).

TIMETABLE

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 ELECTIVE courses, all during the End-of-Year vacation.

FIRST YEAR:

Semester 1 [18 CHs- 18 weeks]

#	COURSE TITLE	CODE	DURATION [WEEKS]	CREDIT HOURS (T+P)*
0	Orientation	-	1	0
1	English Language 1	ME – ENG – 113	11	3 (3+0)
2	Computer Science 1	ME–COMP– 116	11	2 (1+1)
3	Introduction to Medicine and Medical Education	ME-EDU – 114	2	2 (1+1)
4	Physics for Medical Equipment and 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)
			18	18

*T: Theory, P: Practical

Semester 2 [21 CHs- 18 weeks]

#	COURSE TITLE	CODE	DURATION [WEEKS]	CREDIT **HOURS (T+P)***
1	English Language 2	ME-ENG- 123	12 Long	3 (2.5+.5)
2	Computer Science 2	ME-COMP-124	12 Long	2 (1+1)
3	Biostatistics	ME –STAT -117	11 Long	2 (1+1)
4	Behavioral Science	ME-BEHAV-128	11 Long	2 (2+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)
			18	21

*T: Theory, P: Practical

SUMMER 1: ELECTIVES:

1. Health quality: 2 CHs
2. Management and leadership: 2CH

SECOND YEAR:

Semester 3 [24 CHs- 19 weeks]

#	COURSE TITLE	CODE	DURATION [WEEKS]	CREDIT **HOURS (T+P)***
1	Professional Skills 1	ME-SKILL-211	18	2 (0.5+1.5)
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)
			18	24

*T: Theory, P: Practical

Semester 4 [20 CHs- 18 weeks]

#	COURSE TITLE	CODE	DURATION [WEEKS]	CREDIT **HOURS (T+P)***
1	Professional Skills 2	ME-SKILL-221	18	2 (1+1)
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)
			18	20

*T: Theory, P: Practical,

SUMMER 2: ELECTIVES:

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

THIRD YEAR:

Semester 5 [20 CHs- 18 weeks]

#	COURSE TITLE	CODE	DURATION [WEEKS]	CREDIT HOURS (T+P)*
1	Professional Skills 3	ME-SKILL-311	18	2 (1+1)
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)
			18	20

*T: Theory, P: Practical

Semester 6 [18 CHs- 18 weeks]

#	COURSE TITLE	CODE	DURATION [WEEKS]	CREDIT HOURS (T+P)*
1	Professional Skills 4	ME-SKILL-321	18	2 (1+1)
2	Head and Neck	ME-HAN-322	3	2 (0+2)
3	Nervous System and Special	ME-CNS-323	7	8 (4+4)
4	Tropical Medicine	ME-TROP-324	3	2 (1.5+0.5)
5	Clinical Pharmacology	ME-CPHARM-325	3	4 (4+0)
			18	18

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

SUMMER 3 ELECTIVES:

1. Scientific writing: 2CHs
2. Medical informatics: 2CHs
3. Addiction medicine: 2CHs

FOURTH YEAR:

Semester 7 [20 CHs- 18 weeks] Group (A)

#	COURSE TITLE	CODE	DURATION [WEEKS]	CREDIT HOURS (T+P)*
1	Internal Medicine	ME-MED-411	12	12 (4+8)
2	Emergency Medicine	ME-MER-412	2	4 (2+2)
3	Dermatology	ME-DERM-413	2	2 (1+1)
			18	18

*T: Theory, P: Practical

Semester 8 [20 CHs- 18 weeks] Group (B)

#	COURSE TITLE	CODE	DURATION [WEEKS]	CREDIT HOURS (T+P)*
1	General Surgery	ME-SURG-421	9	12 (4+8)
2	Orthopaedics	ME-ORTOP-422	3	4 (2+2)
3	Ophthalmology	ME-OPTAL-423	2	2 (1+1)
4	Ear, Nose and Throat	ME-ENT-424	2	2 (1+1)
			18	20

*T: Theory, P: Practical

SUMMER 4 ELECTIVES:

1. British and American professional examinations: 2 CHs
2. Sports medicine: 2 CHs

FIFTH YEAR:

Semester 9 [19 CHs- 18 weeks] Group (C)

#	COURSE TITLE	CODE	DURATION [WEEKS]	CREDIT HOURS (T+P)*
1	Family Medicine	ME-FAM-513	2	3 (1+20
2	Psychiatry	ME-SYC-512	3	4 (2+2)
3	Obstetrics & Gynecology	ME-OBGYN-511	11	12 (4+7)
			18	19

*T: Theory, P: Practical,

Semester 10 [22 CHs- 18 weeks] Group (D)

#	COURSE TITLE	CODE	DURATION [WEEKS]	CREDIT HOURS (T+P)*
1	Pediatrics	ME-PED-521	10	11 (4+7)
2	Forensic Medicine	ME-LAW-522	2	2 (1+1)
3	Medical Professionalism & Communication skills	ME-Prof-514	2	2 (2+0)
4	Health Economics and Hospital Management	ME-HM-523	1	2 (2+0)
5	Radiology and Imaging	ME-RAD-414	1	2 (2+0)
6	Rural Residency	ME-RUR-524	2	3 (0+2)
			18	22

,T: Theory, P: Practical*

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

Important: Detailed specific objectives can be seen in the Medical Curriculum Manual. A clerkship booklet is provided to students in the first session in the 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.

COURSE OUTLINE

FIRST YEAR

Title	Code	Semester/Duration	Credits
ENGLISH LANGUAGE 1 & 2	ENG-113, 123	1& 2 /longitudinal	3CHs each

The sources of health information in the World are still 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 and abroad. The general objectives of this course include: (1) Pronounce correctly the medical terns, including those related to health services. (2) Read correctly and shows an understanding of texts from medical books. (3) Express himself/herself in good English, career ambitions, present problems in health, and current attempts at management.

Title	Code	Semester/Duration	Credits
COMPUTER SCIENCE 1 & 2	COMP-116, 126	1& 2 /longitudinal	2CHs each

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. The general objectives of this course include: (1) Be familiar with the parts of the computer (2) able to use word processing, spreadsheet, and presentation program (3) Add or remove programs.

Title	Code	Semester/Duration	Credits
INTRODUCTION TO MEDICINE AND MEDICAL EDUCATION	ME-EDU-114	1 / 2 weeks	2CHs

This is a two-week block, which focuses on the concept of health; health care delivery system; the role of physician in health care; the role of other professional and administrative staff; priority health problems. It emphasis on concepts and principles of learning; adult learning; student-centered and problem-based learning; instructional techniques; student assessment methods; holistic approach; interdisciplinary and partnership concepts; curriculum development, program evaluation and leadership. The general objectives are 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.

Title	Code	Semester/Duration	Credits
PHYSICS FOR MEDICAL EQUIPMENT AND INVESTIGATIONS	ME-PHYS-115	1 / 2 weeks	2CHs

This is a two-week course focus on the basic principles of general physics and its importance in understanding certain mechanism that take part in the human body, and also, the technical background of many medical equipment. Considering its proper maintenance, patient's and worker's safety. These include physical chemistry, gas laws, physics of light and sound, and radiation. General objectives of this course include: (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.

Title	Code	Semester/Duration	Credits
HUMAN BIOLOGY	ME-HUBIO-120	1/ 3 weeks	2 CHs

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 objectives of this course include: (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.

Title	Code	Semester/Duration	Credits
GENERAL HISTOLOGY	MEHIST-121	1/2 weeks	2 CHs

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. This 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.

Title	Code	Semester/Duration	Credits
BASIC BIOCHEMISTRY	ME-BIOCH-118	1 / 3 weeks	2CHs

A two-week block includes: (1) structure of essential macromolecules. (2) biological molecules which play important biomedical roles. (3) Different types of carbohydrates. (4) physical and chemical properties of carbohydrates, proteins and lipids. (5) Classification of amino acids,

polypeptides and proteins. (6) the role of three-dimensional structure of proteins in protein function. (7) the nature of catalysts and enzymes and their roles in chemical reactions in the living cells. (8) properties of enzymes and their classification. (9) the differences between simple, complex and derived lipids and their biological importance, (10) the nitrogenous bases: purine and pyramidine, (11) types of molecules of nucleic acids, (12) in vitro distinction between the different types of carbohydrates, (13) in vitro detection of carbohydrates and amino acids in given material.

Title	Code	Semester/Duration	Credits
INTRODUCTION TO MEDICAL ETHICS	ME-ETHIC 226	1 / 2 weeks block or long.	2CHs

This is a two-week (2CHs) course (block or longitudinal) on medical ethics highlights the 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 issue that control dealing with a humans. Objectives of this course include (1) Hippocrates Oath, Islamic Codes of medical practice, SMC Oath, (2) good medical practice, (3) ethics of research and publications, (4) professional relationships.

Title	Code	Semester/Duration	Credits
BIOSTATISTICS	STAT-117	2 / 2 weeks	2CHs

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).

Title	Code	Semester/Duration	Credits
BEHAVIORAL SCIENCE	BEHAV-119	2 / 2 weeks	2CHs

A three-week block introduces students to behavioural sciences and 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.

Title	Code	Semester/Duration	Credits
GENETICS AND MOLECULAR BIOLOGY	MEGENT119	2 / 2 weeks	2CHs

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. 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.

Title	Code	Semester/Duration	Credits
INTRODUCTION TO BIOINFORMATICS	ME- BIOINFO- 129	2 / 2 weeks	2CHs

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. The objective of this course 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 taught how they apply to many of the basic bioinformatics methods that are of common use in the field.

Title	Code	Semester/Duration	Credits
MAN, AND HIS ENVIRONMENT	ME-ENV-127	2 / 3 weeks	2CHs

A 3-week course on the inter-relation between Man's internal and external environments, The course cover: (1) basic concepts of internal physiologic activities, (2) body fluids, (3) acid-base balance, (4) biological membrane, (5) body systems (respiratory, gastrointestinal, nervous etc..) exposed to environment, (6) impact of environment on health, (7) health consequences of exposure to potential environmental hazards (physical, chemical and biological), (8) multi-disciplinary approach to environment, (9) the role of the international organizations interested in environmental protection, (10) principles of epidemiology, (11) biological spectrum of environmental diseases, endemic and epidemic.

Title	Code	Semester/Duration	Credits
GROWTH AND DEVELOPMENT	ME-GROW-126	2 / 3 weeks	2CHs

This is a three-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. The course aim is to facilitate learning about the process of fertilization, embryological development, intrauterine growth and the physiology of pregnancy. Growth and development during infancy and early childhood, with special emphasis on nutrition and immunization. It also an aims to guide the students towards the adolescent period, 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.

Title	Code	Semester/Duration	Credits
IMMUNOLOGY	ME-IMM-216	2 / 3 weeks	2CHs

This is a 2-week block, on the structural details of the structure and anatomy, functional aspects of immune system, Molecules involved and steps of activation in the various immunological reactions, diseases of the immune system in terms of; pathogenesis, clinical presentation and diagnostic methods. The objectives of this course include: (1) identifying 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.

Title	Code	Semester/Duration	Credits
MEDICAL ENTOMOLOGY AND PARASITOLOGY	MEPAR-125	2 / 3 weeks	2CHs

This is a three-week 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 affect 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.

SECOND YEAR

Title	Code	Semester/Duration	Credits
PROFESSIONAL SKILLS 1, 2, 3, 4	ME-SKIL-211, 221, 311, 321	3 -7 / longitudinal	2CHs each

A 2-hour weekly session during semesters 3-4 & 5, includes: (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 arter-

ies, and accurately take pulse, blood pressure. (3) examine venous blood and recognize normal blood cells, basic blood tests for respiratory disease, safety measure in blood taking, administering IV fluids, (4) prepare sputum for detection of mycobacteria, (5) interpret a normal PA chest x-ray, and recognize pneumonia, tuberculosis, and lung mass (6) interpret a normal ECG and that of myocardial infarction, (7) basic life support skills.

Title	Code	Semester/Duration	Credits
PRINCIPLES OF DISEASE-1	ME-DIS-212	3 / 3weeks	3 CHs

A three-week-block on general microbiology, its main objective is to provide students with sufficient knowledge of basic concepts of microbiology with some inputs from molecular biology and to correlate pathologic processes with signs and symptoms of infection, and understand the mechanism of disease (pathogenesis) and, independently, think of the methods of prevention of disease. The course contents 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.

Title	Code	Semester/Duration	Credits
PRINCIPLES OF DISEASE- II	ME-DIS-213	3 / 3weeks	3 CHs

A Three-week block on general pathology, its objectives are: (1) to 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. (4) Understand the mechanism of disease (pathogenesis) and, independently, think of the methods of prevention of disease. Course contents 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 and neoplasia.

Title	Code	Semester/Duration	Credits
BASIC PHARMACOLOGY	ME-DIS-212	3 / 2weeks	3 CHs

A 2-week (3 CHs) block course, 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.

Title	Code	Semester/Duration	Credits
BLOOD AND LYMPH	ME-HEM-316	3 / 3weeks	3 CHs

This is a three-week block module that introduces: (1) hemopoiesis, (2) normochromic and 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) the spleen, (8) hematologic malignancies: (a) acute leukemias, (b) chronic myeloid leukemia, (c) chronic lymphoid leukemia, (d) myelodysplasia, (e) Hodgkin's and non-Hodgkin's lymphomas, (f) multiple myeloma, (g) myeloproliferative disorders, (9) aplastic anemia and bone marrow failure, (10) platelets, blood coagulation and hemostasis, (11) Bleeding disorders, (12) coagulation disorders, (13) thrombosis and anti-thrombotic therapy, (14) blood transfusion, and pregnancy and neonatal hematololgy.

Title	Code	Semester/Duration	Credits
CARDIOVASCULAR SYSTEM	ME-CVS-214	3 / 4weeks	5 CHs

This is a four-week block module on the structure, functions and disorders of the heart and blood vessels. It includes: (1) morphology of the heart, (2) its blood supply, (3) various peripheral blood vessels, (4) structure of cardiac muscle, contraction of cardiac muscle, (5) electrical activity of the heart and normal ECG tracing, (6) cardiac cycle and cardiac output, (7) blood pressure regulation, (8) hypertension, (9) coronary arteries and ischemic heart disease, (10) rheumatic fever and valvular heart disease, (11) heart failure, (12) cardiomyopathies, and (13) essential drugs used in cardiovascular disease.

Title	Code	Semester/Duration	Credits
RESPIRATORY SYSTEM	ME-RES-213	3 / 4weeks	5 CHs

This is a four-week block module, includes: (1) describing the anatomy of the thoracic cage, muscles, diaphragm, upper and lower respiratory tract, 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 disease, respiratory pathogens, respiratory infections, (4) skills of taking history and performing physical examination to elicit physical signs, prepare a list of differential diagnosis and suggest suitable investigations, (5) given one of the following problems/conditions: pneumonia, foreign body inhalation, bronchial asthma, pleural effusion, pneumothorax, tuberculosis, mediastinal masses, ca bronchus. (6) role of inherited, environmental and occupational factors in respiratory disease.

Title	Code	Semester/Duration	Credits
PRIMARY HEALTH CARE	ME-PHC-215	2	2

This is 2-week block module. 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 in order to understand the health problems and help the local people and authorities by suggestions and involvement in solving them. The objectives of this course are: (1) familiarize students with 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) 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

Title	Code	Semester/Duration	Credits
MUSCULOSKELETAL SYSTEM	ME-MSK-223	4/4 weeks	4 CHs

This is a four-week block module, on: (1) the structural and functional details of bones, muscles, nerves and joints, (2) physiology of excitable tissues, (3) processes of muscle contraction, (4) disruption in continuity of bone and methods of restoration of bone function, (5) complications of bone fractures, (6) calcium metabolism, (7) bone infections, (8) inflammation and degeneration in joints, (9) bone and muscle tumors, (10) living and imaging anatomy of bony landmarks of musculoskeletal system, (11) examination skills of musculoskeletal system, (12) musculoskeletal pain, and (13) essential drugs used in musculoskeletal disorders, road traffic accidents and their impact on individual, family and community (outline).

Title	Code	Semester/Duration	Credits
NUTRITION AND METABOLISM	ME-NUT-224	4/4 weeks	4 CHs

This is a four-week block module that helps students understand the: (1) biochemical and physiological basis of nutrition, (2) food substances and supplements including vitamins, (3) breast feeding, (4) nutritional requirements, (5) nutritional disorders in infancy and childhood including malnutrition, (6) deficiency of vitamins and certain other substances resulting in disease,(7) diagnosis and management of nutritional disorders, diabetes mellitus and hyperlipidemias, with particular reference to those occurring in the Sudan.

Title	Code	Semester/Duration	Credits
GASTROINTESTINAL SYSTEM	ME-GIT-225	4/4 weeks	6 CHs

This is a four-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 mas-

tication, 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.

Title	Code	Semester/Duration	Credits
BASIC EPIDEMIOLOGY	ME-EPI-312	4 / 2weeks	2 CHs

This two- week block in semester 4 includes :(1) concept of epidemiology (2) theoretical studies on health system research, (3) the socioeconomic, psychological, behavioural and environmental factors related to health, and epidemiology of disease (4) determinants of health,(8) the concept of screening and its role in health promotion and disease prevention,(9)demographic characteristics of Sudan, (10) and the application of epidemiology in disease process with respect to person, place and time.

THIRD YEAR

Title	Code	Semester/Duration	Credits
RESEARCH METHODOLOGY	ME-SEARCH-227	5 / 2weeks	2 CHs

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.

Title	Code	Semester/Duration	Credits
GRADUATION PROJECT	ME-EPID-215	5 / 2weeks	3 CHs

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 fieldwork, data management, data analysis and drafting reports. The outcome of these three weeks give idea about the first research draft. Each group of 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 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.

Title	Code	Semester/Duration	Credits
URINARY SYSTEM	ME-URO-313	5 / 5weeks	5 CHs

This is a five-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.

Title	Code	Semester/Duration	Credits
ENDOCRINE SYSTEM	ME-ENDO-315	5 / 3weeks	4 CHs

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.

Title	Code	Semester/Duration	Credits
REPRODUCTIVE SYSTEM	ME-REP-314	5 / 4weeks	4 CHs

This is a four-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.

Title	Code	Semester/Duration	Credits
HEAD AND NECK	ME-HAN-322	6 / 3weeks	2 CHs

This is a three-week-block on the anatomy of the head and neck. The student should: (1) identify the various parts of the skull bones, particularly the cranial cavity and facial skeleton, in-

cluding all sutures and foramina, indicating the structures passing through them, (2) name and locate muscles; their attachments, nerve supply and action, on the skull bones, particularly the muscles of mastication and facial expression, (3) describe the walls, fissures, foramina, notches, and name and identify its contents, particularly the extraocular muscles and nerves, (4) Identify the various parts of the eyeball, and discuss the development, structure and function of each, (5) describe the morphology and structure of the various parts of the nasal cavity and their functions, (6) review the anatomy and histology of the oral cavity, including the salivary glands (7) describe the triangles of the neck and their contents, particularly lymph nodes and thyroid and parathyroid glands, (8) describe the skeleton and soft tissues of the larynx, its extrinsic and intrinsic muscles and their nerve supply and actions, (9) review the parts of the pharynx, its muscles and nerve supply, and (10) the various parts of the ear and their functions.

Title	Code	Semester/Duration	Credits
NERVOUS SYSTEM AND SPECIAL SENSES	ME-CNS-323	6 / 7weeks	8 CHs

This is 7-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 includes: (1) structure of the nervous system and its components, (2) functions of the nervous system components and special senses, (3) common pathological deviations that affect the functions of the nervous system components and consequences of these changes, (4) underlying pathophysiological basis of common neurological and special sense disorders, (5) approach to neurological and special sense problems in a logical sequence, (6) taking appropriate history from, and conduct systematic physical examination on patients with nervous system complaints, (7) performing and requesting tests and investigations necessary in diagnosis of common disorders of the nervous system, (8) Outline clinical management plans for common neurological and special sense disorders, (9) identifying the psychological, social and economic impacts of some common neurological disorders in the community, (10) drugs used in the management of common neurological disorders and (11) rehabilitation of patients with neurological disorders, as individuals and in the community.

Title	Code	Semester/Duration	Credits
TROPICAL MEDICINE	ME-TROP-324	6 / 3weeks	2 CHs

This is a three-week course meant to highlight the importance of tropical diseases in Sudan and worldwide. In Sudan a patient may have more than one tropical disease or tropical and non-tropical at the same time. This course will be taught in form of problems of common presentations of tropical diseases, its epidemiology, pathogenesis, diagnosis, treatment, prevention and control of tropical diseases, knowledge, skills and attitudes. By the end of this course the student should be able to diagnose, manage and take appropriate preventive measures; (10 in the relations between vectors and hosts, (2) causes of fever in the tropics, (3) malaria, (4) schistosomiasis, (5) leishmaniasis, (6) leprosy, (7) brucellosis and enteric fever, (8) amaebiasis

and giardiasis, (9) meningitis, (10) trypanosomiasis, (11) onchocerciasis, (12) snake bites and scorpion stings.

Title	Code	Semester/Duration	Credits
CLINICAL PHARMACOLOGY	ME-CPHARM-325	6 / 3weeks	4 CHs

A three-week block during semester 6, to include(1) definition of a drug, (2) development of a drug, (3) drug absorption and pharmaco-dynamics and kinetics, (4) rational use of drugs in the management of emergency and common problems, including drug prescription for common diseases: rhinitis, sinusitis, laryngitis, bronchitis, pneumonia, pulmonary TB, (5) interaction between drugs and of genes with drugs for example glucose-6 phosphate dehydrogenase deficiency and sulphonamides and antimalarials, (6) clarify interrelationship between bacterial infections, inflammatory mediators, anti-inflammatory drugs and antimicrobial drugs, (7) effects of morphine, (8) clinical uses and side effects of aspirin, paracetamol, and non-steroidal anti-inflammatory drugs, (9) 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, anticholinestrases, sympathomimetics and beta blockers, study of anti-hypertension, anti-diabetic and lipid-lowering drugs.

PHASE THREE

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 t***
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, in-

cluding 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.

IMPORTANT:

Detailed specific objectives can be seen in the Medical Curriculum Manual. A clerkship booklet is provided to students in the first session in the 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.

FOURTH AND FIFTH YEAR (SEMESTER 7-10)

Title	Code	Semester/Duration	Credits
INTERNAL MEDICINE	ME-MED-411	7,8,9 or 10 / 12 weeks	4 CHs

This is a 12 week (12 CHs) -block, which is integrated with longitudinal clerkships in emergency medicine, includes: (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.

Title	Code	Semester/Duration	Credits
EMERGENCY MEDICINE	ME-MER-412	7,8,9 or 10 / 3weeks	4 CHs

A three-week block during medical clerkship semester designed to contain common medical emergencies seen in Emergency Department, mostly undifferentiated cases, that require life-saving management including: (1) prioritization, (2) resuscitation and stabilization, (3) simultaneous management of more than one patient, (4) appropriately-focused history and physical examination, (5) working differential diagnosis (6) quick investigations, (7) courageous attitude, (8) adequate basic clinical skills, (9) organization skills and documentation habits, (10) recognition of importance of pre-hospital or onsite emergency care, (11) psychological care, ethical issues in emergency. Major emergency conditions include: (1) trauma resuscitation, (2) poisoning, (3) cardiac dysrhythmias, (4) myocardial infarction, (5) epilepsy and seizures, (6) coma, (7) status asthmaticus, (8) urine retention, and (9) acute abdomen. The essential skills are: (1) basic life support (BLS), (2) advanced cardiac life support (ACLS), (3) venipuncture, (4) intravenous lines, (5) arterial puncture, (6) local anesthetic infiltration, (7) urinary catheter insertion, (8) application of bandage, splints and casts, and (9) wound suturing.

Title	Code	Semester/Duration	Credits
DERMATOLOGY	ME-DERM-413	7,8,9 or 10 / 3weeks	4 CHs

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 colour, texture and thickness, (2) outline of the basics of dermatologic terminology, (3) basic clinical skills to diagnose and suggest management for common skin problems.(4) health promotion, and protection, prevention, treatment, rehabilitation and followup of skin problems.. (5) structure, function and pathophysiological processes of skin conditions.

Title	Code	Semester/Duration	Credits
GENERAL SURGERY	ME-SURG-421	7,8,9 OR 10 / 9 WEEKS	12 CHS

A nine-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 ERM407, (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.

Title	Code	Semester/Duration	Credits
ORTHOPEDICS	ME-ORTOP-422	7,8,9 OR 10 / 3 WEEKS	4 CHS

A three-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 bony parts in x-rays, bone metabolism, and pathophysiological bases of common orthopedic problems, (2) taking adequate history of trauma and chronic 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 accidents 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) diagnosis and outline of subsequent steps in the management of back pain and spinal injuries, (7) outline mechanical hip, knee and other joint disorders, a limping child, peripheral nerve injuries, congenital dislocation of hip, (8) identification of lytic or sclerotic bone lesions in an x-ray, (9) essential drugs used in orthopedic problems, (10) rehabilitation after orthopedic disease or fracture, and (11) neoplastic bone lesions..

Title	Code	Semester/Duration	Credits
OPHTHALMOLOGY	ME-OPTAL-423	7,8,9 OR 10 / 2 WEEKS	2 CHS

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 refraction tests, and request the necessary investigation, (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 disease, abnormal ocular mobility, (5) the use of the ophthalmoscope, and (6) essential drugs used in ophthalmology.

Title	Code	Semester/Duration	Credits
EAR, NOSE AND THROAT	ME-ENT-424	7,8,9 or 10 / 2 weeks	2 CHs

A two-week block, just after or in integration with the general surgery clerkship semester, addressing clinical activities in the ENT department, such as: (1) taking history and performing examination on ENT patients, (2) using knowledge of basic sciences, pathophysiological processes to explain disorders, (3) use clinical sciences and skills, and investigations to reach differential diagnosis, and (4) recommend or observe management done by senior members of the ENT health team. Details of disorders include: (1) common cold, (2) sinusitis, (3) tonsillitis, (4) laryn-

gitis, (5) otitis media, and (6) neoplasia, (7) recognize the various caused of hearing loss, and (8) carry out proper timely referral to specialist. The skills include: (a) examination of the mouth, (b) use of auroscope and laryngoscope in examination of the ear and larynx, and (c) recognize an audiology machine and interpret results.

Title	Code	Semester/Duration	Credits
FAMILY MEDICINE	ME-FAM-513	7,8,9 OR 10 / 2 WEEKS	3 CHS

This two-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.

Title	Code	Semester/Duration	Credits
PSYCHIATRY	ME-SYC-512	7,8,9 OR 10 / 3 WEEKS	4 CHS

A three-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 patients emotional responses and family concerns on raising certain in-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 outline necessary 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, (8) disorders like, dementia, delirium, psychoses, human sexuality problems, (9) essential drugs used in psychiatric practice.

Title	Code	Semester/Duration	Credits
OBSTETRICS & GYNECOLOGY	ME-OBGYN-511	7,8,9 OR 10 / 11 WEEKS	12 CHS

During the 11-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.

Title	Code	Semester/Duration	Credits
PEDIATRICS	ME-PED-521	7,8,9 OR 10 / 10 WEEKS	11 CHS

A ten-week continuous block, contents 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 form child/adolescent or their immediate care giver, perform and record roper 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.

Title	Code	Semester/Duration	Credits
FORENSIC MEDICINE	ME-LAW-522	7,8,9 OR 10 / 2 WEEKS	2 CHS

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.

Title	Code	Semester/Duration	Credits
MEDICAL PROFESSIONALISM & COMMUNICATION SKILLS	ME-PROF-514	7,8,9 OR 10 / 2 WEEKS	2 CHS

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.

Title	Code	Semester/Duration	Credits
HEALTH ECONOMICS AND HOSPITAL MANAGEMENT	ME-HM-523	7,8,9 OR 10 / 1 WEEKS	2 CHS

A two- credit-hour (one week) 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.

Title	Code	Semester/Duration	Credits
RADIOLOGY AND IMAGING	ME-RAD-414	7,8,9 OR 10 / 1 WEEKS	2 CHS

A two-credit-hour 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 live-threatening emergency situations such as chest pain, acute abdominal pain, trauma/fractures, syncope/comma, bleeding, etc.., and (5) essential drugs and material used in radio-diagnosis and patient care while in the imaging department.

Title	Code	Semester/Duration	Credits
RURAL RESIDENCY	ME-RUR-524	7,8,9 OR 10 / 2 WEEKS	3 CHS

A 2-week (3 CHs) course integrates the clinical and professional training of medical students within the rural community setting. Students need to spend at least two weeks in a rural hospital and its catchment area to (1) understand responsibilities of health professions, (2) the role of doctor as a health team leader, (4) the common problems that face a doctor in performing his/her job and how he overcomes them, (5) description of the different types of health care levels, (6) adress the community problems and (7) design appropriate intervention