KILIMANJARO CHRISTIAN MEDICAL UNIVERSITY COLLEGE

(A Constituent College of Tumaini University Makumira)

FACULTY OF MEDICINE

REVISED CURRICULUM FOR THE DEGREE OF DOCTOR OF MEDICINE
(MD CURRICULUM)

UQF LEVEL 8
FIVE YEAR PROGRAMME

March, 2018
TABLE OF CONTENTS
1. Institutional Profile:

1.1 **Name of institution:**
Kilimanjaro Christian Medical University College

1.2 **Cluster of institution:**
Non autonomous College

1.3 **Nature of Provider:**
Private (private, public, private public partnership)

1.4 **Programme host department:**
Faculty of Medicine

1.5 **Head of Department and his/her contacts:**
Dean, Faculty of Medicine, P. O. Box 2240, Moshi, Phone: +255-27-27536161

Programme Details

2.1 **Proposed programme title:**
Doctor of Medicine

2.2 **Programme Cluster:** Medicine, Veterinary and allied Health Sciences

2.3 **Programme sub-field:**
Medicine

2.4 **UQF level:**
Level 8

2.5 **Duration:**
5 years long, 10 semesters with 600 credits.
2.6 Program Status:

Full time

2.7 Mode of delivery:

Face to Face delivery

2.8 Location of the delivery:

KCMUCo & KCMC along the Sokoine Road

2.9 Proposed intake numbers:

200 students per year

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<th>2019</th>
<th>2020</th>
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2.10 Entry Requirements/Qualification:

The Faculty of Medicine offers a programme for the award of Doctor of Medicine (M.D) degree of the Tumaini University. The college has put in place minimum entry qualifications as follows:

Direct Entrants:

a. Ordinary Level Secondary Education Certificate with three credits or five passes in biology, chemistry and physics/mathematics

b. Advanced level Secondary School Education certificate with three principals with a “C” in Chemistry and Biology and at least “D” in Physics and a minimum point aggregate of 8 points.

Entry under Equivalent Qualifications:


b. A Diploma in Clinical Medicine passed at B+-level or above or a GPA of 3.5 from an approved and recognized institution by TCU or NACTE or holders of first degree or its equivalents majoring in Biology, Zoology or Chemistry from an approved and recognized institution by TCU or NACTE OR.

c. BSc (Lower second) majoring in Physics/Mathematics, Chemistry, Biology/Zoology.
d. At least two years continuous working experience intern experience inclusive.
e. Relevant Advanced level Secondary School Education certificate is an added advantage.

2.11 Nature of Practical training or field work attached to programme

The students will attend practical clinical training at KCMUCo and will have internal and external rotation for a period of 3 years

Students will use the entire 7th semester of their study to examine a research topic in more depth in a scientific manner. The topic can stem from (different medical fields) or (community based activities) after which a written report will be submitted.

Practical training will include:

a) Patients assessment on bedside teaching (History taking, Physical Examination)
b) Outpatient and inpatient care
c) Laboratory Skills
d) Pathology Skills
e) Emergency Medicine and Care
f) Radiological and imaging Skills
g) Therapeutic Skills

2.12 List of other approved programmes in the host department/faculty/college/school:

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<th>S/N</th>
<th>Programme name</th>
<th>Date &amp; Year Approved</th>
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3 Rationale & Justification for Review of Medical Doctor curriculum:

3.1 Rationale & Justification in general

The five-year program, training medical doctors, will provide the trainees with the educational and practical experience that will permit them to deliver highly qualified care as general practitioners. The extensive knowledge on diseases and skills will enable a graduate to contribute in both curative and preventive aspect of disease.

Tanzania Health care manpower is insufficient to address the demands of the disease burden. Most Health care is delivered by non-Doctors workforce and in 2002 they were only 822 qualified doctors compared to 29,722 other health care workers such as Clinical Officers and Assistant Medical Officers. Tanzania has the third highest ratio of population per doctor (47,445 persons per one Doctor) in the world, so there is a need to train more doctors to meet the leadership in health care delivery, training future generations of health care providers and perform medical research.

3.2 Consultation process

The process of curriculum review involved consultation from various stakeholders. Consultation process included liaison with employers and relevant professional bodies, internal and external collaborators, Alumni and ongoing students with the purpose of ascertaining the relevance and employment potentials for the graduates. (Attachment of evidence)

3.3 Program objectives and philosophy

Taking into consideration that Medicine is a caring humanitarian profession, the MD curriculum has been designed to produce graduates with adequate knowledge and skills to manage health problems in their locality and globally. The program is design from a learner’s perspective, that combines general and customized clinical education. The comprehensive, advanced curriculum combines established theoretical concepts with practical applications. It is designed to integrate clinical management theories with workplace applications that provide students with the evidence based training, intellectual and analytical skills demanded by current health care needs.
The aim of the MD program is to train medical professionals who combine clinical competence, medical knowledge, and proficiency in inter-personal and communication skills, ability to respond to the psychosocial aspects in healthcare and to keep abreast of new developments in the medical field.

The training will help trainees to acquire theoretical and practical competencies that will enable graduate to offer quality care to the population. This program will also equip students with the necessary skills and competencies to teach juniors and carry out research in different medical field.

The program imparts broad theoretical and practical knowledge, skills and competences in medicine. Specifically, the doctor of medicine training is intended to:

i. To produce medical graduates equipped with the highest possible standard of practical and intellectual skills well suited to the needs of present and future Tanzania society.

ii. To produce medical graduates who are motivated to adapt to rapid changes in the medical practice brought about by new technology and to cope with ever expanding research and vast literature.

iii. To train graduates who are able to show understanding of the ethical basis of medical practice and be able to identify social cultural, psychological and economic factors which influence the health of the individual, family and community.

iv. To train graduates who are able to show ability to communicate with individuals, families and the community. As a member of health team, the graduate should be able to establish inter professional and inter-sectoral relations in order to achieve prescribed goals.

v. A graduate of the College should be sensitive and responsive to community health needs by being able to plan, organize, co-ordinate and evaluate the health needs of individuals, families and the community as well as being capable of implementing primary health care strategy for the community.

vi. Giving high priority in training the general practitioners who are desperately needed by the society.

vii. Since medical education is a life long activity which calls for investing in personal time and resources, graduates should be capable of:
   a. Carry out self evaluation
   b. Self directed learning
   c. Updating ones knowledge and medical practice.

At the end of the course, the graduate should demonstrate the following attitudes in health care delivery.

i. Ethical Behaviour:

ii. Be empathetic to patients, families and the community as a whole.

iii. Be exemplary in self conduct and act as a role model for others.
iv. Respect confidentiality in handling patients’ information.
   a. Be dedicated to work.
   b. Show equal consideration to all patients irrespective of their socio-economic backgrounds.
   c. Be able to identify the difference between a patient suffering from disease and a disease that afflict a patient (i.e. treating patients rather than diseases).
   d. Be sensitive to the impact of illness on families and communities.

v. Maintain appropriate technical standards in health care delivery in keeping with values and priorities upheld by patients and/or communities.

vi. Team work in health care delivery:
   a. Show respect for other professionals in order to achieve intersectional collaboration in health care delivery.
   b. Have ability to listen to others and respect their views.

vii. Response to Community needs.
   a. Respond positively to community needs by being sensitive in listening to the views of members of the communities.
   b. Play a leading role in advocacy for improvement of health for the communities.
   c. Be able to involve communities in planning, implementation and evaluation of health intervention measures in a district.
   d. Ensure equitable provision of health care and resources according to priorities in relation to health needs - Primary Health Care.
   e. Showing sensitivity to costs of health intervention measures.

viii. Self directed learning:
   a. Demonstrate an understanding that medical education is a life long activity which calls for investing personal time and resources.
   b. Be able to educate one-self and carry out self-evaluation.
   c. Be able to update ones knowledge and medical practice skills.

3.4 Exit levels available with respect to UQF description

There will be one final exit in this programme. Candidates will exit at UQF level 8 and will be awarded Doctor of medicine degree, after passing all prescribed courses. The Medical doctor degree will be conferred to candidates who meet all the KCMUCo of The Tumaini University – Makumira requirements in not more than five (5) years after their admission to MD programme. Upon completion of the five years the graduate is expected to undertake an additional sixth year of apprenticeship in an approved institution before being allowed to practice independently.
3.5 Programme expected learning outcomes and its associated teaching/learning activities and assessment criteria (declare to circulate)

Knowledge

i. Be able to Identify health problems of a patient
ii. Be able to identify and interpret social cultural, psychological and economic factors which influence the health of the individual, family and community.
iii. Carry out self evaluation Self directed learning, updating ones knowledge and medical practice.
iv. Be able to solve problems (professional reasoning) that are associated with professional attitudes and working environment in general.

Skills

i. Be able to Practice the ethical basis of medical practice
ii. Communicate with individuals, families and the community. As a member of health team, the graduate should be able to establish inter professional and inter-sectoral relations in order to achieve prescribed goals
iii. Demonstrate problem solving capacity (professional reasoning), associated with clearly identifiable professional attitudes, combined with a range of psychomotor abilities (professional skills) and carry with him/her an integrated information base (professional knowledge)
iv. Writing Research proposals and carry our meaningful research activities

Competence

i. Be able to assess, plan and manage health problems of a patient
ii. To plan, organize, coordinate and evaluate the health needs of individuals, families and the community as well as being capable of implementing primary health care strategy for the community.
iii. Demonstrate competence in the teaching, planning and evaluation of health programs
iv. Demonstrate problem solving capacity (professional reasoning), associated with clearly identifiable professional attitudes, combined with a range of psychomotor abilities (professional skills) and carry with him/her an integrated information base (professional knowledge)
Expected learning outcomes for specific years of Medical doctor program

Years 1 & 2

Knowledge:
The student will have acquired a knowledge and understanding of:

- The basic sciences in relation to medicine health and disease.
- The structure and function of the human body.
- The human relationships in the context of the family, community and society, and the interaction between human beings and their environment.
- An introduction to the identification of need, organization and provision of health care; the economic, ethical and practical constraints.
- The ethical basis and responsibilities of the medical profession.
- To equip the medical students with good grounding in developmental studies and the developmental process and relationships with health care.

Skills
The student will have acquired the essential skills of medicine including:

- Communication skills, both verbally and in writing in relation to individuals and community.
- Self-directed learning skills, Computing skills
- An introduction to laboratory skills.

During year 3 - 5

Knowledge
The above knowledge and understanding will be developed further and will include:

- The application of the basic sciences into the clinical setting
- The disease process, etiology, natural history and prognosis of diseases, both mental and physical.
- The process of pregnancy, childbirth, development and ageing
- The common surgical diseases and conditions.
- The common medical illnesses and conditions
- MCH services, family planning and management of childhood disease.
- The principles of health promotion, disease prevention at an individual and community level.
- The principles of therapy, including the amelioration of suffering and disability, rehabilitation and the care of the dying.
• Making a community diagnosis, prevention and control of communicable disease.
• The organization, management, funding and provision of health care services.
• The legal responsibilities of the medical profession.

Skills

Their skills will be improved and extended further in:
• Obtaining a relevant medical history, assessing symptoms, eliciting physical signs, and arranging appropriate investigations.
• Skills in clinical problem analysis
• Interpreting findings and results to reach a diagnosis.
• Managing patients with common diseases in area of practice.
• Managing medical and surgical emergencies and the critical care of patients.
• Managing emergency situations at a community level.
• Performing simple surgeries and carrying out simple clinical procedures.
• Communication skills with patients, relatives and professional colleagues.
• Managerial, Leadership and Accounting skills.
• Being able to initiate change and absorb challenges of health needs of a community.
• Continuing education and self-learning skills.

During years 3, 4, 5 these objectives will be implemented in a structured progressive manner. **One of the tools to be used for monitoring of experiential learning is departmental clinical log book.**

**Year 3 - Introduction to the clinical areas and communicable diseases**

a. Introductory clinical skills training block for the junior rotations
b. Introduction to theory and practice on the subjects, Internal medicine, Pediatrics, Obs/Gyn and Surgery
c. Introduction to clinical management of infections
d. Health Promotion and communicable diseases in the community
e. Introduction to theory and practice on the subjects ophthalmology, anaesthesia, psychiatry, radiology, clinical laboratory
f. The students will undertake a course in integrated management of childhood illnesses
g. Clinical pathology and clinical pharmacology

**Year 4 - Subspecialty clinical rotations and community health blocks**

a. Introduction to theory and clinical practice in the subjects of psychiatry, orthopedics, urology, ENT, dermatology and STDs, anaesthesia.
b. Will have a course on research methodology
c. Develop a research proposal and conduct medical research
d. Understudy the DMO: understand the organization, management, funding and provision of health care services in the district.

e. Elective Rotation: attachment to a clinical rotation department or to an ongoing health project of interest. This will be done by using a structured protocol.

f. Clinical skills block training in preparation for the senior clinical rotations.

**Year 5 - Taking responsibilities for patient examination, investigations and care**

a. This will be a year of Senior clerkship. The student will be given responsibility to care for patients.

b. Student will guide Junior students. Will do case presentations and management.

c. Attend journal clubs and tutorials.

d. Attend emergency medicine rotation

e. Experience administration, planning and management.

f. Prepare for final examination

4 Programme Management

4.1 Entry Arrangement

4.1.1 Procedure for application:
Advertisement of the programme will be available in the college website, Newspapers, Radio and Television. Brochure will be available at the college and faculty of nursing to advertise the course.

4.1.2 Admission process:
Eligible candidates will apply through KCMUCo. Application forms can be obtained from KCMUCo website (www.kcmuco.ac.tz). Online application

Completed application forms and all necessary supporting documents should be submitted to the admissions office at KCMUCo. Applications with relevant attachments should be addressed to the address below; A copy of financial receipt in respect of application fees paid, Completed application forms with copies of certified certificates and Completed medical examination forms. The academic year begins in the month of October each year (unless otherwise stated).

The Admissions Officer
Kilimanjaro Christian Medical University College,
P.O. Box 2240, Moshi, Tanzania
Tel: +255 (027) 2753616
Fax: +255 (027) 2751351
E-mail: admission@kcmuco.ac.tz
4.1.3 Screening and verification of certificates
Screening of certificates will be made at the college then, submit to TCU for verification.

4.1.4 Registration
Fresh students must register themselves within two weeks from the first day of the orientation week.

All students (including on-going students) must register with the Admissions Office at the first two weeks of every semester or on return from vacation. Students will only be registered upon payment of prescribed fees whose amount shall be determined from time to time. Fees are payable in full at the beginning of the academic year or in two equal installments at the beginning of each semester. Continuing students must complete all registration formalities within two weeks of the beginning of the semester.

4.1.5 Admission policy and admission appeal procedure.
The University is committed to fair, transparent and consistent admissions practices, and it believes that providing constructive feedback about an unsuccessful application will help an applicant to achieve a successful outcome in the future. The University will therefore provide feedback, when requested, to anyone whose application to study at undergraduate or postgraduate level has been unsuccessful. Following the provision of feedback, an applicant will have the right to appeal the selection decision, providing that there are sufficient grounds for an appeal. An applicant who wishes to make a complaint about the application process may do so using the University’s complaints handling procedure. Please note that the complaints procedure cannot be used to challenge an academic decision to refuse an application. The University prefers to deal directly with applicants, and where possible, a request for feedback or the submission of an appeal should be made by the applicant, not by a third party. In cases where a request is submitted by a third party, data protection legislation may prevent the University from releasing information relating to an individual’s application unless the University receives specific written permission from the applicant allowing them to deal with the third party. Should an applicant wish a third party to act on his/her behalf, for example because the applicant is under 16, or has disabilities which would make it difficult for him/her to submit an appeal or complaint directly, the applicant must provide written authorisation, including the name and contact details of the relevant third party.

4.2 Transfer and progression:

4.2.1 Vertical progression- graduate from this programme will be able to join master of medicine programs offered at various universities also other relevant biomedical programmes which he qualifies, e.g. Muhimbili University of health and allied Sciences, CUHAS, Nairobi University, Makerere, Duke University. Also graduate will be able to join Master of Public Health at KCMUCo, MUHAS, and CUHAS etc
4.2.2 Horizontal progression

Not applicable for this programme;

4.2.3 Transfer into programmes
Students from other accredited institution under MD programmes are allowed to transfer their credits into this programme provided that the total credit transferred is not more than 300. And must pass all core courses in this programme and the transfer shall be approved by the Senate and later endorsed by TCU.

4.2.4 Transfer out of the programme
Students undertaking this programme shall be allowed to transfer credit to other institutions of their choice, KCMUCo will issue the student achievement/performance/progress report to enable students’ transferability

4.3 Arrangement for recognition of prior learning

There is no recognition of prior learning in this MD programme.

4.4 Learning assumed to be in place

Direct Entrants:

a. Ordinary Level Secondary Education Certificate with three credits or five passes in biology, chemistry and physics/mathematics

b. Advanced level Secondary School Education certificate with three principals with a “C” in Chemistry and Biology and at least “D” in Physics and a minimum point aggregate of 8 points.

Entry under Equivalent Qualifications:


b. A Diploma in Clinical Medicine passed at B+-level or above or a GPA of 3.5 from an approved and recognized institution by TCU or NACTE or holders of first degree or its equivalents majoring in Biology, Zoology or Chemistry from an approved and recognized institution by TCU or NACTE OR.

c. BSc (Lower second) majoring in Physics/Mathematics, Chemistry, Biology/Zoology.

d. At least two years continuous working experience intern experience inclusive.

e. Relevant Advanced level Secondary School Education certificate is an added advantage.

4.5 Transfer arrangement
In a situation that the student does not complete the programme, transfer of the credits is possible to other universities, which provide a similar programme based on the guidelines given by TCU on Credit Accumulation and Transfer Guidelines. In this regard, universities that may be contacted are such as Muhimbili University of Health and Allied Science (MUHAS), Catholic University of Health and Allied Sciences (CUHAS) and Makerere University (Uganda), and the like.
### 4.5 Normal learning Matrix & Course Matrix

**DOCTOR OF MEDICINE CURRICULUM MATRIX**

#### YEAR 1 SEMESTER 1

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<th>Code</th>
<th>Module/Course</th>
<th>Lecture</th>
<th>Tutorials</th>
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**TOTAL HOURS OF CREDIT IN SEMESTER 1**

|       | 600 | 60  |

#### YEAR 1 SEMESTER 2

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**TOTAL HOURS AND CREDIT IN SEMESTER 2**

|       | 600 | 60  |

#### YEAR 2 SEMESTER 3

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**TOTAL HOURS AND CREDITS IN SEMESTER 3**

|       | 600 | 60  |
### YEAR 2 SEMESTER 4

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**TOTAL HOURS AND CREDITS IN SEMESTER 4**

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### YEAR 3 SEMESTER 5

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**TOTAL HOURS AND CREDITS SEMESTER 5**

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### YEAR 3 SEMESTER 6

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**TOTAL HOURS AND CREDITS FOR SEMESTER 6**

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### YEAR 4 SEMESTER 7

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### YEAR 4 SEMESTER 8

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### YEAR 5 SEMESTER 9

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### YEAR 5 SEMESTER 10

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<td>K8SU</td>
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4.6 Benchmarking and international comparability:

Benchmarking with Muhimbili University of Health and Allied Science (MUHAS), Catholic University of Health and Allied Sciences (CUHAS) and Makerere University (Uganda) in terms of number of years and Clinical skills training and assessment. Also, with University of Duke in research activities.

Benchmarking with Nijmegen University in Clinical Practical Skills training in the laboratory, utilization of peripheral hospital in terms of Clinical Practical Skills Training and Objective Structured Clinical Examination (OSCE), and Mini Clinical Evaluation Exercise (Mini CEX).

4.7 Programme evaluation procedures

(time frame for review -5 years, tracer studies for alumni, annual students evaluation, institution internal self-assessment, external examiners report, quality assessment report)

The relevancy and implementation of the program objectives will be monitored by internal and external examiners. All students will be required to evaluate the modules at the end of each academic year. Furthermore, the implementation of the programme will be reviewed by the staff during the review sessions.

The overall curriculum will be reviewed within three to five years. Any change in this program will be made based on the evaluation findings from stakeholders following TCU and University guidelines. The department and other stakeholders will be responsible for evaluation of the curriculum. Departmental staff will critique the contents in line with the changes observed in medical practise. They will be responsible to carry out research and tracer study to service consumers to identify any gaps that needs to make improvement of the course outline within the curriculum. Any changes should be reported to the academic board. Curriculum review will involve all stakeholders including academic staff, students, service consumers and other stakeholders such as community to make comprehensive changes of the curriculum that could meet the demand of the society.

The departmental staff are responsible to make changes in the curriculum based on the identified gaps, then will forward to academic board for various critiques. Then the curriculum will be presented to the Senate and lastly submit to TCU for Approval.

Students will be given an opportunity to evaluate academic staff and the overall of delivery of the curriculum to the institution. Valid comments will be included in improvement of the services delivered by the department both academic and non-academic activities within the program
5 Assessment Details:

5.1 Programme assessment

Faculty is agreed that student disposal will be at the end of the academic year (academic audit year) except in semester 7 for psychiatry and semester 8 for Community Health.

General guidelines:

BASIC SCIENCES

Subject coordinators will determine modules within the blocks and semesters. The minimum length of a module which has been taught and can be examined is 8 hours. Teaching can be continuous but must not exceed a ceiling of 25 hours without testing.

There should be a minimum of 2 CATs. An end of semester score (ESS) is a summation and averaging of the CATs in that semester.

Behavioural Sciences (Sociology, Anthropology, Psychology, Development Studies) will be taught as modules in the blocks and examined at each end. The scores achieved will be integrated into an examination paper (called Behavioural Science) to cover these subjects.

Oral examinations: the faculty committee recommended that in the MD programme there will be no oral examinations.

GRADING SYSTEM

<table>
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<tr>
<th>Percentage range</th>
<th>70-100%</th>
<th>60-69%</th>
<th>50-59%</th>
<th>40-49%</th>
<th>35-39%</th>
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<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
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<td>4</td>
<td>3</td>
<td>2</td>
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<td>0</td>
</tr>
<tr>
<td>Possible compliment</td>
<td>Excellent</td>
<td>Very Good</td>
<td>Good</td>
<td>Fail for supplementary</td>
<td>Fail for supplementary</td>
<td>Fail for supplementary</td>
</tr>
</tbody>
</table>

UTILISATION OF THE GPA SYSTEM:

This will be applicable to basic science subjects in years 1, 2, 3
1. A student scoring a GPA $\geq 2.0$ has passed provided s/he has passed all courses. The pass mark for a course is 50%.

2. According to examination regulations the student having a GPA $\geq 2.0$ qualifies to sit for a supplementary examination in the failed course/s.

3. Failing the supplementary examination will lead to discontinuation from the course.

4. A second supplementary will be allowed only if a new GPA is $\geq 2.3$. This second supplementary will be taken when the course final examinations are next offered.

5. According to the same regulation the student is protected by the GPS of 2.0. It is to be expected that a student with a GPA of 2.0 will have failed in more than one subject.

**CLINICAL YEARS**

**DISPOSAL OF CANDIDATES**

Definition: A pass in individual subjects is a final mark of 50% or above after computing and adding together contributions as follows: CAT 60% and final examinations 40% in the respective subject.

Passing the whole examination means passing all the 6 examinable subjects Obtains a mark of 50% or more means a pass in the subject.

If fails final written examination 45% or above may be compensated by good marks in the clinical examination.

Fails final clinical means fail the subject.

**Fails** < 50% of examinable subjects repeat rotation each failed rotation for 4 weeks and do a supplementary examination, failing again will lead to repeating the whole year or? 6 months in the failed subjects ????

**Fails** 50% or > of the total number of examinable subjects repeats the whole year in all subjects.

(There is still a need to define what to do with students failing psychiatry and community health in year 4)

**MD 1: Semesters 1 & 2**

**Semester 1**

End of semester score = Summation and averaging of CATs

Student disposal = counsel unsatisfactory performers after CATs. The fate of the student will be determined at end of semester 2.
Semester 2

End of semester score = summation and averaging of CATS

Student disposal = counsel unsatisfactory performers after CATs. The fate of the student will be determined at the end of this semester taking into account performances in semester 1 and 2

The end of year university examination:

Objective: the objective for the UE at the end of year 1 is to help with determining the fate of the student.

Format

There will be a University examination (written papers, practicals) structured in such a way that it includes must know materials. The UE will contribute 40% of the marks (contributed by written 25, practical 15 where applicable. Where there are no practical the written examination will contribute 40%)

Cut of points will be determined by suing GPA to select passing and failing students. Cut off points will also serve to discriminate students to be discontinued, those to do supplementary examinations or repeat the academic year

Role of external examiner

The external examiner will go through selected CAT and UE examination scripts of students to assess the examination quality and fairness in marking.

The external examiner will do this in relation to the present curriculum

The external examiner will issue a narrative report on the implementation of the curriculum and conduct of the examinations.

MD 2 Semester 3 & 4

Semester 3
End of semester score = Summation and averaging of CATs

Student disposal = counsel unsatisfactory performers after CATs. The fate of the student will be determined at end of semester 4.

Student disposal = counsel unsatisfactory performers after CATS. The fate of the student will be determined at end of semester 4.

**Semester 4**

End of Semester Score (ESS) = Rumination and averaging of CATs

Student disposal = counsel unsatisfactory performers after CATs. The fate of the student will be determined at the end of semester 4.

The objective of the UE at the end of year 2 is two fold:
   a) As in year 1 to help with determining the fate of the student
   b) To assure the college that students have acquired enough fundamental/overall basic science knowledge before proceeding to the clinical years.

**Format:**

The cumulative ESS will contribute 60% of marks.

There will be university examination (written paper practical) structured in such a way that it includes must know material. The UE will contribute 40% of the marks (contribute by written 25, practical 15 where applicable. Where there are no practical the written examination will contribute 40).

**Pathology and Pharmacology** subjects and CATs examinations in year 2 (including student disposal) will be conducted according to the same principles as outlined for subjects in MD 1. There will be a UE in these 2 subjects.

**MD 3: Semester 5 & 6**

Pathology and Pharmacology subjects and CATs examinations will be treated according to the same principles as outlined for subjects in MD 2
The University Examination at the end of the 3rd year will follow principles as outline for other subjects and UE of MD 2.

**Semester 5**
CPST 1 block marks, contribution to CAT internal medicine year 5, see table 3 below.
ERE for Junior Clinical Rotation (JCR): This will be clinical examination using the MD 3 specific form:

The ERE score will be obtained by adding clinical long case exam 30%
Personal attributes 10% presentations 30% log book performance 30%
These are recorded in a special departmental assessment form.

ESE will consiste of an integrated written 3 hour paper and practical OSCE examination
Format : 1 long essay and 1 short essay question per department. Intergrated 3 hour paper.
OSCE will consist of 4 stations per department with preference for live patients or simulated patients.

ESS will be calculated as follows
ERE/CAT will contributed 60%
ESE 40% (written 15, OSCE 25)
ESS = 60 + 40

**Semester 6**
Infection block assessment score will contribute as CAT mark
Health Promotion block will be assessed by grading the reports aand score contributes to the CAT marks during the UE in Community Health at end of year 4.

**Specialist Rotations – 1**
ERE/CAT: This will be by clinical examination only and assessment will be done by using a standard form which includes assessment of the log book, see form attached (Attitudes etc 10%, presentations 30%, log book 30% , clinical long case exam 30%).

ESE will consist of standard one hour written paper for each department and an OSCE. format : as per revised format using MCQs and SAQs.

ESS will be calculated as follows
ERE/CAT will contribute 60%
ESE 40% (written 15, OSCE 25) ESS = 60 + 40

Score in clinical rotation will contribute to marks at the end of year 5 as CAT marks, see table 3
Student disposal will take into consideration Pathology and Pharmacology using GPA calculation.

Table 1, ESE formats in subspecialty rotations

<table>
<thead>
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<th>OSCE Score</th>
<th>Results will contribute to CAT marks at end of year 5</th>
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<td>IMCI block</td>
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<td>Paediatrics CAT marks</td>
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</table>

MD 4 Semesters 7 & 8

Semester 7

Psychiatry
Psychiatry block, CAT = EBE …..(Year 3 CAT + Year 4 CAT) = 60%
ESE/UE with external examiner end of Semester 7
Written paper 15 Long Case clinical examination 25 (total 40%)

Specialist Rotation – 2
Marks from these rotations will contribute CAT marks to 5th year final examinations results as follows
### Tables 2

<table>
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<tr>
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<tr>
<td>Urology</td>
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<td>Surgery</td>
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<tr>
<td>Skin and STI</td>
<td></td>
<td>Internal medicine</td>
</tr>
<tr>
<td>ENT</td>
<td></td>
<td>Paediatrics</td>
</tr>
</tbody>
</table>

ERE for Specialist rotations. This will be by clinical examination only and assessment will be done by using a standard form which includes assessment of the log book. see form attached (Attitudes etc 10% presentation 30% log book 30%, clinical long case exam 30%)

ESE will consist of a written paper 1 hour paper and practical OSCE examination Format: as per revised format using MCQs and SAQs.

OSCE will consist of 4 stations per department with preference for live patients or simulated patients.

ESS will be calculated as follows

ERE/CAT will contribute 60%

ESE 40% (Written15%, OSCE 25%)

ESS = 60 + 40 = 100

### Semester 8

**Community Health**

The University exam with external examiner will be held at the end of this semester in year 4.

CAT marks will contribute 60% of final results. These will be obtained from graded reports of field projects which are: Health promotion block (year 3)

Research Elective Project and the DMO rotation (year 4)

The final examination will consist of 2 three hour written examination papers to contribute 40%. There will be no separate examination paper in epidemiology and biostatistics but there should be basic questions in the community health papers.
CPST 2 block; End of block marks will contribute to the CAT marks in internal medicine at end of year 5.

**MD 5 Semesters 9 & 10**

**Semester 9**

CATs = ERE SCR 1  
CATs = ERE SCR 2

End of Semester Score = ERE SCR 1 + ERE SCR 2

**Semester 10**

CATs = ERE SCR 3  
CATs = ERE SCR 4

End of Semester Score = ERE SCR 3 + ERE SCR 4

ERE for Senior Clinical Rotations (SCR): This will be by clinical examination only and assessment will be done by using a standard form which includes assessment of the log book,….see form attached (Attitudes etc 10%, presentations 3%, log book 30%, clinical long case exam 30%)  ESE will consist of an integrated written 3 hour paper and practical OSCE examination.

Format: 1 long essay and 1 short essay question per department…integrated 3 hour paper.

OSCE will consist of 4 stations per department with preference for live patients or simulated patients.

ESS will be calculated as follows:

ERE/CAT will contribute 60% (ERE clinical 40, CPST 2, 20)  
ESE 40% (written 15, OSCE 25)  
ESS = 60 + 40
Final examination results will be computed from CAT marks 60%, final exam 40%

**FINAL EXAMINATION**

**Format:**

Written paper 1, 3 hour paper contributes 10%

Long clinical case contributes 15%

OSCE Contributes 10%

Oral contributes 5%

**Table 3: Contributions of CAT marks (please use end of ESS year 3 5)**

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Contributions by</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgery results</td>
<td>General surgery</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Orthopedics 5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Urology 5</td>
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<td></td>
<td>Dental 5</td>
<td>5</td>
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<tr>
<td>Internal Medicine</td>
<td>Internal Medicine</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Infection block</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>CPST 1 + 2 blocks</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Dermatology</td>
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<tr>
<td>Obstetrics/Gynaecology</td>
<td>Obstetrics and Gynaecology</td>
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<td>Clinical Lab</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Radiology</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Anaesthesia</td>
<td>5</td>
</tr>
<tr>
<td>Paediatrics and Child Health</td>
<td>Paediatrics and Child Health</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>IMCI block</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>ENT</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Ophthalmology 5</td>
<td>5</td>
</tr>
</tbody>
</table>

**Abbreviations used**

UE = University Examination; ERE = End of Block Examination; CPST = Clinical
Practical Skills Training; ESE = End of Semester Examination; ESS = End of Semester Score; ERE = End of Rotation Examination; CAT = Continuous Assessment Tests; SCR = Senior Clinical Rotation; JCR = Junior Clinical Rotation; OSCE = Objectively Structured Clinical Examination; GPA = Grade Point Average

2. Examination Formats

2.1 Duration of Examination Papers

Module length/Hours taught including SDL

- 8 hour …………………………… 1 hour paper
- 9 – 16 hours …………………….. 2 hour paper
- 17 or > hour …………………….. 3 hour paper

2.2 Types of Questions

Questions should be integrated incorporating clinical scenarios of the appropriate student year level. Also community applications should be reflected.

a) Multiple Choice Questions, 4 options, one most correct option
b) Short Answer Questions, 4 types were recommended by the coordinators
   i. Fill in the gaps, allowing only a maximum answer length of 2 lines. The question could be of a branching type arising from a common stem, and should be appropriately specific and focuse.
   ii. True or false type of questions
   iii. Matching items from columns of statements
   iv. Labelled diagrams or photographs

2.3 Scoring the answers, Marking

Examiners should show a marking key against each required response

a) MCQs one full mark for each correct answer
b) Fill in the gaps .. maximum of 2 marks for each precisely correct answer, with an option for awarding lesser marks ranging from 0, 0.5, 1.0, 1.5 for wrong or less correct answers.
c) True or False..one full mark for each correct answer, o mark for leaving blank, penalty of 0.5 mark for a wrong guess
d) Matching …one full mark for each correct answer
e) Labeled diagrams …one full mark for each correct answer

2.4 Proportions of Questions in each examination paper

Regardless of the length of the examination, the question types should be of these proportions:
a) MCQs = 50% of the whole paper
b) SAQs all types = 50% of the whole paper. Subject to review in our next meeting, the examiner at this moment has the option to use one, all or any combination of the 4 types of SAQs

2.5 Marking template for MCQs

Coordinators recommended to adopt a marking template for MCQs to simplify marking and reduce workload. This proposal to be worked out further and a design to be produced by Prof. Sam for circulation to the examinations office and other examiners

5.2 Examination general format & examination regulations,

Examinations regulations are controlled by the Deputy Provost for Academic affairs. College examinations are supervised by invigilators drawn from the academic staff appointed by the respective faculties.

Definitions: For the purposes of these Regulations unless the context requires otherwise:

a. A course is that part of a subject described by a coherent syllabus and taught over a specified period A course is designated as one or more units of study. A credit of study will depend on the requirements of the particular course concerned. A course is designated as one or more units of study.

b. An academic year- shall normally be composed of semester which may depend on specific requirements of the course.
c. College Academic Board- is the supreme academic organ at the Constituent College level.
d. Continuous Assessment- is any form of evaluation made during the course of the academic year such as tests, graded practicals, projects and assignments.
e. Special Examinations- are those which after approval by the College Academic Board and the Senate, are administered to candidates who fail to sit for regular examinations for reason acceptable to the Academic Board and the Senate.

f. Supplementary examinations- are those examinations which, subject to approval by the College Academic Board and the Senate, are administered to candidates who fail to obtain a pass in the specified number of units during the academic year.

g. University Examinations- are all those examinations, assessments or evaluations that are considered in determining whether or not a student shall proceed to the following year of study in the Constituent College or qualifies to graduate.

h. Regular University Examinations- are those scheduled examinations at the end of each academic year or as determined by the Senate.

i. A credit of study will depend on the requirements of the particular course concerned.

j. Subject to Constituent College Regulations, all matters concerning University Examination shall be supervised by the Deputy Provost Academic Affairs under the general direction of Provost.

k. The College Academic Board shall have authority in all matters affecting examinations, including the setting, conduct, marking and declaration of results at Constituent College level.

l. The University Senate shall have overall authority in all matters affecting examinations at the University level and the Senate decision in examination matters shall be final.

Exemptions:

a. The College Academic Committee in consultation with the Senate, may grant the Faculty exemption from any of the requirements of these regulations.

b. The College Academic Committee in consultation with the Senate may grant any student(s) exemption from any of the requirements of these regulations.

General examination guidelines

a. Guidelines for University examinations shall be presented through the Faculty Committee and College Academic Committee for approval by Senate

b. Final examinations are controlled by the Deputy Provost for Academic Affairs, and are scheduled during the last two weeks of each semester.

c. Unless the College Academic Committee in consultation with the Senate directs otherwise all courses shall be examined within the year in which they are taken.
d. A student shall not be allowed to sit for a University Examination in a course if he/she has missed 20% or more of the scheduled semester class periods for each course and has not completed all course requirements.

e. The Deputy Provost for Academic Affairs shall publish a list of candidates registered for examinations, at least, two weeks before the beginning of the examinations and shall issue each eligible candidate with an examination number. The list shall be made available to Heads of Department accordingly.

f. Senior Invigilators must ensure that they have registration lists for candidates registered for each paper in the room in which the examination is being taken.

g. Final examinations account for 50% (or more than 50% in some courses) of the final course grade.

h. Coursework grades will be presented to the student by the Faculty Dean or by the respective course coordinator before the end of semester examinations.

i. A student who finds that the declared grades do not match with the scores on his/her assignment/test examination workbook should report to the respective course coordinator within the allowed period specified by the coordinator. The course instructor shall then submit the student grades to the Faculty Dean.

j. The Deputy Provost for Academic Affairs shall bar any student from being admitted to any examination in any subject or course where the Deputy Provost for Academic Affairs is not satisfied that the student has satisfactorily completed, by attendance or otherwise, the requirements of the subject or course.

k. Where a student who has been barred from examination sits for a paper, his or her paper shall be null and void.

l. Where the prospectus’ guideline and curriculum collides the prospectus shall avail.

m. A candidate who fails to present himself for examinations will be deemed to have failed (‘E’ grade) that part of the examinations.

Academic integrity

a. The academic community of Tumaini University believes that one of the goals of a Christian Institution of higher education is to strengthen academic integrity and responsibility among its members.

b. To this end, the University emphasizes the importance of sound judgement and personal sense of responsibility in each student.

c. All members of the academic community are expected to respect the highest standards of academic integrity.
Academic dishonesty

a. Academic dishonesty is a serious offence at Tumaini University because it undermines the bonds of trust and personal responsibility between and among students and faculty, weakens the credibility of the academic enterprise and defrauds those who believe in the value of integrity of the degree or diploma.

b. A student or staff member who commits an act of academic dishonesty shall face disciplinary action.

c. Academic dishonesty can take several forms such as:
   i. Cheating - Intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise (tests, exercises, examination, etc.)
   ii. Fabrication - Intentional and unauthorized falsification or invention of any information or citation in an academic exercise
   iii. Facilitating Academic Dishonesty – Intentionally or knowingly helping or attempting to help another student commit a breach of academic integrity.
   iv. Plagiarism – representing the words or ideas of another as one’s own in any academic exercise.

d. A student who commits an act of academic dishonesty shall face disciplinary action ranging from failure to receive credit on an academic exercise to dismissal from the College

e. Students who have been discontinued from the programme on the grounds of inadequate academic performance may reapply to the programme only if:
   i. At least one academic year has passed since their dismissal, and
   ii. They can provide evidence of extra-mural studies to improve their academic standing

Eligibility for examination

a. Students will be eligible to sit for an examination if they have fulfilled the following conditions:
   i. Students must have attended at least 80% of the scheduled semester class periods for each course and have completed all course requirements
   ii. Students must not have missed more than 10 consecutive days of class
   iii. No candidate shall be allowed to sit for a paper for which he/she has not registered.
   iv. To be eligible to sit for a University Examination, a student must have attempted the required number of Continuous Assessment Tests (CATs) on the course being examined.
   v. Students who do not complete assigned work by the end of the semester shall not be allowed to sit for semester examinations.
NB: Under extenuating circumstances, the DPAA in consultation with the Dean of Students, the respective Faculty Dean and Course Instructor, may waive the attendance requirements.

5.2.1. Examination regulations

Invigilation and conduct of Examinations

a. Invigilators who are normally academic members of staff shall be appointed and briefed by the Head of Department who is the Chief Internal Examiner.

b. The internal Examiner for any particular examination paper shall normally be one of the invigilators.

c. Names of invigilators for various examination time-tables shall be sent to the Deputy Provost for Academics one month before the start of the examinations.

d. At least two invigilators shall be allocated to each examination room and at least one must be in the examination room throughout examination time.

e. The Deputy Provost for Academic Affairs shall appoint one of the Senior Invigilators to co-ordinate invigilation in each examination room where several examinations are taking place.

f. Instructions to candidates and invigilators shall be published at the end of each semester by the Deputy Provost for Academic Affairs, setting out details of procedures to be followed in the conduct of examinations.

g. The Chief Invigilator shall collect all examination papers and related materials from the Examination’s Office, at least half an hour before the start of all respective examinations.

h. The Chief Invigilator shall ensure that all examinations start and end on time.

i. The Invigilators, under the direction of the Chief Invigilator shall be responsible for the security and laying out of the examination papers and for such other duties as may be specified in the instructions to invigilators.

j. Invigilators shall remain in the examination room throughout the examination.

k. In case where the Invigilator is unable to be present at the start of the examination, he/she shall inform the Head of Department who shall then nominate a replacement from the Department concerned.
l. Internal Examiners shall certify the total number of scripts received from the record of candidates who have taken the examination.

m. There shall be an examination report sheet in which the students shall sign upon submission of the script and the invigilators comments about the conduction of the examination.

**Irregularities in University Examination**

Inappropriate conduct by a student concerning examinations impairs academic integrity, and will subject the offending student to suspension. Such examination irregularities can include, but are not limited to:

a. No unauthorised material (for example purses, electronic equipment such as cell-phones and pagers) shall be allowed into examination premises.

b. Reading other candidate’s answer scripts.

c. Attempting to copy or making reference to the unauthorized materials in the examination room.

d. Communicating with other students, either verbally or through other means, during the examination without permission from the invigilator.

e. Permitting another candidate to copy from someone’s paper.

f. Impersonation or endeavouring to obtain assistance from any other candidate directly or indirectly or endeavouring to give assistance to any other student.

g. Removing examination answer books/sheet from examination room.

h. Starting to attempt the examination before being authorised to do so.

i. Continuing the examination after being ordered to stop.

j. Borrowing of materials such as calculators, rulers, correcting fluid and pens among students during examinations.

k. Destroying or attempting to destroy evidence relating to any suspected irregularity.

l. Failing to comply with any other examination rules, regulations, or directions given by an invigilator.

m. Plagiarism and Reproducing the works of another person or persons in course work assignments without acknowledgement and with intent to deceive.

n. Absconding examinations.

**Procedure for dealing with irregularities**
a. Prior to the beginning of each examination, invigilators shall draw to the attention of candidates the seriousness of irregularities in examinations.

b. If an invigilator suspects a student of examination irregularities the following steps shall be taken:
   i. The student shall be approached immediately.
   ii. Any unauthorized material in the possession of the students, as well as his/her answer book and examination question paper shall be confiscated.
   iii. Ensure that the incidence is witnessed by another person to verify the matter.
   iv. The invigilator shall report in writing to the Deputy Provost for Academic Affairs within 24 hours;
   v. The Deputy Provost for Academic Affairs shall require the student to submit a written statement concerning the incidence within 24 hours after receiving the invigilator’s report.
   vi. The Deputy Provost for Academic Affairs shall set up an investigation committee which should complete the investigation within two weeks.
   vii. The investigation committee shall submit the report to the Deputy Provost for Academic Affairs, who shall in turn table the matter before the Academic Board.
   viii. The Academic Board shall take appropriate action, and if need be make appropriate recommendations to Senate.
   ix. While the matter is under investigation, the candidate may attempt other papers.
   x. An internal examiner, who in the course of marking examination scripts or research or assignment papers suspects that an academic irregularity has taken place, shall report in writing the matter to the Deputy Provost for Academic Affairs, through the respective Faculty Dean.
   xi. The Deputy Provost for Academic Affairs will follow the procedures vii) to ix) above.
   xii. If it is established that the student committed an examination irregularity, he or she shall be expelled from the University forthwith.

5.3 Examination moderations, practical and thesis assessment where applicable

Modes of Examinations

Examinations in the Faculty will be conducted in a combination of any of the following modes, depending on the specific requirements of the course, year of study and in accordance with the Examination schedule:

a. Written Examination
b. Viva Voce (Oral) Examination
In any examination a candidate may, at the discretion of the Board of Examiners, be required to attend an oral examination in addition to written and practical/clinical and other type of examinations depending on the appropriate method of assessment.

**Continuous Assessment**

a. The minimum number of Continuous Assessments per subject, per semester or per year shall depend on specific requirements of the course concerned.

b. Continuous Assessments should be spread evenly throughout the teaching period for the subject content, and the last one at least two weeks before the beginning of the end of year examinations.

c. Continuous assessment shall include all in-course assessments and those assessment tests conducted at the end of each course.

d. Departments shall maintain a record of marks of Continuous assessments, sample assignments and question papers.

e. The records shall be made available to the external examiners.

f. Students are required to register when appearing for tests/examinations, when submitting assignment workbooks, as well as when receiving marked assignment workbooks.

**Examination moderation**

**Setting and moderations**

i An Internal Examiner is normally an academic member of staff at the level of a Lecturer or above who has taught the course being examined.

ii Supplementary and Special Examination papers shall be set simultaneously with the Regular University Examination papers.

iii Examination papers shall be internally moderated by the Faculty/ Departmental Moderation Committee and the moderated exam should bare the signature of all those involved, also External Examiners shall be involved after the examination.

iv The moderated and sealed examination paper shall be sent to the Deputy Provost for Academics and/or the Examination Officer for safe keeping before the start of the examinations.

v Strict precautions shall be taken to ensure that there are no examination leakages.
i A special examination is one which is taken at a time other than the regular examination period as the result of extenuating circumstances.

ii A student may, in extenuating circumstance, be allowed to postpone sitting for an examination, provided he or she reports the matter in writing, before the examination to the Deputy Provost for Academic Affairs through the Dean of Students and the Dean of Faculty.

iii Such a report shall be accompanied by authentic supporting documents.

iv With the exception of emergency cases such requests must be submitted to the office of the DPAA at least 48 hours before a given examination is due to start.

v A student shall be deemed to be eligible for special examinations after receiving a letter of authorization to take special examinations from the Deputy Provost for Academic Affairs.

vi Special examinations shall be conducted at such time, coincident with supplementary examinations.

vii When a student is allowed to sit for a special examination, he/she shall be considered to be attempting the examination for the first time, and shall be accorded all of the rights provided for in the examination regulations.

viii Special examinations shall not be availed to students who have absented themselves from regular examinations without written permission.

**Supplementary examinations**

i A supplementary examination is one which is taken by a student after he/she fails a paper in a regular or in a special examination.

ii A student shall be allowed to sit for a supplementary examination only if he/she has failed in less than 50% of the prescribed examination papers.

iii The supplementary examination must be taken only in the failed paper(s)

iv Supplementary examinations shall be conducted at a convenient time determined by the Academic Board within the concerned academic year.

v The pass mark for supplementary examination is a “B” irrespective of the score.

vi A supplementary examination paper fee of Tsh. 50,000 must be paid for each supplementary examination paper provided to a student.

vii The fee must be paid in advance to the finance department to cover the University’s expenses of providing a supplementary examination.
Postponement of studies

i A student may, in extenuating circumstances postpone studies

ii The student shall report the matter in writing, to the Deputy Provost for Academic Affairs through the Dean of Students and the Dean of Faculty.

iii Such a report shall be accompanied by authentic supporting documents.

iv A student may be allowed to postpone studies for a reason which in the opinion of the Academic Board is strong enough to prevent one from pursuing studies effectively.

v No student shall postpone studies without written permission from the Deputy Provost for Academic Affairs.

vi Such postponement shall be for a semester or an academic year as the case may be.

vii The maximum period for a student to postpone studies shall be one year in the case of programmes of normal longevity of up to 4 years and 2 years for programmes of more than 4 years duration.

viii The period of postponement shall not be counted towards the students’ registration

ix A student may also be allowed to postpone studies for failure to pay student fees, deposits and charges

x On grounds of ill health provided the postponement has been recommended by a competent medical practitioner and approved by the University.

xi Re-admission for a student who postponed studies on the ground of ill health is subject to a recommendation by a competent medical practitioner and approval by the University.

xii Where practical, such a student shall be allowed to continue with his or her studies from the point at which he or she was when taken ill.

Leakage of examination

Definition: Any act which results in a candidate or candidates having access to, or knowledge of examination questions or of any unauthorized materials related to the examinations, before the scheduled date and time of the examination shall amount to leakage of examinations.

Procedure for dealing with leakage of Examinations

a. Any person suspecting leakage of a test or examination shall immediately report to the Deputy Provost for Academic Affairs.
b. Where there are strong indications that an examination leakage has taken place, the Deputy Provost for Academic Affairs, in consultation with the Provost shall cancel/ withdraw the examination and order a fresh examination to be set and administered.

c. The Deputy Provost for Academic Affairs shall set up by a committee to investigate the circumstances surrounding the suspected leakage.

d. The investigating committee shall submit its findings to the Deputy Provost for Academic Affairs, who shall in turn table them before the Academic Board and if necessary the Senate.

e. The Academic Board shall then take appropriate action, and if need be make appropriate recommendation to the Senate.

f. Where it is established that an examination leakage has taken place appropriate disciplinary action shall be taken against those found responsible for the leakage.

Instructions to students and invigilators

i. Candidates shall acquaint themselves with the instruction on the front page of the answer books/examination papers.

ii. Candidates shall ensure that they write their examination numbers, titles and the paper number on the answer books, including the continuation sheets.

iii. Examination Numbers will be issued each year and verified by the Deputy Provost for Academic Affairs. The numbers will be different from student Registration Numbers.

iv. Examination Numbers will be serialised in the following format:- e.g. TUMA/KCMUCo/MD/2013/250

v. At all times during the examination, the examination numbers should be conspicuously placed on the desks.

vi. Candidates without examination numbers authorising them to sit for the examination will not be allowed to sit for the examinations.

vii. No student shall be permitted to enter the examination room after the lapse of 30 minutes from the commencement of the examination. However, if a candidate arrives before the first half hour has passed; the Invigilator may use his discretion in extending the time limit for the candidate provided no candidate has already left the room.

viii. No student will be allowed to leave the examination room during the first or last 30 minutes, except in cases of absolute emergency. Between these times, students may leave the room and be escorted to known common toilets. Students
shall however sign out on leaving the examination room and sign in when they re-enter the examination room.

ix Misreading the examination timetable will not be regarded as ‘sufficient cause’ for missing an examination.

x No books, bags, notes, rough papers and any other paraphernalia should be taken by the candidates into the examination room. Candidates are not allowed to bring their own log tables and calculators in the examination room unless there is an express provision otherwise in case of a particular paper. Any unauthorized materials should be handed over to the Senior Invigilator before the examination starts.

xi Invigilators shall have power to confiscate any unauthorised materials or aid brought into the examination room

xii Invigilators shall have power to expel from the examination room any student who creates a disturbance in the examination room.

xiii At the end of the examination, and on the instructions from the senior invigilator, candidates shall be required to stop writing and assemble their scripts. The students shall hand in his/her scripts to the invigilator and sign to that effect.

xiv If, for any reason, such as sudden illness or other sufficient cause, a candidate is unable to attend an examination he should report the circumstances to the Deputy Provost for Academic Affairs at the earliest possible moment before the start of the scheduled examination.

xv These instructions shall remain in force unless amended by the Senate upon recommendations of the College Academic Board and the Senate sub-Committee for Academic and Curriculum Affairs (SCACA)

**External Examiner**

An external examiner shall be identified by the Dean of Faculty, upon submission of his/ her Curriculum Vitae (CV). The Dean shall submit the identified external examiner to academic board. Finally shall be approved by the senate. This shall validate all examinations within his / her field of expert.

Once examinations are conducted and marked internally, the same papers will also be moderated by external examiners for quality assurance. Research reports shall be marked by the internal examiner and thereafter subjected to external examiner, the final score shall be determined by the average score from both internal and external examiner. Shall big variation between the two scores arise; internal and external examiners shall discuss the score to reduce the gap before getting an average. Practical examinations will be simultaneously conducted by internal and external examiners.
Appointment of external examiners

i  An External Examiner is normally a re-known academician in a University at the level of a Senior Lecturer or above possessing at least a Masters Degree in the field of his qualification.

ii  Senate shall appoint External Examiners on the recommendation of the College Academic Board, upon presentation of Curriculum Vitae by the External Examiner.

iii  External Examiners shall be approved by the College Academic Board in consultation with Senate.

iv  If the current External Examiners are being invited for the last time, departments and Faculties shall start searching for new External Examiners to ensure their appointment within the first month of the following academic year.

v  External Examiners shall not have taught the subject to the students to be examined either as full time or part-time staff members of the University during the last four years.

vi  External Examiners can be appointed for three years consecutively followed by a recess of three years and possible re-appointment.

Functions of external examiners

i  To Examine the Quality of Examination Papers

ii  To read and grade Research Papers/Dissertations/Theses

iii  Attend Examiners Board Meeting

iv  Review the course content and curriculum

v  Present a report on the examination to the Deputy Provost for Academics Affairs for presentation to the Faculty Boards.

vi  To visit the Library/ Laboratory and give their advice regarding the Library Holdings/Laboratory Equipment in respect of the concerned programme.

vii  To grade Oral Defence (viva voce)

Marking and moderation of examinations

i  External Examiners shall review any script to ensure consistency in marking, internal examiners shall be required to have a proper marking scheme.

ii  The Head of Department, as the chief Internal Examiner, shall ensure standardisation of marking between internal Examiners.
iii After marking all the scripts, Internal Examiners shall enter Continuous assessment and the end of the year examination marks on the individual course mark sheets.

iv All Internal Examiners are required to submit results, scripts, projects and assessment materials and records to the head of departments at least 24 hours before viva voce examinations are conducted.

v Staff members failing to meet the set examination deadlines without good cause, shall be subjected to disciplinary action according to prevailing regulations.

vi The Head of Department shall give the scripts together with copies of the question papers, final marking schemes and mark-sheets to the External Examiner on arrival. Records of continuous assessments and projects shall be kept by the Head of department and be made available to the External Examiners.

vii The External Examiner shall normally be expected to review extreme cases.

Practical assessment

Students will demonstrate skills in the laboratory and put into practice in the clinical setting. In this regard an assessment will be based either in clinical setting or in Skill laboratory. Students will be assigned to demonstrate their skills in a given procedure. Continuous assessment will be done by internal assessor and other clinical staff based on the specified topic/subject. However at the end of the year, external examiner will assess both theory and practical aspect. Basically practical assessment involves Logbook, Case presentation during clinical rotation, Field report (DMO) and research report.

Processing of examination results

 Processing by Departments

i A meeting of the Department Board of Examiners shall consider the result and make recommendations to the Faculty Board of Examiners.

ii The External Examiners will be expected to attend the Departmental Board of Examiners’ meeting.

iii The External Examiner shall provide a general overview of performance.

iv The final mark in any subject shall be derived from continuous assessments and the end of year examinations.

v Unless otherwise approved by Senate, each course shall be graded out of a maximum of 100 marks.

vi Continuous assessments as approved by the Senate shall vary depending on the nature of the course.
vii The pass mark as approved by the Senate shall vary depending on the nature of the course in question.

viii Unless otherwise specified by Senate, the Examination grading system shall be as follows.

<table>
<thead>
<tr>
<th>Percentage range</th>
<th>70-100%</th>
<th>60-69%</th>
<th>50-59%</th>
<th>40-49%</th>
<th>35-39%</th>
<th>0-34%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letter grade</td>
<td>A</td>
<td>B+</td>
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**Disposal of Examination answer books and other scripts**

Unless otherwise retained by the University Library for archival purposes, all used examination answer books/scripts shall be destroyed after the expiry of thirteen (13) months following final decision of Senate on the examination concerned. Examination results in electronic form shall be stored indefinitely in the Students Academic Record Information System.

### 5.2 Condition for continuation and discontinuation,

**Student’s disposal (applicable to all students)**

a) Student disposal shall be undertaken at the end of the second semester of each academic year.

b) Professional, logbook, field work attachment report, practical, and research report assessment will also determine whether a student will proceed to the subsequent year of study or graduate.

c) A student passing in all prescribed semester courses shall proceed to the subsequent year of study or graduate.

d) A student who fails in < 50% of the prescribed courses shall be allowed to sit for supplementary examinations in the failed courses during the long vacation.

e) The maximum grade that shall be awarded where a supplementary examination has been passed shall be “C”. The same applies for a repeated course.

f) A candidate who fails Supplementary Examinations shall repeat the failed courses during the next academic year and sit for the examinations when they are scheduled.

g) A candidate who fails after repeating the year of study will be discontinued from studies.

h) A candidate with a GPA of less than 2.0 after the Supplementary Examinations shall be discontinued.

i) Student who fails in ≥50% of the prescribed courses in either semester shall be discontinued from studies in either semester.
j) In addition students may also be discontinued from studies due to the following reasons:
   i. Failure to attend scheduled examination(s) or test(s) unless caused by unavoidable extenuating circumstance
   ii. Committing examination/academic irregularities;
   iii. Committing disciplinary offences as described in the “Tumaini University Makumira Students By-Laws”;
   iv. Absconding from studies;
   v. Absconding from test(s) or examination(s)

**Discontinuation from studies**

Students will be discontinued from any programme as a result of the following:

a) Failure to attend scheduled examination, unless by extenuating circumstances
b) Failure to pass scheduled examinations
c) Examination irregularities
d) Failure to pay student fees, deposits and charges
e) Disciplinary offence as described in the College “Student’s By-Laws”
f) Ill-health if recommended by a recognised medical practitioner and approved by the College

Students who have been discontinued from the programme on the grounds of inadequate academic performance may reapply to the programme only if:

a. At least one academic year has passed since their dismissal, and
b. They can provide evidence of extra-mural studies to improve their academic standing

**5.4 Weight of each component in the final assessment of the programme**

**Continuous assessment (CA) 50%**

Assignment 10% - Students will be given an assignment in a specified topic and the score will be converted into 10 % out of 50% of the continuous assessment.

Practical 20% - Students will demonstrate skills in the laboratory and put into practice in the clinical setting. In this regard an assessment will be based either in clinical setting (OSCE) or Skill laboratory (OSPE), clinical examination students will be assigned to demonstrate their skills in a given procedure.

Written tests 20% - Written tests will base on the specified contents.

**Semester examinations 50%**

Written examination 20% and Practical examination 30% (where applicable)
Where research and fieldwork report are applicable, it will carry 100% as an independent assessment using the guideline approved by the college

6 Course Description

YEAR 1: SEMESTER 1

6.1 Course title: Anatomy for Doctor of Medicine (MD) program (code)

6.1.1 Course status: Core
6.1.2 Total credits: 17
6.1.3 Subject hours: 170

6.1.4 Course aims

This course intends to provide detailed theoretical and practical anatomy training to medical doctor students in their first year. The course will cover the Human Gross anatomy (Macroanatomy), Human histology (Microanatomy), Human Embryology, Neuroanatomy and anatomical radiology. Laboratory study will involve working with human skeletal collections, dissection of cadavers, preserved specimens, histology slides and radiology films or images. Form-function relationships are highly emphasized in the teaching-learning process apart from the clinical applications and relevant cases which will form the basis for the applied examples. The whole human body will be studied in regions which will form nine modules named; the Introductory, Back, Upper limb, Thorax, Abdomen, Pelvis and Perineum, Lower limb, Head and Neck and Neuroanatomy. These modules are sequentially organized and will be independently coordinated. Lecturers are advised to integrate the course vertically and horizontally, also the science and the clinical. Thirty percent clinical integration is recommended as considered relevant to most medical school anatomy curriculums.

6.1.5 Course expected learning outcomes

At the end of the course, first year medical students should be able to:

i. Compare and contrast the structure and function of the four tissue types: epithelium, connective tissue, muscle, and nerve.

ii. Describe the structure and function of cellular organelles.

iii. Demonstrate proper technique in use of the light microscope.

iv. Describe the biology and function of stem cells.

v. Describe the basic principles of embryology in the context of differentiation, morphogenesis and organogenesis.
vi. Describe and explain the structure, function, arrangement, neural and hormonal control, and blood supply of major organs and organ systems.

vii. Explain the basic concepts and principles that govern the function of each organ and organ system.

viii. Recognize, describe, and differentiate processes common to all organ systems (growth, metabolism, repair, and communication).

ix. Infer and explain anatomical detail from the larger structural, historical, and causal principles underlying human morphology and ontogeny.

x. Recognize, describe, and differentiate tissues, organs, and organ systems according to their molecular, cellular, and gross structures.

xi. Discuss complex brain functions related to perception, pain, emotion, language, memory and rational thinking, including:

xii. Neural mechanisms of reward, punishment, and motivation.

xiii. Pre- and post-synaptic mechanisms of plasticity.


xv. Neural basis of addiction, affective disorders, psychiatric illness.

6.1.6 Course contents

- Structure and function of the four tissue types: epithelium, connective, contractile, and nervous tissue.

- The structure and function of cellular organelles.

- Techniques for light microscopy.

- The biology and function of stem cells.

- Basic principles of embryology in the context of differentiation, morphogenesis and organogenesis.

- The structure, function, arrangement, neural and hormonal control, and blood supply of major organs and organ systems.

- Basic concepts and principles that govern the function of each organ and organ system.
• Processes common to all organ systems (i.e. growth, metabolism, repair, and communication).

• Infer and explain anatomical detail from the larger structural, historical, and causal principles underlying human morphology and ontogeny.

• Tissues, organs, and organ systems according to their molecular, cellular, and gross structures.

• The brain structure and functions as related to perception, pain, emotion, language, memory and rational thinking.

1. Module: INTRODUCTORY ANATOMY

Module Description:

The goals of this module are to familiarize medical students with anatomical terminologies, position and movement terms as being used widely in the clinical field.

Learning outcomes

At the end of the module medical students should be able to;

1. Define and demonstrate the following terms relative to the anatomical position: medial, lateral, proximal, distal, superior, inferior, deep, superficial, palmar, plantar, anterior/ventral, posterior/dorsal, rostral, and caudal.
2. Describe the following anatomical planes: axial / transverse / horizontal, sagittal and coronal.
3. Define and demonstrate the terms used to describe the movements of the limbs and vertebral column: flexion, extension, lateral flexion, pronation, supination, abduction, adduction, medial and lateral rotation, inversion, eversion, plantarflexion, dorsiflexion, protraction, retraction and circumduction.
4. Define the terms somatic and visceral when used to describe parts and systems (e.g. somatic and visceral motor systems) of the body.
5. Describe confidently embryogenesis from fertilization, implantation, bilamina disc, gastrulation and organogenesis. Genetic and environmental factors for embryogenesis, and roles of teratogens.
6. Identify microscopically, different types of epithelia tissue, connective tissue, contractile tissue and nervous tissue under various staining techniques.
7. Understand the basic concepts in interpreting radiological images such as x-rays, CT scan, MRI and several others as may be seen necessary.
2. Module: ANATOMY OF THE BACK

Module Description:

The goal of this module to medical graduates are to identify and describe the surface anatomy of the back, vertebral column, bony landmarks, muscle groups for Superficial, intermediate and deep. Sub occipital region, vertebral canal, spinal cord and meninges.

Learning outcomes

After the course, medical student should be able to:

1. Describe the main anatomical features of a typical vertebra. Identify the atlas, axis, typical cervical, thoracic, lumbar vertebrae and sacrum and recognize their characteristic features.
2. Describe the structures, regions and functions of the vertebral column. Describe the range of movement of the entire vertebral column and its individual regions. Explain what makes spinal injuries stable and unstable.
3. Describe the anatomy of intervertebral facet joints and intervertebral discs. Explain the role of the discs in weight bearing by the vertebral column and give examples of common disc lesions, and how they may impinge upon spinal nerve roots and / or the spinal cord.
4. Describe the anatomy of a spinal nerve e.g. as exemplified by a thoracic spinal nerve, including its origin from dorsal and ventral spinal roots, its main motor and cutaneous branches and any autonomic component.
5. Identify the principal muscle groups and ligaments of the vertebral column and surface features in order to be able to perform an examination of the back, discuss their functional role in stability and movement of the vertebral column and describe the anatomical basis of back pain.
6. Describe the anatomical relationships of the meninges to the spinal cord and dorsal and ventral nerve roots, particularly in relation to root compression and the placement of epidural and spinal injections. Describe the anatomy of lumbar puncture.
7. Interpret standard diagnostic images of the vertebral column and be able to recognize common abnormalities.

3. Module: ANATOMY OF THE UPPER LIMB

Module status: Core

Module Description:

This module intends to enable Medical students to be able to recognize the major palpable and imaging features of the bones of the upper limb, be aware of the sites of common fractures (clavicle, humerus, distal radius and scaphoid) and the
complications that might result from them. They should be aware of the factors that influence the stability of the shoulder, elbow, wrist and interphalangeal joints and understand the nature and consequences of common injuries (e.g. shoulder, elbow and finger dislocation). In order to perform clinical procedures safely and effectively, graduates should be able to demonstrate the course, key relations and distribution of the main neurovascular structures of the upper limb, be able to demonstrate major pulse points (e.g. subclavian, brachial and radial), the position of major veins (for venous access) and know the common sites of peripheral nerve injury and their likely functional effects (brachial plexus lesions, axillary, radial, ulnar and median nerve lesions). They should be able to explain the anatomical basis of common conditions of the upper limb (e.g. rotator cuff injuries, carpal tunnel syndrome) and how infection might spread in the limb. They should be able to describe the organization of the axillary lymph nodes and the lymphatic drainage of the breast and explain their significance in relation to metastatic spread of breast cancer and melanoma.

**Learning outcomes**

After the course, medical students should be able to:

1. Describe and demonstrate the main anatomical landmarks of the clavicle, scapula, humerus, radius and ulna. Recognize the bones of the wrist and hand and their relative positions, identify those bones that are commonly damaged (scaphoid and lunate) and predict functional impairment following such damage.
2. Describe the close relations of the bones and joints (e.g. bursae, blood vessels, nerves ligaments and tendons), which may be injured by fractures or dislocation and predict what the functional effects of such damage might be.
3. Describe the fascial compartments delimiting the major muscle groups of the upper limb. Explain the functional importance of those compartments and their contents.
4. Describe the origin, course and distribution of the major arteries and their branches that supply the shoulder, arm and forearm in relation to common sites of injury. Explain the importance of anastomoses between branches of these arteries at the shoulder and in the upper limb.
5. Demonstrate the sites at which pulses in the brachial, radial and ulnar arteries may be located.
6. Describe the courses of the main veins of the upper limb; classify and contrast the functions of the deep and superficial veins. Identify the common sites of venous access and describe their key anatomical relations. Explain the relationship between venous and lymphatic drainage channels.
7. Describe the organisation of the brachial plexus, its origin in the neck and continuation to the axilla and upper limb.
8. Describe the origin, course and function of the axillary, radial, musculocutaneous, median and ulnar nerves in the arm, forearm, wrist and hand. Name the main muscles and muscle groups that these nerves supply as
well as their sensory distribution. Predict the consequences of injury to these nerves and describe how to test their functional integrity.

9. Describe the boundaries of the axilla. List its contents, including the major vessels, parts of the brachial plexus and lymph node groups.

10. Describe the movements of the pectoral girdle; identify the muscles responsible for its movements and summarise their main attachments and somatic motor nerve supply.

11. Describe the factors that contribute to the stability of the shoulder joint and explain the functional and possible pathological consequences of its dislocation.

12. Describe the anatomy of the elbow joint. Demonstrate the movements of flexion and extension identify the muscles responsible for these movements and summarise their main attachments and somatic motor nerve supply.

13. Describe the anatomy of the superior and inferior radio-ulnar joints. Explain the movements of supination and pronation; identify the muscles responsible for these movements and summarise their main attachments and somatic motor nerve supply.

14. Describe the anatomy of the wrist. Describe and demonstrate movements at these joints and name and identify the muscle groups responsible for the movements. Describe the relative positions of the tendons, vessels and nerves at the wrist in relation to injuries.

15. Name and demonstrate the movements of the fingers and thumb. Describe the position, function and nerve supply of the muscles and tendons involved in these movements, differentiating between those in the forearm and those intrinsic to the hand.

16. Explain the main types of grip (power, precision and hook) and the role of the muscles and nerves involved in executing them.

17. Describe the position and function of the retinacula of the wrist and the tendon sheaths of the wrist and hand. Explain carpal tunnel syndrome and the spread of infection in tendon sheaths.

18. Explain why and describe where the axillary, musculocutaneous, radial, median and ulnar nerves are commonly injured and be able to describe the functional consequences of these injuries.

19. Explain the loss of function resulting from injuries to the different parts of the brachial plexus.

20. Demonstrate how to test for motor and sensory nerve function. Describe the anatomical basis of: the assessment of cutaneous sensation in the dermatomes of the upper limb, tendon jerk testing of biceps and triceps and comparative strength tests.

21. Describe the anatomy of the axillary lymph nodes and explain their importance in the lymphatic drainage of the breast and the skin of the trunk and upper limb and in the spread of tumours.

22. Interpret standard diagnostic images of the upper limb and be able to recognize common abnormalities.
4. Module: ANATOMY OF THE THORAX

Module status: Core

Module Description:

The aim of this module is to enable medical students to be able to demonstrate the major palpable and radiological features of the thoracic wall, and describe the anatomy of the intercostal spaces, the diaphragm and the functional anatomy of ventilation. They should know the pleural cavities and the anatomy of the lungs (including their lymphatic drainage and its role in the metastatic spread of lung cancer), the main divisions of the mediastinum and their contents and the anatomy of the heart and great vessels of the thorax, including their surface projections. They should be aware of the anatomical basis of common congenital cardiac abnormalities, heart murmurs and their effects. They should understand the function and arrangement of the coronary arteries and the position and function of the heart valves. They should know the course of major structures passing between the neck and thorax and those which pass through the diaphragm between the thorax and the abdomen. This knowledge forms the basis of understanding pneumothorax, lung and pleural disease, coronary artery and valve surgery and in referred pain from the distribution of the phrenic and intercostal nerves. They should have a working knowledge of surface anatomy of the thorax, be able to undertake an examination of the heart and lungs and interpret standard diagnostic images. They should be aware of the possible complications when inserting central venous lines and where to place a chest drain for simple and tension pneumothorax and for cardiac tamponade.

Learning outcomes

After the course, medical students should be able to:

1. Demonstrate the main anatomical landmarks of the thoracic vertebrae, ribs and sternum.
2. Describe the anatomy of the joints between the ribs and vertebral column, the ribs and costal cartilages and the costal cartilages and sternum. Explain the movements made at those joints during ventilation and the differences between ventilatory movements in the upper and lower chest.
3. Describe how the boundaries of the thoracic inlet and outlet are formed by the vertebrae, ribs, costal cartilages and sternum.
4. Describe the surface projection, attachments and relationships of the diaphragm and the structures that pass through it. Explain the movements it makes during ventilation and the motor and sensory nerve supply to it and its pleural and peritoneal coverings.
5. Explain the anatomy of the intercostals muscles. Describe a neurovascular bundle in a typical intercostal space and outline the structures its components supply.
6. Explain the movements involved in normal, vigorous and forced ventilation and describe the muscles responsible for these movements.
7. Demonstrate the surface markings of the heart and great vessels, the margins of the pleura and the lobes and fissures of the lungs.
8. Summarize the anatomy of the bronchial tree and bronchopulmonary segments; explain their functional significance in relation to inhalation injury.
9. Describe the blood and nerve supply and lymph drainage of the lungs. Describe the structures in the hilum and the mediastinal relations of each lung.
10. Describe the arrangement and contents of the superior, anterior, middle and posterior parts of the mediastinum.
11. Identify the major anatomical features of each chamber of the heart and explain their functional significance.
12. Describe the structure and position of the atrio-ventricular, pulmonary and aortic valves and describe their role in the prevention of reflux of blood.
13. Describe the origin, course and main branches of the left and right coronary arteries and discuss the functional consequences of their obstruction.
14. Understand the anatomical course of the spread of excitation through the chambers of the heart and describe the placement of ECG electrodes for its clinical assessment.
15. Demonstrate the arrangement of the fibrous and serous layers of the pericardium in relation to cardiac tamponade.
16. Describe the course of the ascending aorta, the arch of the aorta and the descending thoracic aorta. Name their major branches and the structures they supply.
17. Describe the origins, course and relationships of the brachiocephalic veins, inferior and superior venae cavae and the azygos venous system.
18. Describe the origin, course and distribution of the vagus nerve and its branches and the phrenic nerves on both the right and left sides of the thorax. Explain the mechanism of referred pain and where pain is referred from thoracic organs.
19. Describe the composition and function of the sympathetic chains and splanchnic nerves. Describe their composition and function.
20. Describe the course and major relations of the oesophagus within the thorax.
21. Describe the course and major relations of the thoracic duct and the other lymph systems within the thorax, and explain their medical significance.
22. Demonstrate the surface markings of the heart and the position and site of auscultation of the four major valves.
23. Demonstrate the surface projections of the margins of the pleura and the lobes and fissures of the lungs.
24. Identify major thoracic structures on standard diagnostic images and be able to recognize common abnormalities.

6.1.7 Teaching and learning activities: Lecturer discussion, Practical in laboratory
6.1.8 Assessment methods
   i. Assignment 10%
   ii. Written test 40%
   iii. Semester written examinations 50%

6.1.9 Reading list
Textbooks

6.2 Course title: Biochemistry

6.2.6 Course status: Core
6.2.7 Total credits: 8
6.2.8 Subject hours: 80

6.2.9 Course aims
This course is offered in two semesters. It is designed to enable students develop competencies in medical biochemistry and biological basis of disease. This course is structured into two modules; the first module introduces fundamentals of chemistry and their medical relevance, followed by structure and functions of biological molecules including amino acids, sugars, nucleic acids and lipids. Enzyme catalysis and an overview of metabolism, which is introduced prior to carbohydrates, lipids and proteins metabolism. This module will provide the foundation for second advanced module focussing on signal transduction and molecular biology.

6.2.10 Course expected learning outcomes
   i. Describe types and chemical properties of important chemical functional groups
   ii. Describe types and classes of chemical and biochemical reactions and bioenergetics
   iii. Describe the basic structures, properties and functions of informational macromolecules such as carbohydrates, proteins, lipids and vitamins
   iv. Describe types, properties and mechanisms of action of enzymes
   v. Explain the role of enzymes in clinical diagnosis
   vi. Analyze and interpret clinical laboratory results for liver and kidney function tests
   vii. Describe the structure, properties and functions of the plasma membrane
viii. Describe the cell theory, cell cycle, structure, components and functions of the cell organelles
ix. Describe structure, properties and functions of nucleotides, nucleic acids and proteins
x. Describe the mechanisms of RNA and DNA transcription/replication and repair
xi. Describe protein synthesis and gene expression and regulation
xii. Outline a set of parameters that can ascertain acid base imbalance and or respiratory or kidney disease
xiii. Differentiate normal and abnormal laboratory findings for acid-base imbalance, kidney disease and electrolytes imbalance

6.2.11 Course content

Review of Basic Concepts in organic and basic chemistry.

i. Atoms, elements, compounds and bonding types, polar and non polar compounds, forces that stabilize biological molecules
ii. Chemical and physical change, types of chemical reactions
iii. Acids and bases, buffers: water and pH
iv. Important biochemical functional groups
v. ATP structure and its role as universal chemical energy currency
vi. Cell biology
vii. Membranes structure, assembly and function including membrane transport
viii. Membrane ion transport mechanisms (simple, facilitated and active transport)
ix. Nucleotides
x. Nucleic acid structure and function
xi. DNA organization, Replication and repair
xii. RNA synthesis (transcription), synthesis and modification
xiii. Peptides
xiv. Protein synthesis and the genetic code
xv. Regulation of gene expression
xvi. Intracellular traffic and sorting of proteins
xvii. Molecular genetics and recombinant DNA technology

Blood, body fluids and the kidney

i. Protein Structure and Functions
ii. Myoglobin and Hemoglobin structure and functions
iii. Biosynthesis of nutritionally non-essential amino acids
iv. Catabolism of proteins and amino acid Nitrogen = urea formation
v. Porphyryns and bile pigments
vi. Creatinine metabolism and excretion
vii. Metabolism of purine and pyrimidine nucleotides = uric acid production and excretion
viii. Acid base balance and acid base disorders
ix. Plasma proteins, immunoglobulins and blood coagulation?
x. Practical session on acid base balance
xi. Practical session on urinalysis, clinical significance

**Structures, properties and functions of significant biological macromolecules**

i. Carbohydrates
ii. Amino acids
iii. Lipids: TGs, Phospholipids, Sphingolipids, Plasmalogens, blood group antigens and fatty soluble vitamins
iv. Water soluble vitamins
v. Important Mineral micronutrients
vi. Enzymology:
   — Bioenergetics and the role of ATP,
   — Enzyme general properties, kinetics, mechanism of enzyme action and regulation of activity.
   — Clinical enzymology principles
   — Enzymology practical
   — Liver and kidney function tests practical
vii. Nucleotides
viii. Nucleic acid structure and function
ix. DNA organization, Replication and repair
x. RNA synthesis (transcription), synthesis and modification
xi. Peptides
xii. Protein synthesis and the genetic code
xiii. Regulation of gene expression
xiv. Intracellular traffic and sorting of proteins
xv. Molecular genetics and recombinant DNA technology

**6.2.12 Teaching and learning activities**
Lecturer discussion, Practical in laboratory

**6.2.13 Assessment methods**

i. Assignment s 10%
ii. Written test 40%

iii. Semester written examinations 50%

6.2.14 Reading list

Textbooks

i. Harper’s Illustrated Biochemistry
ii. Principles of Biochemistry – By Lehninger,
iii. Medical Biochemistry – By Bynes,
iv. Biochemistry – By Stryer

6.3 Course title: Physiology

6.3.6 Course status: Core
6.3.7 Total credits: 16
6.3.8 Subject hours: 160

6.3.9 Course aims

The Medical Physiology course examines the physiological function and regulation of major organ systems and their components in the human body. Topics include the following modules:

I: Blood Physiology

II Renal Physiology

III Endocrine Physiology

IV Muscular Physiology

V Neurophysiology

6.3.10 Course expected learning outcomes

Student is expected to be conversant with blood physiology, renal physiology, endocrine physiology, muscular physiology and neurophysiology.

6.3.11 Course content

I: Blood Physiology

At the end of this lecture, the student will be able to:

i. Provide a physical description of red cells
ii. List at least 10 differences from somatic cells
iii. Describe three functions of red cells
iv. Explain the general nature of cell membranes and the special features of the red cell membrane
v. Describe the energy systems of red cells
vi. Describe the carriage of carbon dioxide and its role as a buffer

1. **Haemoglobin- structure, synthesis and degradation**

**At the end of this lecture,** the student will be able to:

i. Explain the nature of porphyrin and haem
ii. Show how myoglobin and haemoglobin demonstrate primary, secondary, tertiary and quaternary structures of proteins
iii. Explain the structure of myoglobin
iv. Explain the structure of haemoglobin
v. Explain the nature of the haem:oxygen bond
vi. Explain the changes in oxygen affinity brought about by oxygen attachment and release
vii. State the Bohr effect
viii. Explain the effect of 2,3 DPG
ix. Describe haemoglobin synthesis-putting together iron, haem and globin
x. Describe the sites and regulation of haemoglobin synthesis
xi. Describe the mechanism of haemoglobin degradation-sites and consequences
xii. Describe some abnormal haemoglobins

2. **Ferrokinetics and Iron Metabolism**

**At the end of this lecture,** the student will be able to:

i. Explain the distribution of iron in the body
ii. Describe the six iron proteins
iii. Explain the mechanism of iron absorption
iv. Describe the regulation of absorption
v. Describe iron transport
vi. Explain Ferro kinetics as using by radioactive iron
vii. Explain the tissue effects of iron deficiency
viii. Explain the mechanism for microcytosis and the causes
ix. Explain why iron deficiency is so common in Africa

3. **Vitamin B12 and Folic Acid**

**At the end of this lecture,** the student will be able to:

i. Describe the features of megaloblastosis and its mechanisms
ii. Describe the foods rich and poor in VitaminB12 and folate
iii. Describe the absorption of B12 and folate
iv. Contrast the causes of B12 and folate deficiency
v. Describe the tests used to make the diagnosis

4. Erythropoiesis and its Regulation

At the end of this lecture, the student will be able to:

i. Describe erythropoiesis
ii. Describe the sites of erythropoiesis at different ages
iii. Describe the nature of stem cells
iv. Explain the role of growth and differentiation inducers
v. Explain the importance of the stroma
vi. Describe the regulation of erythropoiesis
vii. Describe the characteristics of erythropoietin
viii. Describe the substances required for normal erythropoiesis

5. Red cell Degradation, Turnover and Haemolysis

At the end of this lecture, the student will be able to:

i. State the normal life span and T1/2 of chromium tagged red cells
ii. State the sites of degradation and the use of isotope studies of red cells
iii. Explain the structure and function of the spleen
iv. List the clinical and laboratory features of haemolysis
v. Provide a classification of haemolysis using the terms intrinsic and extrinsic
vi. Provide causes of intrinsic haemolysis
vii. Provide causes of extrinsic haemolysis

6. Anaemia-a classification by abnormal Physiology

At the end of this lecture, the student will be able to

i. Discuss he role of factors required for erythropoiesis-haematinics, stem cells and stroma
ii. Explain the production of haemoglobin synthesis
iii. Explain the mechanisms and types of anaemias caused by disorders in production
iv. Explain the features of anaemia from blood loss
v. Explain the mechanisms and types of anaemias from haemolysis
vi. Provide a pathophysiological classification of anaemia
vii. Outline a practical approach to diagnosis

7. Red and White cell Antigenicity and Transfusion

At the end of this session, the student will be able to:
i. Explain the nature of red cell antigens including the structure the ABO system the natural antibodies the Rh system

ii. Explain the types of immune reactions involving the red cells haemolytic reactions from transfusion haemolytic disease of the new-born

iii. Describe the principles of the testing systems used for blood grouping detection of antibody and complement on the surface of sensitized red cells that have occurred in vivo-the direct antiglobulin test (direct Coombs) detection of antibodies in the serum that have coated the red cell in vitro- the indirect antiglobulin test (indirect Coombs) cross matching

iv. Detail the complications of blood transfusions and the means of prevention of these

v. Describe the white cell antigens the HLA/MCH structure the function of HLA/MCH the relationship to diseases

vi. Explain the principles of tissue typing

vii. Explain the principles of prevention of tissue rejection

viii. Understand the central role for a Blood Bank, and the basic components required for a successful service

8. White blood cells- Neutrophils and Monocytes

At the end of this lecture, the student will be able to:

i. Describe the different white cells and their genesis

ii. Explain the classification based upon the presence of granules

iii. Describe a neutrophil

iv. Describe a monocyte

v. Describe the mechanism of phagocytosis

vi. Describe the monocyte-macrophage system (RE system)

vii. Describe the processes in inflammation

9. White Blood Cells-Lymphocytes

At the end of this lecture, the student will be able to:

i. Describe the lymphocyte

ii. Explain why lymphocytes are the basis of all acquired immunity

iii. Explain the role of macrophages in antigen presentation

iv. Explain the role of the thymus

v. Explain the differences between a B cell and a T cell

vi. Explain how the mystery of so few genes are able to produce so many different antibodies was solved

vii. Describe the process of clonal activation

viii. Explain what memory cells are

ix. Describe the different types of antibody action

x. Explain the functions of the complement system

xi. Describe the role of the helper T cell, the killer T cell and suppressor T cell
xii. Show how the helper T cell has a pivotal role in regulation of the immune system

xiii. Explain the mechanism of tolerance

10. Clotting and Bleeding

At the end of this lecture, the student will be able to:

i. Explain the process of haemostasis
ii. Describe the nature of platelets and explain their various functions
iii. Describe the process of clot formation involving platelets
iv. Describe the process of clot formation involving the coagulation system
v. Describe the process of clot stabilisation and organisation, dissolution and recanalization

11. White Blood Cells- Eosinophils and Basophils

At the end of this lecture, the student will be able to:

i. Describe an eosinophil and its granules
ii. Describe the function of eosinophils
iii. Explain the types of allergy
iv. List the causes of eosinophilia
v. List the parasites that cause eosinophilia
vi. Describe a basophil
vii. Explain the function of a basophil

II: Renal Physiology

1. Body Fluids and Renal Physiology

i. Water –within compartment

ii. Water in blood capillaries—and moving

iii. Water in lymphatics—and moving

iv. Water where it is not wanted—oedema

v. Special Collections of Water

At the end of these four lectures, the student will be able to explain and expand on the following statements.

i. Water is both unique and essential for Biology

ii. Water is compartmentalised. These compartments can be measured (volume, pressure), and have special characteristics that are important for function.
iii. Water and its solutes can shift from compartment to compartment. The mechanisms for these shifts have been determined and can be explained.
iv. Two microscopic circulations exist that solve the dilemma that confronted both Galen in the 2nd century and Harvey in the 16th century. These systems have different structures, different functions and different control mechanisms. These systems can be contrasted. -the blood capillary system and the lymph capillary system
v. Death would occur within a day without the existence of a lymphatic system.
vi. The formation of oedema is both predictable and explicable, based upon understanding capillary forces and dynamics.
vii. “Safety factors” prevent oedema. This is especially important in the lungs, and is explained by an analysis of forces related to capillary dynamics and lymphatic drainage
viii. Different strategies exist for management of venous and lymphatic oedema, based upon different characteristics of the blood and lymphatic capillaries.
ix. Free fluid exists in different anatomical sites. The formation and control of these special fluid compartments has been determined, and can be modified in different ways.

2. Anatomy Determines function

At the end of this lecture, the student will be able to explain and expand upon the following statements.

i. The essential unit of the kidney is the nephron, which has specialised subunits, but works as a whole.
ii. Nephrons are arranged in an orderly manner, so that 1.2 million nephrons in each kidney end as 10-12 papillae. Describe this arrangement
iii. The juxtaglomerular complex has a unique anatomy that helps to explain its function.
iv. The primary physiological processes that the kidney performs are four.

3. Filtration- The Glomerulus, Glomerular Filtration and Glomerular Dynamics

At the end of this lecture, the student will be able to discuss and explain the following

i. The glomerulus is more than a capillary plexus, despite its embryological origins
ii. The glomerular membrane is very porous with pores of 8 nm, yet it is impermeable to albumin, which is smaller than this. Explain
iii. The Filtration Fraction and Filtration Coefficient are helpful measurements of glomerular function. Explain how.
iv. A number of factors can vary the filtration pressure. Explain
v. The ratio of afferent to efferent arterioles is the critical mechanism for autoregulation.

4. Renal Perfusion and Regulation of Glomerular Filtration and Perfusion

At the end of this lecture, the student will be able to discuss and explain the following:

i. Renal perfusion differs from perfusion from other organs in several ways, including the phenomenon of autoregulation
ii. The anatomy and measured pressures within the peritubular capillaries help to explain its function
iii. The vasa recta act as a counter current exchanger.
iv. Autoregulation of the GFR is the primary mechanism, and autoregulation of the renal blood flow is secondary. Explain how these mechanisms work

5. Reabsorption and Secretion Mechanisms

At the end of the lecture, the student will be able to:

i. Explain the microanatomical structures that are required for reabsorption mechanisms
ii. Contrast the reabsorptive mechanisms of Na, Cl, glucose and protein
iii. Explain the secretory mechanisms used and where, and contrast with the reabsorptive mechanisms
iv. Describe what happens to sodium, and what mechanisms are activated as sodium travels through the nephron
v. Describe what happens to potassium, and what mechanisms are activated as potassium travels through the nephron
vi. Describe calcium, phosphate and magnesium handling by the kidney

6. Plasma, Urine and Work

At the end of the lecture, the student will be able to:

i. Explain the differences between urine and plasma, and how these differences occur as a result of passage through nephrons
ii. Explain renal work in terms of three basic functions-tubular reabsorption/secretion mechanisms; medullary hypertonicity, and acid/base regulation
iii. Define tubular load, tubular transport maximum, and threshold

7. Concentrating and Diluting Urine— the development of a hypertonic medulla

At the end of the lecture, the student will be able to:

i. Describe the mechanism of medullary hypertonicity, separating the function of the loop of Henle from that of the vasa recta
ii. Describe the variation osmolarity in the passage through the nephron.
iii. Explain the ADH feedback and mechanism of action of this hormone
iv. Explain how the body copes with a water load, and with dehydration
v. Describe the clinical and diagnostic features of SIADH, and what are the common causes

8. Acid/Base regulation—the work of acid secretion, bicarbonate reabsorption and ammonia formation
At the end of the lecture, the student will be able to:
   i. Show how the Henderson-Hasselbalch equation can be used to derive the pK
   ii. Contrast the buffering systems of the body
   iii. Explain how the lungs can be considered a “physiological’ buffer
   iv. Explain what is the meaning of the idea that H+ secretion can be titrated with HCO3 reabsorption
   v. Describe the role of NH3 production by the kidneys
   vi. Explain how an acid load is handled by the body
   vii. Outline the four common acid/base abnormalities, and the usual causes

9. Clearance
At the end of the lecture, the student will be able to explain:
   i. The concept of clearance of the plasma for any chemical as the end result of filtration, reabsorption and secretion
   ii. Interpret what is happening for any chemical based upon measured clearance, varying from 0 to 600 ml/min

10. Internal Homeostasis
At the end of this lecture, the students will be able to:
   i. State the role of the five hormones that act on the kidneys
   ii. Explain how the kidney acts as an endocrine gland, influencing distant parts of the body with these hormones
   iii. List the seven major factors that are of medical significance for homeostasis
   iv. Explain how reabsorption and secretion rates can be determined based upon knowing the filtration rate and excretion rate
   v. Explain the homeostasis of sodium
   vi. Explain the homeostasis of potassium
   vii. Explain the homeostasis of calcium, magnesium and phosphorus

11. Micturition and Urinary Incontinence
At the end of this lecture, the student will be able to discuss and explain the following topics:
   i. The mechanism of action of the detrusor muscle, both in emptying and retaining urine
ii. The nerve connections and reflex pathways to the bladder and central nervous system
iii. The micturition reflex
iv. The mechanism of both voluntary inhibition and facilitation of micturition
v. The cystogram
vi. The common causes of urinary incontinence

12. Acute Renal Failure (ARF)

At the end of this lecture, the student will be able to:

i. Give a definition of acute renal failure
ii. Describe different patterns of presentation
iii. Explain how to differentiate from chronic renal failure
iv. Explain the pathophysiology of ARF
v. List the causes

III: Endocrine Physiology

i. Introduction to endocrine system
ii. Hormones: nature, transport, measurement, metabolism, excretion
iii. Hormones: mechanisms of action
iv. Hypothalamus and the pituitary gland
v. Anterior and posterior pituitary hormone secretions, regulation and actions
vi. Thyroid gland: functional anatomy, synthesis, secretion and regulations
vii. Thyroid Hormones: Physiological effects of thyroid hormones
viii. Parathyroid hormones: regulations, secretions and physiological effects
ix. Calcium homeostasis: Effects of Parathyroid hormone, Calcitonin and vitamin D
x. Adrenocortical hormones: Functional anatomy of the adrenal gland, secretion, and regulation of secretion
xi. Adrenocortical hormones: Physiological effects of glucocorticoids and mineralocorticoids
xii. Adrenal medulla hormones
xiii. Endocrine pancreas: Anatomy, hormones, synthesis and regulation of secretion
xiv. Glucose homeostasis: Physiological Effects of insulin and glucagon
xv. Reproductive Physiology: Puberty and reproduction in males and females
xvi. Reproductive Physiology: Menstrual cycle and menopause
xvii. Pregnancy and hormones related to pregnancy
xviii. Practical sessions in the endocrine system
xix. Group discussion work in the endocrine system that will be graded accordingly

IV: Muscular Physiology and Neurophysiology

i. Organization of the nervous system; peripheral and sensory, somatic and autonomic, sensory and motor
ii. Trans-membrane potentials and ionic basis of trans-membrane potentials and action potential.
iii. Structure of nerves and nerve impulse transmission
iv. Structure and functions of synapses, and synaptic transmission
v. Muscles types: skeletal cardiac and, smooth muscles; structure, functional properties
vi. The neuromuscular junction, and mechanisms of muscle contraction, excitation contraction coupling
vii. Organization of spinal cord; reflex arc and spinal cord reflexes; general characteristics and functions of muscle spindle and golgi tendon organs.
viii. Organization of autonomic nervous system: sympathetic and parasympathetic systems; neurotransmitters, receptors, central integration, general functions
ix. Sensory system: sensory receptor and generation of nerve impulses.
x. Somatic and visceral sensations: touch, pressure, vibration,
xi. Somatic and visceral sensations: proprioception, pain, and temperature.
xii. Motor system: cerebral cortex and corticospinal tract, corticobulbar system, cerebellum, Basal ganglia
xiii. Brain stem: control of muscle tone and posture
xiv. Sleep and wakefulness
xv. Special senses: the eye optics for vision, neurophysiology of vision.
xvi. Special senses: auditory system, vestibular apparatus, taste and smell sensations
xvii. Practical sessions in the nervous system
xviii. Group discussion work in the nervous system that will be graded accordingly

6.3.12 Teaching and learning activities:
Lecturer discussion, Practical in laboratory

6.3.13 Assessment methods
i. Assignments 10%
ii. Written test 40%
iii. Semester written examinations 50%

6.3.14 Reading list

6.4 Course title: Community medicine

6.4.1 Course status: Core
6.4.2 Total credits: 8.5
6.4.3 Subject hours: 85
6.4.4 Course aims

Community health is a major field of study within the medical and clinical sciences which focuses on the maintenance, protection and improvement of the health status of population groups and communities as opposed to the health of individual patients (Encyclopedia of Public Health). Others define ‘Community health as a multi-sector and multi-disciplinary collaborative enterprise that uses public health science, evidence-based strategies, and other approaches to engage and work with communities, in a culturally appropriate manner, to optimize the health and quality of life of all persons who live, work, or are otherwise active in a defined community or communities’ (McKenzie et al., 2005). Community health, unlike clinical care, tends to focus more on identifying, protecting, promoting and preventing diseases and adverse health events of a community instead of targeting a single individual. Primary and tertiary prevention are key in community healthcare achievement.

The module is taught to Medical students in their 1st and 2nd year of training. The module aims to equip students with knowledge; in definition and key principles in community health, of determinants of health, in community mapping of key health problems, in community engagement in prioritizing and planning interventions, in linking clinical, laboratory and community health problems and in knowledge of different diseases and health events e.g. communicable and non-communicable diseases, maternal and child health, mental health, disability, road traffic accidents and gender based violence to mention a few and in life cycle approach when evaluating health problems. In each specified diseases or health event, knowledge in the national and international goals and targets will be covered. Community health teaching emphasizes ethical and human right approach in engaging communities in assessing burden and determinants of diseases as well as fully engagement of communities in solving health problems. It is the goal of community health to equip students with skills in assessing the community burden of diseases and health events, in synthesis of information and share the results, in planning and deliver community preventive and health promotion education, as well as in skills to address underlying socio, cultural and behavioral determinants of disease in specified community.

6.4.5 Course expected learning outcomes

At the end the students should be able to;
i. Describe community health, its importance in clinical and public health, core functions of community health programs

ii. Explain determinants of health, national and international health and development goals and targets that drives health planning and interventions

iii. Conduct community-based participatory assessment (CBPR).

iv. Use research and evidence base information in planning for education and intervention activities

v. Discuss difference in health needs and challenges to access to care of different groups in the community

vi. Develop skills to treat community members and offer care in dignified manner that follows human rights and ethical principals

vii. Apply epidemiological skills to understand communicable diseases, non-communicable diseases, nutrition related problems, sexual and reproductive health,

viii. Use geographic information system (GIS) and link it with health characteristics and disease distribution of a community in order to design targeted health education, promotion and intervention programs.

6.4.6 Course content

i. Introductory Block
   a. Community health: definition, importance, principles and tools
   b. Factors influencing health in the community
   c. Participatory approaches in community engagement
   d. Priority setting of community health needs (perceived vs. actual needs)
   e. Community and GIS mapping of key structures and places that influence disease occurrence and prevention as well as access to care (water sources, public recreation places, health facilities, schools, places of worship, markets etc)
   f. Mapping of households and assessment of household factors that influence health and access to care (household assessment)
   g. Assessment of availability and access to health care in specified community in a holistic manner (facilities, health providers, traditional practitioners and other providers of any form of health service)
   h. Role of community institutions (schools, religious institutions, political leadership etc) in influencing health
   i. Primary health education practices in the village
   j. Using SPSS for data base creation and entry
   k. Simple analysis and generating results and simple frequency tables

ii. Central Nervous System Block
   a. Introduction to CNS and how it influence health
   b. Specified CNS diseases in newborns and children (Clinical aspect, epidemiology, preventive strategies, community engagement in
prevention & care, assessing key challenges in families with children with these problems)
1. Mental retardation
2. Cerebral palsy/Hydrocephalus/Spinal bifida
3. Seizures: convulsions/epilepsy
4. Spinal and head injuries (causes, epidemiology and community interventions in designing interventions)
5. General blindness (Epidemiology, Key causes in Tanzania, Prevention, Care and Integrated approach in designing intervention and care)
6. Deafness
7. Leprrosy (Burden, clinical, approaches to treatment and case finding)
8. Mental health: neglected health problem in LMIC including Tanzania (Definition, Public Health Importance, Burden, Conditions, Integrated intervention and care and assessment of burden of mental health in different groups in a specified community)

6.4.7 Teaching and learning activities
i. Lectures
ii. Individual & Group assignments
iii. Team based learning (TBL)
iv. Outreach/field visits
v. Presentations and discussion

6.4.8 Assessment methods
Semester examinations
Individual/Group Readiness Assurance Test (IRAT/GRAT)
Marked group presentations
Marked Field Reports
i. IRAT/GRAT: 10%
ii. Group presentations: 10%
iii. Field Report: 20%
iv. Examination: 60%

6.4.9 Reading list
Textbooks


xi. Tamara et al., 2009. Hydrocephalus; who will care for me next? Transitioning to adulthood with hydrocephalus.

### 6.5 Course title: Epidemiology and Applied Biostatistics

6.5.1 Course status: Core  
6.5.2 Total credits: 8  
6.5.3 Subject hours: 80  
6.5.4 Course aims

The course introduces the basic principles and methods of epidemiology and the roles of biostatistics in the discipline of public health. With an emphasis on critical thinking, analytic skills, application into research and clinical practice. At the end of the course students are expected to gain knowledge about: measuring and interpreting patterns of disease occurrence; routine sources of data, their strengths and limitations; study designs used in epidemiology and when to apply them; epidemiological models of causation; and will begin to critically appraise epidemiological literature with reference to issues of study design and interpretation of results. Also, students are expected to be able to distinguish among the different measurement scales and the implications for selection of statistical methods to be
used based on these distributions, apply descriptive techniques commonly used to summarize public health data, apply common statistical methods for inference and also apply descriptive and inferential methodologies according to the type of study design for answering a particular research question.

In addition to the above, students are expected to understand the application of basic informatics techniques with vital statistics and public health records in the description of public health characteristics and in public health research and evaluation. Interpret results of statistical analyses found in public health studies and at the end of the course, students are expected to apply knowledge and skills gained from this course to develop written and oral presentations based on statistical analyses for both public health professionals and educated lay audiences.

6.5.5 Course expected learning outcomes

i. Describe basic concepts of probability, random variation and commonly used statistical probability distributions.

ii. Describe preferred methodological alternatives to commonly used statistical methods when assumptions are not met.

iii. Distinguish among the different measurement scales and the implications for selection of statistical methods to be used based on these distinctions.

iv. Apply common statistical methods for inference.

v. Apply descriptive and inferential methodologies according to the type of study design for answering a particular research question.

vi. Apply basic informatics techniques with vital statistics and public health records in the description of public health characteristics and in public health research and evaluation.

vii. Interpret results of statistical analyses found in public health studies.

viii. Use statistical software to analyse health-related data.

6.5.6 Course content

Biostatistics

i. Introduction to Biostatistics

   a. Definition of statistics & Branches of statistics

   b. Definition of biostatistics & Branches of Biostatistics

   c. History of biostatistics

   d. Important of biostatistics in medicine and public health
ii. **Variables**
   a. Definition and types of variables
   b. Categorical/Qualitative variables
   c. Numerical/Quantitative Variables
   d. Scales of measurement for different variables
   e. Importance of different types of variables
   f. Conceptualization and Operationalization of the variables

iii. **Introduction to SPSS**
   a. Setting up the data variables, database creation & data entry
   b. Data cleaning using frequency
   c. Simple descriptive analysis
   d. Generating results tables/charts (simple frequency tables// bar graph and pie chart)
   e. Data management

iv. **Data Summarization**
   a. Definition of a data, types and relevance of data
   b. What is data summarization
   c. Proportions/percentages for categorical data
   d. Measures of central tendency and associated measures of dispersion for continuous data
   e. Data distribution

v. **Data Presentations**
   a. Ways of data presentation
   b. Graphical Method
   c. Tables
   d. Narration

6.5.7 **Teaching and learning activities**
   i. Lectures
   ii. Questions and answers
   iii. Group work and plenary discussion
iv. Individual assignment

Formal lectures, group work assignment

6.5.8 Assessment methods
i. Assignments 20%

ii. Semester written examinations 80%

6.5.9 Reading list

Textbooks


iv. CDC Epidemiology book


6.6 Course title: Psychology

6.6.1 Course status: Non Core
6.6.2 Total credits: 2.5
6.6.3 Subject hours: 25

6.6.4 Course aims

The module aims to offer scientific broad general knowledge and skills to the learner in normal and abnormal human behavior (psychological human functioning), based on overt actions, mental processes, emotional responses and physiological reactions. It will provide deepen knowledge of applying psychological principles and theories, which are used to understand events, treat mental health issues, and improve education, employment and relationships. They will also recognize the importance of treating the person and not just the disease and this will help them to develop the strategies of treating the patients better.
6.6.5 Course expected learning outcomes
At the end of the course, the student shall be able to:

i. Critically analyze principles and personality theories introduced by different psychologists.

ii. Critically and scientifically describe individual behaviour and mental processes as accurately and completely as possible.

iii. Recognize the conditions under which a given behaviour and or mental processes occur.

iv. Predict the specific conditions under which a behaviour or event is likely to occur.

v. Apply the psychological principles, theories and strategies to treat psychological or emotional problems according to the uniqueness of individual’s thoughts, emotions, personality, behaviour patterns, and their own personal history and experiences. Control unwanted psychological or emotional problems by using a designed therapy so as to bring about desired outcomes.

vi. Build good relationships, Improve communication, Building self-confidence and enriching careers.

vii. Know and teach the patients coping mechanisms for eradicate emotional or psychological problems such as stress, depression, and anxiety.

6.6.6 Course content

An introduction to psychology

i. Meaning of psychology
ii. Main objective of studying psychology
iii. Specific objectives of studying psychology
iv. Psychology as a scientific discipline
v. Application of psychology in everyday life
vi. Exploring psychology roots
vii. Psychology today
viii. Subfields of psychology
ix. What do psychologists observe in human functioning?

x. Common psychological concepts

Personality Theories and Assessment

i. Meaning of personality
ii. Description of personality theories
iii. Types of personalities and their characteristics
iv. Types of personality disorders

Clinical psychology

i. Meaning and concepts of clinical psychology
ii. Learning
iii. Memory
iv. Forgetting
v. Theories of stress
vi. Coping mechanisms
vii. Psychotherapy
viii. Skills and principles of counseling
ix. Motivation and emotion
x. The hierarchy of motives
xi. Maslow’s pyramid of human needs
xii. Motivational systems

Neuro-psychoLOGY
i. Biology and behavior
ii. The central nervous system
iii. Stress and immune system
iv. Some of the major neurotransmitters and some of the ways in which they affect behaviour
v. Comparison of biomedical and biopsychosocial approaches
vi. The limbic system

Psychology and medicine
i. The importance of psychology in medicine
ii. What is health?
iii. Why is psychology important?
iv. Different approaches to medicine
v. Biomedical approach
vi. Biopsychosocial approach

6.6.7 Teaching and learning activities
Lecture/discussion, Case studies, role-play, simulation

6.6.8 Assessment methods
i. Assignment s 10%
ii. Written test 40%
iii. Semester written examinations 50%

6.6.9 Reading list
Textbooks


YEAR 1: SEMESTER 2

6.7 Course title: Anatomy

6.7.1 Course status: Core
6.7.2 Total credits: 17
6.7.3 Subject hours: 170

6.7.4 Course aims

The aim of this module is to enable medical students to be familiar with the anatomy of the anterior and posterior abdominal walls and the inguinal region, the extent of the peritoneal cavity and the anatomy and key relationships of the oesophagus, stomach, small and large intestines including the appendix, liver, gall bladder, pancreas, spleen, kidneys, ureters and adrenal and suprarenal glands. They should understand the arterial supply and venous drainage to the intestine in relation to arterial occlusion, strangulation, intestinal surgery, the portal circulation and the effects of portal hypertension, and the lymphatic drainage and innervations of the abdominal organs in relation to metastatic spread of cancer and abdominal pain. This knowledge forms the basis of understanding of surgical incisions, referred pain from the abdominal viscera (especially the gall bladder and appendix) and how the subhepatic and sub-phrenic spaces may be implicated in the spread of infection. They should have a working knowledge of surface anatomy and be able to undertake an examination of the abdomen and of the inguinal canal for hernias. They should be able to interpret standard diagnostic images of the alimentary, pancreato-biliary and urinary tracts.

6.7.5 Course expected learning outcomes

After the course, medical students should be able to:

1. Demonstrate the bony and cartilaginous landmarks visible or palpable on abdominal examination.
2. Demonstrate the descriptive regions of the abdomen and common incision sites. Demonstrate the surface projections of the abdominal organs.
3. Describe the anatomy, innervations and functions of the muscles of the anterior and posterior abdominal walls. Discuss their functional relationship with the

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4. In relation to direct and indirect inguinal hernias, demonstrate the anatomy of the attachments of the inguinal ligament; the anatomy of the superficial and deep inguinal rings and how the anterior abdominal wall muscles form the inguinal canal. Describe the contents of the inguinal canal in both males and females.
5. Describe the relationship between the femoral canal and the inguinal ligament and the anatomy of femoral hernias.
6. Demonstrate the positions of the liver, pancreas, spleen, kidneys, stomach, duodenum, jejunum and ileum of the small intestine, caecum, appendix, ascending, transverse, descending and sigmoid parts of the colon and the rectum.
7. Describe the organization of the parietal and visceral peritoneum; its lesser and greater sacs, mesenteries and peritoneal ‘ligaments’. Explain the significance of the variable attachment of the ascending and descending colon to the posterior abdominal wall.
8. Summarize the functional anatomy of the small bowel mesentery; its structure, location and vascular, lymphatic and neural content.
9. Explain the nerve supply of the parietal and visceral peritoneum and the role of the visceral peritoneum in referred pain.
10. Describe the functional anatomy of the stomach, its position, parts, sphincters, blood and nerve supply and key relations to other abdominal organs.
11. Describe the duodenum, its parts, position, secondary retroperitoneal attachment, blood supply and key relations with other abdominal organs and their significance in relation to peptic ulcer disease.
12. Describe the regions of the small and large intestine, including the anatomy of the appendix. Describe the anatomical variations in the position of the appendix and explain their significance in relation to appendicitis.
13. Describe the position and form of the pancreas and its relationships to other abdominal organs. Discuss the significance of these relationships in relation to pancreatitis and biliary stone disease.
14. Describe the position and form of the liver, the lobes of the liver and their key anatomical relations. Explain the peritoneal reflections of the liver and its movement during respiration. Summarize the functional anatomy of the portal vein, the portal venous system and portal-systemic anastomosis and their significance in portal hypertension.
15. Describe the position and form of the gall bladder and biliary tree; their relations in the abdomen and the significance of these relations in relation to gall bladder inflammation and biliary stones.
16. Describe the position and form of the kidneys and ureters. Demonstrate their relationships to other abdominal and pelvic structures and discuss the significance of these relations in relation to urinary stones.
17. Describe the relations of the suprarenal (adrenal) glands and their functional anatomy.
18. Describe the position (in relation to the ribs) and form of the spleen in relation to its palpation through the abdominal wall and its key anatomical relationships.
with other abdominal structures. Explain the significance of these relationships in relation to trauma, chronic infections and disorders of the haematopoietic system.

19. Describe the origins, course and major branches of the abdominal aorta, celiac axis, superior and inferior mesenteric arteries and their major branches, the renal and gonadal arteries. Explain the significance of the blood supply from the abdominal aorta to the spinal cord in relation to abdominal aneurysm repair.

Demonstrate the origins, course and major tributaries of the inferior vena cava.

20. Describe the anatomy of the lymph nodes involved in lymph drainage of abdominal viscera and its significance in relation to spread of malignancy.


6.7.6 Course content
Anatomy of the pelvis and perineum

Module Description:

The aim of this module is to enable medical students to be familiar with the anatomy and positions of the ureters, bladder, urethra, rectum and anal canal, the structure of the pelvic floor, and the anatomy of continence, the anatomy of the external and internal genitalia in males (scrotum, testis, vas deferens, seminal vesicles, prostate, penis) and females (ovaries, uterine tubes, uterus, cervix, vagina, labia, clitoris). They should be able to describe the peritoneal relationships, and supports of the pelvic visera to understand ectopic pregnancy, prolapse and suprapubic catheterisation. They should understand the arterial supply, venous drainage and the lymphatic drainage and innervation of the pelvic organs in relation to metastatic spread of cancer. Graduates should be able to interpret relevant standard diagnostic images and have sufficient anatomical knowledge to be able to perform rectal and vaginal examinations, urinary catheterisation in both males and females, and obtain a cervical smear in females.

After the course, medical student should be able to:

i. Describe the skeletal and ligamentous components of the pelvis, the anatomy of the pelvic inlet and outlet and recognize their normal orientation. Explain sex differences in pelvic skeletal anatomy and how these change during development.

ii. Demonstrate the palpable anatomical landmarks of the iliac, ischial and pubic bones in the living and on the bones and identify them on medical images.

iii. Demonstrate the points of attachment of the muscles of the abdominal wall and those of levator ani.

iv. Describe the functional importance of the pelvic floor musculature, its midline raphé and the structures passing through it in males and females.
v. Describe the anatomy of the bladder, its base and ureteric openings. Explain how its position changes with filling and pregnancy and its relationship to the overlying peritoneum.

vi. Describe the anatomy of the urethra; explain the anatomy of its different part in males and females in relationship to continence and catheterisation.

vii. Describe the innervation of the bladder and its sphincters and the mechanism of micturition.

viii. Describe the anatomy of the scrotum, testis, epididymis and their normal features on clinical examination. Explain the significance of their arterial supply in relation to torsion, their venous drainage in relation to varicocoele and their lymphatic drainage in relation to tumour spread.

ix. Describe the structure and course of the spermatic cord and vas deferens.

x. Describe the anatomy of the prostate gland, seminal vesicles and their anatomical relations. Describe the normal form of the prostate when examined per rectum and changes in relation to hypertrophy and malignancy.

xi. Describe the position and form of the ovary, uterine tubes, uterus, cervix and vagina and their anatomical relationships, including any peritoneal coverings. Describe the changes that occur in the uterus and cervix with pregnancy.

xii. Describe the origin, course and relations of the uterine, ovarian and testicular arteries.

xiii. Describe the origin, course and branches of the pudendal nerves and the sites of nerve block during childbirth.

xiv. Describe the innervation and mechanisms involved in erection of cavernous tissue in male and female and emission and ejaculation in the male.

xv. Describe the anatomy of the sigmoid colon and rectum and their anatomical relationships including peritoneal. Explain the anatomy of the anal canal, the functional anatomy of the anal sphincters and their role in faecal continence.

xvi. Describe the blood supply and venous drainage of the distal bowel; the supply from the superior rectal (inferior mesenteric), middle rectal (internal iliac) and inferior rectal arteries (from pudendal to anal canal only), and portal-systemic venous anastomosis. Describe the vascular anal cushions and explain their role in continence.

xvii. Describe the anatomy of the ischio-anal fossa and explain its potential involvement in abscesses, anal glands and fissures.

xviii. Describe the structure of the penis, scrotum and its contents, the clitoris and vulva. Describe the arterial supply to and venous drainage from the penis. Explain the anatomy of the perineal membrane and superficial perineal pouch in relation to the accumulation of fluids in the male.

xix. Describe the lymphatic drainage of the pelvis.

xx. Interpret standard diagnostic images of the pelvis and be able to recognise common abnormalities.
ANATOMY OF THE LOWER LIMB

Module Description:

This module intends to enable medical students to recognize the major palpable and imaging features of the bones of the lower limb, be aware of the sites of common fractures (neck and shaft of femur, tibia and fibula) and the complications that might result from them. They should be able to explain the factors that influence the stability of the hip, knee and ankle joints, the common ligamentous injuries and be able to test for ligament integrity. In order to perform clinical procedures safely and effectively, graduates should be able to describe the course and distribution of the main neurovascular structures in the lower limb (e.g. to avoid damage to the sciatic nerve when making an intramuscular injection,), be able to demonstrate major pulse points (e.g. femoral, for arterial blood sampling, popliteal, posterior tibial and dorsalis pedis), the position of major veins (for venepuncture, venous access by ‘cut down’ and assessment of varicose veins) and the common sites of peripheral nerve injury and the possible functional effects of such damage (e.g. sciatic and common peroneal nerve at neck of fibula). They should have a working knowledge of surface anatomy, dermatomes and peripheral nerve distribution, the functions of major muscle groups and their innervation in order to perform a basic neurological examination of the lower limb. Graduates should understand the organisation of inguinal lymph nodes and how they relate to the lymphatic drainage of the limb, trunk skin and perineum. They should be aware of the organisation of the deep fascia of the lower limb and its relevance to compartment syndromes, how blood is returned to the heart from the legs and how failure of this mechanism may cause the development of varicosities, deep vein thromboses and embolism.

After the course, medical student should be able to:

i. Recognize the major features and surface landmarks of the pelvis, femur, tibia, fibula, ankle and foot. Demonstrate their palpable and imaging landmarks. Appreciate which bones and joints are vulnerable to damage and what the consequences of such damage could be.

ii. Describe the close relations of the bones and joints (e.g. bursae, blood vessels, nerves, ligaments and tendons), which may be injured in fractures or dislocations and predict what the functional effects of such damage would be.

iii. Describe the fascial compartments enclosing the major muscle groups and explain the functional importance of these compartments and their contents in relation to compartment syndromes.

iv. Demonstrate the origin, course and branches of the major arteries that supply the hip, gluteal region, thigh, leg, ankle and foot. Explain the functional significance of anastomoses between branches of these arteries at the hip and knee.
v. Demonstrate the locations at which the femoral, popliteal, dorsalis pedis and posterior tibial pulses can be felt.

vi. Demonstrate the course of the principal veins of the lower limb. Explain the role of the perforator vein connections between the superficial and deep veins and the function of the ‘muscle pump’ for venous return to the heart. Describe the sites of venous access that can be used for ‘cutdown’ procedures in emergencies.

vii. Outline the origin of the lumbosacral plexus and the formation of its major branches.

viii. Describe the origin, course and function of the sciatic, femoral, obturator, common peroneal and tibial nerves, sural and saphenous nerves and summarize the muscles and muscle groups that each supplies as well as their sensory distribution.

ix. Describe the structure and movements of the hip joint. Summarise the muscles responsible for these movements, their innervation and main attachments.

x. Describe the structures responsible for stability of the hip joint and their relative contribution to maintaining the lower limb in different positions.

xi. Describe the structures at risk from a fracture of the femoral neck or dislocation of the hip and explain the functional consequences of these injuries.

xii. Describe the boundaries of the femoral triangle and the anatomical relationships of the femoral nerve, artery, vein and lymph nodes to each other and to the inguinal ligament, with particular regard to arterial blood sampling and catheter placement.

xiii. Describe the anatomy of the gluteal (buttock) region and the course of the sciatic nerve within it. Explain how to avoid damage to the sciatic nerve when giving intramuscular injections.

xiv. Describe the structure and movements of the knee joint. Summarise the muscles responsible for these movements, their innervation and main attachments.

xv. Describe the close relations of the knee joint including major bursae and explain which structures may be injured by trauma (including fractures and dislocation) to the knee.

xvi. Identify the factors responsible for maintaining the stability of the knee joint. Describe the menisci, ligaments and the locking mechanism close to full extension. Explain the anatomical basis of tests which assess the integrity of the cruciate ligaments.

xvii. Describe the boundaries and contents of the popliteal fossa.

xviii. Describe the anatomy of the ankle joint. Explain the movements of flexion, extension, plantarflexion, dorsiflexion, inversion and eversion. Summarise the muscles responsible for these movements, their innervation and their main attachments.

xix. Describe the factors responsible for stability of the ankle joint, especially the lateral ligaments, and explain the anatomical basis of “sprain” injuries.

xx. Describe the arches of the foot and the bony, ligamentous and muscular factors that maintain them.

xxi. Describe the movements of inversion and eversion at the subtalar joint, the muscles responsible, their innervation and main attachments.
xxii. Describe the anatomical basis (nerve root or peripheral nerve) for loss of movements and reflexes at the knee and ankle resulting from spinal injuries, disc lesions and common peripheral nerve injuries. Describe the dermatomes of the lower limb and perineum used to assess spinal injuries.

xxiii. Describe the structures at risk to a fracture of the femoral neck or dislocation of the hip and describe the functional consequences of these conditions.

xxiv. Describe the lymphatic drainage of the lower limb and its relationship to tumour spread.

xxv. Discuss the structures of the lower limb that may be used for autografts.

xxvii. Interpret standard diagnostic images of the lower limb and be able to recognize common abnormalities.

ANATOMY OF THE HEAD AND NECK

Module Description:

This module intends to enable medical students to recognize the major palpable and imaging features of the skull and cervical spine in order to be able to interpret relevant medical images. To perform clinical examination of the head and neck graduates should be familiar with the position, key relationships, neurovascular supply, venous and lymphatic drainage of the following major structures: course and distribution of the cranial nerves, ear and pharyngotympanic (Eustachian) tube, eye, eyelids and conjunctivae, nasal cavity and paranasal air sinuses, oral cavity and tongue, tonsils, soft palate, pharynx, salivary glands, larynx and trachea, thyroid and parathyroid glands and the contents of the carotid sheath. Medical graduates should be able to describe the fascia and fascial spaces of the neck in relation to the spread of infection. This knowledge is necessary for understanding conductive and sensorineural deafness, otalgia and the likely sources of referred pain to the ear, facial nerve palsy, epistaxis, quinsy, dysphagia, upper airway obstruction, infantile stridor, sinusitis, vocal cord paralysis and hoarseness, cervical swellings, and salivary gland swellings. Medical graduates should have sufficient anatomical knowledge to be able to manage the airway, insert an endotracheal or nasogastric tube, and perform a tracheostomy and laryngotomy. They should have a working knowledge of surface anatomy, cranial nerve distribution, the functions of major muscles of the head and neck and their innervation in order to perform a basic neurological examination.

After the course, medical students should be able to:

i. Demonstrate the position, palpable and imaging landmarks of the major bones of the skull, including the frontal, parietal, occipital, temporal, maxilla, zygoma, mandible, sphenoid, nasal and ethmoid bones. Demonstrate the palpable position of the hyoid bone, thyroid and cricoid cartilages, lateral mass of the atlas and the spine of C7. Demonstrate the major sutural joints and describe the fontanelles of the fetal skull.

ii. Describe the boundaries, walls and floors of the cranial fossae.
iii. Identify the external and internal features of the cranial foraminae and list the structures that each transmits.

iv. Demonstrate the position of the anterior and posterior triangles of the neck defined by the sternum, clavicle, mandible, mastoid process, trapezius and sternocleidomastoid.

v. In the posterior triangle, demonstrate the position of the spinal accessory nerve, the roots and trunks of the brachial plexus, the external jugular vein and subclavian vessels in relation to penetrating neck trauma.

vi. In the anterior triangle, demonstrate the position of the common, internal and external carotid arteries, the internal jugular vein and vagus nerve, the trachea, thyroid cartilage, larynx, thyroid and parathyroid glands. Explain their significance in relation to carotid insufficiency, central venous line insertion, emergency airway management and diagnosis of thyroid disease.

vii. Describe the location and anatomical relations of the thyroid and parathyroid glands, their blood supply and the significance of the courses of the laryngeal nerves.

viii. Demonstrate the origin, course and major branches of the common, internal and external carotid arteries and locate the carotid pulse.

ix. Describe the courses of the accessory, vagus and phrenic nerves in the neck.

x. Identify the major structures passing between the neck and the thorax. Describe the courses and important relationships of the subclavian arteries and veins.

xi. Describe the anatomy of the scalp, naming its individual layers. Describe the blood supply of the scalp and its significance in laceration injuries.

xii. Demonstrate the extracranial course of the branches of the facial nerve. Summarise the muscles of facial expression supplied by each branch and describe the consequences of injury to each branch.

xiii. Describe the intracranial and intrapetrous course of the facial nerve and the relationships of its major branches to the middle ear in relation to damage of the nerve within the facial canal.

xiv. Describe the anatomy of the temporomandibular joint. Explain the movements that occur during chewing and describe the muscles involved including their innervation. Explain what occurs in anterior joint dislocation and relocation.

xv. Describe the origin, function and major branches of the sensory and motor components of the trigeminal nerve.

xvi. Describe the origins and summarise the courses and major branches of the facial and maxillary arteries, including the course and intracranial relations of the middle meningeal artery and its significance in extradural haemorrhage.

xvii. Describe the relationship of the termination of the facial vein (draining into the internal jugular vein) and the mandibular branch of the retromandibular vein (supplying facial muscles controlling the angle of the mouth) to the submandibular gland and related upper jugular lymph nodes in relation to exploration of this area.

xviii. Describe the key anatomical relations of the parotid, submandibular and sublingual salivary glands, the course of their ducts into the oral cavity and their
autonomic secretomotor innervation. Appreciate the narrow points of the ducts in relation to salivary stone impaction.

xix. Demonstrate the major features and boundaries of the oral cavity and summarise its sensory innervation.

xx. Describe the functional anatomy of the tongue, including its motor and sensory innervation and the role of the extrinsic and intrinsic muscles. Explain the deviation of the tongue after hypoglossal nerve injuries.

xxi. Describe the anatomical arrangement and functional significance of the lymphoid tissue in the tonsils, pharyngeal, and posterior nasal walls.

xxii. Describe the muscles that compose the pharyngeal walls and move the soft palate; summarise their functions and nerve supply. Describe the components of the gag reflex.

xxiii. Describe the hyoid bone and cartilages of the larynx. Explain how these structures are linked together by the thyrohyoid, cricothyroid, and quadrangular membranes.

xxiv. Describe the intrinsic and extrinsic laryngeal muscles responsible for closing the laryngeal inlet, controlling vocal cord position and tension. Explain how these muscles function during phonation, laryngeal closure, the cough reflex and regulation of intrathoracic pressure.

xxv. Describe the origin, course and functions of the motor and sensory nerve supply of the larynx and the functional consequences of injury to them.

xxvi. Describe the stages of swallowing and the functions of the muscles of the jaw, cheek, lips, tongue, soft palate, pharynx, larynx and oesophagus during swallowing.

xxvii. Describe the location, actions and nerve supply of the intrinsic and extra-ocular muscles and apply this knowledge to explain the consequences of injury to the nerve supply of these muscles.

xxviii. Describe the anatomy of the eyelids, conjunctiva and lacrimal glands. Explain their importance for the maintenance of corneal integrity.

xxix. Describe the functional anatomy of the external auditory meatus, tympanic membrane, ear ossicles and auditory tube, together with their major anatomical relations.

xxx. Describe the bones of the nasal cavity and the major features of the lateral wall of the nasal cavity. Describe the major arteries that supply the lateral wall and nasal septum in relation to nosebleeds.

xxxi. Name the paranasal sinuses, describe their relationships to the nasal cavities and sites of drainage on its lateral wall and explain their innervation in relation to referred pain.

xxxii. Describe the arrangement of the dura mater, and its main reflections within the cranial cavity and their relationship to the major venous sinuses and the brain itself.

xxxiii. Describe the arrangement of the venous sinuses of the cranial cavity; explain the entrance of cerebral veins into the superior sagittal sinus in relation to subdural haemorrhage, and how connections between sinuses and extracranial veins may permit intracranial infection.
Describe the relationships between the brain and the anterior, middle and posterior cranial fossae.

Describe the anatomy of the motor and sensory nerves to the head and neck and apply this to a basic neurological assessment of the cranial nerves and upper cervical spinal nerves.

Describe the sympathetic innervation of the head and neck and the features and casual lesions in Horner’s syndrome.

Demonstrate the positions of the external and internal jugular veins and the surface landmarks that are used when inserting a central venous line.

Describe the arrangement of the lymphatic drainage of the head and neck, the major groups of lymph nodes and the potential routes for the spread of infection and malignant disease.

Interpret standard diagnostic images of the head and neck and be able to recognize common abnormalities.

NEUROANATOMY

Module Description:

This module intends to enable medical students be able to describe the blood supply and venous drainage of the brain and spinal cord, the arrangement of the meninges, the pattern of the major dural venous sinuses, subarachnoid space, ventricular system and the production, circulation and drainage of cerebrospinal fluid. They should understand the position, organisation, connections, vascular supply, venous drainage and key relations of the main parts of the brain and spinal cord including the cerebral cortex, internal capsule, cerebellum, basal ganglia, thalamus, hypothalamus and brainstem. They should be aware of the key relations and components of the white matter, including the main motor and sensory pathways of the brain and spinal cord. This knowledge is necessary for interpretation of standard diagnostic images, an understanding of stroke and recognition of the signs and symptoms of common neurological disorders and intracranial haemorrhages. For all structures, the emphasis should be on those that are commonly damaged or involved in interventional procedures. For the musculoskeletal system, the emphasis should be on the principal palpable and radiological features of the bones, commonly damaged ligaments, functional muscle groups (avoiding unnecessary details of their attachments) and their innervation by segmental spinal nerves. For the cardiovascular system there should be a good knowledge of the heart and emphasis on pulse points and commonly damaged sites on arteries, access points on veins, and a sound understanding of the lymphatic drainage of tissues. For the peripheral nervous system the emphasis should be on supplies to areas of skin and muscle groups by both segmental spinal nerves and peripheral nerves.

After the course, medical student should be able to:

i. Define the terms rostral and caudal, anterior / ventral and posterior / dorsal in relation to the nervous system.
ii. Define the terms grey and white matter, fasciculus, tract, commissure, pathway, chiasm, decussation, nucleus, ganglion, and cortex.

iii. Identify the major divisions of the brain: the cerebral hemispheres, diencephalon (thalamus, hypothalamus and epithalamus), midbrain, pons, medulla oblongata and cerebellum.

iv. Identify the major sulci and gyri of the cerebral hemispheres (lateral, central and post-calcarine) and summarize the position of the frontal, parietal, occipital and temporal lobes.

v. Describe the areas of cerebral cortex subserving major special functions; motor (including motor speech); sensory; visual; auditory (including sensory speech); memory and emotion (medial temporal – hippocampus, amygdala); decision making, social behaviour (orbitofrontal). Explain the manifestations of related disorders.

vi. Summarize the position of the major commissure (corpus callosum) and ascending and descending tracts (internal capsule, cerebral peduncles, pyramids),

vii. Describe the blood supply to the brain and explain the functional deficits occurring after ‘stroke’ involving individual cerebral arteries.

viii. Describe the anatomy of the arachnoid and pia mater and ventricular system. Explain the formation, circulation and drainage cerebrospinal fluid.

ix. Describe the origins, courses and functions of the cranial nerves.

x. Describe the neural pathways sub-serving the special senses.

xi. Summarize the structure of the cerebellum, the connections and functions of the principal cerebellar inputs and outputs.

xii. Summarize the locations, connections and functions of the basal ganglia (caudate, putamen, globus pallidus, subthalamic nucleus and substantia nigra). Explain the manifestations of related disorders.

xiii. Summarize the functions and connections of the thalamus.

xiv. Describe the anatomy and major functions (endocrine, autonomic) of the hypothalamus and pituitary gland. Explain the manifestations of related disorders.

xv. Describe the principal components of the limbic system, hippocampus, amygdala, prefrontal cortex, nucleus accumbens), the pathways connecting them and their function.

xvi. Discuss the position and major functions of the ascending aminergic systems (noradrenaline, dopamine, and serotonin) and cholinergic systems.

xvii. Describe the positions within the spinal cord of the dorsal column, anterolateral (spinothalamic) and trigeminothalamic ascending tracts, the spinocerebellar and the corticospinal and extrapyramidal descending tracts. Describe the sites at which synapses occur in these pathways.

xviii. Explain the anatomical basis of neurological assessment.

xix. Identify the major features of the brain on coronal, horizontal and sagittal sections and standard diagnostic image and be able to recognize common abnormalities

6.7.7 Teaching and learning activities
Lectures, Team based learning (TBL), practical dissections of human cadaver, use of imaging photographs (x-ray films, MRI scans etc), body painting, models, mannequins and bin cards.

6.7.8 Assessment methods

Course evaluation is based on theory examination (lecture exam), practical examination, and TBL assessments. The lecture grade is based on two mid-semester exams, two end of semester exam and TBL quizzes. The theory examinations will be comprehensive weighted accordingly. The laboratory grade is based on comprehensive laboratory practical examinations, laboratory quizzes, reports and attendance. The following is an outline of the intended graded assignments and their relative weight. (Grading criteria may be subject to minor changes throughout the semester)

- 1st Mid-semester assessment (Intro block exam), 2hrs exam (CAT 1) (15%)
- 1st End of Semester Exam (ESE1) (20 %), Theory (2hrs) 12%, Practical (1hr) 8%
- 2nd Mid-semester assessment (CAT2) (20%), theory (2hrs) 12%, Practical (1hr) 8%
- 2nd End of Semester Exam (ESE2) (20 %), Theory (2hrs) 12%, Practical (1hr) 8%
- TBL will contribute 20%, (iRAT 12% and gRAT 8%). Individual deviation on gRAT will base on individual contribution during discussion as marked by the facilitator.
- General attendance, practical participation and reports will contribute 5% to the overall practical assessment.

6.7.9 Reading list

Textbooks
vii. Human Histology by Alan Steven and James Lowe, 4th/5th Edn

Additional Texts:

6.8 Course title: Biochemistry

6.8.1 Course status: Core
6.8.2 Total credits: 8
6.8.3 Subject hours: 80

6.8.4 Course aims

This course enable the student to be conversant with carbohydrate metabolism, Neuromuscular and skeletal biochemistry, reproductive and endocrine biochemistry and fat metabolism.

6.8.5 Course expected learning outcomes

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

i. Describe the major metabolic pathways involving major metabolic fuels in the body
ii. Describe alcohol intoxication and underlying metabolic effects
iii. Describe the mechanisms of diabetic ketoacidosis
iv. Describe major inborn errors of metabolism and their clinical symptoms and treatment measures.
v. Describe the structures of and mechanisms of muscle contraction
vi. Describe cytoskeletal structures and underlying disorders of clinical importance
vii. Describe mechanisms of nerve impulse transmission and the associated chemical substances
viii. Analyze lipoprotein content in blood and give an account of cardiovascular benefits and risks
ix. Describe the hormonal mechanisms of the reproductive system

6.8.6 Course content

i. Digestion and absorption of Carbohydrates, Lipids and Proteins
ii. Glycolysis and the TCA cycle
iii. Glycogen metabolism
iv. Gluconeogenesis and regulation of blood glucose
v. Lactate and Alcohol metabolism
vi. Biologic oxidation
vii. Respiratory chain and oxidative phosphorylation
viii. The pentose phosphate pathway and other hexose metabolism (G6PD deficiency, galactosemia and cataract)
ix. Intermediary metabolism
x. Oxidation of Fatty acids and ketogenesis
xi. Catabolism of amino acids carbon skeletons
xii. Metabolism of xenobiotics

**Locomotor biochemistry -**

i. The extracellular matrix and bone formation: types, structures and properties of cytoskeletal proteins
ii. Muscle structure and muscle contraction

**Neuromuscular and skeletal biochemistry -**

i. Biochemistry of nerve impulse transmission
ii. Specialized derivatives of amino acids and their functions: including neurotransmitters such as catecholamine’s, serotonin, GABA, Nitric oxide, and melanins

**Cholesterol, fatty acids and respiration –**

i. Cholesterol biosynthesis and regulation and excretion
ii. Biosynthesis of fatty acids and regulation
iii. Lipid transport and storage (lipoprotein metabolism and cardiovascular diseases)
iv. Practical session on cholesterol/lipid analysis and clinical significance

**Reproduction, growth Hormones and endocrine biochemistry**

i. Types of hormone receptors and mechanism of signal transduction
ii. Peptide and Steroid hormones – properties and mechanism of action: Pituitary and hypothalamus hormones, Thyroid hormones, Adrenal hormones and catecholamine’s
iii. Metabolism of Eicosanoids (prostaglandin ins, prostacyclin’s and thromboxane’s)
iv. Reproductive hormones and growth producing hormones
v. Hormones of the gonads: synthesis, functions and catabolism,
vi. Placental hormones
vii. Thyroid hormones: synthesis, function and catabolism
viii. Growth hormone and other growth affecting hormones
ix. Practical session on thyroid hormones and clinical significance

6.8.7 **Teaching and learning activities**

Lecturer discussion, Practical in laboratory

6.8.8 **Assessment methods**

i. Assignment s 10%
ii. Written test 40%

iii. Semester written examinations 50%

6.8.9 Reading list

Textbooks
i. Harper’s Illustrated Biochemistry by Lange et al
ii. Principles of Biochemistry – By Lehninger,
iii. Medical Biochemistry – By Bynes,
iv. Biochemistry – By Stryer

6.9 Course title: Physiology

6.9.1 Course status: Core
6.9.2 Total credits: 16
6.9.3 Subject hours: 160

6.9.4 Course aims

The Medical Physiology course examines the physiological function and regulation of major organ systems and their components in the human body. Topics include the following modules: cardiovascular physiology, Respiratory physiology, gastrointestinal and hepatic physiology and Reproductive physiology.

6.9.5 Course expected learning outcomes
Student is expected to be conversant with cardiac physiology, respiratory physiology, gastrointestinal physiology, hepatic physiology and reproductive physiology.

6.9.6 Course content

I: Cardiac Physiology

a. Composition of blood and functions of plasma proteins
b. Red blood cells: formation, characteristics, functions and destruction
c. White blood cells: formation, characteristics and functions
d. Platelets: formation, homeostasis and fibrinolysis
e. Blood groups, blood grouping and blood transfusion
f. Organization and functional organization of the cardiovascular system
g. Impulse generation and conduction in the heart, control of heart rate
h. Introduction to ECG
i. Hemodynamics
j. Cardiac cycle: ventricular filling and emptying, heart sounds
k. Microcirculation, regulation of local blood flow
l. Trans-capillary fluid shift and Starling forces
m. The Lymphatic System
n. Venous return and the regulation of cardiac output
o. Blood pressure; short term and long-term regulation of blood pressure
p. Cardiac adaptive changes during exercise
q. Practical sessions in body fluids
r. Practical sessions in blood
s. Practical sessions in circulatory system
t. Group discussion work in above topics (body fluids, blood and circulation) that will be graded accordingly

II: Respiratory Physiology

i. Functional organization of the respiratory system
ii. Physics of gases, composition of air and concept of partial pressure
iii. Mechanism of breathing
iv. Alveolar ventilation
v. Alveolar capillary gas exchange
vi. Oxygen and carbon dioxide transport and release
vii. Neural and chemical regulation of breathing
viii. Non-respiratory functions of the lungs
ix. Adaptive changes to high altitude
x. Physiology of deep sea diving

III: Gastrointestinal Physiology and Hepatic Physiology

i. Functional Anatomy of the digestive system
ii. Regulation of food intake
iii. Swallowing, gastric motility, movement of small intestines and biliary tracts,

iv. Movement of large intestines and defecation reflex

v. Secretory functions: Secretion, regulation and functions of saliva

vi. Gastric secretion, regulation and function

vii. Intestinal secretion, regulation and function.

viii. Pancreatic exocrine secretions: Bile secretion, storage and release

Gastrointestinal hormones

ix. Digestive functions: digestion and absorption of carbohydrates, proteins, and fats.

x. Absorption of fat-soluble vitamins. Absorption of water, ions and water-soluble vitamins

xi. Liver functions

**IV: Reproductive Physiology**

**Male reproductive system**

i. List and locate the essential and accessory organs of the male reproductive system on a diagram of the system. (Unlabeled picture on blackboard for you to practice labeling)

ii. List the function of the glands associated with the male reproductive system

iii. Explain the significance of the Y chromosome versus the X chromosome in the determination of sex.

iv. Explain the embryonic development of male and female anatomy.

v. Describe the descent of the testes and the formation of the vaginal process. Explain the relationship to development of inguinal hernia. 6. Describe the gross and microscopic anatomy of the testes.

vi. Describe the Sertoli cell (sustentacular cell), and interstitial cell and explain their function in hormone production and spermatogenesis.

vii. Explain temperature control in the testes.
viii. Discuss the primary functions of testosterone and identify the cell responsible for its secretion.

i. Describe the negative feedback system for the control of testosterone, FSH and LH.

ii. Describe the structure of a mature spermatozoon.

iii. Trace the passage of an individual sperm cell from its point of formation, in sequence, through the genital ducts to the exterior of the body.

iv. Discuss the composition of seminal fluid.

v. Describe the process of capacitation and explain its importance to fertilization.

vi. Compare and contrast meiosis and mitosis.

II. Female reproductive

i. List and locate the essential and accessory organs of the female reproductive system on a diagram of the system. (unlabeled picture on blackboard for you to practice labeling)

ii. List the function of the glands associated with the female reproductive system

iii. Understand and identify the stages of follicular growth (primordial, primary, secondary, tertiary), as well as the changes that occur in the follicular wall during pregnancy.

iv. Identify the regional variations in the structure of the oviduct.

v. Describe the changes that occur in the ovary and oviduct during the menstrual cycle.

vi. Distinguish the cyclical alterations in the uterine endometrium and understand their hormonal bases.

vii. Describe the alterations and functional changes in the cytology of the cervix and vagina during the menstrual cycle, and during pregnancy.

6.9.7 Teaching and learning activities
Lectures, tutorials, seminars, small group discussions.

6.9.8 Assessment methods
i. Assignment s 10%

ii. Written test 40%

iii. Semester written examinations 50%

6.9.9 Reading list


6.10 Course title: Community Medicine

6.10.1 Course status: Core
6.10.2 Total credits: 8.5
6.10.3 Subject hours: 85

6.10.4 Course aims

To understand the concept of rehabilitation and burden of disability at the community level

6.10.5 Course expected learning outcomes

i. To understand how disability affects a person, family and community.

ii. To estimate prevalence of disability in the community.

iii. To understand principles of rehabilitation including place of physiotherapy, occupational therapy, orthopedics, and community based rehabilitation.

iv. To learn and understand how to measure DALY/QUALY.

v. To understand occupational hazards, accidents prevention in the work place, workmen’s compensation, occupational health services

vi. To learn and understand first aid for fractures in the community

vii. To describe multidisciplinary approach for caring children with Mental retardation, Cerebral palsy, Hydrocephalus and Spinal bifida

viii. To describe community perception and practices regarding seizures disorders.

ix. To describe the challenges faced by care givers of people with disability and seizures disorders.

x. To describe the magnitude of RTA and interventions to reduce Road traffic accident

xi. To describe the common causes of blindness, prevention, care and how people with blindness are integrated in the community.

xii. To be aware of leprosy control and eradication strategy.
6.10.6 Course content

i. Locomotor Block
   a. Introduction to disability (definition, key terms and conditions)
   b. Principles of Rehabilitation
   c. DALY/QUALY measurement
   d. Occupation health (definition, conditions, hazards & accidents, prevention, designing intervention and assessing selected occupation health problem)
   e. First aid for fractures (types of fractures, prevention and first aid at the community and primary care level)

ii. Human Interaction Block
   a. Introduction to communication and communication skills (how to communicate with peers, colleagues, patients and community during preventive and curative care)
   b. Family relationship, dynamics and communication and influence to health outcomes
   c. Gender and health outcomes
   d. Determinants of health seeking behavior (how family, community and health system communication and interaction influence care seeking behavior)
   e. Human rights and health (definition, patient rights to information & care, providers’ rights and obligations to patients, dignified patient care)
   f. Child rights
   g. Medical ethics (definition, principles and conduct)
   h. Team work and task shifting in clinical and preventive care
   i. Aging in relation to disease and healthcare (understanding common diseases affecting older people & interaction with older people)

6.10.7 Teaching and learning activities

i. Lectures
ii. Individual & Group assignments
iii. Team based learning (TBL)
iv. Outreach/field visits
v. Presentations and discussion

6.10.8 Assessment methods

Semester examinations
Individual/Group Readiness Assurance Test (IRAT/GRAT)
Marked group presentations
Marked Field Reports
   i. IRAT/GRAT: 10%
   ii. Group presentations: 10%
   iii. Field Report: 20%
iv. Examination: 60%

6.10.9 Reading list
Textbooks


xi. Tamara et al., 2009. Hydrocephalus; who will care for me next? Transitioning to adulthood with hydrocephalus.

6.11 Course title: Epidemiology and Biostatistics

6.11.1 Course status: Core

6.11.2 Total credits: 8

6.11.3 Subject hours: 80

6.11.4 Course aims

6.11.5 Course expected learning outcomes

i. Identify key sources of data for epidemiologic purposes.
ii. Identify the principles and limitations of public health screening programs.

iii. Describe a public health problem in terms of magnitude, person, time and place.

iv. Explain the importance of epidemiology for informing scientific, ethical, economic and political discussion of health issues.

v. Discuss basic ethical and legal principles pertaining to the collection, maintenance, use and dissemination of epidemiologic data.

vi. Apply the basic terminology and definitions of epidemiology.

vii. Calculate basic epidemiology measures.

viii. Draw appropriate inferences from epidemiologic data.

6.11.6 Course content

Epidemiology

Introduction to epidemiology

i. Definitions, branches and core functions of epidemiology

ii. History of epidemiology and the concept of descriptive Vs analytical study

Disease Causation

i. Epidemiological Triad

ii. Levels of disease occurrence (sporadic to pandemic)

iii. Levels of prevention (primary to tertiary)

Measures of frequency

i. Ratio, proportion, rate

ii. Prevalence (Point and period prevalence)

iii. Incidence measures (Cumulative incidence and Incidence rate)

Biostatistics
Population and sample

i. Study population vs target population, sample sampling

ii. Significance of sampling

iii. Types of Sampling methods

iv. Probability Sampling methods

v. Non probability Sampling methods

vi. Advantages and disadvantages of different sampling methods

vii. Bias in sampling

Sample size estimation

i. Concepts of sample size estimation

ii. Significance of sample size calculation

iii. Calculate the sample size for a prevalence study

iv. The sample size for testing a difference between two specified proportions

v. The sample size for testing a difference between two specified means

6.11.7 Teaching and learning activities

i. Lectures

ii. Questions and answers

iii. Group work and plenary discussion

iv. Individual assignment

6.11.8 Assessment methods

i. Assignments (20%)

ii. Semester examination (80%)

6.11.9 Reading list


iv. CDC Epidemiology book


**YEAR 2: SEMESTER 3**

**6.12 Course title: Parasitology**

**6.12.1 Course status: Core**

**6.12.2 Total credits: 6.4**

**6.12.3 Subject hours: 64**

**6.12.4 Course aims**

Medical Parasitology and Entomology is taught through four (4) courses *Protozoa*, *Nematodes*, *Cestodes and Trematodes* and *Ectoparasites*. Each the courses emphasizes on biomedical aspects of parasitology, parasite life cycle, epidemiological factors, host parasitic relationships, and appropriate preventive and control measures. The courses are run in succession over the four blocks of 9 weeks each. Assessment of each course is done on completion and prior the start of each subsequent course. All courses are weighed equally through the two semesters of an academic year.

**6.12.5 Course expected learning outcomes**

After finishing this chapter the student will be able to:

i. Define a parasite and parasitism

ii. Define parasite associations including Symbiosis, commensalism, phoresis, mutualism, parasitism

iii. Define parasitism as to location (ectoparasites, endoparasites, temporary, accidental)

iv. Discuss definitive vs intermediate host, obligate vs facultative and permanent host

v. Discuss forms of parasites (parasitoids vs protelean

vi. Define Reservoir host and vector

vii. Discuss the life cycle of all parasites taught

viii. Define mode of parasite transmission: oral, oral fecal, inoculative, contaminative, vector, contagion, aerosol
6.12.6 Course content
A. Blood protozoa:

**Topic 1: Overview of Parasitology and Entomology**
**Topic 2: Genus Plasmodium** (malaria parasites): *Plasmodium falciparum, P. vivax, P. ovale, P. malariae, P. knowlesi*

*After reading topics* on these parasites student will have been acquainted with the new terminology used to describe different parasites. Specifically he will be able to do the following:

i. State the size the parasite and describe its morphology including subcellular structures

ii. Describe in full the life cycle of the parasite, including the cycle in the human and the mosquito and recognize that the mosquito is the definitive host of the parasite

iii. Illustrate how malaria parasites engage a red blood cell and how it successfully become internalized in the red blood cell

iv. List the virulence factors of the parasite

v. Show differences in the life cycle of the 5 malaria parasites

vi. Define the following terms: pre-patent period, incubation period; relapse, vs recrudescence, recurrence

vii. Map up the epidemiology of the disease caused by the parasite

viii. Discuss the different mechanisms of complete resistance or relative resistance to infection with malaria parasites

ix. Discuss malaria virulence factors

x. List and describe different clinical manifestations of malaria

xi. Discuss and show differences between malaria in infancy, childhood, adulthood, pregnancy and in immunodeficiency conditions including HIV, and malignancies

xii. Discuss the different locations of malaria concerning the brain, kidney, lung, spleen, liver

xiii. Discuss diagnosis of malaria including clinical, biochemical, laboratory

xiv. Discuss the pathophysiology of malaria parasites

xv. Describe the different treatment options of malaria in patients with uncomplicated or complicated falciparum malaria, in patients with vivax/ovale/malariae malaria

xvi. Discuss the prevention and control of malaria including use of drugs and mosquito vectors

xvii. Describe the malaria genome and trends in vaccine development

**Topic 3: Babesiosis**

*After studying this chapter the student will be able to do the following:*

i. Recognize the four babesia species by their unique morphology

ii. Describe the mode of multiplication of babesia

iii. Describe the life cycle of babesia
iv. Recognize distribution of babesia worldwide
v. Describe the clinical manifestations of babesia and treatment of babesiosis

**Topic 4: African trypanosomiasis (sleeping sickness)**

**After reading this chapter the student will be able to do the following:**

i. Describe African sleeping sickness
ii. Describe the morphology and virulence factors of pathogenic African trypanosomes
iii. Discuss the distribution of the 2 forms of African trypanosomiasis
iv. Describe clinical manifestations of African Trypanosomiasis
v. Discuss diagnosis of African trypanosomiasis
vi. Discuss pathophysiology of African trypanosomiasis
vii. Discuss diagnosis, treatment and control of African trypanosomiasis

**Topic 5: American Trypanosomiasis (Chagas’ Disease)**

**After reading this chapter the student will be able to:**

i. Discuss American Trypanosomiasis including epidemiology
ii. Describe the agent of American Trypanosomiasis (*Trypanosomacruzi*) and its life cycle
iii. Describe Chaga’s disease
iv. Discuss the diagnosis, treatment and control of Chagas disease

**Topic 6: Leishmaniasis**

**After studying this chapter the student will be able to the following:**

i. Discuss Leishmaniasis as a spectrum disease manifestations found in different parts of the world
ii. Describe the morphology of leishmania parasites and the lifecycle of the organisms
iii. List vectors of leishmania parasites and intermediate hosts
iv. Discuss immunological responses in leishmaniasis
v. Describe cellular and cytokine responses in leishmaniasis
vi. Describe diagnosis, treatment and control of leishmaniasis

**Topic 7: Toxoplasmosis**

**After studying this chapter students will be able to:**

i. Understand that Toxoplasmosis consists of a spectrum of diseases caused by an intracellular parasite; some of the infections are asymptomatic; in some situations immunosuppression contributes to disease development
ii. Describe the life cycle of the parasite
iii. Discuss the life cycle of the parasite: show the different animal species involved; mode of transmission; different forms of the disease
iv. Describe pathophysiology of the disease
v. Describe the diagnosis of the disease
vi. Describe the different forms of toxoplasmosis and their diagnosis
vii. Discuss the diagnosis, treatment and control of toxoplasmosis

B. Intestinal Protozoa

Topic 8: Enteric amebiasis

After reading this chapter the student will be able to:
i. Describe agent of enteric amebiasis vis a vis the nonpathogenic intestinal amebae
ii. Discuss the life cycle of *Entamoebahistolytica*
iii. Discuss the pathogenesis of enteric amebiasis
iv. Describe the two forms (Amebic colitis and liver abscess) of diseases
v. Describe the epidemiology of enteric amoebiasis
vi. Describe treatment and control of amebiasis

Topic 9: Flagellated protozoa. Giardiasis:

After studying this chapter the student will be able to perform the following:
i. Describe the morphology of *Giardia lamblia* trophozoite and cyst
ii. Describe the methods employed to distinguish different types of Giardia
iii. Discuss how trophozoites transform to cysts in the GIT
iv. Discuss disease manifestations in giardiasis
v. Describe the epidemiology of giardiasis including modes of transmission and distribution
vi. Describe the pathogenesis and immune responses to giardiasis
vii. Discuss diagnosis, treatment and control of giardiasis

Topic 10: *Balantidium coli*:

After studying this chapter, the student will be able to answer the following topics on balantidiosis:
i. Describe the morphology of *Balantidium coli* trophozoite and cyst
ii. Discuss the distribution and hosts of *Balantidium coli*
iii. Describe the pathogenesis of balantidiosis
iv. Describe disease manifestations in balantidiosis
v. Discuss treatment and control of balantidiosis

Topic 11: Cryptosporidiosis:

After studying this chapter the student will be able to answer the following topics:
i. Describe *Cryptosporidium parvum* and its life cycle
ii. Discuss the epidemiology of cryptosporidiosis showing the role of different animal species and the degree of transmissibility of the agent
iii. Describe disease manifestations in different immunological status of the host
iv. Discuss immune manifestations and pathogenesis of cryptosporidiosis
v. Discuss diagnosis, treatment and control of cryptosporidiosis

Topic 12: The Trichomonad

After studying this chapter the student will be able to answer questions concerning *Trichomonas vaginalis*, the agent of Trichomoniasis:

i. Describe *Trichomonas vaginalis*
ii. Describe the life cycle of *Trichomonas vaginalis.*
iii. Discuss epidemiology of trichomoniasis
iv. Discuss the pathogenesis of trichomoniasis
v. Describe the clinical features of the disease
vi. Discuss diagnosis, treatment, and control of trichomoniasis

C: Nematodes

Topic 1: Introduction to nematodes

At the end of the session, students shall be able to:

i. Describe distinctive characteristics defining the nematodes.
ii. Identify reproductive strategies among nematode parasites
iii. Discuss the different modes of acquisition of nematode parasites
iv. Identify the location of all nematode parasites in human bodies

TISSUE NEMATODES

Topic 2: Lymphatic filariasis: *Wuchereria bancrofti, Brugia malayi, B. timori*

At the end of the course, students shall be able to:

i. Describe the morphology (shape and size) of the parasites
ii. Describe in detail the life cycle of the parasites in human and mosquito hosts identifying the roles of both hosts.
iii. Describe the epidemiology of the disease caused by the parasite including the concept of periodicity and its implication to the disease
iv. Describe and identify vectors associated with transmission of the parasite.
v. Describe the immunological processes that the patient mounts against the parasite
vi. Discuss the patho-physiological changes that the parasite induces.
vii. Explain the different clinical manifestations (signs and symptoms) of lymphatic filariasis
viii. Demonstrate understanding of options in the diagnosis of lymphatic filariasis.
ix. Describe the available treatment options
x. Explain the control strategies used to limit spread of lymphatic filariasis.

Topic 3: Onchocerciasis (River blindness): *Onchocerca volvulus*
At the end of the course, students shall be able to:

i. Describe the morphology of *Onchocerca volvulus*
ii. Identify vectors associated with transmission of the parasite.
iii. Describe the disease (River blindness)
iv. Explain the epidemiology of the disease
v. Describe the pathophysiology and list the virulence factors of the parasite
vi. Discuss pathophysiology, clinical manifestations, signs and symptoms of the disease
vii. Describe diagnosis of the disease
viii. Describe diagnosis, treatment and control of the disease

**Topic 4: Mansonella species**

At the end of the course, students shall be able to:

i. Recognize the parasites in this genus and their morphology and vectors involved in their transmission
ii. Describe the parasites its life cycle
iii. Identify the resulting disease, signs and symptoms
iv. Discuss the diagnosis, treatment and control of the disease

**Topic 5: Loiasis: Loa loa**

At the end of the chapter, students shall be able to:

i. Describe the parasitic nematode, *Loa loa*, and its geographic distribution and responsible vectors
ii. Discuss the life cycle of the nematode
iii. Describe the pathogenesis and clinical manifestations of the disease
iv. Describe its diagnosis, treatment and control/prevention

**Topic 6: Dracunculiasis: Dracunculus medinensis**

At the end of the chapter, students shall be able to:

i. Describe the parasitic nematode, its geographic distribution and responsible vectors
ii. Discuss the life cycle of the nematode
iii. Describe patho-physiological changes induced by the parasite and identify the clinical manifestations and diagnosis of the disease
iv. Describe its treatment modalities, prevention and control options

**Topic 7: Trichinellosis: Trichinella spiralis**

At the end of the course, students shall be able to:

i. Describe *Trichinella spiralis* and its life cycle in humans and pigs
ii. Explain the epidemiology of Trichinellosis showing the role of both hosts in the transmission of the agent
iii. Describe disease symptoms in a human host
iv. Discuss diagnosis, treatment and control of the disease

INTESTINAL NEMATODES

Topic 8: Ascariasis: *Ascaris lumbricoides*

At the end of the course, students shall be able to:

i. Describe *Ascaris lumbricoides* and the morphology (shape and size) of the different life stages (egg larva and adult)

ii. Discuss the life cycle of the parasite and its geographical distribution identifying the importance of environment (soil) in transmission

iii. Discuss the pathogenesis and the disease manifestation in the different body organs in mild and heavy infections

iv. Describe treatment and control of ascariasis

Topic 9: Enterobiasis: *Enterobius vermicularis*

At the end of the course, students shall be able to:

i. Describe the morphology of all life stages of *Enterobius vermicularis*

ii. Explain the life cycle and epidemiology of the parasite including modes of transmission and distribution

iii. Describe patho-physiological changes induced by the parasite and identify resulting symptoms of the disease

iv. Discuss diagnosis, treatment and control of Enterobiasis

Topic 10: Hook worms: *Ancylostoma duodenale, Necator americanus,*

At the end of the course, students shall be able to:

i. Describe the morphology of eggs and adult stages of the parasites

ii. Discuss the life cycle and epidemiology of the parasites and identify important factors contributing to the spread of hook worms.

iii. Describe the pathogenesis of hook worm infection and the resulting disease manifestations in different body organs

iv. Discuss treatment and control of hook worms

Topic 11: Strongyloidiasis: *Strongyloides stercoralis*

At the end of the course, students shall be able to:

i. Describe the morphology of eggs and adult stages of the parasites

ii. Discuss the life cycle of the parasite, the epidemiology and identify the importance of non-parasitic forms of the parasite in the environment to the spread of strongyloidiasis.

iii. Describe the pathogenesis of strongyloidiasis and discuss the disease manifestations in different immunological status of the host

iv. Discuss treatment and control of hook worms
Topic 12: Trichuriasis: *Trichuris trichiura*

At the end of the course, students shall be able to:

i. Describe *Trichuris trichiura*, the life stages (egg, larva and adult) and its life cycle
ii. Explain the epidemiology of Trichuriasis and identify the role of environment/soil in the transmission of the nematode
iii. Describe location of adult parasites in humans and list the disease symptoms in children and adults
iv. Discuss diagnosis, treatment and control of the disease

Topic 13: *Toxocara canis*

At the end of the course, students shall be able to:

i. Describe *Toxocara canis* and its life cycle
ii. Discuss the epidemiology of *Toxocara canis* showing the role of different animal species and the transmission of the parasite
iii. Discuss the pathogenesis and clinical features of the resulting disease
iv. Discuss diagnosis, treatment and control of *Toxocara canis*

6.12.7 Teaching and learning activities
Lectures and discussions, SDL, Tutorials, Laboratory practical

6.12.8 Assessment methods
i. Assignments 10%
ii. Written test 40%
iii. Semester written examinations 50%

6.12.9 Reading list
vi. John W. Ridley (2012) Parasitology for Medical and Clinical Laboratory Professionals, Delmar Cengage Learning

6.13 Course title: Pathology
6.13.1 Course status: Core
6.13.2 Total credits: 9.6
6.13.3 Subject hours: 96

6.13.4 Course aims
i. To attempt to explain the signs and symptoms manifested by patients
ii. Provide a sound foundation for rational clinical care and therapy

6.13.5 Course expected learning outcomes

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

i. Describe and explain the basic reactions of all cells and tissues to abnormal stimuli that underlies the cell disease. This includes:
   b. Inflammation and repair
   c. Disease of immunity
   d. Genetic disorders.
   e. Neoplasm
   f. Hemodynamic fluid disorders,
   g. Infectious diseases.
   h. Nutritional and environmental diseases.

ii. Describe and explain the cause and structure changes of each of the different systems that results in disease of the selected systems

6.13.6 Course content

At the end of the course the student should be able to describe and explain the basic reactions to all cells and tissue to abnormal stimuli that underlie all diseases

1. Cell Injury – Death And Adaptation

i. The student will be able to explain/ describe:

   ii. Causes of cell injury

   iii. Types of cell injury

   iv. The mechanism of cell injury
v. The morphologic changes of cell injury
vi. The subcellular alteration in cell injury
vii. Intracellular adaptations of growth and differentiation.

2. Inflammations And Repair

The student will be able to:

i. Explain and describe acute inflammation
   ▪ Describe the morphologic patterns in acute inflammation
   ▪ Describe the vascular changes in acute inflammation.
   ▪ Describe the cellular events in acute inflammation.

ii. Explain chronic inflammation
   ▪ Describe morphologic pattern in chronic inflammation.
   ▪ Describe cellular events in chronic inflammation

iii. Describe chemical mediators of inflammation.

iv. Explain the systemic effects of inflammation.
   ▪ In wound healing
   ▪ Reparative response

3. Diseases Of Immunity

The student will be able to describe/explain:

i. The cells of the immune system

ii. Cytokines

iii. Structure and function of histocompatibility antigens

iv. Mechanism of immunologic tissue injury (hypersensitivity reactions).

v. Autoimmune diseases.

vi. Immunologic deficiency Syndromes.

4. Genetic Disorders:
The student will be able to describe/explain

i. Mutation

ii. Mendelian disorders

iii. Multifactorial inheritance

iv. Karyotype/Cytogenetic disorders.

v. Molecular diagnosis

vi. The student should be able to describe/explain the common from disorders. e.g Sickle cell disease, Albinism, Haemophilia, Downs syndrome.

5. Neoplasm

The student will be able to describe/explain

i. The characteristics of Benign and malignant Neoplasm.

ii. The epidemiology of neoplasms especially in relation to Tanzania

iii. Molecular basis of cancer

iv. Biology of tumor growth

v. Carcinogenic agents and their cellular interactions

vi. Host defense against tumors – Tumor immunity.

vii. Clinical features of tumors.

6. Hemodynamic/Fluid Disorders

The student should be able to describe/ explain:

i. Edema

ii. Hyperemia and congestion

iii. Hemorrhage

iv. Homeostasis

v. Embolism

vi. Infarction

vii. Shock

7. Infectious Diseases
The student should be able to describe and explain:

i. The general principles of microbial pathogenesis in
   a. Virus
   b. Bacteria
   c. Fungi
   d. Parasites

ii. (Some selected endo-lumenal infectious diseases with emphasis on local diseases

8. Nutritional And Environmental Diseases

The student should be able to describe/explain:

i. Air pollution eg. Tobacco smoking.

ii. Chemical and drug injury

iii. Physical injuries.

iv. Protein – Calories, and vitamin under nutrition.

v. Nutritional excess.

6.13.7 Teaching and learning activities
Lectures, Practical in pathology laboratory

Practical: Histopathology (Gross and slides) for every topic

Clinical Integration:

i. Theory: (for MD3 mainly -systemic pathology)

ii. Practical: All cases are life examples

Practical questions set are clinically oriented

iii. Postmortem: These are all clinical case from the wards requested by the clinicians. Few are medical legal

iv. Clinical Pathological conferences: By medical department Students in this rotation attend these meetings

6.13.8 Assessment methods
i. Assignment s 10%
ii. Written test 40%

iii. Semester written examinations 50%

6.13.9 Reading list

i. Cotran RS, Kumar V and Collins T. Robbin. Pathologic basis of Diseases, WB Saunders Company, CITY (The most recent edition is by Kumar, Abbas and another)


6.14 Course title: Community Health Medicine

6.14.1 Course status: Core
6.14.2 Total credits: 15.7
6.14.3 Subject hours: 157

6.14.4 Course aims

To understand core community aspects of cardiopulmonary diseases and reproductive health

6.14.5 Course expected learning outcomes

i. To assess presence of risk factors for cardiopulmonary disease at individual, family and community level

ii. To assess knowledge, attitude and behaviour in relation to risk factors for cardiopulmonary diseases.

iii. To assess prevalence of cardiopulmonary diseases e.g. hypertension, Bronchitis and stroke

iv. To understand the concept of the transitional society in relation to cardiorespiratory diseases

v. To understand the basics of occupational health problems

vi. To familiarize with the National TB control program

vii. To learn and understand the first aid for shock, heart attack, stroke, and artificial resuscitation.

viii. To plan and implement a health promotion program for cardiorespiratory diseases prevention.

ix. To understand the progress for MDG4&5; where are we as a Country??

x. To understand adolescent risky sexual behavior and their consequences(teenage pregnancy, abortion and maternal death)

xi. To be aware adolescent friendly reproductive health services –(guideline)
xii. To describe common terminology used in family planning programme (TFR, CPR, Unmet need)
xiii. To describe types of contraceptive method, eligibility, mechanism of action and common side effects
xiv. To describe safe motherhood initiative (SMI) and its content
xv. To describe definition of FANC, recommended visits, services to be provided per visit, danger signs during pregnancy, delivery, postnatal and newborn baby
xvi. To describe four prong approach to PMTCT, and where are we in implementing the four prong approach, Option B plus and challenges faced
xvii. To describe common causes of maternal deaths, 3 delays model, levels of emergency obstetric care and content and CPAC, and the importance of SBA
xviii. To understand the general neonatal health, common causes of mortality and intervention to reduce mortality.
xix. To describe common causes of infant mortality, under five mortality and key preventive strategies available.
xx. To describe common STI and reproductive health cancers (cervical, prostate & breast)

6.14.6 Course content

i. Cardiorespiratory Block
   a. Introduction to cardiorespiratory system
   b. National TB/HIV control program
   c. Transitional society in relation to cardiorespiratory (Hypertension, DM, stroke and COPD)
   d. Rheumatic heart disease
   e. Occupational health and lifestyle in relation to cardiorespiratory diseases
   f. First aid for cardiorespiratory emergencies
   g. Health promotion program for cardiorespiratory diseases

ii. Reproductive Block
   a. Introduction to Reproductive, Maternal, Newborn, Child and adolescent health (RMNCAH) [Definition, history, and concepts]
   b. From MDGs to SDGs in relation to RMNCAH indicators (Status and trend global and in Tanzania)
   c. Adolescent health
   d. Population transition and effects
   e. Family planning: methods and programming
   f. Maternal and newborn morbidity and mortality (epidemiology of key causes of morbidity and mortality and evidence-based interventions)
   g. Factors influencing delay in seeking & accessing maternal, newborn and child care (3 delay model)
   h. Programs that improve maternal and newborn outcomes
i. Care during pregnancy: FANC and associated challenges including PMTCT of HIV
ii. Essential and emergency obstetric and newborn care
iii. Skilled birth attendance and its role saving maternal and newborn morbidity and mortality (SBA)
iv. Postnatal care (PNC)
i. Neonatal and child health (epidemiology of key causes of morbidity and mortality and evidence based interventions)
j. Sexual Transmitted Infections and HIV
k. Reproductive Health Cancers (prostate, cervical and breast cancers)

6.14.7 Teaching and learning activities
i. Lectures
ii. Individual & Group assignments
iii. Team based learning (TBL)
iv. Outreach/field visits
v. Presentations and discussion

6.14.8 Assessment methods
Semester examinations
Individual/Group Readiness Assurance Test (IRAT/GRAT)
Marked group presentations
Marked Field Reports
i. IRAT/GRAT: 10%
ii. Group presentations: 10%
iii. Field Report: 20%
iv. Examination: 60%

6.14.9 Reading list

111


xi. Tamara et al., 2009. Hydrocephalus; who will care for me next? *Transitioning to adulthood with hydrocephalus*.

6.15 Course title: Epidemiology and Applied Biostatistics

6.15.1 Course status: Core
6.15.2 Total credits: 4.7
6.15.3 Subject hours: 47
6.15.4 Course aims
6.15.5 Course expected learning outcomes
6.15.6 Course content

*Epidemiology*

i. Measures of association
   a. Definition, relative and absolute measures
   b. Relative risk and interpretation
   c. Odds Ratio and interpretation

ii. Measures of Public Health Impact
   a. Attributable risk
   b. Population attributable risk

iii. Study designs
   a. Types (Descriptive VS Analytical// Observational vs. Interventional)
   b. Case report, Case series, and Ecological
   c. Cross Sectional
d. Cohort
e. Case control
f. Randomized Controlled Trials (Individual vs. Community trials)

**Biostatistics**

i. **Statistical Inference - Hypothesis testing**
   a. Definition of hypothesis
   b. Non-statistical hypothesis testing & Statistical hypothesis testing
   c. Definition of Type I and Type II errors
   d. The concept of P-value & power of the test

ii. **Statistical Inference - Standard Error and Confidence Interval**
   a. Definition of Standard error & Confidence Interval
   b. Significance of SE & CI
   c. Confidence interval for a single proportion & mean
   d. Confidence interval for the difference between two proportions & means

6.15.7 **Teaching and learning activities**

i. Lectures
ii. Questions and answers
iii. Group work and plenary discussion
iv. Individual assignment

6.15.8 **Assessment methods**

i. Assignments (20%)
ii. Semester examination (80%)

6.15.9 **Reading list**


iv. CDC Epidemiology book


6.16 Course title: Microbiology

6.16.1 Course status: Core
6.16.2 Total credits: 7.6
6.16.3 Subject hours: 76

6.16.4 Course aims

To enable medical students grasp basic microbiology and immunology concepts. Therefore, the students will be introduced into the field of basic microbiology so that they can understand microorganisms of medical importance and they should be able to understand how to identify such microorganisms practically. They will also be introduced to basic immunology and laboratory procedures connected with immunology.

6.16.5 Course expected learning outcomes

Students are expected to describe the basic microbiology and Basic immunology concepts

i. To describe safe laboratory procedures
ii. To explain the use of microscopes and staining procedures
iii. To describe classification, taxonomy and nomenclature of medically important bacteria, fungi and viruses
iv. To describe the basic physiology, structure metabolism, and genetics of micro-organisms
v. To describe the concept of host parasite relationship
vi. To describe the mode of control of microorganisms, mechanisms of action of antimicrobial drugs, sterilisation and disinfection.
vii. To describe vaccines and their application

6.16.6 Course content

**Basic Bacteriology, Mycology, Virology**

At the end of the course the student will be able to describe:

i. Specimen collection for pathogenic microorganisms.
ii. The physiology and structure of pathogens.
iii. The pathology and immunity to pathogens.
iv. The clinical diseases due to these pathogens.
v. Laboratory diagnosis of pathogens.
vii. Treatment, prevention and control of pathogens.

vi. The epidemiology of pathogens.

**Basic Immunology**

**At the end of the course the student will be able to describe:**

i. The basis of immunology
ii. Non specific and specific acquired immunity
iii. Acquired immune response
iv. Immunity to infection
v. Hypersensitivity
vi. Auto immune diseases

**6.16.7 Teaching and learning activities**

PBL, SDL, Tutorials, formal lectures, and laboratory practicals,

**6.16.8 Assessment methods**

i. Assignments 10%
ii. Written test 40%
iii. Semester written examinations 50%

**6.16.9 Reading list**

i. Jawetz, Melnick, & Adelberg’s Medical Microbiology. Editors Geo F Brooks, Janet S Butel and Stephen A Morse, Appleton and Lange, Norwalk, Connecticut

ii. Roitt, Brostoff and Male, Immunology, C. V. Mosby, Missouri

**6.17 Course title: Nursing**

6.17.1 Course status: Non Core
6.17.2 Total credits: 1
6.17.3 Subject hours: 10

6.17.4 Course aims

The course provides opportunity for the MD students to orient themselves to a range of activities/skill/procedure that constitute nursing and nursing care.
Orientation to this at an early stage of professional development provides the MD student with the confidence to proceed to more complex skills and procedures. Students will be expected to record some of their observations and participation in a range of activities that constitute nursing care skills. These include skills associated with the following activities of living: maintaining a safe environment, communication, Health assessment vital signs common procedures used for different procedures. The course will also expose the learners to understand the use of use nursing process in patient care.

6.17.5 Course expected learning outcomes

i. Describe basic nursing procedures in health care settings

ii. Comprehend the concept of nursing process

iii. Demonstrate use of nursing process components in providing care to clients/patients

iv. Demonstrate trust worthiness towards patient/clients and other health care workers

v. Use the principles of confidentiality in rendering health services

vi. Describe components of nursing ethics and etiquettes

vii. Observe patients and service provider rights

viii. Demonstrate abilities in maintaining professional qualities

Communication Skills in Nursing

i. Describe the components of communication process

ii. Explain the factors influencing communication

iii. Establish and maintain good relationship with patient/client and co workers

iv. Demonstrate proper use of verbal and non-verbal communication

v. Utilize listening, observing and questioning skills in clinical setting

vi. Identify various ways in which people communicate non verbally

vii. Collaborate with health team members in giving care

viii. Select and utilize appropriate ways of giving and receiving feedback

ix. Give and receive feedback to patients/clients appropriately

x. Describe factors influencing feedback in communication
6.17.6 Course content

i. Basic Nursing Procedures
   a. Admission and discharge of patients
   b. Positions used in nursing
   c. Moving, lifting and turning patients
   d. Checking vital signs
   e. Head to toe assessment
   f. Administration of medications
   g. Wound dressing
   h. Collection, examination and disposal of specimens

ii. Ethics and etiquettes
   a. Define ethics, etiquettes

iii. Rights
   a. Patients right
   b. Rights of service provide

iv. Definition of common terms used in nursing
   a. Nursing Process
   b. Definition
   c. Characteristics
   d. Steps/components
   e. Nursing care plan

For Communication skills in nursing

i. Components of communication process
   a. Definition of communication
   b. Components of communication process

ii. Communication channels
   a. Definition
   b. Types of communication channels
   c. Advantages of using proper communication channel

iii. Good interpersonal relationship in working place
   a. Meaning
   b. Importance of good relationship
   c. Factors which create and maintain good relationship
iv. Verbal and non-verbal communication
   a. Verbal communication
   b. Non verbal communication
   c. Advantages of verbal and non-verbal
   d. Disadvantage of verbal and non-verbal

v. Listening, Observing and questioning
   a. Listening skills
   b. Observing skills
   c. Questioning skills

vi. Importance of utilizing, listening, observing and questioning skills

vii. Non verbal communication
   a. Cues of non verbal
   b. Importance of non verbal
   c. Interpretation of non verbal communication

viii. Giving and receiving feedback
   a. Define the term feedback
   b. Importance of giving feedback
   c. Guideline for giving feedback
   d. Guidelines for receiving feedback

ix. Receiving and giving feedback
   a. Principles of receiving and giving feedback
   b. Advantages of receiving and giving feedback

x. Factors influencing communication process
   a. Factors influencing
   b. Factors hindering (barriers)
   c. How to overcome barrier

xi. Health care team
   a. Health care team members
   b. Importance of health care team
   c. Collaboration with health care team

6.17.7 Teaching and learning activities
   i. Lecture/discussions, seminars, individual and group presentations
   ii. Demonstrations practical and workplace learning, role play
6.17.8 Assessment methods

i. Assignment s 20%

ii. Written test 40%

iii. Semester written examinations 50%

6.17.9 Reading list


iv. Davis JA. Tschudin, V. de Raeve L. 2006. Essentials of Teaching and Learning in Nursing


6.18 Course title: Pharmacology

6.18.1 Course status: Core

6.18.2 Total credits: 6

6.18.3 Subject hours: 60

6.18.4 Course aims

This module aims to ensure that candidates have a sound understanding of basic and clinical pharmacology principles and practices. Basic principles of pharmacology will include, receptor mechanisms, mechanism of action, drug distribution and metabolism, and pharmacokinetics (drug absorption, distribution, metabolism and elimination), and pharmacodynamics principles.

Pharmacodynamics and pharmacokinetics principles will be taught using clinical examples. Reasons for individual variation, drug monitoring, and types of adverse drug reactions will be discussed using interactive and problem-based scenarios. Candidates will also learn and reflect on medication compliance, why medication errors occur and will discuss safe prescribing guidelines. They will also discuss common clinical toxicology/poisoning case scenarios and develop analytical reasoning to aid diagnostic and management decisions.
The Basic pharmacology will cover selected topics in the autonomic nervous system, and an introduction to antimicrobial chemotherapy. Clinical pharmacology emphasizes the principles of Evidence-Based Pharmacotherapy, a component that consists of lectures and problem-based scenarios on critical appraisal of current literature in pharmacotherapy.

The disease-specific clinical topics component addresses the clinical pharmacology of common disorders. Students will critically review national and international standard treatment and guidelines and recommendations.

Selected topics reflect medical considerations and situations seen most commonly in routine medical practice. These include: the rational pharmacotherapy of endemic diseases such as malaria. Evidence-based pharmacotherapy of cardiovascular diseases such as hypertension (in adults, children & adolescents, pregnancy-induced, HELLP syndrome), coronary artery diseases, and ischaemic heart disorders (Stroke, Myocardial Infarction) and congestive heart failure. The hormonal disorders such diseases of the thyroid glands, diabetes mellitus.

The second Evidence-Based Pharmacotherapy covers the selected neurological disorders such as headache, migraine and epilepsy, and selected CNS degenerative disorders (Parkinson’s disease) and psychiatric disorders.

6.18.5 Course expected learning outcomes

By the end of this course, each student should be able to:

i. Describe the fundamental principles of pharmacokinetics and pharmacodynamics.

ii. Discuss the factors contributing to individual variation in drug responses and toxicity and a basic understanding of pharmacogenetics/pharmacogenomics.

iii. Assess medication errors, why they occur, rate their impact and model practice to improve safe prescribing and factors contributing to poor medication compliance

iv. Analyse the pharmacodynamic and pharmacokinetic principles that describe drug actions in humans.

v. Evaluate the effects and side effects of selected drugs for common diseases

vi. Compare and contrast the specific pharmacology of major classes of drugs, important distinctions among members of each class, the risks and benefits, in relation to the organ systems they affect, and indicated diseases.

6.18.6 Course content

Part A: Basic Pharmacology

i. Basic principles of pharmacology

a. The dynamics of drug absorption, distribution, metabolism and excretion (ADME)
b. Routes of drug administration
c. Drug receptors and drug-receptor interactions
d. Mechanisms of drug action and drug interactions
e. Adverse/side effects, basic and clinical evaluation of new drugs

ii. Intro to the Autonomic Nervous System (ANS)

a. Anatomical organization of the ANS.
b. Neurotransmitters at the autonomic ganglia and the target organs.
c. Receptors at the autonomic ganglia and the target organs.
d. Physiological responses of end organs produced by activation of the parasympathetic (i.e. acetylcholine) and sympathetic (i.e. norepinephrine) nervous systems.
e. Parasympathetic Nervous system (Cholinergic agonists)
   i. Physiologic effects of muscarinic and nicotinic receptor activation
   ii. Therapeutic uses for muscarinic & nicotinic agonists
   iii. Adverse effects of excessive muscarinic & nicotinic stimulation
f. Cholinesterase Inhibitors
   i. Reversible & irreversible cholinesterase inhibitors (anticholinesterases)
   ii. Therapeutic uses for cholinesterase inhibitors

g. Antimuscarinics
   i. Therapeutic uses of antimuscarinics for bronchoconstriction, excessive salivation, motion sickness, AV block, intestinal spasticity/diarrhea & urinary incontinence.
   ii. Side effects of antimuscarinics, including dry mouth (xerostomia), blurred vision, photophobia, tachycardia, difficulty in urination, hyperthermia, glaucoma, and mental confusion in the elderly (Blind as a bat, Mad as a hatter, Red as a beet, Dry as a bone, Hot as hell, Full as a flask).
   iii. Deleterious effects of anticholinergic medications in elderly patients.
h. Nicotinic Antagonists
   i. Major indication for the clinical use of neuromuscular blocking agents (skeletal muscle relaxants).
   ii. Effects of a nondepolarizing blocker
   iii. Effects of ganglionic blockers, and understand the role of predominant tone.
i. Introduction to the Sympathetic Nervous System
   i. Biosynthetic steps & regulation of the biosynthesis of catecholamines.
   ii. Actions of the transmitters of the autonomic nervous system.
   iii. Adrenergic hormones and receptors regulating the cardiovascular function.
   iv. Functions of the adrenergic nerve terminal.

j. Sympathomimetics
   i. Actions of sympathomimetics with respect to receptor subtype selectivity.

k. Sympatholytics (adrenergic antagonists)
   i. Actions of adrenergic blocking drugs with regard to receptor subtype and selectivity.
   ii. Use of alpha-receptor blocking drugs in the treatment of hypertension and benign prostatic hyperplasia (BPH).
   iii. Use of beta-receptor blocking drugs in the treatment of hypertension, angina, and post myocardial infarction.

iii. Antibiotics
   a. Bactericidal and Bacteriostatic antibiotics
   b. Mechanism for selective toxicity.
   c. Mechanisms for microbial resistance
   d. Time dependent and concentration dependent pharmacokinetic/pharmacodynamic of antibiotics.
   e. Antimicrobial susceptibility of infecting organisms (the MIC).
   f. Mechanisms of action for the antimicrobial drugs & drug classes
   g. Describe the mechanisms of resistance for the antimicrobial drugs

6.18.7 Teaching and learning activities
   PBL, SDL, Tutorials, formal lectures, and laboratory practical,

6.18.8 Assessment methods
   i. Assignment s 10%
   ii. Written test 40%
   iii. Semester written examinations 50%

6.18.9 Reading list
6.19 Course title: Sociology

6.19.1 Course status: Non Core
6.19.2 Total credits: 3
6.19.3 Subject hours: 30

6.19.4 Course aims
Sociology is a course that studies human society, social behavior and human interaction. Understanding society and how we interact with each other is important so that we can find answers to questions and solve problems in our world. “Sociology teaches us to look at life in a scientific, systematic way.” The way that we view the world comes from what we learn in our everyday activities. “The values, beliefs, lifestyles of those around us, as well as historic events help to mold us into unique individuals who have varied outlooks on social reality.” This course deals with the social atmosphere that helps to make us who we are and how we behave. The key component of this course is to study ourselves and the society that influences our behaviour.

6.19.5 Course expected learning outcomes
The main learning objective of introduction to sociology is to familiarize the students with the basic ideas, issues, concepts and principles of sociology.

By the end of this session student should be able to

i. Describe basic concepts in sociology
ii. To discuss sociological perspective
iii. Describe how health and illness are linked to social organization
iv. Examine health risk and health promoting behavior in a cultural context
v. Explain how social-cultural issues influence health seeking behavior and health care services utilization
vi. Explain the social determinants of health in developing countries
vii. Applying sociological theories in addressing social phenomena in health
6.19.6 Course content

Introduction to sociology

- Definitions & Development of Sociology
- The scope and types of sociology
- Basic concepts in sociology, Sociological Imagination

Culture & Socialization

- Definitions: Culture and Socialization
- Types of socialization & culture
- Elements and Roles of culture
- Cultural Conformity and Adaptation
- Culture and Health
- Role of socialization
- Agents of socialization (Mass media, family

Social Institutions and social stratifications

- Definition of Institutions, types and roles of social institution
- Family: types of family, function, marriage, types of marriage
- Sociology of Religion,
- Others- schools, work, army, political, economic, social organization, social control
- Definition & types of social stratification
- Dimension of social stratifications
- Social inequality,
- Theories of Social Stratification, Social Mobility

Social Determinants of health

- Individual determinants (attitude, perception, epidemiological factors)
- Gender and Age
- Social stratification

Health and illness

- Concept of health, illness,
- Health seeking behavior
- Explanatory Model Health seeking behaviour

Social control

- Deviance and crime (statistics)
- Pro and anti social behaviour
- Social Function of Deviance

How society control deviance- (Norms, Religion and education Law and legal system)

Theories of behavior change
- Health belief Model,
- Diffusion of Innovation Theory,
- Stages of change Model
- Ecological model

**Social problems & Social Instability**
- Divorce, Single parents,
- Violence Types & Forms (Gender & Child abuse),
- Prostitutions & Human trafficking
- Substance abuse, Homeless, Street children/street Family
- Over population

**Social Change**
- Definition, type of social change,
- Theories of social change
- Social Mobility
- How and why societies change
- Social policies and health improvement
- Social policies in Tanzania

**6.19.7 Teaching and learning activities**

Interactive lectures, group work, individual directed learning, case study and articles review. Each lecture will take 1 hour.

**6.19.8 Assessment methods**

There will be some wide variety assessment methods. Standard grading scale as per KCMU College will be used.
1. Class attendance and participation is required 5%
2. Individual assignment 15%
3. Group presentations 10%
4. Final Examination 75% - Final examination will comprise of short answers, long essay, multiple choice, matching and true and false question.

**6.19.9 Reading list**
ii. Zerihun Doda (2005), Introduction to Sociology, LECTURE NOTES, For Health Science Students, Ethiopia Public Health Training Initiatives, Debub University
6.20 Course title: Foundation of Faith

6.20.1 Course status: Non Core
6.20.2 Total credits: 3
6.20.3 Subject hours: 30

6.20.4 Course aims

The course intends to prepare learners intellectually so that they may cope with new issues pertaining to faith. It also aims at making learners live moral lives and become good and responsible citizens. The importance of this course to students pursuing health profession is based on the fact that quality health care delivery requires professionals who are ethically sound and God fearing. This course will therefore attempt to inculcate such attributes to the learners with hope they will become better health professionals who are ethically upright.

6.20.5 Course expected learning outcomes

By the end of the course, learner should be able to:

i. Explain religion and human experiences
ii. Describe the foundations of different religions including being able to outline the common ground and the differences.
iii. Demonstrate ability to interact and co-exist peacefully with people of other faiths
iv. Discuss the role of spirituality in health care delivery
v. Demonstrate the ability of being responsible, dependable and loyal to their country
vi. Apply the knowledge and skills of faith so as to live an ethical type of life during College life, post College and most importantly at their workplaces

6.20.6 Course content

1. Introduction
   1.1 The concept of God
   1.2 Defining Faith
   1.3 Basic elements of Religions
   1.4 Religious Attitudes to Life

2. Basic doctrines and practices of different religions
   2.1 Brief overview of national religions
   2.2 World Religions
      2.2.1 Christianity
         • Introduction
• Jesus Christ: His birth, teachings, suffering, death and resurrection
• Basic elements/doctrine of Christianity

2.2.2 Islam
• Introduction
• The spread of Islam
• Basic teachings of Islam
• Similarities and differences between Islam and Christianity

2.2.3 Buddhism
• Introduction
• Basic teachings of Buddhism

2.3 An overview of African Traditional Religions

3. Religious life in a changing world
3.1 Discuss the major challenges which religious life has encountered in the 21st Century?
3.2 Discuss effects of globalization on spirituality
3.3 The fate of religions in a changing world

4. Religion and Politics
4.1 What is politics
4.2 Where is the common ground between religion and politics
4.3 Towards building a strong and democratic nation – why bother?

5. Religion and Ethics
5.1 Defining Ethics
5.2 Different ways to determine what is right or wrong
5.3 Ethics and the role of religion in fostering ethical uprightness
5.4 Selected ethical issues
5.4.1 Corruption
5.4.2 Sexuality
5.4.3 Alcohol
5.4.4 Substance abuse
5.4.5 Euthanasia
5.4.6 Capital punishment
5.4.7 Abortion
5.4.8 HIV&AIDS
5.4.9 Aggressive marketing of health care services – is it ethically right?
5.4.10 Civil disobedience in the health care sector – is it justifiable for whatever grounds?

6.0 Faith in God/gods and health care delivery
6.1 Competency, love and compassion as key attributes in the health care industry
6.2 The concept of holistic care and its application in modern health care delivery

6.20.7 Teaching and learning activities
Lectures/discussion, Tutorials, Seminars and team based learning (TBL)

6.20.8 Assessment methods
Continuous Assessment
• Assignments 10%
• Written tests 40%
Semester written examinations 50%

6.20.9 Reading list
vii. Christina M. Puchalski: The role of spirituality in health care

6.21 Course title: Developmental Studies

6.21.1 Course status: Non Core
6.21.2 Total credits: 3
6.21.3 Subject hours: 30
6.21.4 Course aims
This modular course is offered to first year undergraduate students in semester two. It has a total 70 hours of which 55 hours are allocated for teaching (Theory) and 15 hours are used for seminars. The module focuses on providing theoretical foundation for enhancing application of development theories in health and examines critical issues in development as far as they influence health. It is a stepping-stone towards studying DS 200 in semester three, which examines how development trends impact on the health care system and determining appropriate health interventions.

6.21.5 Course expected learning outcomes

At the end of the course the student will be able to:

i. Appraise theories and indicators of social development/ underdevelopment

ii. Examine the links between social and political developments and Health in Africa

iii. Analyze population theories with a focus on their implications on health and development

iv. Analyze the impact of education and culture on health

v. Analyze gender issues with a focus on their implications on health

vi. Examine determinants of poverty and unemployment and how they impact health

vii. Analyze the phenomenon of rural development focusing on health

6.21.6 Course content

Concepts and Indicators of development:

- Introduction to Development Studies
- Concept of development
- Indicators of development

Theories of Social Development/Underdevelopment:

- Theories of development/underdevelopment
- Categories of Development Theories:
  - Orthodox approach
o Radical approach
o Growth with equity approach
o Contemporary development trends

Health and Health care in the context of theories of social development

- Social determinants of health
- The holistic approach, biomedical model and the Vicious Circle of Ill health.

Social and Political Developments in Africa and their impact on health:

- Historical pattern of social and political developments
- Economic crisis, structural adjustment programmes and Health in Africa
- Impact of structural adjustment programmes on health equity in Africa (TZ)
- Conflicts and Health in Africa

Population Theories, Health and Development:

- Concepts of population
- Population profile and its implication on health
- Categories of population theories and their health implications
- Migration and health implications
- Population policy and practice

Education, Culture and Health:

- Definitions of education, culture and health
- The role of education in health
- Beneficial and harmful cultural practices

Gender and Health:

- Concepts in gender;
- National (Macro Level) implications on Gender and health.
- Household (micro level) Health implications of gender-based differences
  Decision making, resource control, GB, IPV, FP, HIV/AIDS, nutrition etc

**Poverty, Unemployment, and Health:**

- Measurement of poverty
- Determinants of poverty (internal and external factors)
- Definitions of unemployment, underemployment
- Types and causes of unemployment
- Poverty and vicious circle of ill-health
- Poverty reduction Strategies

**Rural Development with a focus on Health:**

- An Overview of the rural sector-social services, livelihood and economic factors
- The rural sector in market economies
- The deprivation trap, rural poverty manifestations, rural -urban migration and its implication on health.
- Social and economic infrastructures for rural development and implications on health

6.21.7 Teaching and learning activities
Lectures and tutorials

6.21.8 Assessment methods
Assignment s 10%
Written test 40%
Semester written examinations 50%

6.21.9 Reading list


viii. J.K. Nyerere : Socialism and Rural development in Freedom and Socialism, Oxford University Press

ix. Michael Jennings: We Must Run While Others Walk: Popular Participation and Development in Tanzania.

x. Leaper, C and Friedman, C. The Socialization of Gender, Chapter in Grusec J.E and Hastings, P.D (eds.). Handbook of Socialization: Theory and Research.

Reference Materials:


ii. WHO. Social Determinants of Health: WHO Commission on Social Determinants of Health. Geneva WHO

YEAR 2: SEMESTER 4

6.22 Course title: Parasitology

6.22.1 Course status: Core

6.22.2 Total credits: 12

6.22.3 Subject hours: 120

6.22.4 Course aims

Medical Parasitology and Entomology is taught through four (4) courses *Protozoa, Nematodes, Cestodes and Trematodes* and *Ectoparasites*. Each the courses
emphasizes on biomedical aspects of parasitology, parasite life cycle, epidemiological factors, host parasitic relationships, and appropriate preventive and control measures. The courses are run in succession over the four blocks of 9 weeks each. Assessment of each course is done on completion and prior the start of each subsequent course. All courses are weighed equally through the two semesters of an academic year.

Also the course aims at developing and advancing knowledge and skills of learners in ectoparasites and resulting manifestations, including where applicable, the disease they transmit. The course will also advance students’ knowledge on arthropod biology and behavior in relation to their control.

6.22.5 Course expected learning outcomes

i. Define a parasite and parasitism

ii. Define parasite associations including Symbiosis, commensalism, phoresis, mutualism, parasitism

iii. Define parasitism as to location (ectoparasites, endoparasites, temporary, accidental)

iv. Discuss definitive vs intermediate host, obligate vs facultative and permanent host

v. Discuss forms of parasites (parasitoids vs protelean

vi. Define Reservoir host and vector

vii. Discuss the life cycle of all parasites taught

viii. Define mode of parasite transmission: oral, oral fecal, innoculative, contaminative, vector, contagion, aerosol

At the end of studying ectoparasites course students should be able to:

i. Understand how arthropods affect human health

ii. Describe the major groups of the insects and arthropods of medical importance

iii. Identify arthropod vectors of major vector-borne diseases and/or infestations

iv. Identify important aspects of the life cycles and/or behaviour of insects and relate these to specific infestations and/or diseases transmission

v. Describe the epidemiology of important infestations caused by arthropods and understand their symptoms and signs where applicable

vi. To demonstrate understanding of life cycles and/or behaviour of arthropods of medical importance in their control.

6.22.6 Course content

CESTODES

Topic 1: Introduction to tapeworm infections

After reading this section the student will be able to do the following:
i. Describe the morphology of cestodes (tapeworms)
ii. Describe the nutrition and reproduction of tapeworms
iii. Discuss the life cycle of cestodes

Specific tapeworms

Topic 1: *Taenia saginata* (beef tapeworm of man) and *Taenia solium* (pig tapeworm of man)

After reading this chapter the student will be able to do the following:

i. Describe the morphology of *Taeniasaginata* and *T.solium* and list their definitive and intermediate hosts
ii. Describe the life cycle of *Taeniasolium* and *T. saginata*
iii. Discuss the epidemiology the 2 taenia infections
iv. Discuss clinical manifestations of taeniasis
v. Describe the diagnosis of taeniasis
vi. Discuss treatment, prevention of human taeniasis

Topic 2: Diphyllobothriasis: *Diphyllobothrium latum* (fish tapeworm of man or the broad fish tapeworm)

After reading this chapter the student will be able to do the following:

i. Describe the morphology of *D. latum*
ii. Describe the life cycle of *D. latum*
iii. Discuss the epidemiology of *D. latum*, considering different crustaceans and fish
iv. Discuss disease manifestations of Diphyllobothriasis
v. Describe the diagnosis, treatment and control of Diphyllobothriasis

Topic 3: Echinococcosis: *Echinococcus granulosus, E. multilocularis, E.vogeli, E. oligarthrus*

After studying this chapter students will be able to:

i. Describe the 3 forms of echinococcosis caused by *E. granulosus, E. multilocularis and E. oligarthrus*
ii. Describe all aspects of the 3 echinococcosis including: the organism, transmission and epidemiology, diagnosis, treatment and control

Topic 4: Cysticercosis: *Taenia solium*

After reading this chapter the student will

i. Discover the difference between cysticercosis and taeniasis
ii. Discover the epidemiology of cysticercosis
iii. Discuss the disease manifestations of neurocysticercosis
iv. Describe diagnosis of neurocysticercosis
v. Describe the treatment of neurocysticercosis
vi. Describe prevention of neurocysticercosis

**TREMATODES**

**Topic 5: Schistosomiasis:** Schistosoma mansoni, S. hematobium, S. intercalatum, S. japonicum, S. mekongi

*After studying this chapter students will be able to:*

i. Discuss Schistosomiasis as an important trematode infection and will be able to:
ii. Describe similarities and differences of the 5 pathogenic species of human schistosomiasis
iii. Discuss the epidemiology of each of the 5 species of human schistosomiasis
iv. Describe the clinical and pathological manifestations of each of the 5 forms of human schistosomiasis
v. Discuss pathogenesis and diagnosis of the 5 forms of human schistosomiasis

**Topic 6: Liver fluke:** Fascioliasis: Fasciola hepatica, F. gigantica

*After reading the chapter on Fascioliasis, students will be able to:*

i. Define human fascioliasis
ii. Describe the agents of human fascioliasis
iii. Discuss the life cycle of *Fasciola hepatica* and *F. gigantica*
iv. Discuss the epidemiology of liver fluke
v. Describe pathogenesis and immune responses in human fascioliasis
vi. Describe the clinical manifestations of human fascioliasis
vii. Describe the diagnosis of human fascioliasis
viii. Discuss treatment and control of human fascioliasis

**Other liver flukes**

**Topic 7: Clonorchis sinensis:**

*After reading this chapter students will be able to:*

i. Describe the morphology of the liver fluke
ii. Discuss its distribution
iii. Describe its life cycle
iv. Describe the clinical manifestation of the disease
v. Discuss diagnosis, treatment and control of infection with *Clonorchis sinesis*:

**Topic 8: Opisthorchis viverrini**

After reading this chapter students will be able to:

i. Describe the morphology of *Opisthorchis viverrini*

ii. Discuss its distribution

iii. Describe its life cycle

iv. Describe the clinical manifestation of the disease

v. Discuss diagnosis, treatment and control of infection with *Opisthorchis viverrini*

**Topic 9: Opisthorchis felineus**

After reading this chapter students will be able to:

i. Describe the morphology of *Opisthorchis felineus*

ii. Discuss its distribution

iii. Describe its life cycle

iv. Describe the clinical manifestation of the disease

v. Discuss diagnosis, treatment and control

**ECTOPARASITES (ENTOMOLOGY)**

**Topic 1: Diptera**
- Families Culicidae (mosquitoes), Simuliidae (black flies), Ceratopogonidae (midges), Psychodidae (sand flies), Tabanidae (horse flies), Muscidae (tsetse flies and house flies), Cyclorrhapha (myiasis causing flies)

**Topic 2: Siphonaptera**
- Families: Pulicidae (fleas), Tungidae (sand fleas or jiggers)

**Topic 3: Anoplura**
- Sucking lice, including body louse, head louse and crab louse

**Topic 3: Mallophaga**
- Biting/chewing lice

**Topic 5: Hemiptera**
- Families: Cimicidae (bed bugs) and Reduviidae (kissing/assassin bugs)

**Topic 6: Orthoptera**
- Family Blattidae (cockroaches)
6.22.7 Teaching and learning activities
This course is taught by the Team-based learning mode (TBL). In TBL mode of teaching the learner takes responsibility of the learning process, i.e. he is expected to acquaint himself with the course materials provided in form of a FOLDER before he is taught.
Students will make presentations at which point there will be discussion.
Nine formal lectures preceded by student(s) presentation will be given.

6.22.8 Assessment methods
iRAT (individual readiness assurance test, which garners 80% of the course grade
gRAT (group readiness assurance test which garners 10% of the course score)
Application question which garners 10% of the score. The gRAT and Application examinations are done in groups

6.22.9 Reading list
Manson's Tropical Diseases 21st Edition and above.

6.23 Course title: Pathology

6.23.1 Course status: Core
6.23.2 Total credits: 10
6.23.3 Subject hours: 100

6.23.4 Course aims

This is systemic Pathology which is taught in year 2 semester 4. It attempt to explain the signs and symptoms of patients diseases and provides a sound foundation for rational clinical care and therapy
Also will equip students with regards to Forensic pathology. The Medical Officer in his/her day to day practice will come across, cases of rape murder, assaults, hanging, medical profession misconduct, medical ethics etc which need correct interpretation, examination and documentation. This will
necessitate appearing in courts to give evidence. Acquisition of knowledge and skills patterning to forensic medicine is therefore necessary.

6.23.5 Course expected learning outcomes

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

Describe and explain the cause and structure changes of each of the different systems that results in disease of the selected systems. These include:


For Forensic Pathology

At the end of the course the student should have enough forensic medicine knowledge to enable him/her to do medico-legal duties adequately.

Instructional Objectives

i. Ethics and professional misconduct.

ii. Fill correct death certificate and forms Police Forms (PF3)

iii. Outline court procedures

iv. To appear in court room sessions to give expert interpretation i.e. post mortem findings

v. Fill correctly post-mortem examination reports.

6.23.6 Course content

During all clinical attachments the student will be able to describe and explain the cause and structural changes of each of the different systems that results in diseases in:

A: BLOOD VESSELS:

i. Arteries which will include: - Congenital anomalies, Atherosclerosis, Inflammatory diseases, Vasculitides.
ii. Veins which will include: - Varicose veins, Phlebothrombosis, Thrombophlebitis

iii. Lymphatics which will include: - Lymphangitis, Lymphoedema

iv. Tumors which will include: - Benign tumors e.g. Haemanglomus tumor, vascular ectasia, Intermediate grade tumor, hemangioendothelioma, Malignant tumors, Hemangiosarcoma, Hemangiopericytoma, Kaposis sarcoma, Tumors of lymphatics e.e Lymphangioma, lymphangiosarcoma

B: THE HEART

Congenital heart disease, Endocardial and valvular diseases, Myocardial diseases, Pericardial diseases, Rheumatoid Heart diseases, Tumors.

C: DISEASES OF RED CELLS;

Anaemias
Polycythemias
Bleeding disorders

D: DISEASES OF WHITE CELLS, LYMPH NODES AND SLEEN

Leukopenia

Reactive proliferations of white cells and nodes
Neoplastic proliferations of white cells
Malignant lymphomas, Leukemias and myeloproliferative diseases.
Plasma cells dyscasias and related disorders.

Histiocytosis

On spleen it includes
Splenomegally
Congenitals anomales
Nonspecific acute splenitis
Reactive hyperplasia

**E: RESPIRATORY SYSTEM**

Congenital anomalies, Alteration in lung expansion (atelectasis), Diseases of vascular origin, Obstructive or restrictive pulmonary diseases, Chronic obstructive airway diseases, Pulmonary infectious mainly pneumoniasis, TB etc, Diffuse intestinal diseases of the lungs (chronic obstructive lung diseases)

Others diseases eg. – lipid pneumonia, Drug included pulmonary

Tumors of the lung

The pleural – inflammation, Non inflammatory pleural effusions, Pneumothorax , Tumors.

**F. GASTROINTESTINAL SYSTEM**

GIT congenital anomalies, Lesions a/c motor dysfunction
Inflammations, Vascular lesions, Tumors
The pancreas – exocrine pancreas - long anomalies, Pancreatitis, Tumors

**G: THE LIVER AND BILLIARY SYSTEM**

Jaundice, Hepatic feature, Hereditary hyperbilirubinaemias, Circulatory disorders, Miscellaneous disorders e.g. Drug – related injury, Reye’s syndrome, Neonatal cholestasis and Postmortem changes

On the biliary system

- Congenital disorders
- Cholelithiasis
- Acute/chronic cholelithiasis
- Miscellaneous disorders of the gall bladder Tumors

**H: THE URINARY SYSEM;**

The congenital anomalies of the kidney, Glomerular diseases, Diseases of tubules, Tubulo- intestinal diseases, Disease of blood vessels, Urinary tract obstruction, Tumors of the kidney

The lower urinary tract – cong. -Anomales

- Inflammation
- Obstructive lesions
- Tumors.

**I: THE REPRODUCTIVE SYSTEM:**
Penis: Congenital anomalies, Inflammation, Tumors, Testes + Epididymis: Congenital anomalies, Regressive changes, Inflammation, Vascular disturbances

Testicular tumors.

Prostate - Inflammation, Benign enlargement, Tumors.

Female genital system: Infections, Vulva — Bartholins cyst, Vulva dystrophy, Tumors

Vagina: Congenital anomalies, Tumors

Cervix: Inflammations, Tumors

Body of uterus and endometrium: Congenital anomalies, Inflammation, Adenomyosis, Functional menstrual disorders, and Endometrial hyperplasia, Tumors

Fallopian tubes: Inflammation, Tumors

Ovaries: Cysts – neoplastic, Non neoplastic, Tumors

Gestational and placental disorders: Inflammation, Placental abnormalities, Spontaneous abortions, Ectopic pregnancy, Toxemia of pregnancy, Gestational trophoblastic disease.

J: BREASTS

Inflammatory, Fat necrosis, Fibrocytic changes, Cysts and fibrosis, Epithelial hyperplasia, Sclerosing adenosis, Tumors

K: THE ENDOCRINE SYSTEM

1. Pituitary glands:

   Antenor pituitary syndrome: Hyperpituitarism, Hypopituitarism, Non – secretory pituitary adenoma, Sheehan’s syndrome, Posterior pituitary syndrome

2. Thyroid gland

   Hyperical syndrome associated with thyroid diseases the hyperthyroidism, hypothyroidism, Thyroiditis, Graves disease, Diffuse non toxic, Goitres multinodular goiter, Tumors

3. Parathyroid gland:

   - Primary hyperparathyroidism
   - Secondary hyperparathyroidism
- Hypoparathyroidism

4. Adrenal

Neoplasm – non functional – Developmental anomalies

- Hypoadrenalism
- Hyperadrenalism

5. Adrenal medulla

- Pheochromocytoma
- Neuroblastoma/ganglioneuroma
- Tumors of extra-adrenal paraganglia

6. Pineal gland – Tumors

**L: THE LOCOMOTIVE SYSTEM**

Infectious, Fractions, Osteoporosis, Rickets+ Osteomalacia, Skeletal changes in hyperparathyroidism, Osteitis fibrosa, Renal osteodystrophy, Pagets disease, Fibrous dysplasia, Fibrous fibrous cortical defect, Hypertrophic osteoarthropathy, Tumors, Structures, Osteoarthritis, Rheumatoid arthritis, Arthritis a/c rheumatic, Suppurative arthritis, Lymes disease, Gout, Other forms of arthritis.

**M: DISEASES OF MUSCLE:**

- Basic pathologic reactions of the muscle
- Acquired metabolic toxicmyopathies
- Neurogenic diseases
- Inherited metabolic and congenital myopathies
- Neoplasms

**N: THE NERVOUS SYSTEM:**

Basic reactions to injury in nerve cells, Infections, Vascular diseases, Trauma, Tumors, Demyelinating diseases, Degenerative diseases, Nutritional, environmental and metabolic disorders., In born neurons of metabolism, Malformations and developmental diseases, Phycomatosis, Pathologic reactions, Peripheral neuropathies, Peripheral nerve system

**O: DISEASES OF SKIN:**

Diseases of pigmentation and melanocytes, Benign epithelial tumors, Premalignant and malignant tumors of the epidermis, Tumors of the dermis, Disorders of epidermal maturation, Acute inflammatory dermatoses, Chronic
inflammatory dermatose, Bullous (blistering diseases, Disorders of appendages, Panniaculitis, Infections

**For Forensic Pathology**

Examine and report cases of rape, drowning, murder, hanging, incest, buggery, bestiality, Suffocation, gagging overlaying and choking

- Abortion-legal-illegal
- Suspicious neonatal and infant death
- Type of injuries and wounds
- Identification of human remains
- Changes after death. P.M. changes.
- Changes due to immersion in water
- Signs of death.

**Bases of toxicology**

At the end of the course the Medical Officer should have enough forensic medicine knowledge to enable him/her to do medico-legal duties adequately.

6.23.7 **Teaching and learning activities**

**Theory:** Systemic Pathology/Forensic pathology MDIII

**Practical:**

1. Histopathology (gross and slides) for every topic

2. Post-mortem sessions

**CLINICAL INTERGRATION**

1. Theory: Mainly in year 3 (systemic pathology)

2. Practical: a) All cases are life examples

   b) Practical questions set are clinically oriented

   (see practicals’ manual)

3. Postmortem: These are all clinical case from the wards requested by the clinicians, few are medical legal

4. Clinical Pathological conferences: As conducted by the medical department

   *All students in this rotation to attend*
6.23.8 Assessment methods

Continuous Assessment
• Assignments 10%
• Written tests 40%

Semester written examinations 50%

6.23.9 Reading list

i. Cotran RS, Kumar V and Collins T. Robbin. Pathologic basis of Diseases, WB Saunders Company, CITY (The most recent edition is by Kumar, Abbas and another)


iii. Interactive Case Study Companion to Robbins Pathologic Basis of Diseases – available on Internet.

6.24 Course title: Community Health Medicine

6.24.1 Course status: Core
6.24.2 Total credits: 10.5
6.24.3 Subject hours: 105

6.24.4 Course aims

Topics to be covered

- Oral and dental health
- Food hygiene
- Excreta disposal
- Breastfeeding
- Malnutrition
- Chronic diseases and nutrition transition

6.24.5 Course expected learning outcomes

At the end of this course the students should be able;

i. To identify public health problems related to dental problems (dental Caries and Abscess)

ii. To understand the importance of food hygiene and diseases associated with unhygienic food handling practices (Typhoid, Amoeba, Dysentery, Cholera etc)
iii. To describe proper ways of excreta disposal in developing countries
iv. To describe appropriate breastfeeding practices (EBF, Skills on positioning and attachment and required duration)
v. To describe and assess anthropometry: Growth patterns
vi. To describe Community Management of Acute Malnutrition (CMAM) and overweight/over nutrition
vii. To describe epidemiological transition: (nutrition (physical inactivity and dietary), lifestyle (alcohol and smoking) and emerging cancers (Esophageal, stomach, colon, liver cirrhosis and lung))
viii. To understand how to link diseases and food
ix. To learn and understand the importance of team work and task shifting of health workers.

x. To assess health seeking behaviours of individuals in the community.

xi. To understand the dynamics and gender based violence in relation to health.
xii. To understand the spectrum of mental disorders in relation to stigma and community support.

6.24.6 Course content
i. Blood, Immunization, and Endocrine system
   a. Anemia (Key causes, affected groups, consequence, evidence based preventive interventions, assessment of specified group anemia burden and feedback)
   b. Immunization (public health importance, program in Tanzania and assessment of challenges from providers and users perspectives)
   c. First aid for bleeding and trauma (Community and primary health care first aid for bleeding and shock)
   d. Diabetes – (Epidemiology, key risk factors, evidence based primary and tertiary intervention, community care of diabetic patient and myths and misconceptions regarding diabetes treatment)
   e. Iodine deficiency – Prevention, KABP

ii. Digestive Block
   a. Oral and dental health
   b. Food hygiene
   c. Excreta disposal
   d. Breastfeeding
   e. Malnutrition
   f. Chronic diseases and nutrition transition
   g. GIT related cancers (oesophageal, stomach and colon cancers: burden, causes, prevention and management)

6.24.7 Teaching and learning activities
i. Lectures
ii. Individual & Group assignments
iii. Team based learning (TBL)
iv. Outreach/field visits  
v. Presentations and discussion

6.24.8 Assessment methods  
Semester examinations  
Individual/Group Readiness Assurance Test (IRAT/GRAT)  
Marked group presentations  
Marked Field Reports  
i. IRAT/ GRAT: 10%  
ii. Group presentations: 10%  
iii. Field Report: 20%  
v. Examination: 60%

6.24.9 Reading list  


xi. Tamara et al., 2009. Hydrocephalus; who will care for me next? Transitioning to adulthood with hydrocephalus.
6.25 Course title: Epidemiology and Biostatistics

6.25.1 Course status: Core
6.25.2 Total credits: 3.5
6.25.3 Subject hours: 35
6.25.4 Course aims
6.25.5 Course expected learning outcomes

6.25.6 Course content

Epidemiology

i. Errors in epidemiological studies
   a. Definition random vs. systematic errors and role of chance
   b. Bias in epidemiological studies (from cross section to RCT)
   c. Confounders and control

ii. Screening
   a. Definition and character of diseases that meet criteria for screening
   b. Validity of screening tests
   c. Reliability of screening test

iii. Routine Data (M&E)
   a. Introduce the importance and weakness of routine data
   b. Introduction to HMIS system in Tanzania (MTUHA/ DSS)
   c. How to design M&E system and key indicators for selected programs in Tanzania

Biostatistics

i. Use of SPSS in epidemiological studies (advanced)
   a. Data manipulation and re_categorization in SPSS
   b. Statistical analysis (frequency, cross tabulation and calculation of OR and RR using SPSS)
   c. Generating results tables (simple frequency and 2*2 tables)
   d. Presenting data using tables as used in research papers: simple frequency tables and tables of association

ii. Statistical Tests
   a. Parametric Statistical test (Student T tests, ANOVA)
b. Non Parametric Statistical test (Wilcoxon, Mann Whitney, Kruskal Wallis)

c. Chi square tests (2 by 2 and contingency tables)

d. Interpret the result of statistical analysis

iii. Data Analysis (plan of analysis)
   a. Method to use manual or computer aided
   b. Type of analysis
   c. How to analyse different type of variables
   d. Creation of dummy tables

6.25.7 Teaching and learning activities
   i. Lectures
   ii. Questions and answers
   iii. Group work and plenary discussion
   iv. Individual assignment

6.25.8 Assessment methods
   i. Assignments (20%)
   ii. Semester examination (80%)

6.25.9 Reading list
   iv. CDC Epidemiology book

6.26 Course title: Microbiology
6.26.1 Course status: Core
6.26.2 Total credits: 12
6.26.3 Subject hours: 120

6.26.4 Course aims
Describe the host immune responses which may be directed against parasites and the consequences, beneficial or otherwise, of these responses.

6.26.5 Course expected learning outcomes
At the end of the course the student will be able to describe:

i. The basis of immunology
ii. Non specific and specific acquired immunity
iii. Acquired immune response
iv. Immunity to infection
v. Hypersensitivity
vi. Auto immune diseases

6.26.6 Course content
1. Parasitology
2. Microbiology and immunology
3. The basis of immunology
4. Non specific and specific acquired immunity
   i. Acquired immune response
   ii. Immunity to infection
   iii. Hypersensitivity
   iv. Auto immune diseases

6.26.7 Teaching and learning activities
Lectures, Practical

6.26.8 Assessment methods
Assignment s 10%
Written test 40%
Semester written examinations 50%

6.26.9 Reading list
i. Jawetz, Melnick, & Adelberg’s Medical Microbiology. Editors Geo F Brooks, Janet S Butel and Stephen A Morse, Appleton and Lange, Norwalk, Connecticut

ii. Roitt, Brostoff and Male, Immunology, C. V. Mosby, Missouri
6.27 Course title: Pharmacology

6.27.1 Course status: Core
6.27.2 Total credits: 7.5
6.27.3 Subject hours: 75
6.27.4 Course aims

This module aims at enabling students to understand how drugs are absorbed, distributed and cleared by metabolism and/or excretion and grasp the concepts of drug half-life, volume of distribution and clearance with emphasis on their application to clinical situations. In addition, the aim of this module is to provide students with a sound understanding of the mechanisms by which drugs produce their pharmacological effects and to enable them to recognize the value of the links between pharmacological effects at the molecular level, the cellular level, and the tissue/organ level; and how these effects can be disrupted by disease processes and other drugs. Hence the module will enable students to understand the principles through which therapeutic and adverse effects occur.

6.27.5 Course expected learning outcomes

Individual variation in drug response – role of pharmacogenetics/pharmagenomics.

i. Polymorphic distributions
ii. Single Nucleotide Polymorphisms (SNPs)
iii. Influences of Polymorphism on drug metabolism
iv. Inherited diseases that predispose to drug toxicity
v. Genetic testing and its importance in modern targeted therapy
vi. Gene therapy, human stem cell therapy

Drugs acting on diseases of the cardiovascular system:

i. Overview of national (Tanzanian Standard treatment guidelines) and international evidence-based guidelines (JNC-USA, NICE-UK)
ii. Hypertension (in adults, children & adolescents, pregnancy-induced, HELLP syndrome)
iii. Overview of Coronary artery diseases, and ischaemic heart disorders
iv. Management of Stroke, Myocardial Infarction, Angina pectoris
v. Congestive heart failure

Hormones, Drugs acting on the hormonal system

i. Thyroid and antithyroid drugs
ii. Thyroid hormone biosynthesis, transport, storage and secretion
iii. Treatment options for hypothyroidism
iv. Treatment options for hyperthyroidism
v. Thyroid hormone activation and inactivation
vi. Challenges with Stability, reliability and potency of synthetic oral thyroid preparations
vii. Overview and treatment recommendations for Diabetes mellitus
viii. Classification of diabetes mellitus
ix. Insulin biosynthesis and its mechanism of action
x. Types of insulin preparations (rapid, intermediate, long acting) and clinical uses
xi. Oral hypoglycaemic drugs and mechanism of action
xii. Screening and diagnosis of pre-diabetes, diabetes mellitus
xiii. Prevention diabetic complications (micro and macro), wounds

Chemical transmission and drugs acting on the CNS
i. Drugs used in headache and migraine
ii. Anticonvulsants
iii. Aetiology of epilepsy
iv. Classification, Types and
v. Treatment options, first generation and second generation drugs
vi. Antiepileptics and women’s health, contraception and pregnancy
vii. Management of Status epilepticus
viii. Overview of CND degenerative disposers-Huntington’s chorea, dyskinesias, Alzheimer’s disease
ix. Parkinson’s diseases – epidemiology and pathology
x. Role of dopamine in Parkinson’s diseases
xi. Risk factors for Parkinson’s diseases

Selected Chemotherapeutic Agents
Malaria and antimalarial drugs
i. The new Artemisinin-Combination Therapy (ACT) policy and options for Tanzania
ii. 5.1.2 Withdrawal of artemisinin-based monotherapies from the world market
iii. Treatment of uncomplicated malaria
iv. Treatment of complicated malaria
v. Prevention and treatment of uncomplicated/complicated malaria in pregnancy
vi. Treatment of malaria and neonates below 5kg
vii. Malaria and HIV-co-infection
viii. Management of non-response to malaria on the first-line or second –line drugs
ix. Malaria prevention strategies

6.27.6 Course content
Individual variation in drug response – role of pharmacogenetics/pharmagenomics.
   i. Polymorphic distributions
   ii. Single Nucleotide Polymorphisms (SNPs)
iii. Influences of Polymorphism on drug metabolism
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viii. Classification of diabetes mellitus
ix. Insulin biosynthesis and its mechanism of action
x. Types of insulin preparations (rapid, intermediate, long acting) and clinical uses
xi. Oral hypoglycaemic drugs and mechanism of action
xii. Screening and diagnosis of pre-diabetes, diabetes mellitus
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iii. Aetiology of epilepsy
iv. Classification, Types and
v. Treatment options, first generation and second generation drugs
vi. Antiepileptics and women’s health, contraception and pregnancy
vii. Management of Status epilepticus
viii. Overview of CND degenerative disposers-Huntington’s chorea, dyskinesias, Alzheimer’s disease
ix. Parkinson’s diseases – epidemiology and pathology
x. Role of dopamine in Parkinson’s diseases
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iv. Treatment of complicated malaria
v. Prevention and treatment of uncomplicated/complicated malaria in pregnancy
vi. Treatment of malaria and neonates below 5kg
vii. Malaria and HIV-coinfection
viii. Management of non-response to malaria on the first-line or second –line drugs
ix. Malaria prevention strategies

6.27.7 Teaching and learning activities

Lectures, lecture discussion, tutorials, practical, Seminars, group discussion, presentations, demonstration

6.27.8 Assessment methods
Continuous assessment 50%
Assignment 10%
Written test 40%
End of semester examination 50%

6.27.9 Reading list
6.28 Course title: Development studies (K8DS2428)

6.28.1 Course status: Non Core
6.28.2 Total credits: 4.5
6.28.3 Subject hours: 45

6.28.4 Course aims

The students must demonstrate ability to evaluate health care system in the context of development trends, and thereby determine alternative approaches towards improving quality of health services. Within this framework, the students will gain an understanding of Health Policies, Health planning and Resource Mobilization governance and Human Rights and Health as applied to health care.

6.28.5 Course expected learning outcomes

After completion of the course the student is expected to:

1. Analyze health care delivery systems in the context of current development trends
2. Appraise Health Policies
3. Appraise globalization focusing on its implications on health
4. Explain health implications of violation of human rights
5. Examine the process of industrialization with a focus on its consequences to health
6. Appraise the interface between population dynamics and environmental health

**Broad Competence Statement:** The students will demonstrate knowledge of the various health systems, analyze public health and system problems resulting from human rights abuses, globalization, industrialization, management and entrepreneurship challenges, with a view of contributing to formulation of remedial measures.

**Learning objectives**

1. Employ knowledge of health delivery systems, Health Policies and development trends to draft a comprehensive health plan.
2. Employ knowledge of globalization and human rights to plan an approach for addressing common health challenges
3. Employ knowledge of industrialization to plan an approach to prevent industrial related health challenges.
4. Use knowledge of population dynamics to plan an approach for promoting sustainable health development.
5. Use knowledge of Health Policies, Human Rights, Science and Technology, and Health Systems to plan for improving quality of health services.

**Broad Competence Statement:** The students will demonstrate understanding of the principles and practices of management, governance and entrepreneurship and how they impact on efficient and effective functioning of the health care delivery system. Students will be able to advocate for quality patient care and work in interprofessional health care teams and assess, coordinate, enhance and improve patient safety and quality of care.

**Learning objectives:**

After completion of this module the student will be able to:

1. Demonstrate knowledge of how the health care system functions (structures, policies, regulations, standards and guidelines)
2. Demonstrate the ability to work effectively in various health care delivery settings and systems (hospitals, government, ministries, NGO’s, communities, industry)
3. Demonstrate ability to coordinate and implement health service delivery and health interventions within the health care system
4. Demonstrate the understanding and promote quality care in health systems through audits, accreditations, and/or Evaluations.

**Broad Competence Statement:**

The student will be able to engage and communicate with a patient, clients and communities and to build relationship for the purposes of information gathering, guidance, education, and support under a broad range of social aspects of health care.

**Learning objectives:**

1. Establish constructive relationships and communicate effectively with patients, clients and/or communities in order to address their needs and preferences.

2. Provide service to individuals and groups that is appropriate to their different backgrounds

3. Demonstrate the ability to communicate health issues and polices effectively to the public

**6.28.6 Course content**
An Overview of concept of Health System

- Introduction to health systems
- Health System thinking
- Comparative analysis of models (Horizontal and Vertical) of health care delivery systems
- Health sector reforms

Health Policy

- Concepts of Policy
- Health Policy in Tanzania
- Development Policy implications on Health Policy—a comparative context (Market economies and Health policies, the Welfare state and Health policies, the Socialist Development policy and Health policies etc)

Health planning and Resource Mobilization:

- Concept of strategic planning
- Principles and procedures of health planning
- Resource mobilization and allocation (Health care financing)

Governance and Health:

- Concept of governance
- Governance structures
- Decentralization of health services

Globalization and Health:

- Overview of Globalization and history of globalization
- Globalization as a determinant of ill-health:
- Impact of global health initiatives on health systems
- Human resources for health crisis in Africa
- Public health implications of multilateral trade agreements

Human Rights and Health: Covered as a separate subject

- Meaning and history of human rights discourse- Categories of human rights
- Human rights violations and their health implications

**Science, Technology and Industrialization policies:**
- Overview/concepts of Science and Technology
- Challenges of Technology transfer and its implications in Health Care
- Industrialization practices and health implications in developing countries
- Health aspects of Industrialization policies

**Industry, Agro technology and Health:**
- Nature of agro-technology in developing countries
- Health implications of agro-technology in rural Africa

**Energy, Environment and Health:**
- Concepts of environment and health
- Impact of population growth on environmental health.
- Factors influencing environmental health
- Energy Crisis and Health implications
- Safe management of waste
- Global warming and Health implications

**Introduction to the Principles of Entrepreneurship:**
- Concept of entrepreneurship
- Principles of entrepreneurship
- Entrepreneurship in health

**6.28.7 Teaching and learning activities**

The methods of teaching and learning will include: Lectures, seminars, video, role-play, case based learning, and problem based learning.

**6.28.8 Assessment methods**

The methods of assessment will include: Written test/examinations (MCQs, Essays), Observation and rating of seminar attendance & participation; submission of seminar paper for grading.
6.28.9 Reading list

Proposals for Health Sector Reforms: Ministry of Health and Social Welfare United Republic of Tanzania

The National Health Policy Tanzania: Ministry of Health and Social Welfare United Republic of Tanzania

Healthy Workplaces for employers, Workers, policy makers and Practitioners> Geneva, WHO.


Management Sciences for Health. The Manager: Creating a work climate that motivates staff and improves performance.

Reference Materials


YEAR 3: SEMESTER 5

6.29 Course title: Clinical Practical Skills Training (K8CP3529)

6.29.1 Course status: Core

6.29.2 Total credits: 22

6.29.3 Subject hours: 220

6.29.4 Course aims

In year three, semester five of the MD program, students will be introduced to clinical sciences and the students will start with Comprehensive Clinical Practical Sills Training, and Disease management blocks. During semester five, students will be able to relate the knowledge gained in the first two years of basic science to the pathologic basis of disease, diagnostics and principles of therapy. The course will then be followed by junior clinical rotations in Internal Medicine, Pediatrics, Surgery and Obstetrics and Gynaecology junior clinical rotations/clerkships.

Comprehensive Clinical Practical Skills block (CPST) Block is offered in MD3 at Semester 5

This course link the learning and skills acquired by the students during the first two years with that required for the next three clinical years.
The training of skills is an area of education that has enjoyed increasing attention in medical faculties all over the world during the last decade. The skills laboratory is an educational facility in which systematic skills training of many kinds take place in a wide variety of formats and circumstances.

The term medical skills refers to those practical medical and communication skills and attitudes that are necessary in encounters with patients. These skills cover a wide variety of training topics, ranging from correct methods of history taking, performing abdominal examination properly, taking a laboratory sample, conducting a counselling session or suturing a wound. Any skill must be performed properly and systematically to achieve the desired objectives.

**Course Description**

This course introduces the clinical student to the basic skills in communication, physical examination and clinical procedures so that the student acquires interpretative skills required to make a diagnosis. Advanced and specific clinical skills will be given in the specific clinical rotations or disciplines. Opportunities for the student to acquire understanding of some of the ethical, moral and legal aspects of the practice of medicine will be available. The student will be provided with a guide book called comprehensive Clinical Practical Skills block book, while the teacher will have Tutors manual for guidance.

**6.29.5 Course expected learning outcomes**

At the end of this course the student should acquire Knowledge in:

i. The art of history taking, attitude and patient doctor relationship
ii. Physical Examination
iii. Ethics, moral and legal aspects of medical practice
iv. Elements of Clinical thinking (Clinical Problem Analysis)
v. Basics and advanced life support
vi. Normal vital signs of a normal person (Body Temperature, Pulse, Blood pressure, Respiration and coma charts Skills in
   a. Communication (Interview with a peer/patient)
   b. History taking, Physical examination and apply them by practicing in a Phantom, peer students and selected patients by bedside whenever possible
   c. Common essential cognitive
   d. Physical/Regional examination (Observe and recording features of normal subject, complete thorough Examination of Normal/Patient including Respiratory system, Cardiovascular system, Nervous system, Gastrointestinal system, Musculoskeletal system, Urigenital system, Endocrine system, and Mental Status Evaluation
e. Clinical Problem Analysis is analysis of data from history taking, Physical Examination and make a problem list, Differential Diagnosis and action plan
f. Basic Pathological and Post Moteum
g. Clinical Laboratory
h. Clinical Diagnostics and Therapeutic procedures eg Lumber puncture, ECG, Tube thoracotomy, Bone Marrow Biopsy
i. Pharmacotherapy and prescription
j. Theatre and aseptic techniques
ABC of basics and advanced life support

6.29.6 Course content

Communication skills:
  i. Communication in medical care
  ii. The concept of communication
  iii. Effective communication and a factor affecting it
  iv. Types of communication (verbal, gestures, postures, etc.)

Within the framework of the course, clinical skills will be devoted to the basic function in the consultation which include:

- Skills for gathering information, so that the information obtained from patients is comprehensive and reliable, thereby increasing diagnostic accuracy. Key skills in this area will include: asking open questions, checking understanding, clarifying issues, and summarizing information.
- Skills for information transfer and patient education, to ensure that the patient understands and remembers information about the nature of the problem and treatments. Key skills in this area will include: providing clear information, sequencing, repeating and checking information, presenting advice in categories, frequent summaries tailoring advice to individual patients, written instructions and negotiations.
- Skills for promoting a therapeutic relationship so that the patient will feel valued and understood and therefore motivated to cooperate. Key skill in this area will include: empathy, active listening, responsiveness, eliciting patient’s perceptions, feelings and expectations.
- Skills for writing the interview in Clinical Record data sheet of the patient in chronological and sequential order as per general clinical set up.

Physical examination skills:
  Inspection
  i. Attitude and posture of the patient in bed
  ii. Attitude and posture in the standing position
iii Ambulation
iv External habit
v Development and height
vi Body constitution
vii Body posture
viii Constitution and disposition

**Skin examination and examination of subcutaneous tissues**

i Oedema, pallor, dehydration, nutrition
ii Myxoedema
iii Subcutaneous emphysema

**Abnormalities of body temperature**

i Febrile syndrome
ii Subnormal temperature

**Regional examination**

i Head
ii Neck
iii Chest
iv Abdomen
v Vertebral column
vi Extremities

**Systemic physical examination**

i Neurologic system
ii Respiratory system
iii Cardio-vascular system
iv Gastro-intestinal system
v Genito-urinary system
vi Muskulo-skeletal system

**Materials and resources**

For Students and tutors

- White coat
- Simulated patients
- Active (real) patients
- Stethoscopes,
- Sphygmanometers(working)
- Examination couches and linen
- Thermometers and antiseptic jars
– Weighing scales
– Height measures,
– Ruler and flexible tape measure preferably marked in centimeters
– Wall clocks/wrist watch with seconds
– Examination gloves
– Light source (pen light/flash light)
– Comprehensive Clinical Practical Skills Block Book

Resources for the systems

Cardiovascular and respiratory systems

– As above but in addition
– Pulse oximeter
– ECG
– Audio tapes and recorders for reproducing sounds (lung sounds, heart murmurs)
– Video tapes, video decks and monitors students assisted learning of the various Skills
– CD-ROM and PC for assisted learning of the various skills 
i.e communicative, physical examination and clinical diagnostic and or

Gastrointestinal system

– As for general examination
– Also a PC with CD ROM and video sets are needed for assisted learning.
– Tongue depressors
– Rectal examination trays, rectal speculum and lubricants
– Rectal examination training phantoms

Genito – urinary system

Reproductive

– Female: -Vaginal examination trays, vaginal speculums and lubricants
- Fetoscopes
- Vaginal examination training phantoms
- Obstetric phantoms
– Male: - Rectal examination trays and phantoms.

Urinary: As for general examination but also catheterization training phantoms, for males and females
Neurological system

- Reflex patella hammers (preferably flexible)
- Pin and soft wool tufts for checking sensory modalities

Ophthalmology and ENT

- Ophthalmoscopes
- Auroscopes
- Tuning forks

Physics and measurement

  i. Blood pressure
  ii. Pulse
  iii. Sound transmission
  iv. Temperature

Central Nervous System Function
Respiratory System Function
Cardiac System Function

6.29.7 Teaching and learning activities

During practical training, the general physical examination will be practiced on the basis of case studies, students will practice on peer students, models, listen and watch videos, interactive CD ROM assisted learning, before coming to contact with real patients. Bedside teaching activities (BST) will include problem-based learning, student centered learning, role play, demonstrations, simulations and later patient encounters. There will also be a series of lectures:

  i. Interview skills
  ii. Communication: Introduction to what communication is and its relevance to medical practice
  iii. Feedback process
  iv. Medical ethics on communication in medical practice
  v. General medical interview (history taking)
  vi. General physical examination
  vii. Systemic physical examination
  viii. Medical ethics on physical examination
  ix. Clinical Problem Analysis
  x. Basic Life Support (BLS) and Cardio-Pulmonary Resuscitation (CPR).

6.29.8 Assessment methods

Objective Structured Clinical Examination (OSCE). At the end of the CPST block there will be Clinical Skills Examination in the format of Objective Structured Clinical Examination (OSCE) and written exam in Management of Diseases.
6.29.9  Reading list
Materials: Students, Tutors, Simulated patients, real patients, skills laboratory room, communication skills reference books, video camera and tapes, video deck and screen

6.30  Course title: Disease Management (K8DM3530)

6.30.1  Course status: Core
6.30.2  Total credits: 16.5
6.30.3  Subject hours: 165

6.30.4  Course aims
Management of Disease Block lectures is given in the afternoon (2.00pm to 5.00pm) to students on the management of the most common conditions the students are likely to meet as they enter clinical practice. The lectures will be in the four main subjects of Internal Medicine, Surgery, Obstetrics and Gynecology and Pediatrics and child health. This will be a 12-week block.

Comprehensive Clinical Practical Skills (CPST) will be covered in the same period of 12 weeks and will utilize the morning hours from 8.00am to 12.30pm. But in this case specialty departments will be covered also. These are Dental, Ophthalmology, Radiology, Dermatology, Pharmacology, Ear Nose and Throat and Urology. This will equip students with basic knowledge and skills as they go to the peripheral placement after this.

6.30.5  Course expected learning outcomes
Students are expected to be conversant with the theoretical part of different disease conditions from different speciality.

6.30.6  Course content

Obstetrics and Gynecology
Hypertensive disorders of pregnancy, Antepartum hemorrhage in pregnancy, Trial of scar, Trial of labor, Fetal monitoring in labor, 2 previous scar, PROM/PPROM, PPH, Active management of labor, Normal labor, PMTCT, Post and per op management, IUFD, Malaria in pregnancy, Anemia in pregnancy, Abortions, Menorrhagia, VVF, Molar pregnancy, Infertility, Uterine fibroids, Ovarian tumors, CIN, CaCx, MVA/D+C, Cervical incompetence, PID, Vaginal discharge, Ectopic pregnancy,
Surgery


Pediatrics

Common respiratory diseases; pneumonia, ARI, Asthma, Acute watery diarrhoea, Malaria in children, PAIDS (staging, diagnosis, treatment, PMTCT) Rheumatic heart disease and CCF, Meningitis, Convulsions, Hypoglycemia, Anemia in children, Malnutrition (PEM), Pyrexia of unknown origin, Urinary tract infection, Pulmonary TB, Birth asphyxia, Jaundice, Common neonatal infections, CHD (cyanotic TOF, acyanotic PDA, ASD, VSD), Spinal bifida, Hydrocephalus, Burkitt’s lymphoma, Abdominal mass, Neonatal care and examination, LP procedure, RCH no: 1 card/ Immunizations, Feeding in neonates,

Internal Medicine

Acute renal failure, Tetanus, Acute upper GIT bleeding, Severe Asthma, Acute Pneumonia, Hypertensive crisis, Malaria, Heart failure, Diabetic ketoacidosis, Status epilepticus, Anemia, Organophosphate poisoning, Chronic kidney disease, Acute liver failure, Acute bacterial meningitis, Hypertension, Pyrexia of unknown etiology, Ascites, Rheumatoid arthritis, High altitude illness, Diabetes mellitus, Cerebralvascular accidents (stroke), HIV/AIDS

6.30.7 Teaching and learning activities
Lectures and tutorials
6.30.8 Assessment methods
At the end of the CPST block there will be Clinical Skills Examination in the format of Objective Structural Clinical Examination (OSCE) and written exam in Management of Diseases

6.30.9 Reading list
Swash M. Hutchison’s clinical methods, W.B. Saunders

6.31 Course title: Junior Rotations (K8JC3531)

6.31.1 Course status: Core
6.31.2 Total credits: 21.5
6.31.3 Subject hours: 215
6.31.4 Course aims
After covering CPST and Diseases management, students will be divided into four groups to cover major departments (Pediatrics and child health, Internal Medicine, General Surgery, and Obstetrics and Gynecology). Each Group will rotate in each department for two weeks. This will be Junior Clinical Rotation).

Objective of the course

i. To familiarize the students with the daily activities of the Clinical Departments
ii. To reinforce an art of communication skills real Patient doctor relationship
iii. To practice History taking and Physical Systemic Examination
iv. To learn Different presentation styles
v. To observe common procedures in the departments and do some under supervision
vi. To attend all scheduled ward rounds and outpatient clinics
vii. To see variety of diseases as they appear in the departments and clerk some patients and present the to their seniors
viii. To manage some common conditions as they appear in a respective department
ix. To Learn some normal and abnormal laboratory findings
x. To obtain an art of Clinical Problem Analysis

6.31.5 Course expected learning outcomes
At the end of the course students should acquire the following

Knowledge

i. In basic physiology ad pathophysiology of common diseases
ii. Demonstrate an understanding in clinical presentation
iii. an art of Clinical reasoning (Clinical Problem Analysis)
iv. in clerkship of patients
v in communication and ethics
vi in obtaining history and examining patients in the wards

Skills in

i Communication
ii Clerking patients
iii Common therapeutics
iv Prescription
v Common procedures as they are performed in the departments
vi Interpretation of laboratory findings (Normal and abnormal)

6.31.6 Course content

Pediatrics

Learning outcomes
At the end of the clinical rotation, the student is expected to have acquired.

i. An initial orientation in the clinical field of Paediatrics
ii. A basic understanding of the principles of growth and development
iii. Some skills to measure growth and development
iv. A view on children in health and disease as they live in rural and urban areas

Course content

i. Paediatric/child health general (problems/diseases).
   a. Fever, Hypothermia
   b. General malaise
   c. weight loss, stunting and wasting
   d. Pain in children
   e. Dehydration
   f. Oedema
   g. Cyanosis
   h. Hypoglycaemia
   i. Convulsions
   j. Jaundice
   k. Anaemia
   l. Respiratory distress, stridor, grunting.
ii. Growth and development (intrauterine and later in infancy and childhood)
iii. Breast feeding and the physiology of lactation
iv. Paediatrics in the developing world

Clinical skills
i. History taking

ii. Examination of a child, system by system:
   a. Respiratory system
   b. Cardiovascular system
   c. Gastro intestinal system
   d. Genito urinary system
   e. Central nervous system

iii. Examination of the New-born

**Teaching and learning methods**

The student will rotate in the 3 different paediatrics wards.

The day-to-day programme includes:

i. Morning lecture - 1 hour
ii. Morning ward round - 4 hours (approx.)
iii. Afternoon clinical Tutorial - 2 hours
iv. Problem based learning and self-directed learning will be stressed
v. Training will be student centered (i.e. the student will be the main actor).
   This level will be reached by reading, teaching, showing/demonstrating, without being able to diagnose and treat completely.

**Internal Medicine**

The course aims to help the students to acquire a range of clinical skills and attitudes related to history taking and physical examination, in addition to acquiring the interpretative skills required to make a diagnosis and implement appropriate patient management. It is intended to produce graduates who have appropriate competencies to address the health needs of the community. The programme in years 3 will enable the student to have the the foundation in understand the scientific basis of diseases and the clinical practice and to acquire the necessary Knowledge, Skills, Competencies and ethics relevant to the profession.

**Course outcome in terms of Knowledge, Skills, Attitude and Competencies**

The student will be able to

**A. Take a history and thus be able to:**

i. Define and analyze a problem.
ii. Communicate effectively and sensitively with the patient.
iii. Analyze the patients main complaint within the common modes of presentation in respect of medical and surgical history.
iv. Record and interpret the patient’s past medical and surgical history.
v. Obtain a full family, social and occupational history.
vi. Elicit details of the patients general health by means of a systems review.
vii. Obtain a comprehensive account of the patients medication.

B. Acquire Physical examination skills and thus be able to:

i. Observe and record the features of the normal subject in General Examination
ii. Complete a thorough examination of the adult systems and Regions. The systems includes Respiratory system, Cardiovascular system, Central Nervous System, Musculoskeletal System, Urigenital System, Endocrine and Reproductive system
iii. Assess the general and Mental state of the patient.
iv. Examining Special Regions of patients such as Head and Neck, Abdomen etc
v. Describe lumps and swelling in terms of their characteristics.
vi. Read and understand TPR and coma charts.
vii. Demonstrate Cardio-Pulmonary Resuscitation (CPR)
viii. Demonstrate first aid for sudden collapse, bleeding.

C. Acquire the appropriate Attitudes of:

i. Good conduct
ii. Neat physical appearance
iii. Punctuality and Regular attendance
iv. Ability to bear responsibility when assigned to do so
v. Politeness, good manners and sympathy in his/her approach to patients

After the Mid semester Examination a student will have Junior Clinical Rotation (JCR) for 2 weeks in the department. Emphasis on History taking, General systemic Examination, art of diagnosis and differential diagnosis and Plan for patient management will be emphasised. Students will be allowed to clerk patients and present to their seniors (Interns, Registrars Residents and Specialists) They are assessed at the same time by Mini Clinical Evaluation Exercise (MiniCex). Every student will be encouraged to undergo this process. This will mark the End Of Semester 5

**Surgery**

The Course Content associated with these Objectives will be covered during the year 3 as follows:

**Module I: Principles of Surgery:**

i. History and examination in surgery patients
ii. Ulcers, swellings, fistular, sinus, inflammation, abscess
iii. Wounds and tissue repair, scars and keloids
iv. Hypovolaemia, shock and blood transfusion
v. Fluid and electrolyte therapy in surgery
vi. Nutrition in surgery
vii. Asceptic techniques and sterilization
viii. Analgesia, sedation, pain and anxiety relief.
ix. Surgical infections – abscess, cellulites, forniers gangrene.
x. Lymphangitis pyomyositis and principles of management.
xii. Wound infections and other specific surgical infections.
xii. Physiotherapy in surgery.

Module II: Skin conditions

i. Burn injury
ii. Skin neoplasms
   b. Premalignant conditions – leukoplakia bowens disease, pagets disease.
   c. Malignant tumors, basal cell carcinomas, squamous cell carcinoma and malignant melanoma groin hernias

Module III. Vascular, lymphatic disorders:

i. Arterial disorders and atherosclerosis, arterial stenosis and occlusion, gangrene and amputation, vasospasms.
ii. Arterial dilation – aneurysms, arteriovenous fistular.
iii. Thrombosis and thromboembolism, venous caricosities and complications.
iv. Lymphangitis, lymphoedema and filariasis.
v. Principles of underwater seal chest drainage.

Clinical Skills Training in Surgery

Module I

i. Surgical history taking and examination – five patients
ii. Examination of a skin ulcer – 1
iii. Examination of a skin swelling – 1
iv. Examination of the chest – 1
v. Examination of the acute abdomen – 1
vi. Examination of a chronic abdomen – 1
vii. Examination of abdominal hernias

Module II

i. Examination of an acute burn – 1
ii. Examination of a chronic burn – 1
iii. Burn wound nursing care and management – 1
iv. Chronic burn complications – 1
v. Examination of dry and wet limb/toe – gangrene
vi. Examination of elephantoid, lymphoedam leg.

Module III

a. Witness aseptic techniques in operating rooms.
b. Witness sterilization techniques in operating rooms
c. Practice scrubbing technique
d. Assist wound suture – 1
e. Incision and drainage of abscess – 1
f. Assist appendicectomy or laparatomy – 1
g. Do venepunctures – 6
h. Insert urinary catheter – 3
i. Insert Nasogastric tube – 2
j. Observe underwater seal chest drainage.

Obstetrics and gynaecology

Course aim

During this course, students will be provided with an opportunity to develop a working knowledge base in general obstetrics and gynecology. The students will be able to demonstrate understanding of the clinical presentation, basic physiology, key physical findings, and diagnosis of diseases frequently encountered in an inpatient and outpatient obstetrics and gynaecology settings.

MD students will also have ample opportunity to scrub in for surgical cases, work closely with Ob/Gyn staff and residents in both the outpatient and inpatient settings, and experience hands-on training.

Intended Learning outcomes

Knowledge

By the end of this course, the students will have studied and understood;

Obstetrics

i. Fertilization, Implantation and early development of the embryo
ii. The Fetus, Placental and Amniotic fluid
iii. The Endocrine changes during pregnancy, normal pregnancy diagnosis and Antenatal Care
iv. Bleeding in late pregnancy
v. Monitoring of the Foetus and Placental function, Multiple pregnancy  
vii. Abnormalities of the third stage of Labour, Placenta and cord, and the puerperium  
viii. The New-born Baby, Maternal Injuries, Puerperal infections, maternal and fetal mortality

Gynecology  
i. Normal and abnormal development of the genital organs, Cytogenetics and Intersexuality  
ii. Bleeding in early pregnancy  
iii. Vaginal and Pelvic Infection  
iv. Contraception  
v. Abortion  
vi. Ectopic pregnancy

**Clinical skills**

By the end of this course, the students will have obtained skills to;

**Obstetrics**  
i. Diagnose pregnancy and follow up pregnancy during antenatal period  
ii. Detect risk factors during pregnancy and manage pregnancy complications  
iii. Diagnose labour, fetal monitoring, track labour progress with patrogram and conduct normal birth process.  
iv. Advise on family planning

**Gynecology**  
i. Take proper gynecological history and perform proper physical examination in gynecology inpatients and outpatient settings  
ii. Make common gynecological diagnosis  
iii. Make or perform appropriate investigation, interpret the results

**Attitudes**

By the end of this course, the students should have developed;

i. Good conduct, Neat physical appearance, Punctuality, Regular attendance  
ii. Ability to bear responsibility when assigned to do so  
iii. Politeness and sympathy in approach to patient, good manners.
Course Contents

Obstetrics

i. Early pregnancy
   a. Embryo and trophoblast in the 1st trimester
      i. Revision of implantation
      ii. Revision of anatomy with respect to the structure of the uterine wall and blood supply (uterine artery, spiral arteries)
      iii. Development of the embryo: sequence of organ formation, onset of circulation, growth of the embryo
      iv. Congenital malformations: type of malformations; drug induced malformations
      v. Role of the trophoblast in implantation; changes in wall structure if uterine vessels: loss of media crucial for normal function of placenta
   b. Amniotic cavity, placenta and membranes
      i. Revision of the anatomy of the amniotic cavity; obliteration of the uterine cavity and development of the membranes
      ii. Anatomy of the placenta, relation to structures of the uterine wall (hemochorionic placenta), cotyledons, circulation of maternal blood, maturation of the villi, changes in the placenta barrier/placenta membranes throughout pregnancy
      iii. Trans placental passage of blood
      iv. The umbilical cord and its vessels
   c. Diagnosis of early pregnancy, determination of gestational age
      i. Gynecological history with respect to dates of menstrual cycle
      ii. Uncertain and certain signs of pregnancy
      iii. Role of Ultrasound in early pregnancy, introduction to tables of correlation between size of gestational sac diameter, CR and gestational age; time in pregnancy when heartbeat, limbs buds and movements can be seen.

ii. Normal pregnancy
   a. Endocrine and physiological changes in pregnancy
      i. Changes in the cardiovascular system, metabolism and hematology, urinary, gastrointestinal and respiratory tract, immune system
      ii. Endocrinology: changes in the requirement of thyroid hormone; steroid hormones
      iii. Glucose metabolism and insulin resistance
   b. Growth and maturation of the fetus
      i. Introduction to growth chart (see ultrasound derived growth curves); introduction to ultrasound in estimation of gestational age and fetal weight (FL, BPD, AC); role of clinical and ultrasound estimation of fetal weight.
      ii. Maturation of the fetal organ functions in the 2nd and 3rd trimester (lung, kidney, liver, brain and nervous system): importance of
lung maturation in prematurity (limiting factor in survival of premature infants)

iii. Introduction to IUGR and Macrosomia

iv. Drugs that interfere with growth and development

c. Antenatal care

i. Role of antenatal care in maternal and perinatal health, morbidity and mortality (safe motherhood)

ii. Introduction to maternal and perinatal mortality; goal of reducing it; national and international data

iii. Frequency and timing of antenatal care (with respect to early and late pregnancy)

iv. Quality of antenatal care and parameters to be assessed; prospective value of parameters to detect severe complications in pregnancy; risk factors; role of obstetric history

v. Prophylactic treatment in pregnancy (Vaccines, Anti-D, Malaria)

d. Pregnancy at and post term; abnormal site of the placental; twin pregnancy

i. Changes in the placenta and amniotic fluid at and post term

ii. Risk of pregnancy post dates

iii. Abnormal placenta site; bleeding in late pregnancy

iv. Twin pregnancy (frequency, di-/monochorionic, di/moноzygotic), diagnosis, common complications

iii. Normal delivery

a. Normal labour and delivery

i. Changes in the uterine muscles in late pregnancy (development of oxytocin receptors, role of prostaglandins)

ii. Changes in the structure of the uterine wall in late pregnancy (thinning of the lower segment through increasing number of slight contractions); patterns of contractions in pregnancy (difference between Braxton Hicks contractions and labour contractions)

iii. Changes in the cervix near term (changes on the molecular level, clinical findings of gradual shortening, softening and opening); introduction to Bishops score; difference between prime and multipara

iv. Use of terms: lie, presentation, position of the fetus and engagement

v. Course of a normal delivery (prepare an ideal partogram for visualization and introduction to the use of partogram); phases of delivery (1st stage with latent, active phase, 2nd stage); assessment during delivery (frequency, risks, parameters to assess)

vi. Descent of the fetus through the pelvis with special emphasis on the rotation of the head (use of partogram and model in labour ward)
vii. Technique of vaginal delivery (timing, handling of the head, delivery of the shoulders); episiotomy
viii. Pain relief in obstetrics (benefits and risks, choice of drugs, complications)
b. Fetal Monitoring
   i. Technique used for fetal monitoring (Fetoscope, Dopler, Uss, ECG, scalp blood)
   ii. Introduction to parameters; baseline, variability, accelerations, decelerations
   iii. Stress test, Non-stress test (physiological response of the fetus stimulation)
   iv. Fetal monitoring in pregnancy, more than FHR (risk factors for feta distress, growth of the fetus, amount of liquor, movements, FHR)

c. The Newborn baby; normal puerperium; infection
   i. Adaptation to extraterine life (lung, gas exchange, hemoglobin, oxygen saturation, pH of the blood)
   ii. Apgar score and how to assess
   iii. Assessment of gestational age, introduction to Finstrom score
   iv. Physiological and endocrinological changes in the mother
   v. Uterine regression; changes in the uterus, lochia
   vi. Lactation (role and importance for survival and health of the newborn); Prolactin; histological changes in the lactating breast; clinics; onset of lactation, amount and composition of the milk in the days after delivery

Gynecology
   i. Development of the genital organs, revision of anatomy
   ii. Revision of the normal development of the genital organs with respect to the system of Wolff and Muller ducts; common malformations (absence of the uterus or vagina, bicornuate uterus of all grades, vaginal septae, atresia of the hymen)
      a. Revision of anatomy with special respect to blood supply (to uterus, fallopian tubes, ovaries and vagina), lymph vessels and pelvic floor.
   iii. Vaginal and Pelvic infections
      a. Vaginal and pelvic infections, signs, symptoms and treatment
         i. Vagina: candidiasis, trichomonas, Gardiella, Chlamydia
         ii. Pelvis inflammatory disease (PID): Gonorrhea, Chlamydia. Enterobacteriae
      b. Sexually Transmitted Infections; signs and symptoms of the most common STIs (Gonorrhea, Syphilis, Hepatitis B, HIV); importance of the national health prevention
c. Role of PID in infertility

iv. Contraception
   a. Revision of menstrual cycle, sperm ascension, fertilization and implantation
   b. Identification of sites on interference by contraceptives (ovulation, sperm ascension, implantation)
   c. Hormonal contraceptives
      i. Combined Oral Contraceptives Pill; composition, mode of action, types, mono-/bi-/triphasic pills, side effects and risks, clinical use, failure rate
      ii. Progesterone only pill: composition, mode of action, clinical use, side effects, failure rate
      iii. Depot progesterone: composition, mode of action, clinical use, risk and benefit, failure rate
   d. Intrauterine Device: description of the most common products, mode of action, risk and benefit, most common side effects
   e. Barrier methods (Condom): Use, failure rate, additional benefit in the protection against STIs, beliefs about condoms, role of the churches in the use of condoms
   f. Female sterilization: Techniques, counselling, risks, complications and benefits, role of the husband, failure rates
   g. Male sterilization: techniques, counselling, risks, complication and beliefs.

v. Abortion and ectopic pregnancy
   i. Bleeding in early pregnancy, classification of abortion in early pregnancy (imminent, incipient, incomplete, complete, missed abortion)
   ii. Septic abortion, symptoms, management and complications
   iii. Criminal abortion and complications

vi. Ectopic pregnancy

Teaching and Learning Methodology

During this course the student will have a series of

i. Lectures and Tutorials
ii. Bedside teaching and Demonstrations and an increasing participation in practical procedures and Surgery.
iii. They will be given increasing levels of responsibility, but always under the supervision of a lecture.
iv. There will be Journal clubs and encouragement of self-directed learning.

Assessment:

The student will be assessed using

i. Objective Structured Clinical Examination (OSCE)
ii. End of rotation oral examination
iii. End of semester examinations

Reference Reading

i. Hutchison’s clinical methods (24th Edition), by Robert Hutchison
v. William Gynaecology. 24th Edition
viii. Current-Diagnosis and Treatment.
ix. Obstetrics and Gynaecology.

Hackers & Moore. 5th Edition
x. Essentials of Obstetrics and Gynaecology

Department Guidelines Handbook Obstetrics and Gynaecology- KCMC

6.31.7 Teaching and learning activities
Tutorial, Bedside teaching and demonstration, case presentation

6.31.8 Assessment methods
i. Log Book
ii. Mini Clinical Evaluation exercise (Mini Cex) after each two weeks of rotation in each department

6.31.9 Reading list
Swash M. Hutchison’s clinical methods, W.B. Saunders and Department specific clinical examination references

YEAR 3: SEMESTER 6

6.32 Course title: Infectious Diseases (K8ID3632)

6.32.1 Course status: Core
6.32.2 Total credits: 8
6.32.3 Subject hours: 80

6.32.4 Course aims
To introduce the student to management of common infections of clinical importance and to integrate this with knowledge and skills acquired during basic training in microbiology and parasitology (of the 2nd year) including community health aspects.

6.32.5 Course expected learning outcomes

The student will be able to describe infectious diseases and the organisms causing the diseases.

The student will be able to:

i. Give a diagnosis and differential diagnosis.

ii. Present a patient with infectious disease.

iii. Describe laboratory investigation required.

iv. Obtain specimens for microbiological investigation.

v. Understand and interpret simple side laboratory tests; Gram stain, Z-N stain,

vi. Blood slide for malaria parasites, wet preparation, stool and urine analysis.

vii. Understand the principles of infectious diseases and their treatment

Public health, social and emotional objectives

The student will be able to:

i. Describe the concept of primary, secondary and tertiary prevention in infectious diseases.

ii. Assess and understand the feelings of a patient with stigmased diseases like AIDS, and other STDs, Tuberculosis etc

iii. Describe the National programmes like national extended programme immunisation, National TB/Leprosy programme, National Aids control programme etc.

iv. Understand and implement infection control on different levels, Individually, family based, institutionally and community based.

6.32.6 Course content

The student will be able to describe infectious diseases and the organisms causing the diseases.

Learning and skills objectives

The student will be able to:
i. Present a patient with infectious disease.

ii. Give a diagnosis and differential diagnosis.

iii. Describe laboratory investigation required.

iv. Obtain spacemens for micro biological investigation.

v. Understand and interpret simple side laboratory tests; Gram stain, Z- N stain,

vi. Blood slide for malaria parasites, wet preparation, stool and urine analysis.

vii. Understand the principles of infectious diseases and their treatment

**Public health, social and emotional objectives.**

The student will be able to:

i. Describe the concept of primary, secondary and tertiary prevention in infectious diseases.

ii. Assess and understand the feelings of a patient with stigmased diseases like AIDS, and other STDs, Tuberculosis etc.

iii. Describe the National programmes like national extended programme on Immunisation, National TB/Leprosy programme, National Aids control programme etc

iv. Understand and implement infection control on different levels, Individually, family based, institutionally and community based.

6.32.7 **Teaching and learning activities**

Apart from formal classroom lectures, students will be exposed to clinical cases and structured community visits and projects basing on HIV – AIDS. These will be spearheaded by the internal medicine department. The student will be encourage to use the internet.

6.32.8 **Assessment methods**

Since the clinicians conduct this teaching of clinical infections, they will also conduct assessments by including sections of infections in the end of rotation written and clinical examinations

6.32.9 **Reading list**

6.33 **Course title: IMCI (K8IM3633)**
6.33.1 Course status: Core
6.33.2 Total credits: 6
6.33.3 Subject hours: 60
6.33.4 Course aims
   i. The module is designed to help each participant develop specific skills necessary for case management of sick children. Participants develop these skills as they read the modules, observe live and video taped demonstrations, and practice skills in written exercises, group discussions, oral drills, or role plays.
   ii. After practicing skills in modules, participants practice the skills in a real clinical setting. With supervision to ensure correct patient care.
   iii. Each participant works at his own speed.
   iv. Each participant discusses any problems or questions with a facilitator, and receives prompt feedback from the facilitator on completed exercise. (Feedback includes telling the participant how well he has done the exercise and what improvements could be made)

6.33.5 Course expected learning outcomes

This module will describe and allow you to practice the following skills.
   i. Asking the mother about the child’s problem.
   ii. Checking for general danger signs
   iii. Asking the mother about main symptoms:
       - Cough or difficult breathing
       - Diarrhoea
       - Fever
       - Ear problem
   iv. When a main symptom is present:
       - assessing the child further for signs related to the main symptom
       - classifying the illness according to the signs which are present or absent.
   v. Checking for signs of malnutrition and anaemia and classifying the child’s nutritional status.
   vi. Checking the child’s immunization and vitamin A supplementation status and deciding if the child needs any immunizations or vitamin A supplementation or vitamin A supplementation today.
   vii. Assessing any other problems.

CLINICAL PRACTICE OBJECTIVES

Clinical practice is an essential part of the Management of Childhood Illness course. The course provides daily practice in using case management skills so that participants can perform them proficiently when they return to their own clinics. Participants learn about the skills by reading information in the modules or seeing demonstrations on videotape. They then use the information by doing written
exercises or case studies. Finally and most importantly in clinical practice, participants practice using their skills with real sick children and young infants.

**General Objectives: During clinical practice sessions, participants will:**

i. See examples of signs of illness in real children see demonstrations of how to manage sick children and young infants according to the case management charts.

ii. Practice assessing, classifying and treating sick children and young infants and counseling mothers about food, fluids, and when to return.

iii. Receive feedback about how well they have performed each skill and guidance about how to strengthen particular skills.

iv. Gain experience and confidence in using the skills as described on the case management charts.

**Outpatient Session** take place in outpatient clinics. Each small group of participants travels to an outpatient clinic each day and is supervised by its facilitators. The focus of the outpatient session is to provide practice of the case management process with sick children and young infants. In outpatient sessions, participants will:

i. See sick children and young infants who have been brought to the clinic by their mothers.

ii. Practice assessing and classifying sick children and young infants according to the ASSESS & CLASSIFY and YOUNG INFANT charts.

iii. Practice identifying the child’s treatment by using the “Identify Treatment” column on the ASSESS & CLASSIFY and YOUNG INFANT charts.

iv. Practice treating sick children and young infants according to the TREAT and YOUNG INFANT charts.

v. Practice counseling mothers about food, fluids, and when to return according to the COUNSEL chart.

vi. Practice counseling mothers of sick young infants according to the YOUNG INFANT chart.

vii. Practice using good communications skills when assessing, treating and counseling mothers of sick children and young infants.

**Inpatient Sessions** take place on an inpatient ward. These each small group is led by the inpatient instructor. The focus of the inpatient session is to practice assessing and classifying clinical signs, especially sign of severe illness. During inpatient sessions, participants will:
i. See as many examples as possible of signs of severe classifications from the ASSESS & CLASSIFY and YOUNG INFANT charts, including signs not frequently seen.

ii. Practice assessing and classifying sick children and young infants according to the ASSESS & CLASSIFY and YOUNG INFANT charts, focusing especially on the assessment of general danger signs of severe illness, and signs which are particularly difficult to assess (for example, chest in drawing and skin pinch)

iii. Practice treating dehydration according to Plans B and C as described on the TREAT chart.

iv. Practice helping mothers to correct positioning and attachment for breastfeeding.

Participants practice the clinical skills as part of a case management process. The clinical practice skills are presented in the order they are being learned in the modules. In each clinical session, participants use the skills they have learned up to and including that day’s session. This allows participants to gain experience and confidence in performing skills introduced in earlier sessions.

To make sure that participants receive as much guidance as possible in mastering the clinical skills, the outpatient facilitator and inpatient instructor give particular attention and feedback to the new skill being practiced that day. If any participant has difficulty with a particular skill, the facilitator or inpatients instructor continues working with the participant on that skill in subsequent sessions until the participant can perform the skill with confidence.

### 6.33.6 Course content

There are 7 modules to be taught in 2 weeks

i. Introduction

ii. Assess and classify the sick child Age 2 months up to 5 years.

iii. Identify treatment

iv. Treat the child

v. Counsel the mother

vi. Management of the sick young infant

vii. Follow up

### 6.33.7 Teaching and learning activities

The material in the course is not presented by lecture instead each participant is given a set of instructional booklets called modules, that have the basic information to be learned. Information is also provided through demonstrations, photographs and video tapes. In each module there are several exercises and theory
Practical OPD and IPD Resource Personnel within the College and Hospital

The activities include:

i. Participants working individually
ii. Individual feedback (Exercise)
iii. Group discussion
iv. Video
v. Role play
vi. Photographs
vii. Drills
viii. Practical
ix. Demonstration: IPD, OPD.

6.33.8 Assessment methods

i. Online assessment Tools
ii. Learning experience Tools
iii. Practical recording forms
iv. Exercise

6.33.9 Reading list
Generic Tanzania IMCI Training Course 2013

6.34 Course title: Health Promotion (K8HP3634)

6.34.1 Course status: Core
6.34.2 Total credits: 11
6.34.3 Subject hours: 110
6.34.4 Course aims
Tanzania, like many other developing countries experiences a double burden of communicable and non communicable diseases, and other conditions which have their respective toll on the population. Many of these conditions are largely attributed by behavioural risk factors such as unhealthy diets, smoking, sedentary lifestyle as well as environment, education, social cultural and economic factors which are mostly fuelled by unemployment and poverty. These determinants of health underlie most of the health problems amongst Tanzanians.

Health Promotion is, focusing on good physical and mental health, preventing illness, and being attentive to and addressing the many risk factors in the social, economic and physical environments that affect health from diet, lifestyle, relationships, workplaces, culture and environmental quality with the aim of improving health conditions of whole population by reducing causes of ill health and premature deaths through health promotion.
Health Promotion (HP) is a three week module organized for medical students’ year 3. This module intends to build knowledge on HP theories, principles, models and strategies taking into account determinants of health in a respective area. It also intends to build skills of the students in problem identification and prioritization, community needs assessment, community assessment of burden of identified problem, synthesis of collected information, community feedback. The module also build skills in designing health promotion messages guided by underlying problems of a specified community and in using appropriate communication channel for specified community.

6.34.5 Course expected learning outcomes

At the end of the module, the learner should be able to:

i. Define HP promotion and explain its importance in promoting healthy lives to meet the Sustainable Development Goals of 2030
ii. Describe principles of HP
iii. Explain different strategies and models used in designing HP messages
iv. Assess underlying community health problems, analyze and prioritize key challenge
v. Describe quality assurance and quality control issues in data management.
vi. Design health promotion messages and give feedback to the community

6.34.6 Course content

i. Overview of Health Promotion Principles
   a. Introduction
   b. Brief history of health promotion
   c. Basic concepts in health promotion
   d. Overview of other important disciplines to health promotion

ii. Overview of Strategies and Policies In Disease Prevention and HP
   a. Overview of different strategies used in disease prevention
   b. Diseases prevention in different population (high risk vs. General population)
   c. Health regulatory interventions
   d. Healthy public policies

iii. Overview of Health Behavior and Theoretical Models
   a. Introduction to central theories in health promotion and behaviour change:
   b. Health Belief Model, locus of control.
   c. The Theory of Planned Behavior and
d. Social Learning Theory

iv. **Overview of Planning Health Promotion Programmes**
   a. Introduction to planning for health promotion programs
   b. Overview of PRECEDE-PROCEED planning framework
   c. Four phases of PRECEDE framework
   d. Strategies for social diagnosis at community level
   e. Principles for Setting objectives for planning a health promotion program
   f. PROCEED part of the Framework

v. **Community-Based Strategies in HP**
   a. Concept of community empowerment
   b. Educational strategies for community participation
   c. Policy measures
   d. Empowering strategies
   e. Identifying key stakeholders when designing HP messages

vi. **Community entry, interaction and giving feedback**
   a. Key concepts in community entry
   b. Participatory community assessment/survey
   c. Analysis and synthesis of data
   d. Feedback strategies and designing appropriate HP messages

6.34.7 **Teaching and learning activities**
Lectures, tutorials, on-line training programs, directed & self-directed seminars, group discussion followed by presentations, field work and written examination

6.34.8 **Assessment methods**
The final mark will be based on the following: Individual assignment 10%; group presentation after field work 20%; field work final report 50%; and an end of module written examination 20%.

6.34.9 **Reading list**


6.35 Course title: Dental (K8DE3635)

6.35.1 Course status: Core
6.35.2 Total credits: 6.8
6.35.3 Subject hours: 68
6.35.4 Course aims

This course provide students with an opportunity of overviewing the oral health aspect on the mostly occurring diseases and conditions in the oral facial region of adults and children. The course will have 12 hours of lecture, 13 hours of tutorials, 3 hours of independent studies and 40 practical hours which makes a total of 68 hours (6.8credits)

6.35.5 Course expected learning outcomes

The following three categories of broad goals for the clerkship are not meant to be limiting you to other goals that you may want to focus on but are intended to clearly outline what we expect for you to achieve by the end of the Internal Medicine Clerkship. Herein you can review objectives linked to three main goals; 1) Competency, 2) Patient Care/Clinical Skills, and 3) Knowledge.

1. Competency
   a. Demonstrate commitment to excellence, honesty, respect for others, integrity, and altruism in patient care.

   b. Objectives
      i. Treat all patients, patient family members, staff, and colleagues with respect, which includes maintaining a professional demeanor in speech and dress
      ii. Strive for excellence
      iii. Place the care of your patients above competing interests
      iv. Practice informed consent with patients/patient families
      v. Work effectively as a part of the treatment team

   c. Learning Activity

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i. Professionalism should permeate all aspects of your performance and cannot really be taught in isolation. Important issues of professionalism include:
   1. Navigating the dental department- your role in the team, working with ancillary providers, etc.
   2. Approaching medical errors
   3. Communicating difficult news

   d. Evaluation
   i. Formative and summative feedback will be obtained from the dental team. The clerkship director will evaluate submissions and your interactions with them as well (including timeliness, attitude, initiative). How you treat members of the dental care team can play a role in this evaluation, though the clerkship does not specifically seek out formal feedback from these individuals.

2. Patient Care
   a. Evaluate and manage patients with acute and chronic dental disease in clinic and theatre settings.
   b. History Taking
      i. Objective
         1. Obtain and record a patient’s history and chief complaint in a logical, organized, and thorough manner. Demonstrate effective verbal skills, including appropriate use of open- and closed-ended questions, repetition, facilitation, explanation, summation, and interpretation.
         2. In addition to standard medical history, students to include detailed dental and surgical history, along with family history of dental/oral disease.
      ii. Learning Activity
         1. Interview, examine, and write a summative written case report for each new patient you see (include history, physical exam, problem list, differential diagnosis, additional investigation- labs, imaging, etc, proposed case management and discharge plan).
      iii. Evaluation
         1. Case reports are submitted to the clerkship director who is primarily responsible for evaluating these. The dental team will give ongoing feedback as well. History taking skills will also be evaluated during daily dental chair rounds and a final oral assessment at the end of the rotation.
   c. Physical Exam
      i. Objective
         1. Perform and record a complete dental examination in a logical, organized, accurate and thorough manner for new
patients and an appropriately focused examination for follow up patients. Students will explain the purpose of these exams to the patient and obtain patient consent prior to doing so. Specific physical examination skill we expect students to master by the end of the dental clerkship includes:

a. **Ability to establish rapport with patient.**

b. **Appearance.** Recognize signs of acute illness by evaluating skin color, respiration, hydration, mental status, interaction.

c. **Vital signs.** Measure heart rate, respiratory rate, blood pressure and temperature accurately.

d. **Extraoral exam.**
   i. Facial features (symmetry, swelling, muscle tone, jaw movement, expression, twitch, paralysis, signs of abuse, pigmentation)
   ii. Skin (color, moisture, tone, rash, lesions, growths)
   iii. Hair (loss, dry, coarse)
   iv. Breath (no odor, malodor)
   v. Eyes (size, shape, color, lacrimation, dryness, pupils, vision, movements, bulging, halos)
   vi. Sinuses (frontal, maxillary)
   vii. Parotid glands (location, enlargement)
   viii. Thyroid gland (midline location, visually enlarged, palpate)
   ix. Lymph nodes (location; palpation for size, induration, mobility, pain)
   x. Temporomandibular Joints (pain on palpation, sounds/crepitus with movement, range of motion)
   xi. Extraoral muscles of mastication (palpate; test function; know origin and insertion)
      1. Masseter
      2. Temporalis
      3. Trapezius
      4. Sternocleidomastoid
   xii. Test Cranial Nerves

e. **Intraoral exam.**
   i. Lips (color, texture, size, history of sun exposure, blisters, ulcers, traumatic lesions, angular cheliosis)
   ii. Mucobuccal fold (color, contour, frenum/frena, effects of tobacco use)
iii. Buccal mucosa (color, traumatic lesions, linea alba, moistness, parotid papilla, fordyce, granules, leukoedema, pigmentation)
iv. Hard palate (height, color, contour, rugae, tori, incisive papilla, growths, ulcers, nicotinic stomatitis, denture stomatitis, red lesion)
v. Soft palate (color, size, shape, petechiae, ulcers, trauma, gag reflex)
vi. Uvula (size, shape, midline location)
vii. Oropharynx/Tonsils (color, tonsils present, enlargement, surface character)
viii. Tongue (shape, color, texture, consistency, papillae, coating, lesions, functional deviation, scalloping, fibroma, fissures, hemangioma)
ix. Floor of mouth (Wharton’s duct openings, varicosities, lesions, frenum)
x. Gingiva (margins, recession, zone of attached, mucogingival line, lesions)
xi. Residual Ridge (color, firm, soft, ridge resorption, irregular)
xii. Intraoral muscles of mastication (palpate; test function; know origin and insertion)
   1. Medial Pterygoid
   2. Lateral Pterygoid
xiii. Teeth (number present, decay, inspect surfaces, margins of restorations, percussion, erosion, attrition, food impaction, open contact, supernumerary, fractures, pulp exposure, abrasion, malposed, super-eruption)
xiv. Occlusion (angle, overjet, overbite, midlines)
xv. Periodontium (size, color, consistency, texture, attachment, mobility, calculus)
xvi. Saliva (adequacy, xerostomia)
f. Procedures for sign off include: oral hygiene instruction, scaling, incision and drainage extra and intraorally, tooth restoration, extraction of tooth, veneer, jaw fracture reduction and immobilization (closed reduction), repair of soft tissue injury extra and intraorally, and intraoral tissue biopsy.

ii. Learning Activity
   1. Each student should be observed performing a complete dental examination and/or targeted portions to the exam with given feedback and opportunities for questions.
2. Students will watch and assist with basic procedures.
3. Physical findings on dental chair rounds will be offered to supplement students’ skills.
4. Students will record procedures in their log book.

iii. Evaluation
1. Dental team will observe students perform physical examinations in the course of patient care and these observations will inform the summative evaluation. Physical exam skills will also be tested in the final oral assessment. Log book will be reviewed.

d. Lab Interpretation

i. Objective
1. Obtain and understand important supplemental information, including CBC/FPB, blood smear, blood culture, serum chemistries, hepatitis serologies, coagulation studies, x-ray, STI testing.

ii. Learning Activity
1. **Lab Studies.** From core rotations students should have lectures on and clinical experience in different areas of the clinical lab where students will learn appropriate use and interpretation of laboratory tests.
2. **Radiologic Studies.** Students will have lectures on and clinical experience in the basics of reading plain radiographs and introduction to CT scanning where applicable to dentistry.

iii. Evaluation
1. Students’ understanding of these tests will be assessed on dental chair rounds and through final written examination.

e. Clinical Reasoning

i. Objective
1. Formulate and document an assessment that includes the relevant differential diagnoses based on data gathered to guide initial diagnostic evaluation and disease management.

ii. Learning Activity
1. This will be discussed on daily dental chair rounds with the dental team.

iii. Evaluation
1. This is assessed by the dental team on daily dental chair rounds and review of case reports. *Full development of this skill is a crucial component and goal of this clerkship.*

f. Presentation Skills
i. Objective
   1. Orally present a new patient’s history and dental examination clearly and with appropriate detail.

ii. Learning Activity
   1. This is typically performed with the dental tutor one-on-one and feedback is given at that time, and also as part of rounds when applicable.
   2. Student is to orally present at least 3 case reports.

iii. Evaluation
   1. Dental team members who directly observe this will provide formative and summative feedback. Presentation skills will also be tested at the final oral assessment.

**g. Written Skills**

i. Objective
   1. Write coherent, clear progress notes documenting working diagnosis and status of diagnostic evaluation and therapeutic plans.

ii. Learning Activity
   1. Students practice this by writing daily progress notes on all their patients, in addition to required case reports.

iii. Evaluation
   1. Dental team members will evaluate progress notes and provide feedback. This will also be evaluated in the case reports.

**h. Patient and Family Counseling**

i. Objective
   1. Effectively communicate with the patient (and family if given consent by the patient) their physical findings, diagnosis, and treatment plan.
   2. Educate on preventative and safety measures.

ii. Learning Activity
   1. This is practiced on initial evaluation of new patients and throughout diagnosis/treatment and always observed by a member of the dental team to ensure accurate information.

iii. Evaluation
   1. Dental team members will evaluate and provide feedback.

**3. Knowledge**

a. Demonstrate understanding of the clinical presentation, basic physiology, key physical findings, evaluation and management of
diseases frequently encountered in an inpatient and outpatient medicine setting.

b. Objectives
i. Review the pathophysiology and be able to recognize and initiate evaluation and management plans for the following disease states/clinical presentations:
   1. Gingivitis
   2. Periodontitis
   3. Periodontal abscess
   4. Reversible pulpitis
   5. Irreversible pulpitis
   6. Cervical abrasion
   7. Severe attrition
   8. Severe fluorosis
   9. Dental abscess
  10. Tooth fracture
  11. Fracture mandible
  12. Fracture maxilla
  13. Soft tissue injury of the oral cavity
  14. New growth in the oral cavity
  15. Bleeding of gums
  16. Periodontal pocket
  17. Calculus
  18. Recession of gums
  19. Fluctuant swelling of gums
  20. Tooth temperature sensitivity
  21. Radiating pain from the jaw to the ear and head
  22. Mottling of teeth surface
  23. Flecking off of enamel
  24. Trauma- swelling of face, loss of function of jaw, malocclusion, bleeding from nose ear and mouth
  25. Temporomandibular joint crepitation
  26. Trismus
  27. Dental caries
  28. Halitosis
  29. Oral cancer
  30. Bitten lip or tongue
  31. Canker sores, cold sores and other common mouth sores
  32. Bruxism
  33. Xerostomia

ii. Be able to use clinical reasoning to synthesize data into a prioritized differential diagnosis, working diagnosis, and plan.

6.35.6 Teaching and learning activities
There will be Lectures, Tutorials and practical demonstrations. The student will spend time in the Dental clinic at KCMC and visit Community Dental Officers.

The learning will be by clinical experiences of cases and clinical instruction. The departmental student log book will be used.

In addition, there will be afternoon lectures in this semester.

6.35.7 Assessment methods

The student will be assessed using end of semester examinations and evaluation of the clinical log book.

6.35.8 Reading list

6.36 Course title: Radiology (K83636)

6.36.1 Course status: Core
6.36.2 Total credits: 6.8
6.36.3 Subject hours: 68
6.36.4 Course aims

Radiology is an important field in evidence based management of patients. A general practitioner is in most cases the primary contact to a patient visiting a health facility. In a resource limited set-up where specialists are scarce, the general practitioner is compelled to perform tasks that would have otherwise have been performed by a specialist in a tertiary center, this is true for radiology.

The most widely available radiological modalities are conventional radiography and sonography. Sonography requires proper training and is user dependent; it is therefore mandatory that undergraduate students are trained to correctly recognize and communicate pathology seen in plain radiographs as well as ultrasound where applicable.

These sessions assume that the student has learnt through the CPST block - the basic radiographic techniques and understands the different radiographic views and their diagnostic importance. It also assumes that students have learnt basic sonographic skills and are able to perform FAST scans.

The undergraduate radiology module is conducted in two sessions, the morning sessions and afternoon sessions. It will comprise of practical demonstrations, tutorials, self study assignment, group activities and lectures. It is comprised of 5 essential modules namely; chest, abdomen and pelvis, musculoskeletal and evidence based radiology. These modules cover common pathologies and emergency conditions.
Morning sessions provide an opportunity for students to present, discuss and receive feedback on the activities provided on their undergraduate radiology skills manual. Whereas the afternoon sessions allow students to practise image interpretation and reporting, students should realise that image interpretation relies on a sound clinical knowledge and is not a substitute for good clinical history and physical examination; in fact a radiologist depends on this information to narrow down the list of differentials as well as in deciding appropriate radiological work-up.

The lectures will focus on common emergency radiological conditions as well as introduce the concept of evidence based radiology and encourage the use of ACR imaging appropriateness criteria which are evidence-based guidelines to assist referring physicians and other providers in making the most appropriate imaging or treatment decision for a specific clinical condition.

The students will also be introduced to the modern radiology work flow through the use of simulated DICOM viewers and PACS to prepare them for a digital radiology work-flow.

6.36.5 Course expected learning outcomes
Upon completion of this module, learners shall be able to

The following three categories of broad goals for the clerkship are not meant to be limiting you to other goals that you may want to focus on but are intended to clearly outline what we expect for you to achieve by the end of the Radiology Clerkship. Herein you can review objectives linked to three main goals; 1) Competency 2) Patient Care/Clinical Skills, and 3) Knowledge.

i. Competency
   a. Demonstrate commitment to excellence, honesty, respect for others, integrity, and altruism in patient care.
   b. Objectives
      i. Treat all patients, patient family members, staff, and colleagues with respect, which includes maintaining a professional demeanor in speech and dress
      ii. Strive for excellence
      iii. Place the care of your patients above competing interests
      iv. Practice informed consent with patients/patient families
      v. Work effectively as a part of the treatment team
   c. Learning Activity
      i. Professionalism should permeate all aspects of your performance and cannot really be taught in isolation. Important issues of professionalism include:
         1. Navigating the wards- your role in the team, working with ancillary providers, etc.
         2. Approaching medical errors
d. Evaluation  
i. Formative and summative feedback will be obtained from the radiology team. The clerkship director will evaluate submissions and your interactions with them as well (including timeliness, attitude, initiative). How you treat staff, nurses, and all members of the team can play a role in this evaluation, though the clerkship does not specifically seek out formal feedback from these individuals.

ii. Patient Care  
a. Evaluate radiological studies of patients hospitalized with acute illness, trauma and in clinic settings.  
b. History Taking  
i. Objective  
1. Obtain and record a patient’s history and chief complaint in a logical, organized, and thorough manner that will aid in diagnosis via radiological studies.  
ii. Learning Activity  
1. Interview, examine, and write a radiology consult note for each new patient assigned to you.  
iii. Evaluation  
1. The radiology team will give ongoing feedback. History taking skills will also be evaluated during daily rounds and a final oral assessment at the end of the rotation.  
c. Physical Exam  
i. Objective  
1. Perform and record an appropriate physical examination for a radiological evaluation in a logical, organized, accurate and thorough manner. Students will explain the purpose of these exams to the patient and obtain patient consent prior to doing so. Physical exam skills learned in core rotations are expected to be mastered and used in the radiology rotation, including:
   a. **Ability to establish rapport with patient.**  
   b. **Appearance.** Recognize signs of acute illness by evaluating skin color, respiration, hydration, mental status, interaction.  
   c. **Vital signs.** Measure heart rate, respiratory rate, blood pressure and temperature accurately, demonstrating knowledge of the appropriate sized blood pressure cuff and normal values.  
   d. **HEENT exam.** Be able to identify abnormalities of the oral cavity, throat, nasal passage, gross eye/pupils, and head.  
   e. **Cardiovascular exam.** Be able to identify normal heart sounds, extra heart sounds (S3, S4, pericardial friction rubs), systolic vs. diastolic murmurs, and specifically aortic stenosis and mitral regurgitation.
f. **Pulmonary exam.** Be able to identify normal breath sounds, pulmonary crackles and wheezes.

g. **Abdominal exam.** Be able to identify internal organs and abnormalities (splenomegaly, hepatomegaly, cholecystitis, appendicitis, masses). Be able to recognize and describe stigmata of liver disease including findings consistent with ascites, spider angiomata, palmar erythema, jaundice/scleral icterus, hepatomegaly. Be able to do a rectal examination and recognize when it is indicated.

h. **Endocrine exam.** Be able to identify abnormalities of the thyroid and physical signs of thyroid disease and diabetes.

i. **Neurology exam.** Be able to test all cranial nerves, muscle strength/tone, reflexes, sensation, gait, and coordination and recognize abnormalities.

j. **Genitourinary exam.** Be able to identify abnormalities of the genitals and exam findings consistent with urinary tract abnormalities (flank pain, bladder distention).

k. **Skin exam.** Be able to identify abnormalities of the skin including rashes, deformities, burns and infections.

**ii. Learning Activity**

1. Each student should be observed performing a focused physical examination and/or targeted portions to the exam with given feedback and opportunities for questions.

2. Students will watch and assist with basic radiologic procedures.

3. Physical findings on rounds will be offered to supplement students’ skills.

4. Students will record procedures in their log book.

**iii. Evaluation**

1. Radiologists and residents will observe students perform physical examinations in the course of patient care and these observations will inform the summative evaluation. Physical exam skills will also be tested in the final oral assessment. Log book will be reviewed.

d. **Lab Interpretation**

i. **Objective**

1. Obtain and understand important supplemental information, including CBC/FBP, blood smear, blood culture, serum chemistries, hepatic function panel, hepatitis serologies, cardiac biomarkers, thyroid function tests, ABG, coagulation studies, stool occult blood, ECG, STI testing and urinalysis as they contribute to radiological evaluation and diagnosis.

ii. **Learning Activity**
1. From core rotations students should have lectures on and clinical experience in different areas of the clinical lab where students will learn appropriate use and interpretation of laboratory tests.

iii. Evaluation
   1. Students’ understanding of these tests will be assessed on rounds.

e. Clinical Reasoning
   i. Objective
      1. Formulate and document an assessment that includes the relevant differential diagnoses based on data gathered to guide initial diagnostic evaluation and disease management.
   ii. Learning Activity
      1. This will be discussed on daily rounds with the teams.
   iii. Evaluation
      1. This is assessed by the radiology team on daily rounds and review of consultation notes. *Full development of this skill is a crucial component and goal of this clerkship.*

f. Presentation Skills:
   i. Objective
      1. Orally present a patient’s history and physical examination clearly and with appropriate detail to aid in radiologic study use and interpretation.
   ii. Learning Activity
      1. This is typically performed with the resident or radiologist one-on-one and feedback is given at that time, and also as part of rounds.
   iii. Evaluation
      1. Radiology team members who directly observe this will provide formative and summative feedback. Presentation skills will also be tested at the final oral assessment.

g. Written Skills
   i. Objective
      1. Write coherent, clear consultation notes documenting working diagnosis, reason for radiology study, interpretation of results and suggestion for management/treatment.
   ii. Learning Activity
      1. Students practice this by writing consultation notes on all their patients.
   iii. Evaluation
1. Residents and radiologists will evaluate notes and provide feedback.

h. Patient and Family Counselling
   i. Objective
      1. Effectively communicate with the patient (and family if given consent by the patient) their physical and radiological findings, diagnosis, and treatment plan as appropriate (it may be the primary ward team’s position to do so).

      2. Educate on preventative and safety measures.

   ii. Learning Activity
       1. This is practiced on evaluation of patients and always observed by a member of the radiology team to ensure accurate information.

   iii. Evaluation
       1. Radiology team members will evaluate and provide feedback.

   iii. Knowledge
       a. Demonstrate understanding of the clinical presentation, basic physiology, key physical findings, evaluation and management of diseases frequently encountered in an inpatient and outpatient medicine setting in the context of radiological studies.

       b. Objectives
          i. General Principles- Throughout the radiology clerkship, students will be exposed to the following general principles of the practice of radiology. Upon completion of this curriculum, students will have the appropriate basic diagnostic and therapeutic skills for radiological interpretation, practice, and application for their own future careers. Students will demonstrate competency in the following areas of radiology:

             1. Role of radiologists as specialists and consultants working with other medical staff as part of the healthcare team.
             2. Applications of radiology as a screening modality of disease and for use in guiding medical and surgical interventions.
             3. Importance of evidence-based medicine in choice of radiological imaging, procedures, and appropriate interpretation.
             4. Basic concepts of risk management and confidentiality, as it applies to radiology and the legal obligations to protect patients’ interests.
             5. Formulation of appropriate differential diagnoses for common radiologic findings.

          ii. Throughout the radiology clerkship, students will become familiar with the normal and abnormal structure of the body and each of its
major organ systems as it pertains to radiological imaging. Students will demonstrate competency to:

1. Plain Radiographics
   a. Discuss principles of radiology and radiation.
   b. Identify normal anatomy on PA, AP, and lateral chest films.
   c. Recognize abnormal chest films including pleural effusion, pneumothorax, pneumonia and lobe location, changes of congestive heart failure, changes of chronic obstructive pulmonary disease, atelectasis, pulmonary nodules and masses, and hyaline membrane disease of the newborn.
   d. Identify normal anatomy on four views of the abdomen.
   e. Recognize abnormal abdominal films including ileus, small bowel obstruction, large bowel obstruction, free air, and calcifications.
   f. Identify normal anatomy of the spine and long bones in both adults and children.
   g. Recognize abnormal bone radiographs including fractures, degenerative joint disease, osteoporosis (including vertebral collapse), and primary versus metastatic bone malignancy.
   h. Identify normal anatomy on intravenous pyelogram, barium enema, and upper gastrointestinal series

2. Computed Tomography
   a. Recognize and treat contrast allergy, signs and symptoms, and implications to the patient.
   b. Discuss principles of CT function and applications.
   c. Discuss differences between CT, MRI, plain film, and US, including the comparative benefits/drawbacks and strengths/weaknesses of each modality.
   d. Discuss general indications of when to use CT as the imaging of choice.
   e. Identify normal anatomy found on CT of the head, spine, chest, abdomen, and pelvis.
   f. Recognize abnormal head CTs including acute hemorrhage (subarachnoid, subdural, and parenchymal), infarcts, edema, mass effect, and hydrocephalus in an infant and adult.
   g. Recognize abnormal chest CTs including pulmonary nodules and masses.
   h. Recognize abnormal abdominal/pelvis CTs including diverticular disease, appendicitis, bowel obstruction, abdominal aortic aneurysms, pancreatitis, abdominal abscesses, ascites, and hepatic, pancreatic and renal masses.
   i. Recognize abnormal CTs of the spine, including metastatic disease, degenerative joint disease, and disc disease.
3. Magnetic Resonance Imaging
   a. Discuss principles of magnetic resonance imaging, including differences in abilities and applications of MRI versus CT.
   b. Identify normal anatomy on MRI of the head and spine.
   c. Recognize abnormal head and spine MRIs including central nervous system infection, masses, stroke syndromes, multiple sclerosis, disc disease, metastatic vertebral column disease, and cord compression.

4. Ultrasound
   a. Discuss general principles of ultrasound including the differences between 2D, Doppler, and M mode.
   b. Discuss indications and limitations of ultrasound for specific OB/GYN situations (molar pregnancy, anencephalic pregnancy, placenta previa, fetal age using biparietal diameter and femur length, and ectopic pregnancy), vascular Doppler ultrasound (aneurysm, deep vein thrombosis, and carotid artery and peripheral vascular disease), ultrasound for gall bladder, bile ducts and liver, echocardiogram (transthoracic versus transesophageal echocardiography, chamber size, valvular disease, and pericardial infusions), renal ultrasound for cysts and tumors, prostate ultrasound (for evaluation of nodules and biopsy), ultrasound for trauma.

5. Mammography
   a. Discuss basics of normal and abnormal mammograms.
   b. Discuss indications and utility of mammography, including usefulness as a screening method and as a surgical tool for resection and biopsy.

6. Nuclear Medicine
   a. Discuss general principles and therapeutic uses of nuclear medicine.
   b. Discuss mechanisms, indications, and limitations of HIDA scans, bone scans, tagged RBC scans, myocardial perfusion and function (gated blood pool) scans, bone densitometry scans, and ventilation/perfusion scans.

7. Angiography
   a. Discuss diagnostic and therapeutic principles of angiography.
b. Discuss indications for obtaining angiograms.
c. Discuss applications and utility of MRA angiograms.
d. Recognize normal anatomy of the great vessels and other vasculature on angiograms.
e. Discuss indications for angiograms for abnormal processes including subarachnoid hemorrhage and berry aneurysms, vascular stenotic lesions, pulmonary angiogram for PE, aortic dissection, aortic trauma, and gastrointestinal bleeding.

iii. Students will not only have obtained adequate competency in the identification of normal and abnormal findings, but also will have learned appropriate and judicious choice and sequencing of imaging modalities to optimize the diagnosis in balance with sensitivity and specificity, utility, and potential patient complications. Students will have developed competence regarding the radiologic work-up of:
   1. Pulmonary embolism
   2. Cardiac ischemia
   3. Acute abdomen
   4. Neck and back pain
   5. Neurological syndromes including spinal cord compression, seizures, cerebrovascular accident, headaches, focal neurological findings, mental status changes, and head trauma
   6. Child abuse
   7. Preventive medicine including spiral CT for pulmonary nodules, bone densitometry scans for osteoporosis, mammograms for breast cancer screening, and prostate ultrasound for cancer screening and nodule evaluation
   8. Bone and joint pain
   9. Normal and abnormal pregnancy
   10. Staging of common cancers
   11. Hematuria and flank pain
   12. Gastrointestinal bleeding
   13. Aortic aneurysms/dissections
   14. Physical findings including ascites, abnormal heart sounds, prostate nodules, bruits, aneurysm, testicular masses, thyroid nodules, and breast lumps
   15. Trauma
   16. Suspected malignancy

iv. Students will be able to use clinical reasoning to synthesize data into a prioritized differential diagnosis, working diagnosis, and plan.

v. Specific requirements for MD level:
   1. MD3-
a. Introduction to radiation physics- Know the production, properties and application of x-rays. Learn the different modes of imaging (ultrasound, MRI, nuclear medicine).
b. Radiography- Films (type and sizes), processing of radiographic images, solution used (developer/fixer), darkroom technique, drying of films and storage.
c. Practical work- standard views in radiography, positioning of patients, observation of simple imaging diagnostic procedures (ultrasonography, hysterosalpingography, chest x-ray, IVU, urethrograms, barium swallow and ba-meals).

6.36.6 Teaching and learning activities

i. Students will receive lectures and clinical correlation teaching on rounds. Weekly conferences will provide additional knowledge on medical subjects. The above list also is intended to help guide students’ reading. Students are strongly encouraged to learn about all of their patients’ past medical problems in addition to the acute problems to further enhance their medical knowledge.

ii. Each student will keep a log book of specific diseases seen and procedures done while on their radiology rotation.

6.36.7 Assessment methods
Log book of diseases and procedures; oral final assessment; and team evaluations based on observation.

6.36.8 Reading list

6.37 Course title: Clinical Laboratory (K8CL3637)

6.37.1 Course status: Core
6.37.2 Total credits: 8.6
6.37.3 Subject hours: 86
6.37.4 Course aims
The rotation is 2 weeks. Information about the different departments will be provided and students will have the chance to rotate in the different sections to observe and get information about the various activities carried out in the department. Teaching will be in the form of presentations and bench work instructions.

6.37.5 Course expected learning outcomes
The following three categories of broad goals for the clerkship are not meant to be limiting you to other goals that you may want to focus on but are intended to clearly outline what we expect for you to achieve by the end of the Clinical Laboratory Clerkship. Herein you can review objectives linked to three main goals; 1) Competency 2) Patient Care/Clinical Skills, and 3) Knowledge.

**Competency**

i. Demonstrate commitment to excellence, honesty, respect for others, integrity, and altruism in patient care.

ii. Objectives
   a. Treat all patients, patient family members, staff, and colleagues with respect, which includes maintaining a professional demeanor in speech and dress
   b. Strive for excellence
   c. Place the care of your patients above competing interests
   d. Practice informed consent with patients/patient families
   e. Work effectively as a part of the treatment team

iii. Learning Activity
   a. Professionalism should permeate all aspects of your performance and cannot really be taught in isolation. Important issues of professionalism include:
      1. Navigating the wards- your role in the team, working with ancillary providers, etc.
      2. Approaching medical errors

iv. Evaluation
   a. Formative and summative feedback will be obtained from the laboratory team. The clerkship director will evaluate submissions and your interactions with them as well (including timeliness, attitude, initiative). How you treat all members of the team can play a role in this evaluation, though the clerkship does not specifically seek out formal feedback from these individuals.

**Patient Care**

a. Evaluate patients outpatient and hospitalized with acute/chronic illness in the laboratory setting.

b. History Taking
   i. Objective
      1. Obtain a patient’s relevant history in a logical and organized manner that will aid in diagnosis via laboratory studies.
ii. Learning Activity
1. Students will review laboratory request forms and patient charts to find relevant history and record as necessary. Also, students will record patient and clinician demographics along with test results in registers.

iii. Evaluation
1. The laboratory team will give ongoing feedback. History taking skills will also be evaluated during daily laboratory procedures and a final written assessment at the end of the rotation.

c. Physical Exam

iv. Objective
1. Students will review relevant physical exam findings as noted by the primary treatment team’s examination and use physical exam knowledge from previous core clerkships as another component for diagnosis via laboratory services.

2. Students will learn proper specimen collection and transport guidelines and carry these out successfully. Students will explain the purpose of these tests to the patient and obtain patient consent prior to doing so.

v. Learning Activity
1. Students should review physical examination findings in patient laboratory request forms and patient charts.

2. Students will watch and assist with basic laboratory collection and transport procedures.

3. Students will record procedures in their log book.

vi. Evaluation

2. Laboratory team members will observe students review physical examination findings and perform specimen collection in the course of patient care and these observations will inform the summative evaluation. Collection procedures will be tested in the final written examination. Log book will be reviewed.

c. Clinical Reasoning
i. Objective

1. Formulate and document an assessment that includes the relevant differential diagnoses based on data gathered to guide initial diagnostic evaluation and disease management.

ii. Learning Activity

1. This will be discussed daily with the laboratory team and in lectures.

iii. Evaluation

1. This is assessed by the laboratory teams daily in discussion and review of result interpretation of laboratory tests. This is also assessed formally in the student’s written final examination. *Full development of this skill is a crucial component and goal of this clerkship.*

b. Presentation Skills

i. Objective

1. Orally present a patient’s relevant history and physical examination findings clearly and with appropriate detail to aid in laboratory study use and interpretation of results.

ii. Learning Activity

1. This is typically performed with the laboratory tutor one-on-one or in small groups and feedback is given at that time.

iii. Evaluation

1. Laboratory team members who directly observe this will provide formative and summative feedback.

c. Written Skills

i. Objective

1. Write coherent, clear laboratory result notes documenting findings and possible differential diagnosis to aid primary team in patient treatment.

ii. Learning Activity

1. Students practice this by writing result notes on all their received laboratory requests. Laboratory team member will review each note for accuracy.

iii. Evaluation
1. Laboratory team members will evaluate result notes and provide feedback.

**Knowledge**

Demonstrate understanding of the clinical presentation, basic physiology, key physical findings, evaluation and management of diseases frequently encountered in an inpatient and outpatient medical setting to better understand the use and interpretation of laboratory services.

**6.37.6 Teaching and learning activities**

i. Students will receive lectures and clinical correlation teaching on rounds. Weekly conferences will provide additional knowledge on medical subjects. The above list also is intended to help guide students’ reading. Students are strongly encouraged to learn about all of their patients’ past medical problems in addition to the acute problems to further enhance their medical knowledge.

ii. Each student will keep a log book of laboratory procedures done while on their clinical laboratory rotation.

**6.37.7 Assessment methods**

Log book of procedures; final written examination; and team evaluations based on observation.

**6.37.8 Reading list**

**6.38 Course title: Ophthalmology (K8OP3638)**

**6.38.1 Course status: Core**

**6.38.2 Total credits: 6.8**

**6.38.3 Subject hours: 68**

**6.38.4 Course aims**

The student should learn and experience the aspects of Ophthalmology that he/she will have to manage as a general Medical Officer.

The student should be fully competent in the knowledge of the normal anatomy, physiology, and functions of the eye as one of the main senses of the body, in order to recognise and treat its common disorders and diseases.

**6.38.5 Course expected learning outcomes**
The student will be able to

i. Know the basic anatomy, physiology, pathophysiology and the methods of eye examination and perform a basic eye examination, thus being able to recognise the significant external and internal ocular structures of the normal eye.

ii. Evaluate a patient complaining of acute and chronic visual loss. Recognise the common treatable causes of poor vision (cataract, glaucoma, presbyopia)

iii. Evaluate a patient with a red eye, recognise possible causes, know the correct treatment and determine whether the disorder requires the prompt attention of an ophthalmologist, or if they, as a General Doctor, can appropriately treat it. Recognise the causes of a painful eye.

iv. Evaluate the common ocular or orbital injuries, undertake the acute phase management of the traumatised eye and know when to refer to an ophthalmologist.

v. Recognise signs and symptom of amblyopia, strabismus and refractive errors, and be able to test visual acuity, perform the necessary tests to screen for these conditions.

vi. Perform a basic neuro-ophthalmologic examination, from examining the pupils and fundi and testing motor and sensory activities of eyes including binocularity.

vii. Know some ocular manifestations of systemic disease (diabetes mellitus, systemic hypertension, thyroid disease, herpes zoster ophthalmicus etc.) and know when to refer a patient to an ophthalmologist.

viii. Use drugs to facilitate an eye examination, and know how to stain the corneal surface with fluorescein, anaesthetise the cornea with a topical anaesthetic, and dilate the pupil.

ix. Know the indications and the contraindications for using eye drops (antibiotics, antifungals, corticosteroids, antiglaucoma drugs etc.)

x. Understand the Public health factors in eye care related to Ophthalmia neonatorum, Trachoma, Vitamin A deficiency, Onchocerciasis etc.

xi. Understand the role of Education and rehabilitation for children and adults who are permanently partially sighted or blind

xii. Know the most common causes of blindness in Tanzania and worldwide and the importance of the possibilities for their prevention

xiii. Understand the Indications for some surgical procedures (Cataract, Glaucoma, Trichiasis, Evisceration, Enucleation)

The following three categories of broad goals for the clerkship are not meant to be limiting you to other goals that you may want to focus on but are intended to clearly outline what we expect for you to achieve by the end of the Ophthalmology Clerkship. Herein you can review objectives linked to three main goals; 1) Competency, 2) Patient Care/Clinical Skills, and 3) Knowledge.

i. Competency
a. Demonstrate commitment to excellence, honesty, respect for others, integrity, and altruism in patient care.

b. Objectives
   i. Treat all patients, patient family members, staff, and colleagues with respect, which includes maintaining a professional demeanor in speech and dress
   ii. Strive for excellence
   iii. Place the care of your patients above competing interests
   iv. Practice informed consent with patients/patient families
   v. Work effectively as a part of the treatment team

c. Learning Activity
   i. Professionalism should permeate all aspects of your performance and cannot really be taught in isolation. Important issues of professionalism include:
      1. Navigating the wards- your role in the team, working with ancillary providers, etc.
      2. Approaching medical errors
      3. Palliative Care
      4. Communicating difficult news

d. Evaluation
   i. Formative and summative feedback will be obtained from the team and tutor. The clerkship director will evaluate submissions and your interactions with them as well (including timeliness, attitude, initiative). How you treat staff, nurses, and all members of the care team can play a role in this evaluation, though the clerkship does not specifically seek out formal feedback from these individuals.

ii. Patient Care
   a. Evaluate and manage patients hospitalized and in clinic settings with acute and chronic ophthalmologic disease.
   b. History Taking
      i. Objective
1. Obtain and record a patient’s history and chief complaint in a logical, organized, and thorough manner. Demonstrate effective verbal skills, including appropriate use of open- and closed-ended questions, repetition, facilitation, explanation, summation, and interpretation.

2. In addition to standard medical history, students to include detailed ophthalmologic history:

   a. Additional history of present illness components to ask about:

      i. Floaters and flashing lights.

      ii. Transient vision loss.

      iii. Blurry vision: Is the vision always blurry? Does it worsen when reading or watching TV (people blink less when watching TV and develop dry eyes). Is this a glare problem at night that might indicate cataracts? Does the diabetic patient have poor control and hyperglycemic swelling of the lens?

      iv. Red, painful eyes: Nature of the pain (is it scratchy pain, aching pain, or only pain with bright light). Is there discharge that might indicate an infection?

      v. Chronic itching and tearing.

      vi. Headaches and scalp tenderness.

         a. Past medical history with emphasis on conditions directly contributing to ocular pathology such as diabetes, hypertension, coronary artery disease, and thyroid problems.

         b. **Past ocular history** inquiring about past clinic visits and surgeries, specifically cataract surgeries, eye trauma, and glaucoma.

         c. **Family History with** focus on history of glaucoma and blindness.

   ii. Learning Activity

      1. Interview, examine, and write a history and physical (H&P) for each new patient assigned to you.
iii. Evaluation

1. The tutor will give ongoing feedback. History taking skills will also be evaluated during daily rounds and a final oral assessment at the end of the rotation.

**c. Physical Exam**

i. Objective

1. Perform and record a complete physical examination in a logical, organized, accurate and thorough manner for new patients and an appropriately focused physical examination for follow up patients. Students will explain the purpose of these exams to the patient and obtain patient consent prior to doing so. Specific physical examination skill we expect students to master by the end of the ophthalmology clerkship includes:

   a. **Appearance.** Recognize signs of acute illness by evaluating skin color, respiration, hydration, mental status, interaction.

   b. **Vital signs.** Measure heart rate, respiratory rate, blood pressure and temperature accurately.

   c. **HEENT exam.** Eye exam. Be able to measure visual acuity via Snellen eye chart and near vision card; PERRLA via the swinging light test; peripheral vision via confrontational fields; extraocular movements; perform a dilated ophthalmoscope exam to assess the red reflex, optic nerve and posterior fundus; proper lid eversion; eye pressure via tomometry; and assess for eye trauma via fluorescein drops. Be able to identify abnormalities of the oral cavity, throat, nasal passage, and head.

   d. **Cardiovascular exam.** Be able to identify normal heart sounds, extra heart sounds (S3, S4, pericardial friction rubs), and systolic vs. diastolic murmurs.

   e. **Pulmonary exam.** Be able to identify normal breath sounds, pulmonary crackles and wheezes.

   f. **Abdominal exam.** Be able to identify internal organs and abnormalities (splenomegaly, hepatomegaly, cholecystitis, appendicitis, masses).

   g. **Endocrine exam.** Be able to identify abnormalities of the thyroid and physical signs of thyroid disease and diabetes.
h. Neurology exam. Be able to test all cranial nerves, muscle strength/tone, reflexes, sensation, gait, and coordination and recognize abnormalities.

   a. Skin exam. Be able to identify abnormalities of the skin including rashes, deformities, burns and infections.

ii. Learning Activity

   1. Each student should be observed performing a complete physical examination and/or targeted portions to the exam with given feedback and opportunities for questions.

   2. Students will observe and assist with basic procedures.

   3. Physical findings on rounds will be offered to supplement students’ skills.

   4. Students will record procedures in their log book.

iii. Evaluation

   1. Members of the ophthalmology team will observe students perform physical examinations in the course of patient care and these observations will inform the summative evaluation. Physical exam skills will also be tested in the final oral assessment. Log book will be reviewed.

d. Lab Interpretation

i. Objective

   1. Obtain and understand important supplemental information, including CBC/FBP, blood smear, serum chemistries, thyroid function tests, STI testing, fluorescein stain and histology for normal and abnormal eye tissue.

ii. Learning Activity

   1. Lab Studies. Students will have lectures on and clinical experience in different areas of the clinical lab where
students will learn appropriate use and interpretation of laboratory tests.

2. **Radiologic Studies.** Students will have lectures on introduction to CT scanning, ultrasonography, and magnetic resonance imaging specific to ophthalmic structure and pathology.

iii. Evaluation

1. Students’ understanding of these tests will be assessed on rounds and through final written examination.

e. Clinical Reasoning

i. Objective

1. Formulate and document an assessment that includes the relevant differential diagnoses based on data gathered to guide initial diagnostic evaluation and disease management.

ii. Learning Activity

a. This will be discussed on daily rounds with the teams.

iii. Evaluation

1. This is assessed by the team on daily rounds and review of progress notes. This is also assessed formally in the student’s written and oral final assessments. *Full development of this skill is a crucial component and goal of this clerkship.*

f. Presentation Skills: Initial

i. Objective

1. Orally present a new patient’s history and physical examination clearly and with appropriate detail.

ii. Learning Activity

1. This is typically performed with the tutor one-on-one and feedback is given at that time, and also as part of rounds.

iii. Evaluation

1. Ophthalmology team members who directly observe this will provide formative and summative feedback. Presentation skills will also be tested at the final oral assessment.
g. Presentation Skills: Follow-up

i. Objective

1. Orally present a follow-up patient’s case in a focused manner, including diagnostic and therapeutic plans.

ii. Learning Activity

1. This is practiced on daily rounds with the whole team present.

iii. Evaluation

1. Ophthalmology team members who directly observe this will provide formative and summative feedback.

h. Written Skills

i. Objective

1. Write coherent, clear progress notes documenting working diagnosis and status of diagnostic evaluation and therapeutic plans.

ii. Learning Activity

1. Students practice this by writing daily progress notes on all their patients. These should be on the chart in a timely manner (ideally before noon) if feedback is to be given.

iii. Evaluation

1. Ophthalmology team members will evaluate progress notes and provide feedback.

i. Patient and Family Counseling

i. Objective

1. Effectively communicate with the patient (and family if given consent by the patient) their physical findings, diagnosis, and treatment plan.

2. Educate on preventative and safety measures.

ii. Learning Activity
1. This is practiced on initial evaluation of new patients and throughout diagnosis/treatment on rounds and always observed by a member of the ophthalmology team to ensure accurate information.

iii. Evaluation

1. Ophthalmology team members will evaluate and provide feedback.

j. Knowledge

a. Demonstrate understanding of the clinical presentation, basic physiology, key physical findings, evaluation and management of diseases frequently encountered in an inpatient and outpatient medicine setting.

b. Objectives

i. Review the pathophysiology and be able to recognize and initiate evaluation and management plans for the following disease states/clinical presentations:

1. Fundamentals of Ophthalmology

   a. Ocular Anatomy: Eyelids, Sclera, Limbus, Iris, Pupil, Conjunctiva, Cornea, Extraocular muscles, Anterior chamber, Lens, Ciliary body, Posterior chamber, Vitreous cavity, Retina, Macula, Choroid, Optic disc. The student should be able to define each of these structures and provide relevant information regarding function and structure.

   b. Indications for Referral

      i. Student should understand potential causes for reduced visual acuity, abnormal fundus appearance, and potentially other abnormal findings that would result in referral of the patient to an ophthalmologist for evaluation.

2. Refraction and Contact Lens

   a. Student should understand the following:
i. The human eye is an optical system.

ii. The schematic eye.

iii. Pupil size and its effect on visual resolution.

iv. Visual acuity and clinical measurement with the Snellen fraction

b. Refraction States of the Eye
   i. Emmetropia
   ii. Myopia
   iii. Hyperopia
   iv. Astigmatism
   v. Presbyopia and accommodation

c. Spectacle Correction
   i. Spherical lenses
   ii. Bifocals, trifocals, multi-focal lenses

d. Special Lens Material
   i. Plastic
   ii. Impact resistant high index glass
   iii. Polycarbonate lens

e. Contact Lenses
   i. Clinically important features of contact lens – Optics, Field of vision, Image size, Hard contact lens, Flexible contact lens, Therapeutic contact lens

f. Intraocular Lens

g. Refractive Surgery

3. Pediatric Ophthalmology and Strabismus
   a. Anatomy of the Extraocular Muscles and their Fascia
      i. Origin, course, insertion, innervation, and action of the extraocular muscles
1. Horizontal rectus muscles
2. Vertical rectus muscles
3. Oblique muscles
4. Levator palpebrae superioris muscle
5. Insertion relationships of the rectus muscles
   i. Blood supply of the Extraocular muscles
   ii. Fine structure of the extraocular muscles (fiber types)

b. Amblyopia
   i. Strabismic amblyopia
   ii. Refractive amblyopia
   iii. Form deprivation and occlusion amblyopia

c. Strabismus
   i. Concomitant strabismus
   ii. Incomitant strabismus
   iii. Heterotropia
      1. Esophoria: inward deviation not manifest
      2. Exotropia: inward deviation manifest
      3. Exophoria: outward deviation not manifest
      4. Exotropia: outward deviation
      5. Hyperphoria: upward deviation not manifest
      6. Hypertropia: upward deviation
      7. Hypophoria: downward deviation not manifest
      8. Hypotropia: downward deviation

d. Examination of the eyes
   i. Visual acuity and amblyopia
      1. Newborns
2. Infants to 2 years old
3. 2 to 4 years old
4. to 5 and up

e. Strabismus Testing
   i. General Inspection
   ii. Corneal light reflex
   iii. Cover test, red reflex, ophthalmoscopy, pupillary testing

f. Leukocoria
   i. Retinoblastoma
   ii. PHPV
   iii. ROP
   iv. Cataract

   a. Anatomy
      i. Bony Anatomy
      ii. Vascular Anatomy
      iii. Afferent Visual Pathways
      iv. Ocular Motor Pathways
      v. Facial Motor and Sensory Anatomy
         1. Trigeminal Nerve
         2. Facial Nerve
            ii. Ocular Autonomic Pathways

   b. Neuroimaging

   c. How to interpret findings
      i. Pupillary disorders (dilated, tonic, and unilateral small pupils)
ii. Neuro-motility abnormalities

1. cranial nerve palsies (III, IV, V, VI, VII)
2. Myasthenia Gravis
3. Intranuclear ophthalmoplegia
4. Nystagmus
   i. Optic nerve disease
      1. Optic disc elevation
         a. Congenital anomalous disc elevation
         b. Papilledema
         c. Papillitis
         d. Ischemic optic neuropathy
            a. Amaurosis Fugax
            b. Optic atrophy
            c. Visual field defect
            d. Know these terms
               i. Scotoma
               ii. Hemianopia
               iii. Homonomous hemianopia
               iv. Bi-temporal hemianopia

5. Retina Vitreous

   a. Symptoms suggestive of vitreoretinal disorders
      i. Flashes
      ii. Floaters
      iii. Central blur and/or distortion and/or minification
      iv. Abrupt or progressive dimming of vision in one eye
      v. Abrupt or progressive loss of peripheral visual field in one eye
b. Practical anatomy of vitreous and retina
   i. Clarity of vitreous
   ii. Transparency of retina and normal retinal blood vessel walls
   iii. Location of rods and cones in retina relative to vitreous and choroid
   iv. Nature of retinal pigment epithelium
   v. Nature of choroid

c. Abnormal fundus features revealed by direct ophthalmoscopy
   i. Loss of normal red reflex
   ii. Dark spots in red reflex
   iii. Abnormal color of red reflex
   iv. Fundus features of important systemic diseases
      1. Diabetes mellitus
         a. Background diabetic retinopathy
         b. Proliferative diabetic retinopathy
      2. Systemic hypertension
         a. Vasospastic (accelerated) retinopathy
         b. Sclerotic (chronic) retinopathy
      3. Atherosclerotic carotid occlusive disease
         a. Central retinal artery occlusion
         b. Central retinal vein occlusion
      4. Embolic cardiovascular disease
         a. AIDS
         b. Disseminated metastatic cancer
v. Fundus features of important ocular diseases
   1. Retinoblastoma
   2. Retinal detachment
   3. Age-related macular degeneration

6. Lens and Cataract
   a. Practical anatomy of lens
      i. Intraocular location of lens behind plane of iris
      ii. Optical clarity of normal lens
      iii. Suspension of normal lens in retroiridic position by zonule
   b. Symptoms attributable to cataract
      i. Slowly progressive blurring of vision
      ii. Progressive painless loss of vision
   c. Examination of the lens by direct ophthalmoscopy
      i. Evaluation of red reflex
   d. Lens abnormalities found in important systemic diseases
      i. Marfan’s syndrome – spontaneous dislocation of lens
   e. Lens abnormalities found in important ocular diseases
      i. Cataract (clouding or opacification of lens)
      ii. Implanted artificial intraocular lens
   f. Treatment of cataract
      i. Surgical removal of lens (cataract extraction)
      ii. Implantation of artificial lens in eye

7. Eyelid, Lacrimal and Orbit
   a. Eyelid
i. Anatomy

1. Anterior and posterior lamellae
2. Lid margin
3. Orbital septum relationship to eyelid/orbit
4. Eyebrow
5. Levator aponeurosis
6. Blood supply – internal and external carotid circulation
7. Sensory supply – CN VI and VI
8. Motor supply – CN III, CN VII, and sympathetics

ii. Eyelid Diseases

1. Malpositions
   a. Blepharoptosis
   b. Dermatochalasis
   c. Entropion
   d. Ectropion
   e. Retraction
   f. Lagophthalmos

2. Inflammations
   a. Chalazion
   b. Blepharitis
   c. Meibomitis

3. Infections
   a. Hordeolum
   b. Preseptal cellulitis

4. Tumors
a. Benign
   i. Cysts
   ii. Nevi
   iii. Papillomas
   iv. Xanthelasma

b. Malignant
   i. Basal cell carcinoma
   ii. Squamous cell carcinoma

c. Eyelid trauma

b. Lacrimal
   i. Anatomy
      1. Upper lacrimal system – puncta, canaliculi and lac sac
      2. Lower lacrimal system – bony and mucosal nasolacrimal duct

   ii. Lacrimal Diseases
      1. Congenital nasolacrimal duct obstruction
      2. Acquired nasolacrimal duct obstruction
      3. Dacryocystitis
      4. Lacrimal Trauma

c. Orbit
   i. Anatomy
      1. Seven bones used to make up 4 walls – floor, medial and lateral walls and roof
      2. Orbital septum relationship to orbit
      3. Contents of orbit – extraocular muscles, lacrimal system, opthalmic artery, nerves
(CN I, II, IV, V, VI, sympathetics, and parasympathetics)

4. Relationship of orbit to surrounding structures – sinuses, cranial cavity

ii. Orbital Diseases

1. Orbital cellulites
2. Graves’ ophthalmolopathy
3. Orbital inflammatory disease
4. Orbital tumors – vascular, nerve sheath, metastatic and lacrimal tumors
5. Orbital trauma

8. Refractive Surgery

a. Types of refractive errors:
   i. Myopia – long eye or steep cornea
   ii. Hyperopia – short eye or flat cornea
   iii. Astigmatism – uneven curvature of cornea
   iv. Presbyopia – inability to focus at near due to aging

b. Types of surgical techniques to correct refractive errors:
   i. Incisional – weaken cornea structurally to induce changes in its curvature
   ii. Lamellar – change shape of the cornea with addition or removal of tissue
   iii. Thermal – shrink corneal collagen to induce corneal steepening
   iv. Intraocular – implantation of intraocular lens or removal of crystalline lens

c. Recent advances involve the use of laser to perform:
   i. Photorefractive keratectomy (PRK)
ii. Laser in situ keratomileusis (LASIK)

iii. Risks associated with refractive surgery include:

1. Infection
2. Loss of best-corrected visual acuity
3. Overcorrection, undercorrection, regression
4. Visual aberrations such as glare and halos

9. Ocular Manifestations of Systemic Disease

a. Diabetes

i. Anterior segment

1. corneal wound healing
2. cataract

ii. Posterior segment

1. diabetic retinopathy
   a. BDR-hard exudates, hemorrhages, microaneurysms
   b. preproliferative-soft exudates, IRMA
   c. proliferative - NVE, NVD
2. vitreous hemorrhage
3. ischemic optic neuropathy

b. Sickle cell anemia

i. Anterior segment

1. hyphema
2. anterior segment ischemia

ii. Posterior segment

1. salmon patch
2. black sunburst
3. sea fan
c. Hypertension
   i. Posterior segment
      1. arteriolar narrowing
         a. copper wire
         b. silver wire
      2. hemorrhages (flame-shaped)
      3. disc edema (malignant hypertension)
   ii. Neuro-ophthalmic manifestations
      1. CN VI nerve palsy
      2. intracranial hemorrhage
d. Cerebrovascular diseases
   i. Transitory Ischemia Attack (TIA)
      a. visual changes
      b. fundus findings
   ii. Infarction
      1. visual field findings
         a. homonomous hemianopia
         b. homonomous quadrantanopia
e. Thyroid (Graves) disease
   i. Treatment for thyroid orbitopathy
      1. non-surgical
         a. corticosteroids
         b. radiation
      2. surgical
         a. eyelid

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b. orbital decompression

f. Sarcoidosis/inflammatory conditions

i. Clinical findings

1. nodules
   a. eyelid
   b. conjunctival

2. Uveitis
   a. non-granulomatous (associated diseases-JRA, Reiter, Behcet)
   b. granulomatous (associated diseases-sarcoid, Tb, fungal)

3. Diagnostic tests
   a. imaging
   b. ACE level

g. Malignancy

i. Primary

1. intraocular
   a. retinoblastoma
   b. uveal melanoma
   c. lymphoma

2. eyelid
   a. basal cell carcinoma
   b. sebaceous carcinoma
   c. melanoma

3. orbit
   a. lymphoma
   b. lacrimal gland tumors

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ii. Secondary

1. extension from sinus carcinoma
2. metastasis
   a. adults-carcinoma
   b. children-leukemia

h. AIDS
   i. Anterior segment
      a. bacterial infection
      b. Kaposi sarcoma (conjunctiva or eyelid)
   ii. Posterior segment
      1. CMV retinitis
   
   i. Syphilis
      i. Anterior segment
         a. interstitial keratitis
         b. anterior uveitis
      ii. Posterior segment
         a. neuroretinitis
         b. papillitis
         c. posterior uveitis

j. Other systemic infections
   i. Viral (e.g. herpes zoster ophthalmicus “shingles”)
   ii. Fungal (e.g. candida endophthalmitis)
   iii. Bacterial (e.g. Tb uveitis)

10. Intraocular Tumors
    a. Retinoblastoma

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i. Knudson’s two-hit hypothesis

ii. Genetics
   1. 13q14 deletion
   2. heritable vs sporadic

iii. Clinical
   1. Leukokoria
   2. strabismus

iv. Treatment
   1. non-surgical
   2. surgical (enucleation)

b. Uveal Melanoma
   i. Most common primary Intraocular malignancy
   ii. Variants- iris, ciliary body, choroidal

iii. Clinical
   a. asymptomatic vs symptomatic
   b. pigmented vs amelanotic

iv. prognosis- size, cell type

v. Treatment
   1. non-surgical
   2. surgical (enucleation)

c. Other Intraocular Tumors
   i. Lymphoma-primary large cell lymphoma vs manifestations of systemic lymphoma
   ii. Metastasis-carcinomas in adults vs leukemia in children

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11. Cornea and External Disease

a. Anatomy

i. Lids

1. Glands of Zeis and Moll
2. Lashes
3. Meibomian glands
4. Lacrimal gland

ii. Conjunctiva

a. Bulbar
b. Palpaedral

iii. Regional lymph nodes

1. Pre-auricular
2. Sub-mandibular

iv. Cornea

1. Tear film layer
2. Epithelium
3. Stroma
4. Endothelium

v. Lacrimal system

1. Punctum – upper and lower
2. Lacrimal sac

b. The red eye

i. Acute angle closure glaucoma
ii. Iritis or iridocyclitis
iii. Herpes simplex keratitis
iv. Conjunctivitis
1. Bacterial
2. Viral
3. Allergic
4. Irritative

v. Episcleritis
vi. Scleritis
vii. Adnexal disease
   1. Blepharitis
   2. Thyroid eye disease
   3. Dacryocystitis
   4. Hordeolum
   5. Chalazion

viii. Subconjunctival hemorrhage
ix. Pterygium
x. Keratoconjunctivitis sicca
xi. Corneal abrasions and foreign body
xii. Secondary to abnormal lid function
      1. Bell’s palsy
      2. Thyroid ophthalmopathy

12. Glaucoma
   a. Anatomy
      i. Aqueous humor
         1. Production- Ciliary body
         2. Circulation- From posterior chamber through pupil into anterior chamber
         3. Outflow Pathway- Trabecular meshwork in anterior chamber angle
ii. Optic Nerve

1. “Glaucoma” as a chronic progressive optic neuropathy usually associated with increased intraocular pressure
   a. Injury to axons from retinal ganglion cells at lamina cribosa

   b. Signs of optic nerve injury
      i. Increased size of central cup
      ii. Asymmetric cupping

   iii. Organization of axons and associated visual field defects

   d. How to interpret history
      i. Primary open angle glaucoma
         1. Risk factors
            a. African and Caribbean African ancestry
            b. Age greater than 75 years
            c. Primary family member with glaucoma
         2. Genetic influence
            a. GlC1a (myocillin gene) juvenile open angle glaucoma
         3. Symptoms
            a. Lack of symptoms until late in disease

   ii. Normal tension glaucoma
      1. Optic nerve injury and visual field loss similar to primary open angle glaucoma
      2. Not associated with elevated intraocular pressure

   iii. Primary Angle Closure Glaucoma
1. Risk Factors
   a. Anatomically narrow anterior chamber angle
   b. Hyperopia
   c. Dilating drops in eyes with narrow angles
   d. Anti-cholinergic medications

2. Symptoms
   a. Severe ocular pain
   b. Ocular redness
   c. Blurred vision and colored haloes

3. Signs
   a. Dilated fixed pupil
   b. Narrow anterior chamber angle
   c. Pupillary block
   d. Corneal edema

iv. Pharmacological treatment
1. Medications that increase aqueous humor outflow
   a. Parasympathomimetics
   b. Prostaglandin analogues
2. Medications that decrease aqueous production
   a. Beta blockers
   b. Carbonic anhydrase inhibitors
   c. Alpha₂-agonists

v. Surgical treatment
1. Primary acute angle closure glaucoma
a. Peripheral iridectomy

2. Primary open angle glaucoma
   a. Argon laser trabeculoplasty
   b. Filtering surgery

3. Be able to use clinical reasoning to synthesize data into a prioritized differential diagnosis, working diagnosis, and plan.

6.38.6 Teaching and learning activities

Programmes of lectures, practical demonstrations, tutorials, bedside teaching and attendance to outpatient clinics and operating sessions will be compulsory throughout the rotation.

During Years 1 and 2

The Anatomy and Physiology of the eye, and its relation to the rest of the nervous system, will be taught during the Nervous system block.

Demonstrations of common eye diseases and disorders will follow immediately after the lectures. This will be in order to consolidate the student’s understanding of the relevance of what they have learned.

During year 3

They will take part in or observe all the activities of the Eye Department such as Ward rounds, Outpatient clinics, outreach clinics, surgery, refraction and rehabilitation.

A minimum of 8 hours of formal lectures per year will be given. These may be to all students in the same year as a group but will be preceded by programmes of specific self-directed learning relevant to the lectures they will be attending.

Experiences learned will be monitored by the use of the clinical log book

6.38.7 Assessment methods

The student will be assessed using end of rotation examination, end of semester examinations and evaluation of the clinical log book

6.38.8 Reading list

6.39 Course title: Psychiatry (K8PY3639)

6.39.1 Course status: Core
6.39.2 Total credits: 6
6.39.3 Subject hours: 60
6.39.4 Course aims

Having covered normal behaviour and mental processes in the first year, (i.e. psychology) the student is now introduced into abnormal behaviour and abnormal mental processes (psychopathology). This is a relatively short course in the preparation of the student to understand symptom formation in mental illnesses (i.e clinical psychiatry).

6.39.5 Course expected learning outcomes

At the end of the block, the student should know:

i. Abnormal behaviours and abnormal mental processes according to the systems of psychological functioning.
ii. The common neuro-psychiatric conditions in which these psychological disorders occur
iii. The theoretical knowledge/mechanisms involved in such symptom formation.

6.39.6 Course content

i. Disorders of perception
   1. Hallucinations- auditory, visual, tactile, olfactory
   2. Illusions

ii. Disorders of thinking

iii. Disorder of progression of thinking: Flight of ideas, Retardation of thought, Perservaration of thought, Thought block, Circumstantial thinking, Fragmented thinking

iv. Disorders of content of thinking: Delusions – persecutory, Grandiose, Nihilistic, Obsessions, Phobias

v. Disorders of possession of thinking: thought insertion, thought withdrawal, thought broadcasting, thought echo

vi. Disorders of speech: incoherence, echolalia, neologism, impoverished, mutism

vii. Disorders of motor activity: increased, decreased, restlessness, stereotypy, waxy flexibility, negativism, compulsion

viii. Disorders of mood and affect: anxiety, euphoria, depression, inappropriate (incongruous) affect, flat affect, labile affect, ambivalence
ix. Disorders of memory: amnesia, confabulation, de’ja’ vu/jamais vu

x. Disorders of consciousness: distractibility, inattention, sleepiness, confusion, delirium, stupor, coma, fugue/twilight states

xi. Disorders of intelligence: mild mental handicap, moderate mental handicap, severe mental handicap, profound mental handicap

xii. Disorders of orientation: in time, in person, in place

xiii. Disorders of cognition (agnosias): visual, tactile, auditory, body schema, Gerstman’n’s syndrome

xiv. Disorders of volition: reduced/absence of: Motivation, drive, willpower

Psychological Defense Mechanisms

conscious

i. suppression

ii. direct confrontation

iii. direct expression of strong feelings

unconscious

1. denial
2. repression
3. sublimation
4. displacement
5. regression
6. reaction formation
7. projection
8. rationalization
9. identification
10. fixation
11. conversion

6.39.7 Teaching and learning activities

Lectures, handouts, tutorials, PBL, Clinical demonstration if a suitable patient with symptoms is available.

6.39.8 Assessment methods

End of Rotation examinations including assessment of the clinical log book performance

6.39.9 Reading list
6.40 Course title: Anaesthesia (K8AN4740)
   6.40.1 Course status: Core
   6.40.2 Total credits: 10
   6.40.3 Subject hours: 100
   6.40.4 Course aims
   Students will spend 2 weeks in premedication rounds, completing checklist
   requirements, intra-operative monitoring, conduct of anesthesia and recovery
   phase and 2 weeks in post-operative follow up, intubation, continuing education,
   and anesthetic equipment.

6.40.5 Course expected learning outcomes

   The following three categories of broad goals for the clerkship are not meant to be
   limiting you to other goals that you may want to focus on but are intended to
   clearly outline what we expect for you to achieve by the end of the Anesthesia
   Clerkship. Herein you can review objectives linked to three main goals; 1) Competency, 2) Patient Care/Clinical Skills, and 3) Knowledge.

   i. Competency
      
      a. Demonstrate commitment to excellence, honesty, respect for others,
         integrity, and altruism in patient care.

      b. Objectives
         
         i. Treat all patients, patient family members, staff, and colleagues
            with respect, which includes maintaining a professional demeanor
            in speech and dress

         ii. Strive for excellence

         iii. Place the care of your patients above competing interests

         iv. Practice informed consent with patients/patient families

         v. Work effectively as a part of the treatment team

   c. Learning Activity
      
      i. Professionalism should permeate all aspects of your performance
         and cannot really be taught in isolation. Important issues of
         professionalism include:

         1. Navigating the wards- your role in the team, working with
            ancillary providers, etc.
2. Approaching medical errors

3. Palliative Care

4. Communicating difficult news

d. Evaluation

i. Formative and summative feedback will be obtained from the anesthesia team. The clerkship director will evaluate submissions and your interactions with them as well (including timeliness, attitude, initiative). How you treat staff, nurses, and all members of the health care team can play a role in this evaluation, though the clerkship does not specifically seek out formal feedback from these individuals.

ii. Patient Care

a. Evaluate and manage patients hospitalized with anesthesia needs.

b. History Taking

i. Objective

1. Obtain and record a patient’s history and chief complaint in a logical, organized, and thorough manner. Demonstrate effective verbal skills, including appropriate use of open- and closed-ended questions, repetition, facilitation, explanation, summation, and interpretation. Also, learn intra-operative charting methods and SICU protocols.

ii. Learning Activity

1. Interview, examine, and write a history and physical (H&P) for each new patient assigned to you. On premedication rounds clerk at least one patient.

iii. Evaluation

1. Reports are submitted to the clerkship director who is primarily responsible for evaluating these. The anesthesia team will give ongoing feedback as well. History taking skills will also be evaluated during daily rounds and a final oral assessment at the end of the rotation.

c. Physical Exam

i. Objective
1. Perform and record a complete physical examination in a logical, organized, accurate and thorough manner for new patients and an appropriately focused physical examination for follow up patients. Students will explain the purpose of these exams to the patient and obtain patient consent prior to doing so. Specific physical examination skill we expect students to master by the end of the anesthesia clerkship includes:

a. **Ability to establish rapport with patient.**

b. **Appearance.** Recognize signs of acute illness by evaluating skin color, respiration, hydration, mental status, interaction.

c. **Vital signs.** Measure heart rate, respiratory rate, blood pressure and temperature accurately.

d. **HEENT exam.** Be able to identify abnormalities of the oral cavity, throat, nasal passage, gross eye/pupils, and head.

e. **Cardiovascular exam.** Be able to identify normal heart sounds, extra heart sounds (S3, S4, pericardial friction rubs), systolic vs. diastolic murmurs, and specifically aortic stenosis and mitral regurgitation.

f. **Pulmonary exam.** Be able to identify normal breath sounds, pulmonary crackles and wheezes.

g. **Abdominal exam.** Be able to identify internal organs and abnormalities (splenomegaly, hepatomegaly, cholecystitis, appendicitis, masses). Be able to recognize and describe stigmata of liver disease including findings consistent with ascites, spider angiomata, palmar erythema, jaundice/scleral icterus, hepatomegaly. Be able to do a rectal examination and recognize when it is indicated.

h. **Endocrine exam.** Be able to identify abnormalities of the thyroid and physical signs of thyroid disease and diabetes.

i. **Neurology exam.** Be able to test all cranial nerves, muscle strength/tone, reflexes, sensation, gait, and coordination and recognize abnormalities.

j. **Genitourinary exam.** Be able to identify abnormalities of the genitals and exam findings consistent with urinary tract abnormalities (flank pain, bladder distention, enlarged kidney).

k. **Skin exam.** Be able to identify abnormalities of the skin including rashes, deformities, burns and infections.
1. Techniques for each of the following procedures: venipuncture, ECG, chest radiography, nasogastric tube placement, urethral catheterization, peripheral intravenous catheter insertion, urine dipstick, stool occult blood testing, subcutaneous injection, intramuscular injection, airway control, urine quantity/quality, blood loss physiological/surgical meaning, take part in giving general anesthesia, do at least two dura punctures, and recover at least 4 patients noting post-operative complications.

m. Be able to identify the basic tray in anesthesia and know the functions of its contents.

ii. Learning Activity

1. Each student should be observed performing a complete physical examination and/or targeted portions to the exam with given feedback and opportunities for questions.

2. Students will watch and assist with procedures.

3. Physical findings on rounds in and theatre will be offered to supplement students’ skills.

4. Students will record procedures in their log book.

iii. Evaluation

1. Anesthesiologists and other members of the team will observe students perform physical examinations in the course of patient care and these observations will inform the summative evaluation. Physical exam skills will also be tested in the final oral assessment. Log book will be reviewed.

d. Lab Interpretation

i. Objective

1. Obtain and understand important supplemental information, including CBC/FBP, blood smear, blood culture, serum chemistries, hepatic function panel, hepatitis serologies, cardiac biomarkers, thyroid function tests, ABG, coagulation studies, stool occult blood, CSF, ECG, chest x-ray, STI testing and urinalysis.

ii. Learning Activity

1. Lab Studies. Students will have lectures on and clinical experience in different areas of the clinical lab where students will learn appropriate use and interpretation of laboratory tests.
2. **ECG Studies.** Students will have lectures on and clinical experience in the systematic approach to reading ECGs (beginning with rate, rhythm, axis, intervals progressing through heart block and ventricular and atrial arrhythmias).

3. **Radiologic Studies.** Students will have lectures on and clinical experience in the basics of reading plain radiographs (chest, abdomen) beginning with normal studies and progressing through abnormal studies (pulmonary infiltrates, edema, pneumothorax, effusion, etc) and introduction to CT scanning, ultrasonography, and magnetic resonance imaging. Images are presented both in a disease-specific orientation as well as in a problem-based setting (i.e. how to choose and interpret radiographic studies for the patient with hematuria; headache; abdominal pain, etc).

iii. **Evaluation**

1. Students’ understanding of these tests will be assessed on rounds and through final oral and written examination.

**e. Clinical Reasoning**

i. **Objective**

1. Formulate and document an assessment that includes the relevant differential diagnoses based on data gathered to guide initial diagnostic evaluation and disease management.

ii. **Learning Activity**

1. This will be discussed on daily rounds with the teams.

iii. **Evaluation**

1. This is assessed by the anesthesia team on daily rounds and review of charting. *Full development of this skill is a crucial component and goal of this clerkship.*

**f. Presentation Skills**

i. **Objective**

1. Orally present a new patient’s history and physical examination clearly and with appropriate detail.

ii. **Learning Activity**
1. This is typically performed with the anesthesiologist and feedback is given at that time. Present at least one patient on every premedication rounds.

iii. Evaluation

1. Anesthesiology team members who directly observe this will provide formative and summative feedback. Presentation skills will also be tested at the final oral assessment.

**g. Written Skills**

i. Objective

1. Write coherent, clear progress notes documenting working diagnosis and status of diagnostic evaluation and therapeutic plans.

ii. Learning Activity

1. Students practice this by writing daily progress notes on all their patients. Intra-operatively chart at least 2 patients. In the SICU, document at least one protocol.

iii. Evaluation

1. Anesthesia team members will evaluate notes and provide feedback.

**h. Patient and Family Counseling**

i. Objective

1. Effectively communicate with the patient (and family if given consent by the patient) their anesthesia plan.

2. Educate on preventative and safety measures.

ii. Learning Activity

1. This is practiced on initial evaluation of new patients and throughout diagnosis/treatment on rounds and always observed by a member of the anesthesia team to ensure accurate information.
iii. Evaluation

1. Anesthesia team members will evaluate and provide feedback.

iii. Knowledge

a. Demonstrate understanding of the clinical presentation, basic physiology, key physical findings, evaluation and management of diseases frequently encountered in anesthesiology.

b. Objectives

i. Review the pathophysiology and be able to recognize and initiate evaluation and management plans for the following disease states/clinical presentations:

1. Preanesthetic Evaluation

   a. The student shall acquire an appreciation of the Anesthesiologist’s considerations in preoperative evaluation of the patient. This is demonstrated by:

      i. Conducting several preanesthetic assessments, including:

         1. Taking and recording a pertinent history
         2. Performing an appropriate physical examination, including assessment of:

            a. Airway
            b. Cardiovascular system
            c. Respiratory system
            d. Other systems as indicated
         3. Reviewing pertinent laboratory data
         4. Assigning appropriate ASA physical status

   ii. Discussing how the following factors may influence the patient’s course during the preoperative period:

      1. Age
2. Nature of surgery, including minor versus major, peripheral versus central, and elective versus emergent

3. Cardiovascular disorders, including but not limited to:
   a. Coronary insufficiency
   b. Hypertension
   c. Myocardial failure
   d. Dysrhythmias

4. Respiratory disorders
   a. Known or suspected difficult intubation
   b. Upper and/or lower respiratory infection
   c. Asthma
   d. Chronic obstructive pulmonary disease
   e. Lab work-up

5. Central nervous system disorders
   a. Increased intracranial pressure
   b. Convulsive disorders
   c. Cerebrovascular insufficiency
   d. Quadriplegia or paraplegia

6. Gastrointestinal disorders
   a. Pulmonary aspiration risk: hiatal hernia/gastro-esophageal reflux/full stomach functional or mechanical bowel obstruction
   b. Hepatitis, hepatic insufficiency, portal hypertension

7. Renal insufficiency

8. Hematologic disorders
a. Anemias
b. Coagulopathies
c. Hemoglobinopathies

9. Personal or family history of unusual response to anesthesia
   a. Malignant hyperthermia susceptibility
   b. Abnormal succinylcholine metabolism

10. Lifestyle factors
    a. Obesity
    b. Substance abuse – tobacco, alcohol, chemicals

11. Pregnancy
    a. Concomitant surgery
    b. Pre-eclampsia and eclampsia

   iii. Discussing medication histories and the influence of chronic and current medications on the perianesthetics period, including:

1. Which drugs should be discontinued and why
   a. Do monoamine oxidase inhibitors pose a potential danger?
   b. The rebound phenomena resulting from abrupt discontinuation of some classes of drugs, notably beta blockers and clonidine

   iv. Approaches to perioperative management of patients taking insulin or anticoagulants

2. Preoperative Medication
   a. The student shall demonstrate knowledge of the objectives of effective preanesthesia medication by naming and discussing drugs used for:
      i. Relief of anxiety
      ii. Sedation
iii. Amnesia
iv. Analgesia
v. Drying secretions
vi. Reducing gastric acidity and volume

b. The student shall demonstrate knowledge of the basic pharmacology and pharmacokinetics of the following premedication agents, including dosage schedules and relative and absolute contraindications:

i. Narcotics
   1. Morphine
   2. Meperidine
   3. Others

ii. Sedatives
   1. Benzodiazepines
      a. Diazepam
      b. Midazolam
      c. Lorazepam
   2. Antihistamines
      a. Diphenhydramine
   3. Barbiturates
      a. Secobarbital
   4. Anticholinergics
      a. Atropine
   5. Drug used to reduce the incidence or consequences of pulmonary aspiration:
      a. H2 antagonists
      b. Antacids

c. NPO guidelines
i.  Fasting periods (assuming no risk for increased gastric emptying time)

1. Adults
   a.  2-4 hours clear liquids
   b.  6-8 hour for solids

ii. Pediatrics
   a.  2 hours clear liquids
   b.  hours breast milk
   c.  hours formula, non human milk, solids

iii. Definition of clear liquids
   1. Water, fruit juices without pulp, carbonated beverages, clear tea and black coffee

3. The Operating Room
   a.  The student will demonstrate knowledge of procedures and observe induction of anesthesia:
      i. Identify several agents used on induction of general anesthesia and give their advantages and disadvantages,
         1. Intravenous agents
         2. Inhalation agents
         3. Neuromuscular blocking agents
      ii. Discuss emergency intubations, indications, techniques, and complications; concentrate on aspiration prophylaxis
      iii. Observe and practice airway management during several uncomplicated intravenous inductions

b.  The student will demonstrate proper airway and ventilatory management by:
      i. Describing the indications risks and benefits of airway management by mask versus intubation versus laryngeal mask airway (LMA)
ii. Describing and identifying basic or opharyngeal and laryngotracheal anatomy

iii. Identifying and overcoming upper airway obstruction with mask ventilation, using
   1. Various masks
   2. Jaw thrust
   3. Nasopharyngeal airway
   4. Oropharyngeal airway
   5. Naming several techniques of intubation and practicing direct laryngoscopy

c. In order to demonstrate understanding of the principles and practice of routine intraoperative monitoring, the student will:
   i. Explain and demonstrate ECG lead placement and selection to optimize detection of dysrhythmias and ischemia
   ii. Indications and risks for invasive methods for monitoring blood pressure
   iii. Demonstrate results of arterial blood gas analysis in terms of
      1. Oxyhemoglobin dissociation curve
      2. Acid-base status

d. Student will prescribe and conduct appropriate intraoperative fluid and electrolyte therapy with the guidance of his instructor by:
   i. Explaining the rationale for establishing both central and peripheral access
   ii. Identifying the common sites for venous access and the contraindications and indications for each
   iii. Demonstrating skill at establishing venous access by:
      1. Using sterile technique and universal precautions
2. Successfully inserting several peripheral catheters of various calibers

3. Protecting the venipuncture site and immobilizing the catheter

iv. Prescribing maintenance fluid and electrolytes

1. Predicting how the following preoperative conditions will alter requirements for perioperative maintenance therapy:
   i. NPO
   ii. Bowel prep
   iii. NG suction
   iv. Fever

2. Discussing intraoperative considerations which after maintenance fluid and electrolyte therapy including:
   a. Blood loss
   b. “Third space” loss
   c. Temperature

3. Correctly interpreting data from the following monitors of volume status:
   a. Examination of the patient
   b. Pulse and blood pressure
   c. Urine output
   d. CVP
   e. PCWP

4. Discussing indications, risks and benefits of crystalloid, colloid and blood product replacement therapies
   a. Regarding the functions of
      i. Blood volume
      ii. Oxygen carrying capacity
iii. Coagulation

5. Regarding complications of each type of therapy

e. The student shall identify several position-related injuries that patients may sustain while unconscious.

f. The student will discuss methods of recognizing and treating various preoperative problems, including:

   i. Dysrhythmias

   ii. Ventricular dysfunction

   iii. Hypertension

   iv. Myocardial ischemia

   v. Low oxygen saturation

   vi. Hypercarbia

   vii. Endobronchial intubation

   viii. Esophageal intubation

4. Regional Anesthesia

a. The student will demonstrate knowledge of local anesthetic pharmacology appropriate to the practice of general medicine by:

   i. Classifying commonly used agents according to amide or ester linkage

   ii. Listing commonly used local anesthetics for:

   iii. Topical use

   iv. Local infiltration

   v. Peripheral nerve blocks

   vi. Listing acceptable doses of at least two agents used for topical and local infiltration anesthesia

   vii. Describing identifying signs of impending local anesthetic and/or vasopressor toxicity vs. “allergic reaction.”
viii. Describing therapeutic steps necessary to prevent or treat local anesthetic toxicity in the event of an accidental intravascular injection.

ix. Discussing allergic reactions to local anesthetics.

x. Contrasting allergic reactions to systemic and/or toxic reactions in local anesthetics.

5. Ambulatory Anesthesia

a. The student will demonstrate knowledge of the types of procedures and patient appropriate for ambulatory surgery.

b. The student will demonstrate knowledge of assessment of the ambulatory patient with respect to:
   i. ASA classification
   ii. NPO status
   iii. Appropriate lab work
   iv. Nausea/vomiting prophylaxis
      1. Droperidol
      2. 5HT3 receptor antagonists
   v. Discharge criteria
   vi. Pain management

6. Post-Operative Pain Management

a. The student will demonstrate knowledge of the different types of pain management, including:
   i. PCA
   ii. Epidural catheters
   iii. Prn vs. round-the-clock dosing
   iv. PO medications
      1. Narcotics
2. Acetaminophen w/without codeine
3. Ketorolac
4. N-SAIDS
   b. The student will demonstrate knowledge of assessing post-op pain:
      i. Pain scales
      ii. Visual analog scales
   c. The student will demonstrate knowledge of how to convert patient from parenteral drugs to p.o. drugs.

7. The Student Should Successfully Complete Basic CPR and ACLS training during Medical School

8. Be able to use clinical reasoning to synthesize data into a prioritized differential diagnosis, working diagnosis, and plan.

6.40.6 Teaching and learning activities

i. Students will receive lectures and clinical correlation teaching on rounds. Weekly conferences will provide additional knowledge on medical subjects. The above list also is intended to help guide students’ reading. Students are strongly encouraged to learn about all of their patients’ past medical problems in addition to the acute problems to further enhance their medical knowledge.

ii. Each student will keep a log book of specific diseases seen and procedures done while on their anaesthesia rotation.

6.40.7 Assessment methods

Log book of diseases and procedures; written examination; oral final assessment; and team evaluations based on observation.

6.40.8 Reading list

6.41 Course title: Orthopedics (K8OR4741)

6.41.1 Course status: Core
6.41.2 Total credits: 10
6.41.3 Subject hours: 100
6.41.4 Course aims
Orthopedics and trauma is a clinical subject which provide the experience and knowledge to student on how to manage the common orthopedic disorders and musculoskeletal trauma that he/she will have to deal with as a general Medical Officer.

Orthopedics and trauma course is designed to provide the student with a fundamental understanding of current concepts and management of common orthopedic disorders and musculoskeletal trauma. Demonstrate understanding of the clinical presentation, basic physiology, key physical findings, evaluation and management of diseases frequently encountered in an inpatient and outpatient orthopaedic setting.

This course will be conducted for 4 weeks in semester 7 which occurs in year 4.

6.41.5 Course expected learning outcomes
By the end of the course, the MD 4 medical student should have the following:-

Knowledge
i. The student should be able to learn the anatomy relevant to orthopedic and trauma conditions.
ii. The student should be able to describe the common orthopedic and trauma conditions.
iii. The student should be able to learn common pathologies in patients with orthopedic and trauma conditions.
iv. The student should be able to describe the general principles of orthopedics and the management of different fractures and dislocations.

Skills
i. The student should be able to take and write relevant orthopedic history from patient.
ii. The student should be able to perform and write relevant orthopedic physical examination of patient.
iii. The student should be able to evaluate and interprets investigations on patients with orthopedic and trauma.
iv. The student should be able to suggest and participate in treatment of patients with orthopedic and trauma conditions.

Competency
i. The student should be able to communicate the orthopedic and trauma findings both verbally and in writing.
ii. The student should be able to relate the history and clinical findings to the imaging findings and suggest the most likely diagnosis and list differential diagnoses where applicable and suggest the appropriate treatment.

6.41.6 Course content
i. The basic anatomy, physiology and biochemistry of the Locomotor system will have been learnt during year 1 (MD 1)

ii. Clinical examination of the musculo-skeletal system including:

iii. Musculoskeletal history taking
   a. Obtain and record a patient’s history and chief complaint in a logical, organized, and thorough manner. Demonstrate effective verbal skills, including appropriate use of open- and closed-ended questions, repetition, facilitation, explanation, summation, and interpretation

iv. Musculoskeletal examination - Inspect noting any swelling, deformity, redness, muscular atrophy, nodules, and joint symmetry. Palpate the joints and the bones noting any swelling, bogginess, tenderness, bony enlargement. Assess range of motion (active range of motion, done by the patient)
   a. Hands
      1. Inspect noting any swelling, deformity, redness, muscular atrophy, nodules, and joint symmetry
      2. Assess range of motion (active range of motion, done by the patient- flexion, extension, ability to make a fist)
      3. Palpate the distal and proximal interphalangeal joints and the metacarpophalangeal joints noting any swelling, bogginess, tenderness, bony enlargement
   b. Wrists
      1. Inspect noting any swelling, deformity, redness, muscular atrophy, nodules, and joint symmetry
      2. Assess active range of motion (done by patient with arms extended, flexion and extension to 90°; with arms in handshake position, supination and pronation to 90°)
      3. Place thumb on dorsum of patient's wrist with fingers beneath it. Palpate the metacarpocarpal, carporadial and carpoulnar joints noting any swelling, bogginess, tenderness
      4. Perform Tinel’s sign for Carpal tunnel syndrome – Hyperextend the wrist and tap the median nerve with your middle finger or reflex hammer. A positive sign is pain or paresthesias radiating down the palm into the index, middle, and lateral half of ring finger.
5. Perform Phalen’s test for Carpal tunnel syndrome – Flex the wrist to 90° and maintain it for at least 40-60 seconds. A positive test would be pain or paresthesias in the median nerve distribution.

6. Perform the Median Nerve Compression test for Carpal tunnel syndrome – Firmly compress the median nerve with your thumb at the flexor retinaculum for about 40 seconds. A positive test would be pain or paresthesias in the median nerve distribution.

c. Elbows

1. Assess active range of motion

2. With patient’s forearm supported and elbow flexed to about 70° palpate the extensor surface of ulna and Olecranon process noting any swelling, nodules, thickening or tenderness

3. Note any signs of ulnar nerve entrapment at ulnar groove leading to neuropathy and distal muscle atrophy of hypothenar muscle

4. Press on the lateral epicondyles noting any tenderness to assess for tennis elbow or lateral epicondylitis

d. Shoulders and Environs

1. Inspect shoulders and shoulder girdle anteriorly noting any swelling, joint symmetry, deformity, muscular atrophy

2. Inspect scapula and related muscles posteriorly

3. Assess active range of motion

4. Have patient clasp hands behind head and extend arms so that elbows are “up against the wall” parallel to coronal plane.

5. With arms at sides, abduct arm to 90°

6. With scapular motion elevate arm to 180° (move arms to a vertical position near head)
7. With patient’s arm at side (0°) flex shoulder forward to 180° flex shoulder backward to 60° (without scapular motion), adduct shoulder to 30°

8. Have patient place hands behind small of back (internal rotation to 90°)

9. Place hands behind neck with elbows out to side (external rotation to 90°)

10. Palpate the acromioclavicular joint, greater tubercle of humerus, biceps groove, coracoid process, genohumeral joint and subdeltoid bursa noting any tenderness and fluid

e. Head and Neck

1. Inspect for deformities and abnormal posture

2. Assess active range of motion for cervical spine (head and neck)

3. Touch chin to chest (flex neck) – Normal is 45° of flexion.

4. Touch chin to each shoulder (rotate neck) – Normal is 70° of rotation, each side.

5. Touch ear to corresponding shoulder (lateral bending) – Normal is 40° of lateral bending, each side

6. Put head back (extend neck) – Normal is 45° of hyperextension of neck.

7. With index fingers, gently palpate the sternoclavicular, manubriosternal and costochondral joints noting fluid, tenderness, swelling

8. With finger pads, palpate the cervical spine, paracervical muscles, trapezius muscles, and rhomboids

9. Palpate temporomandibular joint (TMJ) by placing first two fingers of each hand in front of tragus of ear and have patient open and close mouth noting range of motion, tenderness, swelling, crepitus, and pain
10. Spurling’s test or Vertex Compression test (for cervical radicular pain or paresthesia)

11. Forcibly press down vertically on top of the head to compress the cervical nerve roots. Normally this is well tolerated. Avoid doing this test on elderly, frail individuals or patients with serious spine disease or injury

f. Feet

1. Inspect noting any swelling, calluses, deformity, corns, nodules, and flat feet

2. Have patient flex and extend toes, then “cup” the arch of the foot to screen for abnormalities. This also assesses active range of motion. Note any deformity like claw toe or hammer toe.

3. Compress the forefoot between thumb and fingers at the level of the metatarsal phalangeal joints. A painful interdigital neuroma (Morton’s neuroma) is usually found by palpatting between the 3 and 4 metatarsal bones, using thumb and index finger.

4. With thumbs on sole of foot and fingers on top of foot, bilaterally palpate the distal and proximal interphalangeal joints, metatarsophalangeal joint and origin of platar fascia into calcaneus (plantar fasciitis leads to tenderness to palpation at this site)

5. Bilaterally assess passive range of motion (done by examiner)
   a. Stabilize heel
   b. Rest heel in one hand and grip forefoot with other hand: invert, evert and flex toes on metatarsophalangeal joint

6. Palpate for any bony deformity and tenderness

g. Ankles

1. Inspect

2. Have patient flex, extend, invert and evert the foot (active range of motion).

3. Palpate anterior surface of ankle joint, achilles (gastrocnemius) tendon noting nodules and tenderness
4. Assess passive range of motion- dorsiflex, plantar flex, invert and evert

h. Knees

1. Inspect noting alignment (valgus -lateral malalignment of lower leg or varus- medial malalignment deformity), deformity, quadriceps atrophy, absence of normal hollows around patella, knock knee (genu valgum), bowleg (genu varum), popliteal fossa swelling

2. Bulge sign – indicates an abnormal but small effusion (massage the medial knee upwardly to remove fluid from the medial knee area, press or tap the lateral patella medially and observe for bulge of fluid appearing in the medial pouch)

3. Palpate suprapatellar pouch on each side of quadriceps and compress either side noting presence of fluid

4. Palpate tibiofemoral joint space to assess for cysts or bursitis

5. Assess range of motion (passive or active)

6. Assess degree of ligamentous laxity both medially and laterally.
   a. With the knee slightly flexed (20°), place outer hand on the lateral side of knee, grasp the medial foot or ankle with the opposite hand, and abduct the lower leg (valgus stress).
   b. Then adduct the lower leg (varus stress)

7. Lachman’s test: Flex knee slightly to about 20° and one hand stabilizes the lower femur while the other holds the tibia above the tibial tuberosity and then pulls and pushes the tibia to assess laxity of anterior and posterior cruciate ligaments.

8. Drawer test: Patient is supine, knee is flexed about 90°, examiner sits on patient’s foot, grabs the upper leg and pulls it anteriorly and posteriorly to assess for laxity of the respective cruciate ligaments.

i. Hips

1. Assess passive range of motion (rotate leg externally and internally to 45°, extension, active ~110° and passive flexion ~130°, abduct to 60°, adduct to 30°
2. Patrick’s or FABER test (flexion, abduction, external rotation of the hip) to test for hip or sacroiliac joint disease.

3. Trendelenburg sign (to detect gluteal weakness)
   a. Have patient stand on one leg and note if opposite hip remains parallel or slightly elevated (normal or negative). A positive Trendelenberg sign occurs when the opposite hip falls below the parallel plane.

j. Spine
   1. Inspect spinal profile and note cervical lordosis, shoulder height symmetry, dorsal kyphosis, iliac crest symmetry, lumbar lordosis, lateral curvature (concave or convex)—scoliosis, skin creases below buttocks
   2. Inspect patient’s gait
   3. With patient bending slowly forward inspect dorsolumbar spine noting symmetry, smooth curve of spine, range of motion (90°)
   4. Assess active range of motion (lateral bending, 35°, extension, 35°, rotation, 30°)
   5. Palpate spinous processes noting tenderness
   6. Palpate paravertebral muscles noting spasm, tenderness, hypertonicity
   7. Palpate intervertebral spaces
   8. Percuss spine noting pain/tenderness
   9. Perform straight leg raising test
      a. With patient supine, raise patient’s leg up to 70° from examination table, then sharply dorsiflex the forefoot; positive test if there is pain radiating down the posterior leg to at least the popliteal fossa.
      b. Increased pain down the affected leg when the opposite (contralateral) leg is raised is a positive crossed straight leg raising sign.

Topics
i. Healing of Tissues
   a. The process of wound and fracture healing.
b. The basic processes in the healing of wounds.
c. Techniques in closure of wounds e.g. suture, skin, graft and flaps.
d. Healing of a fracture and the different techniques used by the clinician to assist in the healing of the fractures.

ii. The causes and mechanisms of injuries to the soft tissues.
   a. Wounds - superficial and deep, and treatment
   b. Ligaments, joint instability and treatment
   c. Other injuries e.g. tendons, nerves and blood vessels and their treatment.

iii. Fractures and Dislocations
   a. The Diagnosis and Treatment of fractures and dislocations.
   c. General Principles in the care of a patient with multiple injuries and fractures.
   d. Resuscitation - A. B. C. D. e.g. Airway, Breathing, Circulation and Drugs
   e. Common techniques of treatment of fractures and dislocations.
   f. Techniques of splinting fractures and dislocations.
   g. Fractures and dislocations in the upper limb, spine, pelvis and lower limbs.

iv. Congenital disorders
   a. The diagnosis and management of the common orthopaedic congenital malformations
   b. clubfoot
   c. congenital dislocation of the hip
   d. meningomyelocele
   e. cerebral palsy
   f. The developmental disorders and bone dysplasias
   g. slipped proximal femoral epiphysis.
   h. poliomyelitis
   i. Arthogryposis multiplex congenital
   j. Spina bifida
   k. Genu recurvatum
   l. Achondroplasia
   m. Osteogenesis imperfecta
   n. Kyphoscoliosis

v. Inflammatory Conditions
   a. Acute septic arthritis
   b. Acute osteomyelitis
   c. Chronic osteomyelitis
   d. Brodies bone abscess
   e. Spinal osteomyelitis
   f. Spinal discitis
   g. Spinal tuberculosis (Pott’s disease)
   h. Rheumatoid arthritis
i. Rheumatic arthritis
j. Reiter’s disease

vi. Neoplastic conditions of the skeleton
   a. Common tumours of the skeleton i.e primary and secondary
   b. Ganglions
   c. Bone cysts
   d. Osteochondroma (exostosis)
   e. Osteosarcoma
   f. Osteoclastoma, giant cell tumor
   g. Ewings tumor
   h. Metastatic carcinoma

vii. Metabolic Diseases
   a. Osteoporosis
   b. Rickets
   c. Gout arthritis
   d. Skeletal fluorosis
   e. Diabetes mellitus in orthopedics

viii. Degenerative conditions of the musculoskeletal system
   a. Disorders of the bones, joints and articular cartilage
   b. Arthritis – traumatic
   c. Primary osteoarthritis
   d. Secondary osteoarthritis
   e. Spinal spondylosis
   f. Intervertebral disc prolapse
   g. Rotator cuff lesions of shoulder
      1. Intervertebral disc disease
      2. Capsulitis of the shoulder

ix. Vascular
   a. Avascular necrosis of bone
   b. Aseptic necrosis (Perthes, etc)
   c. Bone complications (Sickle cell disease)

x. Neural and Muscular
   a. Erbs palsy
   b. Cerebral palsy
   c. Wrist drop
   d. Foot drop
   e. Carpal tunnel syndrome
   f. Volkman’s contracture
   g. Poliomyelitis
   h. Myositis ossificans
   i. Low back pain
xi. Other Diseases/Conditions
   a. Knock knees (genu valgus)
   b. Bow legs (genu varus)
   c. Flat feet
   d. Fracture non-unions, malunions
   e. Fat embolism
   f. Tetanus
   g. Gas gangrene
   h. Compartment syndrome
   i. Entrapment syndrome

6.41.7 Teaching and learning activities

Lecturer, tutorials, discussion, self-directed learning and Practical.

Students will receive lectures and clinical correlation teaching on rounds. Weekly conferences will provide additional knowledge on medical subjects. The above list also is intended to help guide students’ reading. Students are strongly encouraged to learn about all of their patients’ past medical problems in addition to the acute problems to further enhance their medical knowledge.

6.41.8 Assessment methods

Log book of diseases and procedures 20%
Oral presentation of cases 10%
Oral final clinical assessment 20%
Semester written examinations 50%

6.41.9 Reading list


6.42 Course title: Urology (K8UR4742)

6.42.1 Course status: Core
6.42.2 Total credits: 10
6.42.3 Subject hours: 100
6.42.4 Course aims
   i. The student, by the time of completion of the training should be able to recognize and manage appropriately urological problems that are dealt with by general medical doctors.
   ii. The student by the time of completion of the training should be able to recognize conditions to be referred and when should be referred to the specialist urologist.

6.42.5 Course expected learning outcomes

The following three categories of broad goals for the clerkship are not meant to be limiting you to other goals that you may want to focus on but are intended to clearly outline what we expect for you to achieve by the end of the Urology Clerkship. Herein you can review objectives linked to three main goals; 1) Competency 2) Patient Care/Clinical Skills, and 3) Knowledge.

i. Competency
   a. Demonstrate commitment to excellence, honesty, respect for others, integrity, and altruism in patient care.
   b. Objectives
      i. Treat all patients, patient family members, staff, and colleagues with respect, which includes maintaining a professional demeanor in speech and dress
      ii. Strive for excellence
      iii. Place the care of your patients above competing interests
      iv. Practice informed consent with patients/patient families
      v. Work effectively as a part of the treatment team
c. Learning Activity
   i. Professionalism should permeate all aspects of your performance and cannot really be taught in isolation. Important issues of professionalism include:
      1. Navigating the wards, clinic, and theatre- your role in the team, working with ancillary providers, etc.
      2. Approaching medical errors
      3. Palliative Care
      4. Communicating difficult news

d. Evaluation
   i. Formative and summative feedback will be obtained from the urology team. The clerkship director will evaluate submissions and your interactions with them as well (including timeliness, attitude, and initiative). How you treat staff, nurses, and all members of the healthcare team can play a role in this evaluation, though the clerkship does not specifically seek out formal feedback from these individuals.

   i. Patient Care
      a. Evaluate and manage patients hospitalized and in a clinical setting with acute and chronic urologic illness.
      b. History Taking
         i. Objective
            1. Obtain and record a patient’s history and chief complaint in a logical, organized, and thorough manner. Demonstrate effective verbal skills, including appropriate use of open- and closed-ended questions, repetition, facilitation, explanation, summation, and interpretation.

         ii. Learning Activity
            1. Interview, examine, and write a history and physical (H&P) for each new patient assigned to you, in addition to 4 summative written case reports for patients followed from admission to discharge (include H&P, problem list, differential diagnosis, additional investigation- labs, imaging, etc, proposed case management and discharge plan).

         iii. Evaluation
            1. Case reports are submitted to the clerkship director who is primarily responsible for evaluating these. The tutor and urology team will give ongoing feedback as well. History
taking skills will also be evaluated during daily rounds and a final oral assessment at the end of the rotation.

c. Physical Exam
   i. Objective
      1. Perform and record a complete physical examination in a logical, organized, accurate and thorough manner for new patients and an appropriately focused physical examination for follow up patients. Students will explain the purpose of these exams to the patient and obtain patient consent prior to doing so. Specific physical examination skill we expect students to master by the end of the urology clerkship includes:
         a. **Ability to establish rapport with patient.**
         b. **Appearance.** Recognize signs of acute illness by evaluating skin color, respiration, hydration, mental status, interaction.
         c. **Vital signs.** Measure heart rate, respiratory rate, blood pressure and temperature accurately.
         d. **HEENT exam. Be able to identify abnormalities of the oral cavity, throat, nasal passage, gross eye/pupils, and head.**
         e. **Cardiovascular exam.** Be able to identify normal heart sounds, extra heart sounds (S3, S4, pericardial friction rubs), systolic vs. diastolic murmurs.
         f. **Pulmonary exam.** Be able to identify normal breath sounds, pulmonary crackles and wheezes.
         g. **Abdominal exam.** Be able to identify internal organs and abnormalities (splenomegaly, hepatomegaly, cholecystitis, appendicitis, masses). Assess bowel sounds. Be able to do a rectal examination and recognize when it is indicated.
         h. **Endocrine exam.** Be able to identify abnormalities of the thyroid and physical signs of thyroid disease and diabetes.
         i. **Neurology exam.** Be able to test all cranial nerves, muscle strength/tone, reflexes, sensation, gait, and coordination and recognize abnormalities.
         j. **Genitourinary exam.**
            i. **Kidneys**
               1. Palpation
                  a. Patient in the supine position
                  b. The kidney is lifted from behind with one hand in the costovertebral angle and palpated anteriorly by the other hand
                  c. In neonates, palpating of the flank between the thumb anteriorly and the fingers over the costovertebral angle posteriorly
d. Flank tenderness- kidney vs urethral distribution

2. Auscultation : epigastrium for bruit, Systolic periumbilical or paravertebral murmur

ii. Bladder
1. There must be at least 150 ml of urine in it to be felt
2. Percussion is better than palpation
3. A bimanual examination, best done under anesthesia, is very valuable to assess bladder motility and presence of masses

iii. Penis
1. Foreskin
   a. Retract foreskin and evaluate hygiene, phimosis
   b. Frenulum breve

2. Glans
   a. The position and width of the urethral meatus
   b. Hypospadias
   c. Tumor of the glans
3. Penile Shaft
   a. Induration or angulation
   b. Dermatosis
   c. Tumor of the shaft

4. Groin
   a. Inguinal lymphadenopathy
   b. Dermatosis
5. Priapism: sickle cell disease

iv. Scrotum and Testicles
1. Inguinal Canal and Spermatic Cord
   a. Inguinal hernia
   b. Palpable vas deferens
   c. Inguinal cutaneous conditions
2. Scrotal Skin
   a. Dermatoses
3. Testicles
   a. Determination of testicular size (mL) using an orchidometer
b. Testes position- scrotal, inguinal, not palpable
c. Epididymis- tenderness, enlargement
d. Painful- Torsion
e. Painless – Spermatocide, Hydrocele, Varicocele
f. Transillumination : Cystic vs. solid
g. Painless solid testicular mass is tumor until proven otherwise

v. Digital Rectal Examination and Prostate

1. Anus
   a. Inspection- Hemorrhoids, anal fissure
   b. Palpation- tone of anal sphincter, anal sphincter reflex

2. Rectum
   a. Tumor
   b. Presence of blood
   c. Mobility of mucosa in relation to prostate

3. Prostate
   a. Assess size
   b. Consistency- normal is a consistency like the contracted thenar muscle of the thumb. Carcinomas are firm, indurated nodules (like a knuckle of a finger).
   c. Tenderness- acute prostatitis
   d. Fluctuations- abscess or cyst

k. Skin exam. Be able to identify abnormalities of the skin including rashes, deformities, burns and infections.

l. Techniques for each of the following basic procedures: venipuncture, blood culture, wound culture, biopsy for histology, urethral catheterization, peripheral intravenous catheter insertion, urine dipstick, stool occult blood testing, dressing change.

ii. Learning Activity

1. Each student should be observed performing a complete physical examination and/or targeted portions to the exam with given feedback and opportunities for questions.
2. Students will watch and assist with basic procedures.
3. Physical findings on rounds will be offered to supplement students’ skills.
4. Students will record procedures in their log book.

iii. Evaluation
1. Urology team members and tutor will observe students perform physical examinations in the course of patient care and these observations will inform the summative evaluation. Physical exam skills will also be tested in the final oral assessment. Log book will be reviewed.

d. Lab Interpretation
   i. Objective
      1. Obtain and understand important supplemental information, including CBC/FBP, blood smear, blood culture, wound culture, biopsy histology, serum chemistries, coagulation studies, ESR, stool occult blood, STI testing, urinalysis, urine cytology, urine culture, tumor markers (PSA, AFP, HCG), hormones (prolactin, testosterone, sexual hormone binding globulin, FSH, LH, GnRH), and imaging of the urinary tract.
   
   ii. Learning Activity
      1. Lab Studies. Students will have lectures on and clinical experience in different areas of the clinical lab where students will learn appropriate use and interpretation of laboratory tests.
      2. Radiologic Studies. Students will have lectures on and clinical experience in the basics of reading plain radiographs (abdomen, KUB) and introduction to IVU, MCU, RUG, retrograde uretero-pyelography, CT, ultrasonography, and magnetic resonance imaging.

   iii. Evaluation
      1. Students’ understanding of these tests will be assessed on rounds and through final written examination.

e. Clinical Reasoning
   i. Objective
      1. Formulate and document an assessment that includes the relevant differential diagnoses based on data gathered to guide initial diagnostic evaluation and disease management.

   ii. Learning Activity
      1. This will be discussed on daily rounds with the team.

   iii. Evaluation
      1. This is assessed by the urology team on daily rounds, in theatre and review of progress notes. This is also assessed formally in the student’s written
case reports. *Full development of this skill is a crucial component and goal of this clerkship.*

f. **Presentation Skills: Initial**
   i. **Objective**
      1. Orally present a new patient’s history and physical examination clearly and with appropriate detail.
   ii. **Learning Activity**
      1. This is typically performed with the tutor and feedback is given at that time, and also as part of rounds. Students should work up and present a new patient each admission day.
   iii. **Evaluation**
      1. Urology team members who directly observe this will provide formative and summative feedback. Presentation skills will also be tested at the final oral assessment.

g. **Presentation Skills: Follow-up**
   i. **Objective**
      1. Orally present a follow-up patient’s case (including those with more than one problem) in a focused manner, including diagnostic and therapeutic plans.
   ii. **Learning Activity**
      1. This is practiced on daily rounds with the whole team present.
   iii. **Evaluation**
      1. Urology team members who directly observe this will provide formative and summative feedback.

h. **Written Skills**
   i. **Objective**
      1. Write coherent, clear progress notes documenting working diagnosis and status of diagnostic evaluation and therapeutic plans.
   ii. **Learning Activity**
      1. Students practice this by writing daily progress notes on all their patients, in addition to required case reports. These should be on the chart in a timely manner (ideally before noon) if feedback is to be given.
   iii. **Evaluation**
      1. Urology team members will evaluate progress notes and provide feedback. This will also be evaluated in the 4 formal case reports.

i. **Patient and Family Counseling**
   i. **Objective**
1. Effectively communicate with the patient (and family if given consent by the patient) their physical findings, diagnosis, and treatment plan.
2. Educate on preventative and safety measures.

ii. Learning Activity
1. This is practiced on initial evaluation of new patients and throughout diagnosis/treatment on rounds and always observed by a member of the urology team to ensure accurate information.

iii. Evaluation
1. Urology team members will evaluate and provide feedback.

ii. Knowledge
a. Demonstrate understanding of the clinical presentation, basic physiology, key physical findings, evaluation and management of diseases frequently encountered in an inpatient and outpatient urology setting.

b. Objectives
i. Review the pathophysiology and be able to recognize and initiate evaluation and management plans for the following disease states/clinical presentations:
1. Renal
   a. Hydronephrosis
   b. Pyelonephritis, acute and chronic
   c. Renal calculus
   d. Renal cell carcinoma
   e. Transitional cell carcinoma of the kidney
   f. Renal failure, acute and chronic

2. Urinary bladder
   a. Cystitis- acute bacterial, chronic, and schistosomiasis
   b. Neuropathic bladder
   c. Urinary incontinence
   d. Squamous cell carcinoma of the bladder
   e. Transitional cell carcinoma of the bladder
   f. Vesicovaginal fistula
   g. Acute and chronic urinary retention
   h. Extrophy- epispidias complex

3. Prostate
   a. Benign prostatic hypertrophy
   b. Carcinoma of the prostate
   c. Prostatitis
   d. Prostatic abscess

4. Urethra
   a. Urethritis

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b. Urethral stricture
c. Urethral trauma
d. Epispadias
e. Hypospadias

5. Penis
   a. Phimosis
   b. Paraphimosis
c. Balanitis
d. Carcinoma
e. Trauma
f. Peyronies disease
g. Meatal stenosis
h. Erectile dysfunction

6. Testes and Scrotal Contents
   a. Epididymitis
   b. Orchitis
c. Testicular neoplasm
d. Hydrocele
e. Spermatocele
f. Torsion of appendix testis
g. Male infertility
h. Maldescended testes
i. Elephantiasis of the scrotum
j. Scrotal abscess
k. Scrotal injury or laceration
   l. Varicocele

7. Problems with urination
   a. Hematuria
   b. Anuria
c. Stress incontinence
d. Urge incontinence
e. Overflow incontinence

ii. Know the basic steps, risks, and indication for the following surgical procedures:
   1. Suprapubic cystostomy
   2. Cystoscopy
   3. Urethral dilatation
   4. Urinary diversion
   5. Urethral catheterization
   6. BSO
   7. Hydrocelectomy
   8. Testicular biopsy
   9. Prostatectomy (TU, RP, RPP, TUP)
   10. Nephrectomy
   11. Urethroplasty
12. DVU
13. Pyelolithotomy, pyeloplasty
14. Ureterolithotomy
15. Cystolithotomy
16. Cystectomy

iii. Be able to use clinical reasoning to synthesize data into a prioritized differential diagnosis, working diagnosis, and plan.

6.42.6 Teaching and learning activities
1. There will be lectures (block and group) tutorials and bedside teaching.
2. The student will participate in the ward rounds, outpatient clinics, surgical sessions both minor and major, and in the pathology and x-ray sessions.
3. The student will observe, assist and undertake procedures under supervision in the wards diagnostic rooms, minor, and major theatre.
4. The students will be given tasks as part of student cantered learning.
5. If possible, the student will visit rehabilitation centres community based centres for schistosomal endemic areas near Moshi.

6.42.7 Assessment methods

Log book of diseases and procedures; written examination; oral final assessment; team evaluations based on observation; and assessment of the 4 required written case reports.

6.42.8 Reading list

6.43 Course title: Skin and STDs, Dermatology (K8SS4743)
6.43.1 Course status: Core
6.43.2 Total credits: 10
6.43.3 Subject hours: 100
6.43.4 Course aims

The dermato-venereology course will enable the student to:

i. Recognize and treat the most common skin diseases, especially those of public Health concern, leprosy and STDs in the context of Primary Health Care

ii. Understand the public health aspects of the main communicable parasitic and infectious dermatoses including the principles of community control.

6.43.5 Course expected learning outcomes

The following three categories of broad goals for the clerkship are not meant to be limiting you to other goals that you may want to focus on but are intended to clearly outline what we expect for you to achieve by the end of the Dermatology Clerkship.
Herein you can review objectives linked to three main goals; 1) Competency 2) Patient Care/Clinical Skills, and 3) Knowledge.

i. Competency
   a. Demonstrate commitment to excellence, honesty, respect for others, integrity, and altruism in patient care.
   b. Objectives
      i. Treat all patients, patient family members, staff, and colleagues with respect, which includes maintaining a professional demeanor in speech and dress
      ii. Strive for excellence
      iii. Place the care of your patients above competing interests
      iv. Practice informed consent with patients/patient families
      v. Work effectively as a part of the treatment team
   c. Learning Activity
      i. Professionalism should permeate all aspects of your performance and cannot really be taught in isolation. Important issues of professionalism include:
         1. Navigating your role in the team, working with ancillary providers, etc.
         2. Approaching medical errors
         3. Palliative Care
         4. Communicating difficult news
   d. Evaluation
      i. Formative and summative feedback will be obtained from the dermatology team. The clerkship director will evaluate submissions and your interactions with them as well (including timeliness, attitude, and initiative). How you treat staff, nurses, and all members of the health care team can play a role in this evaluation, though the clerkship does not specifically seek out formal feedback from these individuals.

ii. Patient Care
   a. Evaluate and manage patients with acute and chronic dermatologic illness.
   b. History Taking
      i. Objective
         1. Obtain and record a patient’s history and chief complaint in a logical, organized, and thorough manner. Demonstrate effective verbal skills, including appropriate use of open- and closed-ended questions, repetition, facilitation, explanation, summation, and interpretation.
         2. In addition to standard medical history, students to include detailed:
            a. Integument review
i. Site: covered vs. sun exposed, symmetrical vs. asymmetrical, where originated, if spread, when it moved, arrangement pattern.

ii. Character: color, shape, depression/elevation, edges, changes in properties, itchiness, pain, scaling, crusting, discharge, bleeding.

b. Past Medical History
   i. Similar condition in the past.
   ii. Diabetes Mellitus (lower limb ulcerations).
   iii. Asthma, hay fever (eczema).
   iv. Streptococcus infection (erythema nodosum).
   v. Rash diseases: psoriasis, RA, herpes, etc.

c. Family History
   i. Similar condition in a relative, what age.
   ii. Skin problems in the family.
   iii. Allergies in the family.

d. Social History
   i. Smoking: ever smoked, how many per day, for how long, type [cigarette, pipe, chew]. Passive smoking in the home, workplace.
   ii. Occupation details:
      1. Tasks done at work.
      2. Chemicals, plants contacted.
      3. Length of exposure.
      4. Protection used.
      5. Illness in fellow workers.
   iii. Pets at home (allergy).
   iv. Stress levels (alopecia, etc).

ii. Learning Activity
   1. Interview, examine, and write a history and physical (H&P) for each new patient assigned to you. 10 summative written Case Reports for patients followed from admission to discharge must be signed by the consultant or registrar (include H&P, problem list, differential diagnosis, additional investigation- labs, imaging, etc, proposed case management and discharge plan as details are available).

iii. Evaluation
1. Case reports are submitted to the clerkship director who is primarily responsible for evaluating these. The consultants and registrars will give ongoing feedback as well. History taking skills will also be evaluated during daily rounds

c. Physical Exam
   i. Objective
      1. Perform and record a complete physical examination in a logical, organized, accurate and thorough manner for new patients and an appropriately focused physical examination for follow up patients. Students will explain the purpose of these exams to the patient and obtain patient consent prior to doing so. Specific physical examination skill we expect students to master by the end of the clerkship includes:
         a. Ability to establish rapport with patient.
         b. Appearance. Recognize signs of acute illness by evaluating skin color, respiration, hydration, mental status, interaction.
         c. Vital signs. Measure heart rate, respiratory rate, blood pressure and temperature accurately.
         d. HEENT exam. Be able to identify abnormalities of the oral cavity, throat, lymph nodes, nasal passage, gross eye/pupils, and head.
         e. Cardiovascular exam. Be able to identify normal heart sounds, extra heart sounds (S3, S4, pericardial friction rubs), systolic vs. diastolic murmurs.
         f. Pulmonary exam. Be able to identify normal breath sounds, pulmonary crackles and wheezes.
         g. Abdominal exam. Be able to identify internal organs and abnormalities (splenomegaly, hepatomegaly, cholecystitis, appendicitis, masses).
         h. Endocrine exam. Be able to identify abnormalities of the thyroid and physical signs of thyroid disease and diabetes.
         i. Neurology exam. Be able to test all cranial nerves, muscle strength/tone, reflexes, sensation, gait, and coordination and recognize abnormalities.
j. **Genitourinary exam.** Be able to identify abnormalities of the genitals.

k. **Skin exam.** Be able to identify abnormalities of the skin including rashes, deformities, malignancies, burns and infections.

   i. Inspect entire skin- dryness, thickness, elasticity, scratch marks, swollen lymph nodes, systemic rash.

   ii. Inspect lesions- location: Sun exposed vs. covered and peripheral vs. trunk; asymmetrical vs. symmetrical; number; pattern: discrete vs. confluent; color; size; shape; edges: well demarcated vs. poorly demarcated; surface: scaling, crusting, shiny vs. dull, thickening, blistering, ulceration, skin breaks, and fissures; elevation; discharge; bleeding.

   iii. Palpate lesions- ask the patient if it is tender first, flat vs. raised, temperature (inflammatory), blanching on pressure, moisture, texture, turgor, fragility.

   iv. Inspect and palpate the hair- Texture, color, quantity, distribution, brittleness, diffuse hair loss, pattern thinning, patchy loss, and excessive hair in females should be noted. Observe for broken hair shafts, chemical or mechanical (pulling, twisting). Note the presence of nits or parasites. Examine the scalp for scales, crusts, or lesions. Inspect facial hair distribution, quantity, texture, hirsutism in females.

   v. Inspect and palpate the nails- Length, color, configuration, symmetry, hygiene, thickness, deformities, new hyperpigmented band, pitting, and splinter hemorrhages should be noted.

l. Techniques for each of the following basic procedures: potassium hydroxide examination for fungus, gram stain, Fite stain for AFB in leprosy, wet smear for trichomonas and clue cells, scabies oil mount, Tzanck smear, slit skin smear, onchosnip, shave biopsy, punch biopsy of the skin, basic suturing technique of the
dermis and epidermis, cryotherapy, and dermatoscopy.

ii. Learning Activity
1. Each student should be observed performing a complete physical examination and/or targeted portions to the exam with given feedback and opportunities for questions.
2. Students will watch and assist with basic procedures.
3. Physical findings on rounds will be offered to supplement students’ skills.
4. Students will record procedures in their log book.

iii. Evaluation
1. Interns, Residents and Specialists will observe students perform physical examinations in the course of patient care and these observations will inform the summative evaluation. Log book will be reviewed.


d. Lab Interpretation
i. Objective
1. Obtain and understand important supplemental information, including wound culture, potassium hydroxide examination, gram stain, Fite stain, wet smear, scabies oil mount, Tzanck smear, slit skin smear, STI testing, and biopsy histology.

ii. Learning Activity
1. Students will have lectures on and clinical experience in different areas of the clinical lab where students will learn appropriate use and interpretation of laboratory tests.

iii. Evaluation
1. Students’ understanding of these tests will be assessed on rounds and through written case reports.

e. Clinical Reasoning
i. Objective
1. Formulate and document an assessment that includes the relevant differential diagnoses based on data gathered to guide initial diagnostic evaluation and disease management.

ii. Learning Activity
1. This will be discussed on daily rounds and clinical encounters with the team.

iii. Evaluation
1. This is assessed by the dermatology teams on daily rounds, review of progress notes and the student’s written case reports. *Full development of this skill is a crucial component and goal of this clerkship.*
f. **Presentation Skills: Initial**
   i. **Objective**
      1. Orally present a new patient’s history and physical examination clearly and with appropriate detail.
   ii. **Learning Activity**
      1. This is typically performed with the intern, resident or consultant one-on-one and feedback is given at that time and as a part of rounds.
   iii. **Evaluation**
      1. Dermatology team members who directly observe this will provide formative and summative feedback.

g. **Presentation Skills: Follow-up**
   i. **Objective**
      1. Orally present a follow-up patient’s case in a focused manner, including diagnostic and therapeutic plans.
   ii. **Learning Activity**
      1. This is practiced on daily rounds with the whole team present.
   iii. **Evaluation**
      1. Dermatology team members who directly observe this will provide formative and summative feedback.

h. **Written Skills**
   i. **Objective**
      1. Write coherent, clear progress notes documenting working diagnosis and status of diagnostic evaluation and therapeutic plans.
   ii. **Learning Activity**
      1. Students practice this by writing daily progress notes on all their patients, in addition to required case reports. These should be on the chart in a timely manner (ideally before noon) if feedback is to be given.
   iii. **Evaluation**
      1. Dermatology team members will evaluate progress notes and provide feedback. This will also be evaluated in the formal case reports.

i. **Patient and Family Counseling**
   i. **Objective**
      1. Effectively communicate with the patient (and family if given consent by the patient) their physical findings, diagnosis, and treatment plan.
      2. Educate on preventative and safety measures.
   ii. **Learning Activity**
      1. This is practiced on initial evaluation of new patients and throughout diagnosis/treatment on rounds and
always observed by a member of the dermatology team to ensure accurate information.

iii. Evaluation
   1. Dermatology team members will evaluate and provide feedback.

iii. Knowledge
   a. Demonstrate understanding of the clinical presentation, basic physiology, key physical findings, evaluation and management of diseases frequently encountered in an inpatient and outpatient dermatology setting.
   b. Objectives
      i. Review the pathophysiology and be able to recognize and initiate evaluation and management plans for the following disease states/clinical presentations:
         1. Use the language of dermatology to effectively and accurately describe skin conditions or lesions.
         2. Discuss the anatomy and physiology of the skin and its appendages including basic histopathology.
         3. Discuss the prevalence, epidemiology and pattern of skin disease in different rural and urban communities and the reasons for the differences.
         4. Inflammatory disorders:
            a. Acne
               i. Identify and describe the morphology of acne
               ii. Discuss the pathogenesis of acne
               iii. Explain the basic principles of treatment for acne
               iv. Recommend an initial treatment plan for a patient presenting with comedonal acne
               v. Recommend an initial treatment plan for a patient presenting with inflammatory acne
               vi. Practice providing patient education on topical and systemic acne treatment
               vii. Determine when to refer to a patient with acne to a dermatologist
            b. Rosacea
               i. Identify and describe the morphology of rosacea
               ii. List common triggers for intermittent flushing in rosacea
               iii. Explain the basic principles of treatment for rosacea
iv. Determine when to refer to a patient with rosacea to a dermatologist
c. Atopic dermatitis
   i. Identify and describe the morphology of atopic dermatitis
   ii. Recognize that superficial infections often complicate atopic dermatitis
   iii. Recommend an initial treatment plan for a child with atopic dermatitis
   iv. Provide patient/parent education about daily skin care for a child with atopic dermatitis
   v. Determine when to refer to a patient with atopic dermatitis to a dermatologist
d. Contact dermatitis
   i. Identify and describe the morphology of contact dermatitis
   ii. Distinguish allergic contact dermatitis from irritant contact dermatitis
   iii. Recommend an initial treatment plan for a patient with allergic or irritant contact dermatitis
   iv. Determine when to refer a patient with contact dermatitis to a dermatologist
e. Pityriasis rosea
   i. Identify and describe the morphology of pityriasis rosea
   ii. Recall the typical duration of symptoms in pityriasis rosea
   iii. Determine when to refer to a patient with a red, scaly rash to a dermatologist
f. Psoriasis
   i. Identify and describe the morphology of psoriasis
   ii. Describe associated triggers or risk factors for psoriasis
   iii. Describe the clinical features of psoriatic arthritis
   iv. Explain the basic principles of treatment for psoriasis
   v. Discuss the emotional and psychosocial impact of psoriasis on patients
   vi. Determine when to refer a patient with psoriasis to a dermatologist
5. Infections and Infestations

a. Warts
   i. Identify and describe the morphology of various types of warts
   ii. Discuss the pathogenesis of warts
   iii. Develop an initial treatment plan for a patient with warts
   iv. Describe the technique of cryotherapy
   v. List the side effects of cryotherapy

b. Molluscum contagiosum
   i. Identify and describe the morphology of molluscum contagiosum
   ii. List treatment options for molluscum contagiosum
   iii. Provide patient education about molluscum contagiosum
   iv. Determine when to refer a patient with molluscum contagiosum to a dermatologist

c. Superficial dermatophytoses
   i. Identify and describe the morphologies of superficial fungal infections
   ii. Practice performing the KOH examination and interpreting the results
   iii. Recognize the use and limitations of the KOH examination and fungal cultures to diagnose dermatophyte infections
   iv. Recommend an initial treatment plan for an adult with tinea pedis
   v. Recommend an initial treatment plan for a child with tinea capitis

d. Tinea (pityriasis) versicolor
   i. Identify and describe the morphology of tinea versicolor
   ii. Choose a KOH examination to confirm the diagnosis of tinea versicolor
   iii. Practice performing KOH examination and interpreting results
iv. Recommend an initial treatment plan for a patient with tinea versicolor

e. Candidiasis
   i. Identify and describe the morphology of diaper candidiasis and candidal intertrigo
   ii. Recognize the utility of KOH examination and fungal culture to detect Candida species
   iii. Recommend an initial treatment plan for a patient with diaper candidiasis
   iv. Recommend an initial treatment plan for a patient with candidal intertrigo

f. Herpes simplex and herpes zoster
   i. Identify and describe the morphology of herpes simplex and herpes zoster
   ii. Recommend an initial treatment plan for a patient with herpes simplex infection
   iii. Recommend an initial treatment plan for a patient with herpes zoster infection

g. Impetigo
   i. Identify and describe the morphology of impetigo
   ii. Discuss the basic principles of treatment for impetigo

h. Cellulitis and erysipelas
   i. Identify and describe the morphology of cellulitis and erysipelas
   ii. Discuss the bacterial etiologies of cellulitis and erysipelas
   iii. Recommend an initial treatment plan for a patient with cellulitis

i. Furuncles, abscesses, and MRSA
   i. Identify and describe the morphology of follicular bacterial infections and abscesses
   ii. Recognize clinical patterns and risk factors that suggest MRSA
   iii. Recommend an initial treatment plan for patients with these common cutaneous bacterial infections

j. Necrotizing fasciitis
i. Recognize characteristic features of necrotizing fasciitis
ii. Recognize the need for emergent treatment, including surgical intervention

k. Scabies
   i. Identify and describe the morphology of scabies
   ii. Identify risk factors for scabies
   iii. Select skin scraping as the diagnostic test of choice for scabies
   iv. Recommend an initial treatment plan for a patient with scabies
   v. Provide patient education for a patient with scabies

l. Lice (pediculosis)
   i. Identify nits and adult lice as diagnostic of pediculosis
   ii. Recognize risk factors for lice infestation
   iii. Recommend an initial treatment plan for a patient with pediculosis capitis
   iv. Provide patient/parent education for a patient with pediculosis capitis

m. Onchocerciasis
   i. Discuss the clinical features, cause and management

n. Filariasis
   i. Discuss the clinical features, cause and management

o. Leprosy
   i. Discuss the clinical features, cause and management

6. Reactive disorders and drug eruptions
   a. Venous stasis dermatitis and leg ulcers
      i. Identify and describe the morphology of stasis dermatitis
      ii. List the most frequent causes of leg ulcers and describe their clinical presentations
      iii. Describe treatment and preventive measures for stasis dermatitis
      iv. Describe proper wound care and treatment for leg ulcers
v. Distinguish stasis dermatitis from lower extremity cellulitis
vi. Determine when to refer a patient with leg ulcers to a specialist
b. Petechiae, Purpura, Vasculitis
   i. Identify and describe the morphology of petechiae and purpura
   ii. Outline an initial diagnostic approach to petechiae or purpura
   iii. Recognize patterns of petechiae that are concerning for life-threatening conditions
   iv. Recognize palpable purpura as the hallmark lesion of leukocytoclastic vasculitis
   v. Name the common etiologies of vasculitides according to size of vessel affected
   vi. Determine when to refer a patient with petechiae and purpura to a dermatologist
c. Urticaria
   i. Identify and describe the morphology of urticaria
   ii. Distinguish between acute and chronic urticaria
   iii. Recommend an initial treatment plan for a patient with acute or chronic urticaria
   iv. Recognize the signs and symptoms of anaphylaxis
d. Viral exanthems
   i. Recognize morbilliform eruption as typical of viral exanthems
   ii. Describe classic presentations of distinctive pediatric viral exanthems
e. Drug eruptions
   i. Identify and describe the morphology of common drug eruptions
   ii. List key features of Stevens-Johnson syndrome and toxic epidermal necrolysis
   iii. List key features of drug-induced hypersensitivity syndrome (drug
reaction with eosinophilia and systemic symptoms)
iv. Describe initial steps in management for drug eruptions
v. Determine when to refer to a patient with a drug eruption to a dermatologist

7. Neoplasms
   a. Actinic keratosis
      i. Identify and describe the morphology of actinic keratoses
      ii. List common first-line treatments for actinic keratoses
   b. Basal cell carcinoma
      i. Identify and describe the morphology of basal cell carcinoma
      ii. Refer patients with skin lesions suspicious for non-melanoma skin cancer for biopsy
   c. Squamous cell carcinoma
      i. Identify and describe the morphology of squamous cell carcinoma
      ii. Recognize high risk factors for development of squamous cell carcinoma
      iii. Refer patients with skin lesions suspicious for non-melanoma skin cancer for biopsy
   d. Malignant melanoma
      i. Identify and describe the morphology of melanoma
      ii. Identify patients who need frequent total body skin examinations based on risk factors for melanoma
      iii. Recall prognostic factors in melanoma survival
      iv. Practice providing patient education on the ABCDEs of melanoma and self skin examinations
      v. Refer patients with skin lesions suspicious for melanoma to dermatology
   e. Benign melanocytic nevi
      i. Identify and describe the morphology of benign melanocytic nevi
ii. Identify morphologic features of atypical nevi

f. Common benign conditions
   i. Identify and describe the morphology of seborrheic keratoses, acrochordons, cherry angiomas, dermatofibromas, solar lentigines, sebaceous hyperplasia, keloids, epidermal inclusion cysts, milia, pilar cysts and lipomas
   ii. Recommend management options of these lesions as appropriate

g. Discuss the predisposing diseases for skin cancer in Tanzania (e.g. albinism, xeroderma pigmentosum, and neglected tropical ulcers).

8. Discuss the dermatologic clinical features, cause and management of HIV and other sexually transmitted diseases (gonorrhea, clamidia, PID, candidiasis, trichomoniasis, bacterial vagnosis, syphilis, chancroid, LGV, granuloma inguinale, herpes).

9. Apply the basic principles and practice of oral and topical dermatologic therapy including the appropriate use of emollients, topical steroids (with knowledge of relative potency), antipruritic therapies, and systemic immunosuppressants. In addition, discuss the use of surgery, phototherapy, and radiotherapy.

10. Successfully demonstrate essential dermatologic diagnostic and treatment procedures including cryotherapy, shave and punch skin biopsy, potassium hydroxide mounts, scabies oil mounts, Tzanck smear, and dermatoscopy.

11. Dermatologic Surgery
   a. Learn the principles of surgical and nonsurgical management of common skin cancers
   b. Learn basic suturing technique of the dermis and epidermis

12. Dermatopathology:
   a. Learn the approach to examining histologic specimens of the skin
   b. Learn how to build a differential diagnosis for both tumors and inflammatory conditions in skin biopsies
   c. Learn the importance of the clinicopathologic correlation

13. Pediatric Dermatology:
a. Learn the approach to the diagnosis and management of the most common skin problems encountered in the pediatric population.
b. Learn the basic and intermediate principles and practice of oral and topical dermatologic therapy in children, with steroids, calcineurin inhibitors, antibiotics, and isotretinoin.

14. Advanced Medical Dermatology:
   a. Refine the approach to the diagnosis and management of the most common skin problems encountered in a complex medically ill population.
   b. Learn basic and intermediate principles and practice of oral and topical dermatologic therapy with wet dressings, steroids, emollients and antipruritic therapy.
   c. Learn to recognize major life-threatening skin diseases and markers of systemic disease.

   ii. Be able to use clinical reasoning to synthesize data into a prioritized differential diagnosis, working diagnosis, and plan.

6.43.6 Teaching and learning activities

This will include Ward rounds, outpatient clinics, formal lectures, Group discussions, Clinical practical demonstrations, Supervised practical procedures.

   i. Students will receive lectures and clinical correlation teaching on rounds. Weekly conferences will provide additional knowledge on medical subjects. The above list also is intended to help guide students’ reading. Students are strongly encouraged to learn about all their patients’ past medical problems in addition to the acute problems to further enhance their medical/dermatologic knowledge.

   ii. Each student will keep a log book of specific diseases seen and procedures done while on their dermatology rotation.

6.43.7 Assessment methods

The student will be assessed using end of rotation examination, end of semester examinations and evaluation of the clinical log book

   i. Log book of diseases and procedures; team evaluations based on observation; and assessment of the required written case reports.
There will be questions on dermatology, leprosy and STIs in the general medicine and OG final university examinations (written, practical, and oral). There will not be a separate dermato-venereology examination.

6.43.8 Reading list

6.44 Course title: Psychiatry (K8PY4744)
6.44.1 Course status: Core
6.44.2 Total credits: 10
6.44.3 Subject hours: 100

6.44.4 Course aims
In the 4th Year, the student is trained to acquire adequate clinical skills; attitudes and knowledge of clinical psychiatry to enable him/her to recognize and adequately manage the common neuropsychiatry as well as the less common neuropsychiatry conditions in the general clinical practice.

6.44.5 Course expected learning outcomes

The following three categories of broad goals for the clerkship are not meant to be limiting you to other goals that you may want to focus on but are intended to clearly outline what we expect for you to achieve by the end of the Psychiatry Clerkship. Herein you can review objectives linked to three main goals; 1) Competency 2) Patient Care/Clinical Skills, and 3) Knowledge.

- Competency
  a. Demonstrate commitment to excellence, honesty, respect for others, integrity, and altruism in patient care.
  b. Objectives
    i. Treat all patients, patient family members, staff, and colleagues with respect, which includes maintaining a professional demeanor in speech and dress
    ii. Strive for excellence
    iii. Place the care of your patients above competing interests
    iv. Practice informed consent with patients/patient families
    v. Work effectively as a part of the treatment team
  c. Learning Activity
    i. Professionalism should permeate all aspects of your performance and cannot really be taught in isolation. Important issues of professionalism include:
       1. Navigating the wards- your role in the team, working with ancillary providers, etc.
       2. Approaching medical errors
       3. Communicating difficult news
  d. Evaluation
    i. Formative and summative feedback will be obtained from the ward team. The clerkship director will evaluate submissions
and your interactions with them as well (including timeliness, attitude, initiative). How you treat staff, nurses, and all members of the health care team can play a role in this evaluation, though the clerkship does not specifically seek out formal feedback from these individuals.

- **Patient Care**
  a. Evaluate and manage patients hospitalized with acute psychiatric illness and in clinic settings.
  b. **History Taking**
     i. **Objective**
        1. Obtain and record a patient’s history and chief complaint in a logical, organized, and thorough manner. Demonstrate effective verbal skills, including appropriate use of open- and closed-ended questions, repetition, facilitation, explanation, summation, and interpretation.
        2. Use basic strategies for interviewing disorganized, cognitively impaired, hostile/resistant, mistrustful, circumstantial/hyper-verbal, non-spontaneous/hypo-verbal and potentially assaultive patients while soliciting and acknowledging expression of the patient's ideas, concerns, questions, and feelings about the illness and its treatment in an empathetic and non-judgmental manner.
        3. Obtain collateral information from family or others who know the patient well to help create a clear clinical history.
        4. In addition to standard medical history, students to include detailed:
           a. **Psychiatric Review of Systems**
              i. Depression symptoms
              ii. Anxiety symptoms
              iii. Bipolar symptoms
              iv. Psychotic symptoms
              v. Post traumatic stress symptoms
              vi. Suicidal or homicidal ideations
              vii. Eating disorders
              viii. Substance use (alcohol, illicit drugs)
              ix. Cognitive/memory symptoms
           b. **Patient Psychiatric History**
              i. Hospitalizations/Previous treatment
              ii. Medication treatment
              iii. Suicide attempts
              iv. History of violence
           c. **Family Psychiatric History**
d. Mental Status Examination

e. Social History with special attention to:
   i. Ability to function - work, care for self, etc.
   ii. Pre-morbid condition
   iii. Social support
   iv. Religious/Spiritual beliefs
   v. Education level
   vi. History of abuse/trauma (verbal, physical, sexual, military)

ii. Learning Activity

   1. Interview, examine, and write a history and physical (H&P) for each new patient assigned to you, in addition to 4 summative written Case Reports for patients followed from admission to discharge (include H&P, problem list, differential diagnosis, additional investigation - labs, imaging, case management and discharge plan).

iii. Evaluation

   1. Case reports are submitted to the clerkship director who is primarily responsible for evaluating these. The clinical tutor will give ongoing feedback as well. History taking skills will also be evaluated during daily rounds and a final oral assessment at the end of the rotation.

c. Physical Exam

   i. Objective

      1. Perform and record a complete physical examination in a logical, organized, accurate and thorough manner for new patients and an appropriately focused physical examination for follow up patients. Students will explain the purpose of these exams to the patient and obtain patient consent prior to doing so. In psychiatry, the physical exam is crucial to rule out possible organic causes to psychiatric symptoms (e.g. altered mental status and confusion in severe liver disease or depressive symptoms in hypothyroidism) especially in new onset presentations, but may also be an aspect of the disorder (e.g. tachycardia with panic disorder) or a result of treatment (e.g. extra-pyramidal side effects of antipsychotics). Specific physical examination skills we expect students to master by the end of the psychiatry clerkship includes:

         a. Ability to establish rapport with patient.
b. Appearance. Recognize signs of acute illness by evaluating skin color, respiration, hydration, interaction.

c. Vital signs. Measure heart rate, respiratory rate, blood pressure and temperature accurately.

d. HEENT exam. Be able to identify abnormalities of the oral cavity, throat, nasal passage, gross eye/pupils, and head.

e. Cardiovascular exam. Be able to identify normal heart sounds, extra heart sounds (S3, S4, pericardial friction rubs), systolic vs. diastolic murmurs.

f. Pulmonary exam. Be able to identify normal breath sounds, pulmonary crackles and wheezes.

g. Abdominal exam. Be able to identify internal organs and abnormalities (splenomegaly, hepatomegaly, cholecystitis, appendicitis, masses). Be able to recognize and describe stigmata of liver disease including findings consistent with ascites, spider angiomata, palmar erythema, jaundice/scleral icterus, hepatomegaly.

h. Endocrine exam. Be able to identify abnormalities of the thyroid and physical signs of thyroid disease and diabetes.

i. Neurology exam. Be able to test all cranial nerves, muscle strength/tone, reflexes, sensation, gait, and coordination and recognize abnormalities. Including recognition of cogwheeling/rigidity, dystonia, akathisia, parkinsonism, and tardive dyskinesia from antipsychotics.

j. Mental status exam. Be able to assess a patient’s appearance, behavior, motor activity, speech, mood, affect, thought processes, thought content (suicidal/homicidal ideations, auditory/visual hallucinations, and delusions), cognition (state of consciousness, orientation, registration, recent and remote memory, calculations, capacity to read and write, abstraction), insight and judgment in appropriate descriptive terms. For each category of the mental status exam be able to list abnormalities and their common causes.
ii. Learning Activity
   1. Each student should be observed performing a complete physical and mental status examination and/or targeted portions to the exam with given feedback and opportunities for questions.
   2. Physical and mental status findings on rounds will be offered to supplement students’ skills.
   3. Students will record findings in their log book.

iii. Evaluation
   1. The clinical tutor will observe students perform physical and mental status examinations in the course of patient care and these observations will inform the summative evaluation. Physical exam skills will also be tested in the final oral assessment. Log book will be reviewed.

d. Lab Interpretation
   i. Objective
      1. Obtain and understand important supplemental information, including CBC/FBP, blood smear, serum chemistries, hepatic function panel, thyroid function panel, ECG, EEG, chest x-ray, head CT, STI testing, drug screen, drug level monitoring and urinalysis.

   ii. Learning Activity
      1. Knowledge of various lab studies from internal medicine course will be applied to rule out organic causes of psychiatric symptoms. The importance and clinical use of these labs will be taught through discussion on rounds and reading.

   iii. Evaluation
      1. Students’ understanding of these tests will be assessed on rounds and through final written examination.

e. Clinical Reasoning
   i. Objective
      1. Formulate and document an assessment that includes the relevant differential diagnoses based on data gathered to guide initial diagnostic evaluation and disease management.

   ii. Learning Activity
      1. This will be discussed on daily rounds with the team.

   iii. Evaluation
      1. This is assessed by the psychiatric team on daily rounds and review of progress notes. This is also assessed formally in the student’s written case reports. *Full development of this skill is a crucial component and goal of this clerkship.*
f. Presentation Skills: Initial
   i. Objective
      1. Orally present a new patient’s history and physical examination clearly and with appropriate detail.
   ii. Learning Activity
      1. This is typically performed with the clinical tutor one-on-one and feedback is given at that time, and as part of rounds. Students should present on at least 2 occasions.
   iii. Evaluation
      1. Psychiatric team members who directly observe this will provide formative and summative feedback. Presentation skills will also be tested at the final oral assessment.

g. Presentation Skills: Follow-up
   i. Objective
      1. Orally present a follow-up patient’s case in a focused manner, including diagnostic and therapeutic plans.
   ii. Learning Activity
      1. This is practiced on daily rounds with the whole team present.
   iii. Evaluation
      1. Psychiatric team members who directly observe this will provide formative and summative feedback.

h. Written Skills
   i. Objective
      1. Write coherent, clear progress notes documenting working diagnosis and status of diagnostic evaluation and therapeutic plans.
   ii. Learning Activity
      1. Students practice this by writing daily progress notes on all their patients, in addition to required case reports. These should be on the chart in a timely manner (ideally before noon) if feedback is to be given.
   iii. Evaluation
      1. Psychiatric team members will evaluate progress notes and provide feedback. This will also be evaluated in the 4 formal case reports.

i. Patient and Family Counseling
   i. Objective
      1. Effectively communicate with the patient (and family if given consent by the patient) their physical findings (if any), diagnosis, and treatment plan.
      2. Educate on preventative and safety measures.
3. Educate on mental illness.

ii. Learning Activity
   1. This is practiced on initial evaluation of new patients and throughout diagnosis/treatment on rounds and always observed by a member of the psychiatric team to ensure accurate information.

iii. Evaluation
   1. Psychiatric team members will evaluate and provide feedback.

Knowledge
   a. Demonstrate understanding of the clinical presentation, basic physiology, key physical findings, evaluation and management of diseases frequently encountered in an inpatient and outpatient psychiatric setting.
   b. Objectives
      i. Review the pathophysiology and be able to recognize and initiate evaluation and management plans for the following disease states/clinical presentations:
         1. Psychiatric Emergencies
            a. Identify the risk factors associated with suicide in general and clinical populations.
            b. Develop a differential diagnosis, conduct a clinical assessment, and recommend management for a patient exhibiting suicidal thoughts or behavior; altered consciousness/delirium; potential or active violent behavior.
            c. Recognize the clinical findings that might suggest a general medical cause for neuropsychiatric symptoms, such as hallucinations, delusions, confusion, altered consciousness, and violent behavior.
            d. Recognize the typical signs and symptoms of common psychopharmacologic emergencies (e.g., lithium toxicity, neuroleptic malignant syndrome, anticholinergic delirium, monoamine oxidase inhibitor-related hypertensive crisis) and discuss treatment strategies.
            e. Discuss non-pharmacologic and pharmacologic management (classes, indications, associated risks) of acutely psychotic, agitated, and combative patients.
            f. Discuss the indications for psychiatric hospitalization, including the presenting problem and its acuity, risk of danger to patient or others, community resources, and family support.
         2. Dementia, Delirium, Amnestic and Other Cognitive Disorders
            a. Discuss the clinical features, differential diagnosis, evaluation and course of each. (delirium, dementia
[including treatable dementia], dementia syndrome of depression [pseudodementia], cortical dementia, subcortical dementia, Alzheimer's disease, vascular dementia, substance-induced persisting dementia, Parkinson's disease, HIV encephalopathy, amnestic disorder due to general medical conditions [e.g. head trauma, seizure disorder, strokes], substance-induced conditions [e.g., Korsakoff's syndrome that is due to thiamine deficiency]).

b. Discuss the behavioral and pharmacologic treatments of each.

c. Employ a cognitive screening evaluation to assess and follow patients with cognitive impairment.

3. Substance abuse and dependence

a. List and compare the characteristic clinical features.

b. Discuss the epidemiology (including the effects of gender), clinical features, patterns of usage, course of illness, and treatment.

c. List the psychiatric disorders that share significant comorbidity with substance-related disorders.

d. Know the clinical features and treatment of intoxication with, and withdrawal from: anticholinergics, cocaine, amphetamines, hallucinogens, cannabis, phencyclidine, barbiturates, opiates, caffeine, nicotine, benzodiazepines, volatile substances, and alcohol.

4. Psychosis associated with schizophrenic, affective, general medical, and other psychotic disorders

a. Define features of psychosis.

b. Develop a differential diagnosis for a person presenting with psychosis, including identifying historical and clinical features that assist in the differentiation of general medical, substance-induced, affective, schizophrenic, and other causes.

c. State the pathophysiology of schizophrenia.

d. Summarize the treatment of schizophrenia, including both pharmacologic and psychosocial interventions; and list the features that differentiate delusional disorder, schizopreniform disorder, schizoaffective disorder, and brief psychotic disorder from each other and from schizophrenia.

e. List organic mental disorders from medical conditions— infection, intoxication, metabolic, nutritional deficiencies.

5. Mood disorders
a. Discuss evidence for neurobiological, genetic and environmental etiologies of mood disorders.

b. Compare and contrast the clinical features of unipolar depression and bipolar disorders.

c. State the common signs and symptoms, differential diagnosis (including general medical and substance-induced disorders), course of illness, comorbidity, prognosis, and complications of mood disorders.

d. Contrast normal mood variations, states of demoralization, and bereavement with the pathological mood changes that constitute depressive illness.

e. Identify the difference in the presentation, treatment, and prognosis of major depression with and without melancholic features, psychotic features, atypical features, catatonic features, seasonal pattern, and postpartum onset.

f. Discuss the increased prevalence of major depression in patients with general medical-surgical illness (e.g. HIV/AIDS, cancer, myocardial infarction) and the impact of depression on morbidity and mortality from their illnesses.

g. Discuss the identification and management of suicide risk in general medical settings.

h. Outline the recommended acute and maintenance treatments for dysthymia, major depression, and bipolar disorders (manic and depressive phases).

i. State the characteristics and techniques of the non-pharmacological treatments for depression, including psychotherapy.

6. Anxiety disorders

a. Discuss the clinical features, course, and psychiatric comorbidity of panic disorder (vs. panic attack), agoraphobia, social phobia, specific phobias, generalized anxiety disorder, posttraumatic stress disorder, acute stress disorder, and obsessive-compulsive disorder.

b. List the common general medical and substance-induced causes of anxiety, and assess for these causes in evaluating a person with an anxiety disorder.

c. Outline psychotherapeutic and pharmacologic treatments for each of the anxiety disorders.

7. Somatoform and Factitious disorders

a. State the clinical characteristics of somatization disorder, conversion disorder, pain disorder, body dysmorphic disorder, and hypochondriasis.
b. Discuss the implications of the high rate of underlying general medical/neurologic illness in patients diagnosed with pain disorder and conversion disorder.
c. List the characteristic features of factitious disorder and malingering, and compare these with the somatoform disorders.
d. Discuss the frequency and importance of physical symptoms as manifestations of psychological distress.
e. Summarize the principles of management of patients with somatoform disorders.

8. Eating disorders
   a. Summarize the clinical features, epidemiology, course, comorbid disorders, complications, and treatment for anorexia nervosa and bulimia.
   b. List the medical complications and indications for hospitalization in patients with eating disorders.

9. Sleep disorders
   a. Describe normal sleep physiology, including sleep architecture, throughout the life cycle.
   b. Discuss the manifestations, differential diagnosis, evaluation, and treatment of primary sleep disorders, including dyssomnias and parasomnias.
   c. Summarize the effect(s) of psychotropic medications on sleep.
   d. Describe sleep hygiene treatment.

10. Personality disorders
    a. Defines personality traits vs. disorders, and identify features common to all personality disorders.
    b. List the three descriptive groupings (clusters) of personality disorders and describe the typical traits of each personality disorder.
    c. Discuss the epidemiology, differential diagnosis, course of illness, prognosis, and comorbid psychiatric disorders in patients with personality disorders.
    d. Identify difficulties in diagnosing personality disorders in the presence of stress, substance abuse, and other major psychiatric disorders.
    e. List the psychotherapeutic and pharmacologic treatment strategies for patients with personality disorders.

11. Child psychiatric disorders
    a. Compare and contrast the process of psychiatric evaluation of children and adolescents at different developmental stages with that of adults.
b. State the value of obtaining data from families, teachers, and other non-physicians in the evaluation and treatment of children and adolescents.

c. Summarize the clinical features, epidemiology, pathophysiology, course, comorbid disorders, complications, and treatment for attention-deficit hyperactivity disorder, conduct disorder, mental retardation, and autism.

d. Describe typical clinical features of anxiety disorders at different developmental stages.

e. Compare and contrast the clinical features of mood disorders in children with that of adults.

f. Discuss the epidemiology and clinical features of suicide risk in adolescents.

g. Identify signs and symptoms of child sexual and physical abuse, and discuss its short- and long-term psychiatric sequelae.

12. Geriatric Psychiatry

a. Employ a cognitive screening evaluation to assess and follow patients with cognitive impairment.

b. Compare and contrast the clinical presentation of depression in elderly patients with that of younger adults.

c. Summarize the special considerations in prescribing psychotropic medications for the elderly.

d. Discuss the differential diagnosis, etiological hypotheses, epidemiology, clinical features, treatment and course of dementia, delirium, amnestic and other cognitive disorders as described above.

13. Psychopharmacology

a. Anxiolytics

i. Discuss the indications, mechanism of action, pharmacokinetics, common side effects, signs of toxicity, and drug interactions of the different benzodiazepines and sedative-hypnotics; the consequences of abrupt discontinuation; and the differences (mechanism of action, onset of effect, and indications) between buspirone and benzodiazepines.

b. Antidepressants

i. Summarize the indications, mechanisms of action, pharmacokinetics, common or serious side effects (including overdose potential), signs of toxicity, and drug interactions of
tricyclics, second generation (atypical) antidepressants, monoamine oxidase inhibitors, and selective serotonin reuptake inhibitors; the pretreatment assessment and strategies of antidepressant use, including ensuring adequacy of trial and blood level monitoring; the effect of antidepressants on the cardiac conduction system and electrocardiogram; dietary and pharmacologic restrictions in prescribing a monoamine oxidase inhibitor; and advantages of selective serotonin reuptake inhibitors.

c. Antipsychotics (neuroleptics)
i. Discuss the indications, mechanisms of action, pharmacokinetics, common or serious side effects, signs of toxicity, and drug interactions of antipsychotics; differences between high-potency and low-potency antipsychotics, including the side effects common to each group; diagnosis and management of extrapyramidal side effects including acute dystonia, parkinsonism, akathisia, tardive dyskinesia, and neuroleptic malignant syndrome; and the indications and special considerations in using clozapine and risperidone.

d. Mood Stabilizers
i. Discuss the indications, mechanism of action, pharmacokinetics side effects, signs of toxicity (neurological, gastrointestinal, renal, endocrine, cardiac), and drug interactions of lithium; the pretreatment assessment and strategies of use of lithium, including blood level monitoring; and the indications, mechanisms of action, pharmacokinetics, common and serious side effects, toxicity, drug interactions, and plasma level monitoring for carbamazepine, valproic acid, and calcium channel blockers.

e. Anticholinergics
i. Discuss the indications, mechanisms of action, pharmacokinetics, common and serious side effects, signs of toxicity, and drug interactions of anti-parkinsonian agents; which antidepressants and antipsychotics have a
higher incidence of anticholinergic side effects; and special considerations in prescribing these medications in the elderly

14. Electroconvulsive Therapy (ECT)
   a. Summarize the indications, physiologic effects, and side effects of ECT; clinical situations in which ECT may be the treatment of choice; pretreatment assessment, including conditions requiring special precautions; and the medical care of the patient before, during, and after ECT treatment.

15. Psychotherapy
   a. State the characteristics and techniques of, and common indications and contraindications for, psychodynamic psychotherapy, psychoanalysis, supportive psychotherapy, cognitive and behavioral therapies, group therapies, couples and family therapy, and psycho-educational interventions.
   b. Define and begin to recognize transference, counter-transference, and commonly used defense mechanisms.

16. Seizure Disorders
   a. Discuss the etiology, signs/symptoms of diagnosis, management and treatment.
   b. Describe the psychosocial sequelae.

17. Be able to use clinical reasoning to synthesize data into a prioritized differential diagnosis, working diagnosis, and plan.

6.44.6 Teaching and learning activities

- Students will receive lectures and clinical correlation teaching on rounds. Weekly conferences will provide additional knowledge on medical subjects. The above list also is intended to help guide students’ reading. Students are strongly encouraged to learn about all of their patients’ past medical/psychiatric problems in addition to the acute problems to further enhance their knowledge.
- Each student will keep a log book of specific diseases seen and procedures done while on their psychiatry rotation.

6.44.7 Assessment methods

Log book of diseases and procedures; oral final assessment; team evaluations based on observation; and assessment of the 4 required written case reports.

6.44.8 Reading list

6.45 Course title: Ear, Nose and Throat (ENT) (K8ET4745)
6.45.1 Course status: Core
6.45.2 Total credits: 10
6.45.3 Subject hours: 100
6.45.4 Course aims
Acquire basic clinical knowledge, skills and attitudes in order to familiarize with ENT patients

6.45.5 Course expected learning outcomes

The following three categories of broad goals for the clerkship are not meant to be limiting you to other goals that you may want to focus on but are intended to clearly outline what we expect for you to achieve by the end of the ENT Clerkship. Herein you can review objectives linked to three main goals; 1) Competency, 2) Patient Care/Clinical Skills, and 3) Knowledge.

i. Competency
   a. Demonstrate commitment to excellence, honesty, respect for others, integrity, and altruism in patient care.
   b. Objectives
      i. Treat all patients, patient family members, staff, and colleagues with respect, which includes maintaining a professional demeanor in speech and dress
      ii. Strive for excellence
      iii. Place the care of your patients above competing interests
      iv. Practice informed consent with patients/patient families
      v. Work effectively as a part of the treatment team
   c. Learning Activity
      i. Professionalism should permeate all aspects of your performance and cannot really be taught in isolation. Important issues of professionalism include:
         1. Navigating the wards and theatre- your role in the team, working with ancillary providers, etc.
         2. Approaching medical errors
         3. Palliative Care
         4. Communicating difficult news
   d. Evaluation
      i. Formative and summative feedback will be obtained from the ENT team. The clerkship director will evaluate submissions and your interactions with them as well (including timeliness, attitude, and initiative). How you treat staff, nurses, and all members of the health care team can play a role in this evaluation, though the clerkship does not specifically seek out formal feedback from these individuals.

ii. Patient Care
a. Evaluate and manage patients hospitalized with acute illness, in clinic settings and in theatre.

b. **History Taking**
   i. **Objective**
      1. Obtain and record a patient’s history and chief complaint in a logical, organized, and thorough manner. Demonstrate effective verbal skills, including appropriate use of open- and closed-ended questions, repetition, facilitation, explanation, summation, and interpretation.
   
   ii. **Learning Activity**
      1. Interview, examine, and write a history and physical (H&P) for each new patient assigned to you, in addition to 4 summative written case reports for patients followed from admission to discharge (include H&P, problem list, differential diagnosis, additional investigation- labs, imaging, etc, proposed case management and discharge plan).

   iii. **Evaluation**
      1. Case reports are submitted to the clerkship director who is primarily responsible for evaluating these. The ENT team will give ongoing feedback as well. History taking skills will also be evaluated during daily rounds and a final oral assessment at the end of the rotation.

c. **Physical Exam**
   i. **Objective**
      1. Perform and record a complete physical examination in a logical, organized, accurate and thorough manner for new patients and an appropriately focused physical examination for follow up patients. Students will explain the purpose of these exams to the patient and obtain patient consent prior to doing so. Required equipment- head mirror and otoscope. Specific physical examination skill we expect students to master by the end of the ENT clerkship includes:
         a. **Ability to establish rapport with patient.**
         b. **Appearance.** Recognize signs of acute illness by evaluating skin color, respiration, hydration, mental status, interaction.
         c. **Vital signs.** Measure heart rate, respiratory rate, blood pressure and temperature accurately.
         d. **HEENT exam.**
            i. **Eyes-** Be able to identify abnormalities of the gross eye/pupils.
ii. Ears
1. Inspect, palpate, use the otoscope
2. Look behind the ear
3. Identify and palpate external anatomy- pinna, preauricular lymph nodes, surrounding neck
4. Identify internal anatomy using proper otoscope techniques- ear canal, tempamic membrane, structures of the middle ear (malleus, incus)
5. Be able to identify abnormalities- otitis externa and media, osteoma, tempamic membrane perforation
6. Test hearing- tuning fork Rinne and Weber tests, gross field test

iii. Nose
1. Inspect- shape, skin, scars, abnormalities, look at vestibules by lifting the tip and note erythema, exudates, masses, septal deviation
2. Test airflow through each nostril by occluding the opposite side
3. Demonstrate proper use of rhinoscopy
4. Palpate and percuss frontal and maxillary sinuses for pain/fullness
5. Test smell

iv. Throat
1. Oral cavity- Using a tongue depressor inspect all mucosal surfaces, protrude the tongue and inspect, look at salivary orifices, note any deviation of the uvula, inspect tonsils, inspect hard and soft palates, bimanual palpation, percuss teeth
2. Larynx- Inspect using laryngoscopy, identify anatomy (base of tongue, epiglottis, false
cords, vocal cords, piriform fossa and arytenoids

v. Neck
1. Inspect- Identify any scars; lumps; sinuses; asymmetry; stoma; ask patient to swallow, protrude tongue, speak and breathe deeply
2. Palpate- Systematically from front and back; be sure to include submandibular and supraclavicular areas, thyroid gland, parotid gland, and lymph nodes (submental, submandibular, tonsilar, anterior cervical, posterior cervical, and supraclavicular); note any abnormalities (firm, nonmobile nodes)/ asymmetry
3. Auscultate- list for carotid bruits

vi. Head
1. Inspect, palpate and note any abnormalities/asymmetry of scalp and hair

e. Cardiovascular exam. Be able to identify normal heart sounds, extra heart sounds (S3, S4, pericardial friction rubs), systolic vs. diastolic murmurs.
f. Pulmonary exam. Be able to identify normal breath sounds, pulmonary crackles and wheezes.
g. Abdominal exam. Be able to identify internal organs and abnormalities (spleomegaly, hepatomegaly, cholecystitis, appendicitis, masses). Be able to do a rectal examination and recognize when it is indicated.
h. Endocrine exam. Be able to identify abnormalities of the thyroid and physical signs of thyroid disease and diabetes.
i. Neurology exam. Be able to test all cranial nerves, muscle strength/tone, reflexes, sensation, gait, balance and coordination and recognize abnormalities.
j. Genitourinary exam. Be able to identify abnormalities of the genitals and exam findings
consistent with urinary tract abnormalities (flank pain, bladder distention).

**k. Skin exam.** Be able to identify abnormalities of the skin including rashes, deformities, burns and infections.

**ii. Learning Activity**
1. Each student should be observed performing a complete physical examination and/or targeted portions to the exam with given feedback and opportunities for questions.
2. Students will watch and assist with basic procedures.
3. Physical findings on rounds will be offered to supplement students’ skills.
4. Students will record procedures in their log book.

**iii. Evaluation**
1. The ENT team will observe students perform physical examinations in the course of patient care and these observations will inform the summative evaluation. Physical exam skills will also be tested in the final oral assessment. Log book will be reviewed.

**d. Lab Interpretation**

**i. Objective**
1. Obtain and understand important supplemental information, including CBC/FBP, blood smear, blood culture, serum chemistries, hepatic function panel, thyroid function tests, coagulation studies, STI testing, urinalysis, biopsy, x-ray, audiograms and tympanograms.

**ii. Learning Activity**
1. **Lab Studies.** Students will have lectures on and clinical experience in different areas of the clinical lab where students will learn appropriate use and interpretation of laboratory tests.
2. **Radiologic Studies.** Students will have lectures on and clinical experience in the basics of reading plain radiographs (pertaining to ENT, head and neck) beginning with normal studies and progressing through abnormal studies and introduction to CT scanning, ultrasonography, audiograms and tympanograms.

**iii. Evaluation**
1. Students’ understanding of these tests will be assessed on rounds and through final written examination.

**e. Clinical Reasoning**

**i. Objective**
1. Formulate and document an assessment that includes the relevant differential diagnoses based on data gathered to guide initial diagnostic evaluation and disease management.

ii. Learning Activity
   1. This will be discussed on daily rounds with the team.

iii. Evaluation
   1. This is assessed by the ENT team on daily rounds and review of progress notes. This is also assessed formally in the student’s written case reports. *Full development of this skill is a crucial component and goal of this clerkship.*

f. **Presentation Skills: Initial**
   i. Objective
      1. Orally present a new patient’s history and physical examination clearly and with appropriate detail.
   
   ii. Learning Activity
      1. This is typically performed with the ENT tutor and feedback is given at that time, and also as part of rounds. Students should present at least 2 cases at the case presentation seminar.
   
   iii. Evaluation
      1. ENT team members who directly observe this will provide formative and summative feedback. Presentation skills will also be tested at the final oral assessment.

  
g. **Presentation Skills: Follow-up**
   i. Objective
      1. Orally present a follow-up patient’s case (including those with more than one problem) in a focused manner, including diagnostic and therapeutic plans.
   
   ii. Learning Activity
      1. This is practiced on daily rounds with the whole team present.
   
   iii. Evaluation
      1. ENT team members who directly observe this will provide formative and summative feedback.

h. **Written Skills**
   i. Objective
      1. Write coherent, clear progress notes documenting working diagnosis and status of diagnostic evaluation and therapeutic plans.
   
   ii. Learning Activity
      1. Students practice this by writing daily progress notes on all their patients, in addition to required case
reports. These should be on the chart in a timely manner (ideally before noon) if feedback is to be given.

iii. Evaluation
   1. ENT team members will evaluate progress notes and provide feedback. This will also be evaluated in the 4 formal case reports.

i. Patient and Family Counseling
   i. Objective
      1. Effectively communicate with the patient (and family if given consent by the patient) their physical findings, diagnosis, and treatment plan.
      2. Educate on preventative and safety measures.

   ii. Learning Activity
      1. This is practiced on initial evaluation of new patients and throughout diagnosis/treatment on rounds and always observed by a member of the ENT team to ensure accurate information.

   iii. Evaluation
      1. ENT team members will evaluate and provide feedback.

iii. Knowledge
   a. Demonstrate understanding of the clinical presentation, basic physiology, key physical findings, evaluation and management of diseases frequently encountered in an inpatient and outpatient ENT setting.
   b. Objectives
      i. Review the pathophysiology and be able to recognize and initiate evaluation and management plans for the following disease states/clinical presentations:
         1. Hearing/Balance
            a. Sensorineural deafness
            b. Conductive deafness
            c. Tinnitus
            d. Otitis externa
            e. Otitis media
            f. Keratosis obturans
            g. Cholesteatoma
            h. Granulations
            i. Aural polyps
            j. Otosclerosis
            k. Presbyamisis
            l. Presbystasis
            m. Vestibular neuromitis
            n. Labyrinthitis
o. Vertigo
p. Meniere’s disease
q. Preauricular sinusitis/abscess
r. Mastoiditis
s. Mastoid abscess

2. Rhinology
   a. Nasal obstruction/congestion
   b. Allergic rhinitis
   c. Rhinorrhea
d. Epistaxis
e. Rhinosinusitis
f. Septal deviation
g. Septal perforation
h. Septal abscess

3. Mouth/Oropharynx
   a. Pharyngitis
   b. Tonsilitis
c. Hoarseness
d. Aphonia
e. Referred otalgia
f. Stridor
g. Epiglottitis
h. Ludwig’s angina
i. Cleft lip
j. Cleft palate

4. Larynology
   a. Laryngitis
   b. Laryngo-bronchitis
c. Airway foreign bodies

5. Salivary Glands
   a. Salivary gland tumors
   b. Salivary gland infections
c. Sialolithiasis
d. Xerostomia

6. Neck
   a. Branchial cyst
   b. Thyroglossal cyst
c. Cervical adenopathy

ii. Be able to use clinical reasoning to synthesize data into a prioritized differential diagnosis, working diagnosis, and plan.

6.45.6 Teaching and learning activities

i. Students will receive lectures and clinical correlation teaching on rounds. Weekly conferences will provide additional knowledge on
medical subjects. The above list also is intended to help guide students’ reading. Students are strongly encouraged to learn about all of their patients’ past medical problems in addition to the acute problems to further enhance their medical knowledge.

ii. Each student will keep a log book of specific diseases seen and procedures done while on their ENT rotation.

6.45.7 Assessment methods

Log book of diseases and procedures; written examination; oral final assessment; team evaluations based on observation; and assessment of the 4 required written case reports.

6.45.8 Reading list

YEAR 4: SEMESTER 8

6.46 Course title: Community medicine (DMO Rotation) (K8CM4846)

6.46.1 Course status: Core
6.46.2 Total credits: 30
6.46.3 Subject hours: 300
6.46.4 Course aims

The overall objectives of the course are to increase participants’ knowledge on the health system, organs playing key roles planning, coordinating and implementing and monitoring Tanzania health system, linking theories taught in class with the real world practice in respective districts and to strengthen their capability to deal with managerial and leadership challenges of the Tanzania health system.

6.46.5 Course expected learning outcomes

By the end of the course, participants should be able to:

i. Explain role and importance of collaboration between different stakeholders of health

ii. Explain the main components of health system building blocks and their interactions to achieve Universal Health Coverage

iii. Critically analyze challenges facing Tanzania health system and apply leadership and managerial knowledge to propose solutions.

iv. Increased capacity of Tanzania in dealing with health system challenges to achieve universal health coverage.

v. Increased, efficient and effective leaders that will participate in building local and international health system
6.46.6 Course content

The course focuses on the following:

i. **In-class sessions (1 week)**
   a. *CHMT and Leadership roles played by the District Medical Officer (DMO)*
   b. *Health System Building Blocks*
      i. Health system strengthening and sustainable health financing and CCHP at the Central Government Level
      ii. Supply chain management including MSD challenge
      iii. Information management system (HMIS) & region score card
      iv. *Emergency Preparedness*
      v. Supportive supervision, Monitoring and Evaluation of health services
      vi. Health Policy Formulation & Key Health Policy Documents

ii. **Fieldwork (2weeks)**
   a. Participating in activities conducted by CHMT (E.g. Supportive supervision, planning and outreach programs.)
   b. A case study on the health system and implementation of government directives.

iii. **Report writing and presentation (1 week)**

6.46.7 Teaching and learning activities

i. Lectures
ii. Case studies
iii. Group assignments and presentations
iv. Questions and answers
v. Individual assignments
vi. eLearning

6.46.8 Assessment methods

i. Individual assignment
ii. Marked group presentation
iii. Marked field report
iv. End of the module examination

6.46.9 Reading list

Each participant will receive a copy of AMREF module and additional materials from facilitators.
6.47 Course title: Research (K8RE4847)

6.47.1 Course status: Core

6.47.2 Total credits: 30

6.47.3 Subject hours: 300

6.47.4 Course aims

This is a course training for the undergraduate students, who has already done epidemiology and biostatistics, in order to prepare them to develop a research proposal, conduct their research, and analyze their data using statistical software. Students will at the end develop a research report. The course will cover theory on the components of research proposal, practical sessions in developing a research proposal as well as practical sessions in data analysis and research write up.

6.47.5 Course expected learning outcomes

By the end of this course students should be able to

i. Describe different types of research, key parts of research proposal and purpose of conducting research

ii. Conduct literature search and different types of referencing

iii. Calculate sample size and sampling producers

iv. Design questionnaires and data collection sheets that capture objectives of a study

v. Conduct analysis for quantitative and qualitative data

vi. Apply key ethical principles in the conduct of research

vii. Apply study designs in develop a research proposal and conduct data collection

viii. Prepare and present a research report

6.47.6 Course content

i. Introduction to research

   a. Definition of research

   b. Purpose and importance of conducting research

   c. Types of research

   d. Research cycle

ii. Research proposal

   a. What is research proposal and its difference with research report
b. Importance of research proposal

c. Components and steps in developing research proposal

d. KCMUCo proposal format

e. Practical: evaluation of previous research proposals

iii. Research topic and researchable question

a. Identification of research idea

b. How to narrow research idea into a researchable problem

c. Development of research questions from a problem

d. Development of research title and character of the title

iv. Literature review

a. What is literature and importance of LR in research

b. Literature sources

c. Application of MESH terms and Boolean operators to search literature

d. Guide in developing literature summary matrix and matrix format

e. Practical: how to search literature at different sources (Pubmed, Google Scholar, HINARI, DHSdata)

f. Practical: apply MESH and Boolean operators for appropriate literature search

v. Referencing and citation

a. Referencing vs. bibliography and importance

b. Reference styles (Harvard and Vancouver)

c. Cite in the text

d. Principals in organize reference list

e. Practical use of Mendeley in writing reference list

vi. Research question, hypothesis and objectives

a. Define research question and hypothesis and their difference

b. Define research objectives and types
c. Characteristics of broad objectives

d. Characteristics of specific objectives

e. Principles of writing objectives

vii. **Introduction section**

a. Structure of introduction section

b. Principles of writing introduction section

viii. **Literature review section**

a. Structure of the literature review section

b. Principles of writing LR section

ix. **Statement of the problem and justification**

a. What is statement of problem

b. Synthesizing information and guide in developing a well structured statement of the problem

c. Stakeholders for research results

d. Guide in writing justification

x. **Methodology section**

a. Guide in writing methods section and its importance

b. Appropriate study design for objectives

c. Appropriate site for study

d. Identification of appropriate study population to answer the objectives

e. Other parts of the methodology section

xi. **Sampling and sample size estimation**

a. Sample size estimation (guided by design)

b. Sampling technique

c. Sampling and sample size for qualitative research
d. Variables: dependent, independent, and explanation of key outcome variable if depend on several variables

xii. Data collection methods and tools

a. Data collection methods (self filled questionnaires, interviews, observation, record review)

b. Data collection tools (questionnaire, checklists, data extraction form, examination, biological sample collection etc)

c. Development of data collection tools [questionnaire/ checklist] (principals and methods)

d. Data collection methods and tools in qualitative research

e. Development of data collection tools for qualitative research (IDI or FGD guides)

f. Study procedures

xiii. Data processing and analysis plan

a. Data management plan at the field

b. Data quality assurance on daily basis

c. Data summarization appropriate for design and outcome variable(s)

d. Develop dummy tables

e. Plan of analysis for qualitative research

xiv. Ethical principles and conduct in research

a. Introduction and significance of ethics in research

b. Ethical principles in research

c. Good clinical practice (GCP) and Good laboratory clinical practice (GLCP)

d. Research misconduct and consequence (falsification, plagiarism, plagiarism)

e. Informed consent and confidentiality

f. Development of participant information form and participant consent form

g. Ethical approval (IRBs) & local permission (s)
xv. **Quality assurance**
   a. Quality assurance during selection and sampling of population
   b. Tools: use of validated tools or piloted tools
   c. Quality assurance in data collection process
   d. Quality assurance in data analysis

xvi. **Database creation and entry using SPSS**
   a. Introduction to statistical databases: definition and examples (excel, EPI Info, Access, SPSS)
   b. Introduction to SPSS data base
   c. How to create a database template
   d. Data entry using created database

xvii. **Data collection**
   a. Application for ethical approval and/ or permission from relevant bodies
   b. Application for permission from regional and municipal or hospital or local leaders depending on study site and population
   c. Training of research assistant (s)
   d. Actual data collection

xviii. **Data cleaning and manipulation**
   a. Data cleaning using frequency analysis
   b. Finding missing, outliers and other numbers that does not tally at SPSS
   c. Data manipulation (recording categorical and change numerical to categorical)
   d. Computing commands at SPSS

xix. **Data analysis**
   a. Descriptive analysis using SPSS (categorical vs. numerical variables)
b. Dummy tables by specific objectives

c. Cross tabulation and interpretation

d. How to test difference between groups (using test statistics_ t –test and/ or Chi square test)

e. Calculation of measure of association using SPSS

f. Data analysis in qualitative study

xx. **Result section**

a. Guiding in writing the result section

b. Objective zero and other specific objectives

c. Revision data presentation (narration, key features of tables and figures)

d. How to write results from qualitative study

xxi. **Discussion section**

a. Guide to writing discussion part

b. Limitations and strengths of the study

c. Conclusion

d. Recommendation

xxii. **Dissemination and publication**

a. Who and where to share study results (stakeholders)

b. Manuscript development process

c. How to choose a journal and guideline to authors

d. Authorship issues

e. Data ownership

6.47.7 **Teaching and learning activities**

i. Lectures

ii. Questions and answers

iii. Group work followed by presentations

iv. Individual assignment
6.47.8 Assessment methods

Written examination
Marked research proposal
Marked research report

i. Written Examination will contribute 20%

ii. Research proposal and report will contribute 80%

6.47.9 Reading list

i. Amar-Singh HSS, Abu Bakar A, Sararaks S. *The Medical Research Handbook: planning a research project*. Clinical Research Center Perak (CRC Perak) and the Institute for Health Systems Research (IHSR), 2008.


6.48 Course title: Internal Medicine (K8IM5948)

6.48.1 Course status: Core
6.48.2 Total credits: 13
6.48.3 Subject hours: 130

6.48.4 Course aims

The course aims to help the students to acquire a range of clinical skills and attitudes related to history taking and physical examination, in addition to acquiring the interpretative skills required to make a diagnosis and implement appropriate patient management. It is intended to produce graduates who have appropriate competencies to address the health needs of the community. The programme in years 3 and 5 will enable the student to understand the scientific basis of diseases, the clinical practice and to acquire the necessary Knowledge, Skills, Competencies and ethics relevant to the profession.

6.48.5 Course expected learning outcomes

The following three categories of broad goals for the clerkship are not meant to be limiting you to other goals that you may want to focus on but are intended to clearly outline what we expect for you to achieve by the end of the Internal Medicine Clerkship. Herein you can review objectives linked to three main goals; 1) Competency 2) Patient Care/Clinical Skills, and 3) Knowledge.

i. Competency

a. Demonstrate commitment to excellence, honesty, respect for others, integrity, and altruism in patient care.

b. Objectives

i. Treat all patients, patient family members, staff, and colleagues with respect, which includes maintaining a professional demeanor in speech and dress

ii. Strive for excellence

iii. Place the care of your patients above competing interests

iv. Practice informed consent with patients/patient families

v. Work effectively as a part of the treatment team

c. Learning Activity

i. Professionalism should permeate all aspects of your performance and cannot really be taught in isolation. Important issues of professionalism include:

1. Navigating the wards- your role in the team, working with ancillary providers, etc.

2. Approaching medical errors

3. Palliative Care

4. Communicating difficult news
d. Evaluation
   i. Formative and summative feedback will be obtained from the ward team. The clerkship director will evaluate submissions and your interactions with them as well (including timeliness, attitude, initiative). How you treat staff, nurses, and all members of the health care team can play a role in this evaluation, though the clerkship does not specifically seek out formal feedback from these individuals.

ii. Patient Care
   e. Evaluate and manage patients hospitalized with acute illness and in clinic settings.

f. History Taking
   i. Objective
      1. Obtain and record a patient’s history and chief complaint in a logical, organized, and thorough manner. Demonstrate effective verbal skills, including appropriate use of open- and closed-ended questions, repetition, facilitation, explanation, summation, and interpretation.

   ii. Learning Activity
      1. Interview, examine, and write a history and physical (H&P) for each new patient assigned to you, in addition to 4 summative written case reports for patients followed from admission to discharge (include H&P, problem list, differential diagnosis, additional investigation- labs, imaging, etc, proposed case management and discharge plan).

   iii. Evaluation
      1. Case reports are submitted to the clerkship director who is primarily responsible for evaluating these. The interns and residents will give ongoing feedback as well. History taking skills will also be evaluated during daily rounds and a final oral assessment at the end of the rotation.

g. Physical Exam
   i. Objective
      1. Perform and record a complete physical examination in a logical, organized, accurate and thorough manner for new patients and an appropriately focused physical examination for follow up patients. Students will explain the purpose of these exams to the patient and obtain patient consent prior to doing so. Specific physical examination skill we expect students to master by the end of the medicine clerkship includes:
         a. Ability to establish rapport with patient.
b. **Appearance.** Recognize signs of acute illness by evaluating skin color, respiration, hydration, mental status, interaction.

c. **Vital signs.** Measure heart rate, respiratory rate, blood pressure and temperature accurately, demonstrating knowledge of the appropriate sized blood pressure cuff and normal values.

d. **HEENT exam.** Be able to identify abnormalities of the oral cavity, throat, nasal passage, gross eye/pupils, and head.

e. **Cardiovascular exam.** Be able to identify normal heart sounds, extra heart sounds (S3, S4, pericardial friction rubs), systolic vs. diastolic murmurs, and specifically aortic stenosis and mitral regurgitation.

f. **Pulmonary exam.** Be able to identify normal breath sounds, pulmonary crackles and wheezes.

g. **Abdominal exam.** Be able to identify internal organs and abnormalities (splenomegaly, hepatomegaly, cholecystitis, appendicitis, masses). Be able to recognize and describe stigmata of liver disease including findings consistent with ascites, spider angioma, palmar erythema, jaundice/scleral icterus, hepatomegaly. Be able to do a rectal examination and recognize when it is indicated.

h. **Endocrine exam.** Be able to identify abnormalities of the thyroid and physical signs of thyroid disease and diabetes.

i. **Neurology exam.** Be able to test all cranial nerves, muscle strength/tone, reflexes, sensation, gait, and coordination and recognize abnormalities.

j. **Genitourinary exam.** Be able to identify abnormalities of the genitals and exam findings consistent with urinary tract abnormalities (flank pain, bladder distention).

k. **Skin exam.** Be able to identify abnormalities of the skin including rashes, deformities, burns and infections.

l. Techniques for each of the following basic procedures: venipuncture, blood culture,
arterial blood gas, ECG, chest radiography, nasogastric tube placement, urethral catheterization, peripheral intravenous catheter insertion, throat culture, PAP smear, digital rectal examination, urine dipstick, stool occult blood testing, subcutaneous injection, intramuscular injection, wound culture, dressing change, chest tube placement and PPD placement.

ii. Learning Activity
1. Each student should be observed performing a complete physical examination and/or targeted portions to the exam with given feedback and opportunities for questions.
2. Students will watch and assist with basic procedures.
3. Physical findings on rounds will be offered to supplement students’ skills.
4. Students will record procedures in their log book.

iii. Evaluation
1. Interns, Residents and Specialists will observe students perform physical examinations in the course of patient care and these observations will inform the summative evaluation. Physical exam skills will also be tested in the final oral assessment. Log book will be reviewed.

h. Lab Interpretation
i. Objective
1. Obtain and understand important supplemental information, including CBC/FBP, blood smear, blood culture, serum chemistries, hepatic function panel, hepatitis serologies, cardiac biomarkers, thyroid function tests, ABG, coagulation studies, stool occult blood, ECG, chest x-ray, STI testing and urinalysis.

ii. Learning Activity
1. **Lab Studies.** Students will have lectures on and clinical experience in different areas of the clinical lab where students will learn appropriate use and interpretation of laboratory tests.
2. **ECG Studies.** Students will have lectures on and clinical experience in the systematic approach to reading ECGs (beginning with rate, rhythm, axis, intervals progressing through heart block and ventricular and atrial arrhythmias).
3. **Radiologic Studies.** Students will have lectures on and clinical experience in the basics of reading plain
radiographs (chest, abdomen) beginning with normal studies and progressing through abnormal studies (pulmonary infiltrates, edema, pneumothorax, effusion, etc) and introduction to CT scanning, ultrasonography, and magnetic resonance imaging. Images are presented both in a disease-specific orientation as well as in a problem-based setting (i.e. how to choose and interpret radiographic studies for the patient with hematuria; headache; abdominal pain, etc).

iii. Evaluation
   1. Students’ understanding of these tests will be assessed on rounds and through final written examination.

i. Clinical Reasoning
   i. Objective
      1. Formulate and document an assessment that includes the relevant differential diagnoses based on data gathered to guide initial diagnostic evaluation and disease management.
   ii. Learning Activity
      1. This will be discussed on daily rounds with the teams.
   iii. Evaluation
      1. This is assessed by the medical teams on daily rounds and review of progress notes. This is also assessed formally in the student’s written case reports. *Full development of this skill is a crucial component and goal of this clerkship.*

j. Presentation Skills: Initial
   i. Objective
      1. Orally present a new patient’s history and physical examination clearly and with appropriate detail.
   ii. Learning Activity
      1. This is typically performed with the intern or resident one-on-one and feedback is given at that time, and also as part of rounds.
   iii. Evaluation
      1. Medical team members who directly observe this will provide formative and summative feedback. Presentation skills will also be tested at the final oral assessment.

k. Presentation Skills: Follow-up
   i. Objective
      1. Orally present a follow-up patient’s case (including those with more than one problem) in a focused manner, including diagnostic and therapeutic plans.
ii. Learning Activity
   1. This is practiced on daily rounds with the whole team present.

iii. Evaluation
    1. Medical team members who directly observe this will provide formative and summative feedback.

l. Written Skills
i. Objective
   1. Write coherent, clear progress notes documenting working diagnosis and status of diagnostic evaluation and therapeutic plans.

ii. Learning Activity
   1. Students practice this by writing daily progress notes on all their patients, in addition to required case reports. These should be on the chart in a timely manner (ideally before noon) if feedback is to be given.

iii. Evaluation
   1. Medical team members will evaluate progress notes and provide feedback. This will also be evaluated in the 4 formal case reports.

m. Patient and Family Counseling
i. Objective
   1. Effectively communicate with the patient (and family if given consent by the patient) their physical findings, diagnosis, and treatment plan.
   2. Educate on preventative and safety measures.

ii. Learning Activity
   1. This is practiced on initial evaluation of new patients and throughout diagnosis/treatment on rounds and always observed by a member of the medical team to ensure accurate information.

iii. Evaluation
   1. Medical team members will evaluate and provide feedback.

iii. Knowledge

n. Demonstrate understanding of the clinical presentation, basic physiology, key physical findings, evaluation and management of diseases frequently encountered in an inpatient and outpatient medicine setting.

  o. Objectives
     i. Review the pathophysiology and be able to recognize and initiate evaluation and management plans for the following disease states/clinical presentations:
        1. Acute Coronary Syndromes
2. Congestive Heart Failure
3. Pneumonia
4. Pulmonary Embolism
5. Meningitis
6. Acute Renal Failure and Chronic Kidney Disease
7. Fluid, Electrolyte and Acid-Base disturbance
8. Ascites
9. Gastrointestinal bleeding
10. Anemia
11. Back Pain
12. Syncope
13. HIV/AIDS
14. Other Infectious diseases - malaria, tuberculosis, schistosomiasis, etc.
15. Acute mental status change/delirium
16. Diabetes
17. Abdominal Pain
18. Health Maintenance
19. Cough
20. Dyspnea
21. Dysuria
22. Fever
23. Sepsis
24. Knee Pain
25. Rash
26. Upper Respiratory Complaints
27. Common Cancers
28. COPD and Other Obstructive Airways Disease including Pneumonconiosis
29. Dyslipidemia
30. Hypertension
31. Liver Disease
32. Depression
33. Rheumatologic Problems
34. Stroke
35. Peripheral Neuropathy
36. Sexual Transmitted Diseases
37. Malignancy- Lymphoma, Kaposi Sarcoma, Breast Cancer, Prostate Cancer, Lung Cancer
38. Geriatric Care- key illnesses in the elderly, focusing on their often atypical presentation, and the common “geriatric syndromes” including: immobility, falls/gait and balance problems, dizziness, incontinence, weight loss/failure to thrive/malnutrition, sleep disturbance,
dementia/delirium, osteoporosis, hearing and visual impairment, pressure ulcers.
39. Be able to use clinical reasoning to synthesize data into a prioritized differential diagnosis, working diagnosis, and plan.

6.48.6 Teaching and learning activities

i. Students will receive lectures and clinical correlation teaching on rounds. Weekly conferences will provide additional knowledge on medical subjects. The above list also is intended to help guide students’ reading. Students are strongly encouraged to learn about all of their patients’ past medical problems in addition to the acute problems to further enhance their medical knowledge.

ii. Each student will keep a log book of specific diseases seen and procedures done while on their internal medicine rotation.

iii. Students will be expected to give tutorials on assigned diseases/topics during the rotation.

6.48.7 Assessment methods

Log book of diseases and procedures; oral presentation of tutorials; written examination; oral final assessment; team evaluations based on observation; and assessment of the 4 required written case reports.

6.48.8 Reading list

i. Michael Swash and Michael Glynn, Hutchison’s clinical methods of Medicine,

ii. Nicki R. Colledge, BSc, FRCP(Ed), Brian R. Walker, BSc, MD, FRCP(Ed) and Stuart H. Ralston, MD, FRCP, FMedSci, FRSE. Davidson’s principles and practice of Medicine.

iii. Parveen Kumar, Michael L. Clark. Clinical Medicine, Elsevier, Conhagen.


6.49 Course title: Paediatrics (K8PE5949)

6.49.1 Course status: Core

6.49.2 Total credits: 13

6.49.3 Subject hours: 130

6.49.4 Course aims

To train a community-oriented doctor, competent enough to promote child health in a broad sense, capable of weighing priorities, and with the ability to adapt to fast changes in health care.

6.49.5 Course expected learning outcomes
The following three categories of broad goals for the clerkship are not meant to be limiting you to other goals that you may want to focus on but are intended to clearly outline what we expect for you to achieve by the end of the Pediatrics Clerkship. Herein you can review objectives linked to three main goals; 1) Competency, 2) Patient Care/Clinical Skills, and 3) Knowledge.

i. Competency
   a. Demonstrate commitment to excellence, honesty, respect for others, integrity, and altruism in patient care.
   b. Objectives
      i. Treat all patients, patient family members, staff, and colleagues with respect, which includes maintaining a professional demeanor in speech and dress
      ii. Strive for excellence
      iii. Place the care of your patients above competing interests
      iv. Practice informed consent with patients/patient families
      v. Work effectively as a part of the treatment team
   c. Learning Activity
      i. Professionalism should permeate all aspects of your performance and cannot really be taught in isolation. Important issues of professionalism include:
         1. Navigating the wards- your role in the team, working with ancillary providers, etc.
         2. Approaching medical errors
         3. Palliative Care
         4. Communicating difficult news
   d. Evaluation
      i. Formative and summative feedback will be obtained from the ward team. The clerkship director will evaluate submissions and your interactions with them as well (including timeliness, attitude, initiative). How you treat staff, nurses, and all members of the health care team can play a role in this evaluation, though the clerkship does not specifically seek out formal feedback from these individuals.

ii. Patient Care
   a. Evaluate and manage children hospitalized with acute illness and in clinic settings.
   b. History Taking
      i. Objective
         1. Obtain and record a patient’s history and chief complaint (from the parent/guardian and patient as able/appropriate) in a logical, organized, and thorough manner. Demonstrate effective verbal skills, including appropriate use of open- and closed-ended questions, repetition, facilitation, explanation, summation, and interpretation.
2. In addition to standard medical history, students to include detailed:
   a. Neonatal history- including birth weight; approximate gestational age; maternal complications, such as extent of prenatal care, infections, exposure to drugs, alcohol or medications and problems in the newborn period, such as prematurity, respiratory distress, jaundice and infections.
   b. Immunizations
   c. Development
   d. Diet- noting the importance of assessing the amount, type, and method of infant feeding.
   e. Family History-including number and ages of siblings; consanguinity, known genetic disorders, early childhood deaths, cardiovascular disease, depression and alcohol abuse.
   f. Social History- including assessment of the home environment, school and peer relationships.

   ii. Learning Activity
      1. Interview, examine, and write a history and physical (H&P) for each new patient assigned to you.

   iii. Evaluation
      1. The interns, residents and specialists will give ongoing feedback. The student may turn in a formal written case report or H&P to the clerkship director for further assessment.

c. Physical Exam
   i. Objective
      1. Perform and record a complete physical examination in a logical, organized, accurate and thorough manner for new patients and an appropriately focused physical examination for follow up patients. Students will explain the purpose of these exams to the parent/guardian (and patient as applicable) and obtain consent prior to doing so. Specific physical examination skill we expect students to master by the end of the pediatric clerkship includes:
         a. Ability to establish rapport with patient and adapting the exam accordingly.
         b. Developmental Assessment. Evaluate for age appropriate milestones. In adolescents check Tanner staging.
         c. Appearance. Recognize signs of acute illness in an infant and child by evaluating skin color, respiration, hydration, mental status, cry and social
interaction; and recognize the importance of observing the psychosocial condition of the child, including behavior, development, body habitus (height, weight, body fat), relationship to parents and examiners, and general condition.

d. **Vital signs.** Measure heart rate, respiratory rate, blood pressure and temperature in an infant and child, demonstrating knowledge of the appropriate sized blood pressure cuff, interval to count respirations, and normal variation in temperature depending on the route of measurement (oral, rectal, axillary or tympanic); understand that normal values of heart rate, respiratory rate and blood pressure change with age.

e. **Measurements.** Accurately measure height, weight and head circumference; plot the data on an appropriate growth chart; understand the normal relationships between height, weight and head circumference; and recognize the usefulness of longitudinal data.

f. **HEENT exam.** Be able to identify the anterior and posterior fontanels and assess them for fullness or turgor; recognize the need for careful observation of the head size and shape, symmetry, facial features, ear size and hair whole as part of the examination for dysmorphic features; recognize the red reflex and strabismus; assess hydration of the mucous membranes; and examine the tympanic membrane using pneumatic otoscopy.

g. **Neck exam.** Be able to palpate lymph nodes, know what anatomic areas they drain; know that lymph nodes are more prominent during childhood; and recognize and demonstrate maneuvers that test for nuchal rigidity.

h. **Cardiovascular exam.** Be able to identify normal heart sounds, extra heart sounds (S3, S4, pericardial friction rubs), and systolic vs. diastolic murmurs.

i. **Pulmonary exam.** Be able to recognize how the rate and pattern of respirations change with age, and that abdominal respirations are normal in infants; observe the rate and effort of breathing as a measure of respiratory distress; recognize stridor, wheezing and rales and be able to distinguish between inspiratory and expiratory obstruction;
and interpret less serious respiratory sounds such as transmitted upper airway sounds.

j. **Abdominal exam.** Understand that the liver edge, spleen tip and kidneys may be palpable in the normal newborn; examine the umbilical cord for signs of infection; examine the abdomen for distention, tenderness, rebound and mass lesions in an infant or young child with lethargy, irritability or signs of acute illness; and be able to do a rectal examination and recognize when it is indicated.

k. **Neurology exam.** Be able to elicit primitive reflexes; assess tone, gait, strength and reflexes, recognizing the importance of symmetry; assess developmental milestones; and recognize that much of the neurologic examination of infants and children is accomplished through observation alone.

l. **Extremities and Back exam.** Be able to examine the hips of a newborn for dysplasia; recognize arthritis; and evaluate gait and limp. Know how to test for scoliosis.

m. **Genital exam.** Be able to identify the appearance of normal male and female genitalia in the newborn; recognize abnormalities, including cryptorchidism, hypospadias, testicular mass in the male; be able to examine the external genitalia of a female patient, and recognize the need for privacy at all ages.

n. **Skin exam.** Be able to recognize jaundice, petechiae, purpura, birth marks (such as nevus flammeus and Mongolian spots); vesicles, urticaria and rashes, such as erythema toxicum, impetigo, eczema, diaper dermatitis and viral exanthems; recognize common skin findings associated with child abuse; and assess skin turgor.

o. **Procedures.** Be able to describe and/or perform techniques for the following procedures- blood transfusion, bone marrow aspiration, capillary blood collection, cut down, endotracheal intubation, exchange transfusion (assist), gastric aspiration, intravenous fluid administration, lumbar puncture, peritoneal paracentesis, pericardiocentesis (assist), rectal temperature, restraint and positioning, urine collection (suprapubic percutaneous bladder aspiration, clean
catch, bladder catheterization), thoracocentesis, umbilical vessel catheterization, and venipuncture.

ii. Learning Activity
   1. Each student should be observed performing a complete physical examination and/or targeted portions to the exam with given feedback and opportunities for questions.
   2. Students will observe and assist with basic procedures.
   3. Physical findings on rounds will be offered to supplement students’ skills.
   4. Students will record procedures in their log book.

iii. Evaluation
   1. Interns, Residents and Specialists will observe students perform physical examinations in the course of patient care and these observations will inform the summative evaluation. Physical exam skills will also be tested in the final oral assessment. Log book will be reviewed.

4. Lab Interpretation

   i. Objective
      1. Obtain and understand important supplemental information, including CBC/FBP, blood smear, blood culture, serum chemistries, hepatic function panel, arterial blood gas, coagulation studies, newborn screening (bilirubin level, phenylketonuria, thyroid function, genetic testing), ECG, chest x-ray, STI testing, and urinalysis.

   ii. Learning Activity
      1. **Lab Studies.** Students will have lectures on and clinical experience in different areas of the clinical lab where students will learn appropriate use and interpretation of laboratory tests.
      2. **ECG Studies.** Students will have lectures on and clinical experience in the systematic approach to reading ECGs (beginning with rate, rhythm, axis, intervals progressing through heart block and ventricular and atrial arrhythmias).
      3. **Radiologic Studies.** Students will have lectures on and clinical experience in the basics of reading plain radiographs (chest, abdomen) beginning with normal studies and progressing through abnormal studies (pulmonary infiltrates, edema, pneumothorax, effusion, etc) and introduction to CT scanning, ultrasonography, and magnetic resonance imaging. Images are presented both in a disease-specific orientation as well as in a problem-based setting (i.e. how to choose and interpret radiographic studies for the patient with hematuria; abdominal pain, etc).
iii. Evaluation
   1. Students’ understanding of these tests will be assessed on rounds and through final written examination.

e. Clinical Reasoning
   i. Objective
      1. Formulate and document an assessment that includes the relevant differential diagnoses based on data gathered to guide initial diagnostic evaluation and disease management.
   ii. Learning Activity
      1. This will be discussed on daily rounds with the teams.
   iii. Evaluation
      1. This is assessed by the pediatric team on daily rounds and review of progress notes/H&Ps. Full development of this skill is a crucial component and goal of this clerkship.

f. Presentation Skills: Initial
   i. Objective
      1. Orally present a new patient’s history and physical examination clearly and with appropriate detail.
   ii. Learning Activity
      1. This is typically performed daily during morning report and feedback is given at that time, though this can occur as part of rounds.
   iii. Evaluation
      1. Pediatric team members who directly observe this will provide formative and summative feedback. Presentation skills will also be tested at the final oral assessment.

g. Presentation Skills: Follow-up
   i. Objective
      1. Orally present a follow-up patient’s case (including those with more than one problem) in a focused manner, including diagnostic and therapeutic plans.
   ii. Learning Activity
      1. This is practiced on daily rounds with the whole team present.
   iii. Evaluation
      1. Pediatric team members who directly observe this will provide formative and summative feedback.

h. Written Skills
   i. Objective
      1. Write coherent, clear progress notes documenting working diagnosis and status of diagnostic evaluation and therapeutic plans.
   ii. Learning Activity
1. Students practice this by writing daily progress notes on all their patients. These should be on the chart in a timely manner (ideally before noon) if feedback is to be given.

iii. Evaluation
1. Pediatric team members will evaluate progress notes and provide feedback.

i. **Patient and Family Counseling**

   i. **Objective**
   1. Effectively communicate with the family and patient (as appropriate) the physical findings, diagnosis, and treatment plan.
   2. Educate on preventative and safety measures.

   ii. **Learning Activity**
   1. This is practiced on initial evaluation of new patients and throughout diagnosis/treatment on rounds and always observed by a member of the pediatric team to ensure accurate information.

   iii. Evaluation
   1. Pediatric team members will evaluate and provide feedback.

iii. **Knowledge**

   a. Demonstrate understanding of the clinical presentation, basic physiology, key physical findings, evaluation and management of diseases frequently encountered in an inpatient and outpatient pediatric setting.

   b. **Objectives**

      i. Review the pathophysiology and be able to recognize and initiate evaluation and management plans for the following disease states/clinical presentations:

         1. **Well Child Care**

            a. Immunization schedule and major contraindications and complications of the various vaccines
            b. Necessary health maintenance procedures at various ages
            c. Significance of deviations in recorded growth from the standard growth curves and in development.
            d. Discuss common parental concerns
            e. Create a health and safety plan for the child and family

         2. **Assessment of Behavior and Development**

            a. Recognize the importance in clinical care of the following developmental issues:

               i. Infant – changes in reflexes, tone and posture; cephalocaudal progression of
motor milestones during the first year; stranger anxiety.

ii. Toddler / child – separation and autonomy in two to three-year olds; concept of school readiness.

iii. Adolescent – sequence of physical maturation and sexual maturity rating (Tanner); stages of emotional development.

b. Identify the early signs of mental retardation and cerebral palsy.

c. Summarize the main developmental changes of infancy, childhood and adolescence that are important to discuss with parents and patients. Identify behavioral and psychosocial problems during the visit.

d. Discuss the typical presentation of common behavioral problems at various ages and developmental stages
   i. Infant: sleep problems
   ii. Toddler/preschooler: temper tantrums, toilet training, eating problems
   iii. Elementary school age: enuresis, attention deficit disorder
   iv. Middle school/high school: conduct disorders, eating disorders, risk taking behaviors

e. Recognize that somatic complaints may represent underlying psychosocial problems (e.g. recurrent abdominal pain or headaches, chronic fatigue, and neurological complaints).

f. Recognize the various situations where pathology in the family contributes to childhood behavior problems (e.g. alcoholism, domestic violence, depression).

g. Distinguish between age-appropriate “normative” behavior and significantly “deviant” behavior or psychiatric illness.

3. Assessment of Growth
   a. Recognize and define short stature.
   b. Meaning of primary and secondary growth disturbances.
   d. Evaluation of children with precocious or delayed puberty, including menarche.
e. Perform and describe the Tanner sexual maturity rating.

4. Assessment of Nutrition
   a. State the calories/kg per day needed for normal growth in infants and small children.
   b. Identify the major differences between human milk and the various commonly available infant formulas.
   c. Recognize factors that contribute to the development of failure to thrive and obesity in childhood.
   d. Recognize that chronically ill children may have special nutritional needs requiring unique diets, supplements, or feeding methods, and identify ways that these special diets can be an essential aspect of patient treatment.
   e. Advise families about the dietary prevention and treatment of common pediatric mineral (e.g. iron, fluoride, calcium) and vitamin deficiencies.
   f. Obtain routine diet histories on infants that include:
      i. Type of feeding (breast vs. formula) with amount and frequency
      ii. Types and approximate amounts of solids
      iii. Diet supplements given (vitamins, fluoride, iron).

5. Care of the Febrile Child
   a. Describe historical information that is important in the evaluation of a febrile child.
   b. Physical exam findings that are important in the evaluation of a febrile child.
   c. Clinical conditions that may be potentially life threatening in a febrile child and know how to differentiate them from other less threatening conditions.
   d. Provide indications for the symptomatic management of fever.

6. Assessment of the Child with Severe Infection
   a. Recognize the signs and symptoms of sepsis and meningitis.
   b. List the primary organisms associated with sepsis and meningitis during the neonatal and the post neonatal period.
   c. Recognize the signs and symptoms of other severe infections during childhood including septic
arthritis, respiratory infections, and urinary tract
d. Recognize the signs and symptoms associated with
streptococcal, staphylococcal, mycoplasmal, chlamydial, and tuberculosis infections.
e. Recognize the signs and symptoms associated with
the major viral pathogens of childhood including
adenovirus, enterovirus, parvovirus, herpes virus,
cytomegalovirus, varicella zoster virus, influenza
viruses, rubeola, rubella, mumps, Epstein-Barr
virus, human herpes virus 6 (roseola), parainfluenza, and respiratory syncytial viruses.
f. Recognize the signs and symptoms associated with
pelvic inflammatory disease and other sexually
transmitted diseases in adolescents and be able to
manage them.
g. Recognize the history and physical findings that
would cause you to suspect an underlying
immunodeficiency.

7. Care of the Child with Acute Respiratory Symptoms
   a. Recognize the signs and symptoms associated with
tuberculosis, croup, whooping cough and
epiglottitis.
b. Discuss the common causes of pneumonia in
   normal infants and children as well as those that
   occur in the immunocompromised child.
c. Recognize the signs and symptoms of common
   respiratory conditions, e.g., upper respiratory
   infection/common cold, rhinitis, otitis media,
croup, epiglottitis, bronchiolitis and asthma, and
   know the approach to treatment of these problems.
d. Identify symptoms and physical findings that
   suggest allergic disease.

8. Assessment of the Child with Cardiovascular Disease
   a. Describe the clinical features that point to the
   presence of a congenital heart malformation.
b. Understand the anatomy and physiology of
   common congenital cardiac defects.
c. Understand the etiology, symptoms and diagnosis
   of acute rheumatic fever.
d. Describe the criteria for establishing a diagnosis of
   hypertension in a child.
e. List the causes of hypertension during infancy and
   childhood.
9. Assessment of the Child with Suspected Endocrine Disease
   a. Recognize and discuss the symptoms, diagnosis, and management of type I and II diabetes, thyroid disease, pituitary disease, and congenital adrenal disorders in children.
   b. Know the laboratory abnormalities associated with each.
10. Assessment of the Child with Acute Abdominal Pain and/or Diarrhea
    a. Describe the initial information necessary to categorize the severity of the problem and the urgency of response.
    b. List an age appropriate differential diagnosis that reflects the degree of acuity.
    c. Describe the criteria for establishing a diagnosis of diarrhea and common diagnoses (gastroenteritis, cow’s milk intolerance, inflammatory bowel disease, parasitic infections, etc).
    d. Explain the major risks associated with diarrhea and identify the signs and symptoms that indicate high risk to the patient.
    e. Select laboratory tests that complement patient management.
11. Assessment of the Child with Suspected Genito-Urinary System Disease
    a. Identify clinical features that suggest renal or urinary tract disease.
    b. Relate historical, physical, and laboratory findings to common renal pathology, including the nephrotic syndrome and glomerulonephritis.
    c. Recognize clinical situations that mandate urgent intervention.
    d. Develop an appropriate management plan for common renal or urinary system problems.
    e. Recognize the clinical signs and symptoms of sexually transmitted disease among males and females.
    f. Be able to differentiate normal from abnormal findings on a pelvic exam.
    g. Identify clinical features of primary nocturnal enuresis and alternative differential (diabetes, UTI, nocturnal epilepsy).
h. Develop a differential diagnosis for abdominal masses (Wilms tumor, neuroblastoma, lymphoma, teratoma, polycystic kidney).

12. Assessment of the Child with a Suspected Neurologic Disorder
   a. Describe the features of the history and physical examination important to the evaluation of a child with a nervous system complaint.
   b. Describe the common causes of altered consciousness, weakness, and ataxia in children.
   c. Describe the clinical features obtained from the history and physical examination that indicate the need for immediate intervention or early consultation for a neurological condition.
   d. Describe the different types of seizure disorders in children.
   e. Describe the symptoms of cerebral malaria.

13. Assessment of the Child with a Fluid and/or Electrolyte Disorder
   a. Describe the physiologic processes that maintain fluid and electrolyte homeostasis.
   b. Identify the clinical signs and symptoms that suggest abnormalities of fluid and electrolyte balance.
   c. Select the laboratory procedures appropriate to clarify the clinical findings.
   d. Recognize clinical situations that mandate urgent intervention.
   e. Apply physiologic principles to the development of a fluid and/or electrolyte management plan.
   f. Describe a monitoring plan for assessing the efficacy of treatment plan.

14. Assessment of the Child with a Suspected Hematologic / Oncologic Disorder
   a. Describe the findings from the history, physical exam and blood count that suggest a hematologic or malignant disorder.
   b. Describe the laboratory findings associated with various types of anaemia.
   c. Recognize the historical, physical and laboratory findings associated with a bleeding disorder.
   d. Select procedures that assist in the diagnosis of a malignancy.
   e. Describe a monitoring plan for assessing the efficacy of treatment plan.
15. Assessment of the Child with Suspected Acute Poisoning
   a. Describe the history and physical examination findings in common childhood poisonings.
   b. Describe management measures essential to sustaining a child during a diagnostic evaluation for acute poisoning.

16. Common Pediatric Surgical Presentations (Identify presenting symptoms)
   a. Genitourinary- Undescended testicles, phimosis, torsion of testicle
   b. Gastrointestinal- inguinal hernia, intussusception, hypertrophic pyloric stenosis
   c. Lymphatic- suppurative lymphadenitis

17. Care of the Child with an Abusive Home Situation or an Emotional Disorder
   a. Discuss the clinical findings associated with psychosocial deprivation and/or physical abuse.
   b. Recognize the historical information and clinical signs that may indicate an abusive home situation.
   c. Discuss common behavioral problems including attention deficit-hyperactivity disorder, school phobias, illicit drug use, drinking alcohol, smoking, and adolescent sexual activity that may occur among children from an abusive home situation.

18. Care for the Child in Pain or with a Terminal Illness
   a. Prescribe age appropriate and situation appropriate medications for an infant or child experiencing pain.
   b. Counsel families on the common stages of grief associated with the impending or accomplished death of an infant or child.

19. General Care of the Newborn
   a. Recognize factors in the maternal history that may adversely affect the fetus or newborn.
   b. Identify characteristics of a normal newborn physical examination and its acceptable variations.
   c. Identify preventive and screening practices used in the newborn period.
   d. Recommend an appropriate diet for a newborn and know the underlying basis for their commendation.
   e. Provide anticipatory guidance to parents for the period from birth to 2 months of age.
   f. Discuss the changes in cardiovascular and respiratory systems physiology that occur at birth.
20. Common Problems Encountered in the Newborn
   a. Develop a differential diagnosis for jaundice occurring in the newborn period.
   b. Discuss the common causes of respiratory distress encountered in the newborn period.
   c. Discuss the possible causes of cyanosis in the newborn period.
   d. Identify the possible causes of vomiting in the newborn period.
   e. Recognize the causes of hypoglycemia in the newborn period.
   f. Recognize the signs and symptoms of sepsis in the newborn and discuss the common causes of neonatal infection and the approach to therapy.
   g. Recognize the signs and symptoms of neonatal asphyxia and list the steps required for resuscitation.

21. Congenital Malformations and Genetics
   a. Discuss physical exam findings, and the clinical implications they are from, associated with the diagnosis of common:
      i. Chromosomal abnormalities (e.g. Trisomy 21).
      ii. Sex chromosome abnormalities (e.g. Turner’s syndrome, Klinefelter’s syndrome, Fragile X syndrome).
      iii. Other genetic disorders (e.g. Cystic Fibrosis, Sickle Cell Disease).
      iv. Congenital malformations (e.g. spina bifida, cleft lip and palate, hypospadias, etc).
   b. Identify prenatal diagnostic techniques and the accepted indications for their use, e.g. alpha-fetoprotein, amniocentesis.
   c. Discuss the effects of commonly recognized teratogenic agents such as alcohol, hydantoin, maternal tobacco smoking and illicit drug use
      ii. Be able to use clinical reasoning to synthesize data into a prioritized differential diagnosis, working diagnosis, and plan.

6.49.6 Teaching and learning activities

1. Students will receive lectures and clinical correlation teaching on rounds. Weekly conferences will provide additional knowledge on subjects. The above list also is intended to help guide students’ reading. Students are strongly
encouraged to learn about all of their patients’ past medical problems in addition to the acute problems to further enhance their knowledge.

2. Each student will keep a log book of specific diseases seen and procedures done while on their paediatrics rotation.

3. The student will rotate in the 3 different paediatrics wards.

4. The student will participate in the ward rounds, outpatient clinics, lectures, tutorials and demonstration.

5. The student will be allocated 10 beds and will have to present his/her plans for his/her patients explicitly during rounds. He/she will be allowed to clerk directly into the patient’s file which will be checked by at least an intern (including the authorization for investigation and treatment proposals).

6. It will be the duty of the student to take histories, clinical examination including daily entries of management information in the case notes of all the patients occupying those beds.

7. He/she will be expected to know and understand all details regarding his/her patients. The student should also be well informed regarding the other patients in his/her ward and cases of special interest in the other wards.

8. The student will keep a record of all clinical experiences in the departmental log book and get all observations countersigned appropriately.

**6.49.7 Assessment methods**

Log book of diseases and procedures; written final examination; oral final assessment; team evaluations based on observation.

**6.49.8 Reading list**

i. Swash M. Hutchison’s Clinical Methods. W.B. Saunders


iii. Behrmann RE, Kliegman RM, Arvin AM: Nelson Textbook of Paediatrics, W.B. Saunders

iv. Management of the child with a serious infection or severe malnutrition. Guidelines for care at the first-referral level in developing countries. WHO; 2000,

v. Marshall Klaus. Care of the at risk Neonate

**6.50 Course title: Surgery (K8SU5950)**

**6.50.1 Course status: Core**
6.50.2 Total credits: 13  
6.50.3 Subject hours: 130  
6.50.4 Course aims

To enable the Student to acquire the principles of the practice of Surgery which will include the theoretical knowledge, basic skills and ethics and to graduate as a general practitioner with the ability to make surgical decisions for the patients.

6.50.5 Course expected learning outcomes

The following three categories of broad goals for the clerkship are not meant to be limiting you to other goals that you may want to focus on but are intended to clearly outline what we expect for you to achieve by the end of the Surgery Clerkship. Herein you can review objectives linked to three main goals; 1) Competency 2) Patient Care/Clinical Skills, and 3) Knowledge.

i. Competency

1. Demonstrate commitment to excellence, honesty, respect for others, integrity, and altruism in patient care.
2. Objectives
   a. Treat all patients, patient family members, staff, and colleagues with respect, which includes maintaining a professional demeanor in speech and dress
   b. Strive for excellence
   c. Place the care of your patients above competing interests
   d. Practice informed consent with patients/patient families
   e. Work effectively as a part of the treatment team
3. Learning Activity
   a. Professionalism should permeate all aspects of your performance and cannot really be taught in isolation. Important issues of professionalism include:
      i. Navigating the wards- your role in the team, working with ancillary providers, etc.
      ii. Approaching medical errors
      iii. Palliative Care
      iv. Communicating difficult news
4. Evaluation
   a. Formative and summative feedback will be obtained from the ward team. The clerkship director will evaluate submissions and your interactions with them as well (including timeliness, attitude, initiative). How you treat staff, nurses, and all members of the health care team can play a role in this evaluation, though the clerkship does not specifically seek out formal feedback from these individuals.
ii. Patient Care

a. Evaluate and manage patients hospitalized with acute illness requiring surgical intervention.

b. History Taking
   i. Objective
      1. Obtain and record a patient’s history and chief complaint in a logical, organized, and thorough manner. Demonstrate effective verbal skills, including appropriate use of open- and closed-ended questions, repetition, facilitation, explanation, summation, and interpretation.
      2. In addition to standard medical history, students to include detailed:
         a. Surgical history
         b. Anesthesia history

e. Learning Activity
   1. Interview, examine, and write a history and physical (H&P) for each new patient assigned to you, in addition to 4 summative written Case Reports for patients followed from admission to discharge (include H&P, problem list, differential diagnosis, additional investigation labs, imaging, surgical procedure, proposed case management and discharge plan).

iii. Evaluation
   1. Case reports are submitted to the clerkship director who is primarily responsible for evaluating these. The interns and residents will give ongoing feedback as well. History taking skills will also be evaluated during daily rounds and a final oral assessment at the end of the rotation.

c. Physical Exam
   i. Objective
      1. Perform and record a complete physical examination in a logical, organized, accurate and thorough manner for new patients and an appropriately focused physical examination for follow up patients. Students will explain the purpose of these exams to the patient and obtain patient consent prior to doing so. Specific physical examination skill we expect students to master by the end of the surgery clerkship includes:
         a. Ability to establish rapport with patient.
         b. Appearance. Recognize signs of acute illness by evaluating skin color, respiration, hydration, mental status, interaction.
         c. Vital signs. Measure heart rate, respiratory rate, blood pressure and temperature accurately,
d. **HEENT exam.** Be able to identify abnormalities of the oral cavity, throat, nasal passage, gross eye/pupils, and head.

e. **Cardiovascular exam.** Be able to identify normal heart sounds, extra heart sounds (S3, S4, pericardial friction rubs), systolic vs. diastolic murmurs.

f. **Pulmonary exam.** Be able to identify normal breath sounds, pulmonary crackles and wheezes.

g. **Abdominal exam.** Be able to identify internal organs and abnormalities (splenomegaly, hepatomegaly, cholecystitis, appendicitis, masses). Be able to recognize and describe stigmata of liver disease including findings consistent with ascites, spider angiomata, palmar erythema, jaundice/scleral icterus, hepatomegaly. Be able to do a rectal examination and recognize when it is indicated. Be able to identify an acute surgical abdomen.

h. **Endocrine exam.** Be able to identify abnormalities of the thyroid and physical signs of thyroid disease and diabetes.

i. **Neurology exam.** Be able to test all cranial nerves, muscle strength/tone, reflexes, sensation, gait, and coordination and recognize abnormalities.

j. **Genitourinary exam.** Be able to identify abnormalities of the genitals and exam findings consistent with urinary tract abnormalities (flank pain, bladder distention).

k. **Skin exam.** Be able to identify abnormalities of the skin including rashes, deformities, burns and infections.

l. **Surgical procedures.** Be able to identify internal organs, vessels, and other structures during surgery. Be able to perform the following procedures: aseptic technique, passing NIG tube under supervision, urethral catheter placement, performing ET intubation under supervision, retractors, IV placement, simple skin suturing, chest tube insertion, venipuncture, wound care/dressing, abdominal incision, obtaining informed consent (thus knowing risks/benefits of the specific surgical procedure), suture and staple.
removal, two-handed and instrument surgical knot ties.

ii. Learning Activity
   1. Each student should be observed performing a complete physical examination and/or targeted portions to the exam along with surgical skills with given feedback and opportunities for questions.
   2. Students will watch and assist with basic procedures/surgeries.
   3. Physical findings on rounds and in theatre will be offered to supplement students’ skills.
   4. Students will record procedures in their log book.

iii. Evaluation
   1. Interns, Residents and Surgeons will observe students perform physical examinations in the course of patient care and these observations will inform the summative evaluation. Physical exam skills will also be tested in the final oral assessment. Log book will be reviewed.

d. Lab Interpretation
   i. Objective
      1. Obtain and understand important supplemental information, including CBC/FBP, blood smear, blood type and screen, serum chemistries, arterial blood gas, coagulation studies, ECG, chest x-ray, ultrasonography, STI testing and urinalysis.

   ii. Learning Activity
      1. Lab Studies. Students will have lectures on and clinical experience in different areas of the clinical lab where students will learn appropriate use and interpretation of laboratory tests.
      2. ECG Studies. Students will have lectures on and clinical experience in the systematic approach to reading ECGs (beginning with rate, rhythm, axis, intervals progressing through heart block and ventricular and atrial arrhythmias).
      3. Radiologic Studies. Students will have lectures on and clinical experience in the basics of reading plain radiographs (chest, abdomen, bones, skull, spine) beginning with normal studies and progressing through abnormal studies (pulmonary infiltrates, edema, pneumothorax, effusion, fractures, signs of obstruction, barium tests, etc) and introduction to CT scanning, ultrasonography, and magnetic resonance imaging. Images are presented both in a disease-specific orientation as well as in a problem-based setting (i.e. how to choose and
interpret radiographic studies for the patient with hematuria; headache; abdominal pain, etc).

iii. Evaluation
   1. Students’ understanding of these tests will be assessed on rounds and through final written examination.

e. Clinical Reasoning
   i. Objective
      1. Formulate and document an assessment that includes the relevant differential diagnoses based on data gathered to guide initial diagnostic evaluation and disease management.
   ii. Learning Activity
      1. This will be discussed on daily rounds with the team and during surgical procedures.
   iii. Evaluation
      1. This is assessed by the team on daily rounds, in surgery and review of progress notes. This is also assessed formally in the student’s written case reports. Full development of this skill is a crucial component and goal of this clerkship.

f. Presentation Skills: Initial
   i. Objective
      1. Orally present a new patient’s history and physical examination clearly and with appropriate detail.
   ii. Learning Activity
      1. This is typically performed with the intern, resident or surgeon one-on-one and feedback is given at that time, though this can occur as part of rounds. Students are to present at least 4 clinical cases.
   iii. Evaluation
      1. Surgical team members who directly observe this will provide formative and summative feedback. This will be considered in the student’s clinical assessment.

g. Presentation Skills: Follow-up
   i. Objective
      1. Orally present a follow-up patient’s case (including those with more than one problem) in a focused manner, including diagnostic and therapeutic plans.
   ii. Learning Activity
      1. This is practiced on daily rounds with the whole team present.
   iii. Evaluation
      1. Surgical team members who directly observe this will provide formative and summative feedback.

h. Written Skills
i. Objective
   1. Write coherent, clear progress notes documenting working diagnosis and status of diagnostic evaluation and therapeutic plans.

ii. Learning Activity
   1. Students practice this by writing daily progress notes on all their patients, in addition to required case reports. These should be on the chart in a timely manner (ideally before noon) if feedback is to be given.

iii. Evaluation
   1. Medical team members will evaluate progress notes and provide feedback. This will also be evaluated in the 4 formal case reports.

i. Patient and Family Counseling

i. Objective
   1. Effectively communicate with the patient (and family if given consent by the patient) their physical findings, diagnosis, and treatment plan.
   2. Educate on preventative and safety measures.

ii. Learning Activity
   1. This is practiced on initial evaluation of new patients and throughout diagnosis/treatment on rounds and always observed by a member of the surgical team to ensure accurate information.

iii. Evaluation
   1. Surgical team members will evaluate and provide feedback.

iii. Knowledge

a. Demonstrate understanding of the clinical presentation, basic physiology, key physical findings, evaluation and management of diseases frequently encountered in an inpatient and outpatient surgical setting.

b. Objectives
   i. Review the pathophysiology and be able to recognize and initiate evaluation and management plans for the following disease states/clinical presentations:
      1. Abdominal Masses
         a. Causes and Diagnosis of Hepatomegaly
         b. Causes and treatment of Splenomegaly
         c. Differential diagnosis of pancreatic mass
         d. Common retroperitoneal masses
         e. Evaluation and Management of Abdominal Aortic Aneurysms
      2. Acute Abdominal Pain
a. Discuss the significance of various maneuvers utilized in evaluating acute abdominal pain. *Examples: iliopsoas sign, Rovsing’s sign, obturator sign, Murphy’s sign, cough tenderness, heel tap, cervical motion tenderness.*

b. Know abdominal quadrant areas of presentations
c. Discuss common non-surgical presentations of acute abdominal pain *Examples: MI, pneumonia, pleuritis, hepatitis, gastroenteritis, mesenteric adenitis, sickle cell crisis, DKA, herpes zoster, nerve root compression.*

d. Upper:
   i. Cholecystitis, Cholelithiasis, Choledocholithiasis, Cholangitis
   ii. Pancreatitis
   iii. Peptic Ulcer Disease with and without perforation
   iv. Gastroesophageal reflux
   v. Gastritis/Duodenitis
   vi. Gastric Cancer
   vii. Splenomegaly/splenic rupture
   viii. Liver Abscess
   ix. Pancreatic Cancer
e. Mid:
   i. Appendicitis
   ii. Small Bowel Obstruction: incarcerated hernia, adhesions, tumor
   iii. Meckel’s Diverticulum
   iv. Mesenteric ischemia
f. Lower:
   i. Diverticular Disease
   ii. Inflammatory Bowel Disease
   iii. Entercolitis
   iv. Colon Ischemia
   v. Bowel Obstruction: volvulus, tumor, stricture
   vi. Hemorrhoid
   vii. Gynecologic etiologies: ectopic pregnancy, ovarian cysts, tuboovarian abscess, salpingitis, endometriosis
   viii. Genitourinary etiologies: UTI, pyelonephritis, urterolithiasis, testicular torsion

3. Gastrointestinal hemorrhage
   a. Medical vs. Surgical management of: peptic ulcer, variceal hemorrhage, Mallory-Weiss tear, gastric ulcer (benign vs. malignant), Meckel’s diverticulum,
intussusception, diverticulosis, ulcerative colitis, colon cancer, rectal cancer, hemorrhoids, AV malformation

4. Abdominal Wall & Groin Masses
   a. Hernia- direct/indirect, incarcerated/strangulated/reducible
   b. Adenopathy
   c. Muscular strain
   d. Desmoid tumor
   e. Neoplasm
   f. Rectus sheath hematoma

5. Jaundice
   a. Etiology: Prehepatic, intrahepatic (both non-obstructive) and posthepatic (obstructive), Painful vs. Non-painful, Benign vs. Malignant, Inflammatory vs. Non-inflammatory
   b. Cholecystitis, Choledocholithiasis, Cholangitis, Cholangiocarcinoma
   c. Hepatic abscess
   d. Pancreatic cancer
   e. Periampullary cancer
   f. Hepatic cancer
   g. Autoimmune hemolysis
   h. Hepatitis
   i. Hematobilia
   j. Periampullary duodenal diverticulum

6. Perianal
   a. Pain- benign, malignant, inflammatory
   b. Masses
   c. Discharge
   d. Hemorrhoids

7. Altered Neurological Status
   a. Cushing reflex in brain herniation
   b. Management of headache
      i. Intracranial hemorrhage
      ii. Brain tumors
      iii. Brain abscesses, intracranial infections
      iv. Draining of Subdural Hematomas
      v. VP shunt placement
   c. TIA, CVA
   d. Hydrocephalus
   e. Seizure disorders
   f. Opened/Closed Head Injury

8. Back Pain
   a. Radicular pain symptoms- Herniated disc
   b. Spondylosis/spondylolisthesis
c. Scoliosis
d. Osteoporosis and Degenerative disc disease
e. Primary and Metastatic tumors of the spine
f. Infectious: osteomyelitis, epidural and paraspinal abscess
g. Traumatic: musculoskeletal strain, vertebral fractures/dislocation leading to cord injury
h. Retroperitoneal sources: aortic aneurysm, GU sources, pancreatic disease

9. Breast Complaints
   a. Masses- benign vs. malignant
   b. Abscess
   c. Discharge
   d. Pain

10. Neck Masses
    a. Embryologic origin
    b. Inflammatory- cervical adenitis, tuberculous adenitis
    c. Neoplasm
    d. Thyroid disease

11. Chest Pain and Shortness of Breath
    a. Pneumothorax
    b. Hemothorax
    c. Pulmonary embolus
    d. Thoracic aortic dissection
    e. Esophageal rupture
    f. Gastroesophageal reflux
    g. Empyema
    h. Lesions
    i. Cancer
    j. Tuberculosis and surgical complication

12. Lung Nodule
    a. Cancer- primary vs. metastases
    b. Infectious

13. Vascular
    a. Abdominal Aortic Aneurysm
    b. Transient Ischemic Attack
    c. Carotid Bruits
    d. Acute Extremity (ischemia/necrosis/gangrene)
    e. Embolic vs. Thrombotic Occlusions
    f. Ischemia
    g. Atherosclerosis
    h. Claudication

14. ENT
    a. Ear pain- infection, trauma, neoplasm, inflammation, vascular
b. Hearing Loss
c. Tinnitus
d. Epistaxis
e. Chronic rhinitis/rhinorrhea
f. Tonsillectomy
g. Salivary gland mass
h. Oral cavity pain- inflammation, infection, neoplasm
i. Difficulty swallowing
   i. Motility disorder- neurologic or motor
   ii. Extrinsic obstruction/compression
   iii. Intrinsic obstruction/compression- neoplasm, inflammation, foreign body, infection

15. Urology
   a. Scrotal pain/swelling
      i. Testicular vs. Extratesticular
      ii. Benign vs. Malignant
      iii. Emergent vs. Non-emergent
   b. Hematuria
c. Cancer
d. Renal and ureteral calculi
e. Incontinence
f. Prostate cancer/elevated PSA
g. Prostate nodule

16. Pediatrics
   a. Bowel Obstruction
   b. Tumors/Masses
c. Undescended testicles
d. Hernias
e. Congenital anomalies
f. Trauma
g. Chronic otitis media

17. Fluid & Electrolytes: Shock & Acid/base

18. Laceration/Cellulitis/Abscess/Wound Care

19. Nutrition in surgery

20. HIV and other transmissible diseases in surgery

21. Skin Conditions
   a. Burn injury
   b. Skin growths
      i. Benign- cysts, papillomas, warts, corns, horns, neurofibromas, cylindroma, nevi
      ii. Premalignant conditions- leukoplakia, Bowens disease, Pagets disease of the nipple
      iii. Malignant tumors- basal cell carcinoma, squamous cell carcinoma, melanoma

22. Trauma
a. Evaluation- ABC’s, types of injury and appropriate screening
b. Classes of hemorrhagic shock
c. Fluid resuscitation

23. Perioperative Complications

a. Preoperative assessment- risks (pulmonary, cardiovascular, renal, metabolic); anesthesia (age, urgency of intervention); history, physical and laboratory findings
b. Perioperative assessment- informed consent, monitoring techniques, fluid/electrolyte balance, risk of bleeding, risk of alcohol withdrawal syndrome
c. Postoperative assessment- surgical wound healing/care, level of monitoring
d. Postoperative Complications
   i. Fever
   ii. Sepsis/Septic shock
   iii. Wound infection or dehiscence
   iv. Hematoma and seroma
   v. Incisional hernia
   vi. Respiratory distress/insufficiency- atelectasis, pneumonia, aspiration, pulmonary edema, ARDS, pulmonary embolism, fat embolism
   vii. Oliguria
   viii. Hypotension- hypovolemia, sepsis, shock, medications
   ix. Chest pain, arrhythmias
   x. Abnormal bleeding- surgical site, gastroduodenal (stress ulcerations)
   xi. Nausea, vomiting, abdominal distension-paralytic ileus, acute gastric dilatation, obstruction, fecal impaction
   xii. Metabolic disorders- hyperglycemia, adrenal insufficiency, thyroid storm
   xiii. Alteration in cognitive function- hypoxia, perioperative stroke, medication effects, metabolic/electrolyte abnormalities, delirium, convulsions

24. Be able to use clinical reasoning to synthesize data into a prioritized differential diagnosis, working diagnosis, and plan.

6.50.6 Teaching and learning activities
i. Students will receive lectures and clinical correlation teaching on rounds and in surgery. Weekly conferences will provide additional knowledge on medical subjects. The above list also is intended to help guide students’ reading. Students are strongly encouraged to learn about all of their patients’ past medical problems in addition to the acute problems to further enhance their medical/surgical knowledge.

ii. Each student will keep a log book of specific diseases seen and procedures done while on their surgery rotation.

iii. Students will be expected to give tutorials on assigned diseases/topics during the rotation.

6.50.7 Assessment methods

Log book of diseases and procedures; oral presentation of tutorials; written examination; oral final assessment; team evaluations based on observation; and assessment of the 4 required written case reports.

6.50.8 Reading list

i. Clinical Surgery, Das and Das.

ii. Clinical Surgery, by Michael M. Henry

iii. Principles and practice of surgery, by Garden

iv. Hamilton Bailey’s Physical Signs in Clinical Surgery


vi. J.L. Eshleman. A textbook of Urology and Nephrology in Africa

vii. Clinical Paediatric surgery: by Jones

6.51 Course title: Obstetrics and Gynaecology (K8OB5951)

6.51.1 Course status: Core

6.51.2 Total credits: 13

6.51.3 Subject hours: 130

6.51.4 Course aims

This course intends to impart competency in full range of basic obstetric and gynaecology conditions. In particular, knowledge, skills and attitude toward managing obstetric and gynaecological conditions will be ascertained in a comprehensive manner in this discipline. Students will be able to gain knowledge, skill and attitude in managing diseases and conditions through attendance and participating in clinical rotations, outpatients clinical rotation, assisting obstetrics and gynaecological surgeries and procedures.
MD students will also have ample opportunity to scrub in for surgical cases, work closely with Ob/Gyn staff and residents in both the outpatient and inpatient settings, and experience hands-on training.

6.51.5 Course expected learning outcomes

The following three categories of broad goals for the clerkship are not meant to be limiting you to other goals that you may want to focus on but are intended to clearly outline what we expect for you to achieve by the end of obstetric and gynaecology clerkship. Here in you can review objectives linked to three main goals: 1) Competency 2) Patient care/clinical skills, 3) Knowledge

1. Competency
   o Demonstrate commitment to excellence, honesty, respect for others, integrity, and altruism in patient care.
   o Objectives
     ▪ Treat all patients, patient family members, staff, and colleagues with respect, which includes maintaining a professional demeanor in speech and dress
     ▪ Strive for excellence
     ▪ Place the care of your patients above competing interests
     ▪ Practice informed consent with patients/patient families
     ▪ Work effectively as a part of the treatment team
   o Learning Activity
     ▪ Professionalism should permeate all aspects of your performance and cannot really be taught in isolation. Important issues of professionalism include:
       • Navigating the wards- your role in the team, working with ancillary providers, etc.
       • Approaching medical errors
       • Palliative Care
       • Communicating difficult news
   o Evaluation
     ▪ Formative and summative feedback will be obtained from the ward team. The clerkship director will evaluate submissions and your interactions with them as well (including timeliness, attitude, initiative). How you treat staff, nurses, and all members of the health care team can play a role in this evaluation, though the clerkship does not specifically seek out formal feedback from these individuals.

2. Patient Care
   o Evaluate and manage women hospitalized for acute and chronic gynecological illness, childbirth, prenatal and postnatal care.
   o History Taking
     ▪ Objective
• Obtain and record a patient’s history and chief complaint in a logical, organized, and thorough manner. Demonstrate effective verbal skills, including appropriate use of open- and closed-ended questions, repetition, facilitation, explanation, summation, and interpretation.

• In addition to standard medical history, students to include detailed:
  o Menstrual cycle history
  o Obstetric history
  o Gynecologic history
  o Contraceptive history
  o Sexual history - with risk for sexually transmitted diseases
  o Family/genetic history
  o Social history - with risk for domestic violence

  ▪ Learning Activity
  • Interview, examine, and write a history and physical (H&P) for each new patient assigned to you, in addition to 4 summative Case Reports for patients followed from admission to discharge in both obstetrics and gynecology (include H&P, problem list, differential diagnosis, additional investigation- labs, imaging, etc, proposed case management and discharge plan).

  ▪ Evaluation
  • Case reports are submitted to the clerkship director who is primarily responsible for evaluating these. The interns and residents will give ongoing feedback as well. History taking skills will also be evaluated during daily rounds and a final oral assessment at the end of the rotation.

  o Physical Exam
    ▪ Objective
    • Perform and record a complete physical examination in a logical, organized, accurate and thorough manner for new patients and an appropriately focused physical examination for follow up patients. Students will explain the purpose of these exams/tests to the patient and obtain patient consent prior to doing so. Specific physical examination skill we expect students to master by the end of the obstetrics and gynecology clerkship includes:
      o Ability to establish rapport with patient.
- **Appearance.** Recognize signs of acute illness by evaluating skin color, respiration, hydration, mental status, interaction.
- **Vital signs.** Measure heart rate, respiratory rate, blood pressure and temperature accurately, demonstrating knowledge of the appropriate sized blood pressure cuff and normal values.
- **Cardiovascular exam.** Be able to identify normal heart sounds, extra heart sounds (S3, S4, pericardial friction rubs), systolic vs. diastolic murmurs.
- **Pulmonary exam.** Be able to identify normal breath sounds, pulmonary crackles and wheezes.
- **Abdominal exam.** Be able to identify internal organs and abnormalities (spleenomegaly, hepatomegaly, masses). Be able to do a rectal examination and recognize when it is indicated.
- **Skin exam.** Be able to identify abnormalities of the skin including rashes, deformities, burns and infections.
- **Neurologic exam.** Be able to identify hyperreflexia in preeclampsia.
- **Pelvic exam.** Be able to identify both normal and abnormal findings of the vagina, cervix, uterus and ovaries via speculum and bimanual palpation. Perform a pap smear and obtain a sexually transmitted disease specimen. Be able to recognize physical signs of pregnancy.
- **Breast exam.** Be able to indentify both normal and abnormal findings of the breasts.
- **Deliveries and perinatal exams.** Per abdominal examination be able to record fundal height, presence or absence of contractions, fetal size, lie, and presentation. Be able to count fetal heart rate. Be able to identify stages of birth through proper vaginal examination and safely deliver a child. Students will also assist in cesarean sections and D&C or evacuation for early spontaneous abortions.
- **Other procedures.** Intravenous catheter placement, blood culture and other lab collection, nasogastric tube placement, urethral
catheter insertion, endotracheal intubation during anesthesia of gynecological procedures.

- **MD5 additional procedural requirements.**
  Perform 15 abdominal examinations, 15 gynecological examinations, 5 D&C or evacuations in spontaneous early abortion, 5 other minor procedures such as incision of an abscess, 10 assistance of TAH or laparotomies, 10 Pap smears, 20 normal deliveries, 10 abnormal deliveries, 10 cesarean sections, and 5 episiotomy repairs.

  - **Learning Activity**
    - Each student should be observed performing a complete physical examination and/or targeted portions to the exam with given feedback and opportunities for questions.
    - Students will observe and assist with basic procedures.
    - Physical findings on rounds will be offered to supplement students’ skills.
    - Students will record procedures in their log book.

  - **Evaluation**
    - Interns, Residents and Specialists will observe students perform physical examinations in the course of patient care and these observations will inform the summative evaluation. Physical exam skills will also be tested in the final oral assessment. Log book will be reviewed.

- **Lab Interpretation**
  - **Objective**
    - Obtain and understand important supplemental information, including CBC/FBP, blood smear, blood type and screen, serum chemistries, ABG, coagulation studies, ECG, urinalysis, Pap smear, pregnancy testing, STI testing, chorionic villous sampling, potassium hydroxide examination, wet smear, scabies oil mount, Tzanck smear, ultrasound and maternal/fetal monitoring.

  - **Learning Activity**
    - **Lab Studies.** Students will have lectures on and clinical experience in different areas of the clinical lab where students will learn appropriate use and interpretation of laboratory tests.
    - **ECG Studies.** Students will have lectures on and clinical experience in the systematic approach to reading ECGs (beginning with rate, rhythm, axis,
intervals progressing through heart block and ventricular and atrial arrhythmias).

- **Radiologic Studies.** Students will have lectures on and clinical experience in the basics ultrasonography.

- **Maternal/Fetal monitoring.** Students will have lectures and clinical experience in the various methods of monitoring conditions during pregnancy and labor/birth.

  - **Evaluation**
    - Students’ understanding of these tests will be assessed on rounds and through final written examination.

  - **Clinical Reasoning**
    - **Objective**
      - Formulate and document an assessment that includes the relevant differential diagnoses based on data gathered to guide initial diagnostic evaluation and disease management.
    - **Learning Activity**
      - This will be discussed on daily rounds with the team.
    - **Evaluation**
      - This is assessed by the team on daily rounds and review of progress notes. This is also assessed formally in the student’s written case reports. *Full development of this skill is a crucial component and goal of this clerkship.*

  - **Presentation Skills: Initial**
    - **Objective**
      - Orally present a new patient’s history and physical examination clearly and with appropriate detail.
    - **Learning Activity**
      - This is typically performed with the intern or resident one-on-one and feedback is given at that time, though this can occur as part of rounds. Students are expected to give 5 formal case presentations.
    - **Evaluation**
      - Team members who directly observe this will provide formative and summative feedback. Presentation skills will also be tested at the final oral assessment.

  - **Presentation Skills: Follow-up**
    - **Objective**
      - Orally present a follow-up patient’s case (including those with more than one problem) in a focused manner, including diagnostic and therapeutic plans.
    - **Learning Activity**
• This is practiced on daily rounds with the whole team present.

- **Evaluation**
  • Team members who directly observe this will provide formative and summative feedback.

- **Written Skills**
  - **Objective**
    • Write coherent, clear progress notes documenting working diagnosis and status of diagnostic evaluation and therapeutic plans.
  
  - **Learning Activity**
    • Students practice this by writing daily progress notes on all their patients, in addition to required case reports. These should be on the chart in a timely manner (ideally before noon) if feedback is to be given.
  
  - **Evaluation**
    • Team members will evaluate progress notes and provide feedback. This will also be evaluated in the 8 formal case reports (4 from obstetrics and 4 from gynecology).

- **Patient and Family Counseling**
  - **Objective**
    • Effectively communicate with the patient (and family if given consent by the patient) their physical findings, diagnosis, and treatment plan.
    • Educate on preventative and safety measures.
  
  - **Learning Activity**
    • This is practiced on initial evaluation of new patients and throughout diagnosis/treatment on rounds and always observed by a member of the team to ensure accurate information.
  
  - **Evaluation**
    • Team members will evaluate and provide feedback.

3. **Knowledge**

   a. Demonstrate understanding of the clinical presentation, basic physiology, key physical findings, evaluation and management of diseases frequently encountered in an inpatient and outpatient obstetrics and gynecological setting.

   b. **Objectives**

      i. **Review the pathophysiology and be able to recognize and initiate evaluation and management plans for the following normal and disease states/clinical presentations:**
1. Apply recommended prevention strategies to women throughout the life-span.

2. Demonstrate knowledge of preconception care including the impact of genetics, medical conditions (including medications to treat these conditions) and environmental factors (substance abuse, nutrition, exercise, immunizations) on maternal health and fetal development.

3. Explain the normal physiologic changes of pregnancy.
   a. Maternal physiologic and anatomic changes
   b. Fetal and placental physiology
   c. Interpretation of common diagnostic studies

4. Demonstrate knowledge of antepartum care.
   a. Diagnose pregnancy
   b. Determine gestational age
   c. Identify risk factors for complications
   d. Describe appropriate diagnostic studies
   e. Describe nutritional needs of pregnant women
   f. Describe adverse effects of drugs and the environment
   g. Describe approaches to assessing fetal well-being, fetal growth, amniotic fluid volume, fetal lung maturity

5. Demonstrate knowledge of intrapartum care.
   a. List the signs and symptoms of true and false labor
   b. Describe the three stages of labor and recognize common abnormalities
   c. Describe methods of monitoring the mother and fetus
   d. Describe the steps of a vaginal delivery
   e. List indications for operative delivery

6. Demonstrate knowledge of postpartum care of the mother and newborn.
   a. Discuss techniques for assessing newborn status
   b. Describe immediate care of the normal newborn
   c. Recognize situations requiring immediate intervention in newborn care
   d. Discuss the normal maternal physiologic changes of the postpartum period
e. Describe the components of normal postpartum care
f. Discuss the appropriate postpartum patient counseling
g. List the normal physiologic and anatomic changes of the breast during pregnancy and postpartum
h. Recognize and know how to treat common postpartum abnormalities of the breast
i. List reasons why breast feeding should/should not be encouraged
j. Fistulas
k. Mastitis
7. Describe problems in obstetrics.
   a. Ectopic pregnancy
      i. List risk factors
      ii. Describe how it is diagnosed and treated
   b. Spontaneous abortion
      i. Differentiate the types (missed, complete, incomplete, threatened, septic)
      ii. List causes and complications
   c. Anemia
d. Endocrine disorders including diabetes mellitus and thyroid disease
e. Hypertension
f. Cardiovascular disease
g. Pulmonary disease
h. Renal disease
i. Gastrointestinal disease
j. Neurologic disease
k. Autoimmune disorders
l. Alcohol, tobacco and substance abuse
m. Surgical abdomen
n. Infectious disease
   i. Syphilis
   ii. TORCH (Toxoplasmosis, Rubella, Cytomegalovirus, Herpes)
   iii. Group B Streptococcus
   iv. Hepatitis
   v. HIV
   vi. HPV
   vii. Parvovirus
   viii. Varicella
ix. Malaria

o. Pre-eclampsia and Eclampsia
   i. Classify types of hypertension in pregnancy
   ii. Describe pathophysiology, diagnosis, management
   iii. List maternal and fetal complications

p. Alloimmunization
   i. Describe pathophysiology and diagnosis
   ii. Discuss use of immunoglobin prophylaxis

q. Multifetal gestation
   i. Describe embryology
   ii. Describe unique maternal and fetal physiologic changes
   iii. Diagnosis and management
   iv. Potential complications

r. Fetal death
   i. Describe common causes in each trimester
   ii. Describe symptoms/physical findings and diagnostic methods for diagnosis
   iii. Medical and psychosocial management

s. Abnormal labor
   i. List abnormal patterns
   ii. Describe causes and methods of evaluation
   iii. Complications
   iv. Indications/contraindications for oxytocin
   v. Risks/benefits of trial of labor after previous Cesarean delivery
   vi. Discuss strategies for emergency management of breech, shoulder dystocia, transverse lie, and cord prolapse

t. Third Trimester Bleeding
   i. List causes
   ii. Describe initial evaluation
   iii. Differentiate signs and symptoms
iv. Maternal and fetal complications of placenta previa and abruptio placenta
v. Management for acute blood loss
vi. List indications and potential complications of blood product transfusion

u. Preterm Labor
   i. Identify risk factors and causes
   ii. Describe signs/symptoms
   iii. Describe initial management
   iv. List indications/contraindications of medications used
   v. Identify adverse outcomes

v. Premature Rupture of Membranes
   i. List history, physical findings and diagnostic methods to confirm
   ii. Identify risk factors
   iii. Describe risks/benefits of expectant management vs. immediate delivery based on gestational age
   iv. Describe methods to monitor status during expectant management

w. Postpartum Hemorrhage
   i. Identify risk factors
   ii. Construct a differential diagnosis for immediate and delayed hemorrhage
   iii. Develop an evaluation and management plan

x. Postpartum Infection
   i. Identify risk factors
   ii. List common infections
   iii. Develop and evaluation and management plan

y. Anxiety and Depression
   i. Identify risk factors
   ii. Differentiate between postpartum blues, depression and psychosis
   iii. Describe treatment options and recognize those appropriate for pregnancy and lactation

z. Postterm Pregnancy
   i. Identify normal duration of gestation
ii. Identify complications of prolonged gestation
iii. Describe the evaluation and management options

aa. Fetal Growth Abnormalities
   i. Define macrosomia and fetal growth restriction
   ii. Discuss etiologies of abnormal growth
   iii. Cite methods of detection
   iv. Describe management
   v. State associated morbidity and mortality

8. Describe menstrual cycle physiology, discuss puberty and menopause and explain normal and abnormal bleeding.
   a. Puberty
      i. Describe changes in the hypothalamic-pituitary-ovarian axis and target organs
      ii. Explain normal sequence of pubertal events and ages of occurrence
      iii. Describe precocious and delayed puberty, and evaluation of these conditions
   b. Amenorrhea an Oligomenorrhea
      i. Define and explain pathophysiology and etiology
      ii. Discuss management and consequences of no treatment
   c. Hirsutism and Virilization
      i. Recognize normal variations and abnormalities in secondary sex characteristics
      ii. Describe pathophysiology and etiologies
      iii. Describe evaluation and management
   d. Normal and Abnormal Uterine Bleeding
      i. Define the normal menstrual cycle, endocrinology and physiology
      ii. Describe the pathophysiology, etiology, evaluation and
medical/surgical management of abnormal uterine bleeding

e. Dysmenorrhea
   i. Define and distinguish primary and secondary dysmenorrhea
   ii. Describe pathophysiology, etiology, evaluation and management

f. Metromenorrhagia
   i. Define
   ii. Describe pathophysiology, etiology, evaluation and management

g. Menopause
   i. Define and describe changes in the hypothalamic-pituitary-ovarian axis
   ii. Recognize symptoms and exam findings
   iii. Discuss management options
   iv. Discuss long-term changes associated with menopause

h. Premenstrual syndrome and Premenstrual Dysphoric Disorder
   i. Identify criteria for diagnosis
   ii. List treatment options

9. Describe the etiology and evaluation of infertility.

10. Develop a thorough understanding of contraception, including sterilization and abortion.
    a. Describe mechanism of action and effectiveness of contraceptive methods (oral contraceptive pills, injectables, condoms, intrauterine devices)
    b. Describe methods of male and female surgical sterilization
    c. Explain surgical and non-surgical methods of pregnancy termination, along with potential complications
    d. Post-abortion infections

11. Demonstrate knowledge of benign gynecological conditions.
    a. Vulvar and Vaginal Disease
       i. Vulvovaginitis
       ii. Describe dermatologic disorders of the vulva
       iii. Discuss evaluation and management
    b. Sexually Transmitted Infections
i. Discuss guidelines for screening and partner notification/treatment
ii. Describe prevention strategies, including immunization
iii. Describe symptoms and exam findings associated with common STIs
iv. Discuss evaluation and management
v. Describe the pathophysiology of salpingitis and pelvic inflammatory disease along with possible long-term sequelae
c. Uterine Fibroids
d. Genital tuberculosis
e. Urinary Tract Infections
   i. Describe diagnosis and treatment
f. Pelvic Organ Prolapse and Urinary Incontinence
   i. Describe normal pelvic anatomy and pelvic support
   ii. Differentiate the types of urinary incontinence
   iii. Describe evaluation and diagnosis
   iv. Describe anatomic changes associated
   v. Describe medical and surgical management
g. Endometriosis
   i. List most common sites
   ii. Describe symptoms and exam findings
   iii. Describe diagnosis and management

12. Formulate a differential diagnosis of the acute abdomen and chronic pelvic pain.
13. Describe common breast conditions and outline the evaluation of breast complaints.
   a. Describe symptoms, exam findings and initial management of benign or malignant conditions of the breast
   b. Discuss evaluation of mastalgia, mass, and nipple discharge
14. Demonstrate knowledge of perioperative care and familiarity with gynecological procedures (Foley catheter insertion, Pelvic ultrasonography,

15. Describe gynecological malignancies including risk factors, signs and symptoms, initial evaluation and treatment options.
   a. Gestational Trophoblastic Neoplasia
      i. Recognize the difference between molar pregnancy and malignant GTN
   b. Vulvar and Vaginal Neoplasms
   c. Cervical Disease and Neoplasia
   d. Uterine Leiomyomas
   e. Endometrial Hyperplasia and Carcinoma
   f. Ovarian Neoplasms
      i. Compare functional cysts, benign ovarian neoplasms and ovarian cancers

16. Provide a preliminary assessment of patients with sexual concerns.
   a. Explain the physiology of the female sexual response
   b. Classify patterns of female sexual dysfunction
   c. Sexual Assault- Describe medical and psychosocial management
   d. Domestic Violence- Describe screening methods and communicate available resources including short-term safety

17. Be able to use clinical reasoning to synthesize data into a prioritized differential diagnosis, working diagnosis, and plan.

6.51.6 Teaching and learning activities

During this course the student will have a series of

   a. Lectures and Tutorials
   b. Bedside teaching and Demonstrations and an increasing participation in practical procedures and Surgery.
c. They will be given increasing levels of responsibility, but always under the supervision of a lecture.
d. There will be Journal clubs and encouragement of self-directed learning.

6.51.7 Assessment methods

The student will be assessed using

i. Objective Structured Clinical Examination (OSCE)
ii. End of rotation oral examination
iii. End of semester examinations

6.51.8 Reading list

i. Hutchison’s clinical methods (24th Edition), by Robert Hutchison
v. William Gynaecology. 24th Edition
viii. Current-Diagnosis and Treatment.
ix. Obstetrics and Gynaecology. Essentials of Obstetrics and Gynaecology
x. Hackers &Moore. 5th Edition

6.52 Course title: Emergency Medicine (K8EM5952)

6.52.1 Course status: Core
6.52.2 Total credits: 8
6.52.3 Subject hours: 80
6.52.4 Course aims

i. Introduce the student to emergency medicine and provide the student with accurate and contemporary knowledge in regard to different areas of emergency medicine.
ii. To enable and equip students with the needed knowledge and skills to responsibly manage patients in emergency situations from all major subspecialties.
iii. To equip students with knowledge of basic and advanced life support.
iv. To contrast and highlight the differences in regard to international standard and working in a country with limited resources.
6.52.5 Course expected learning outcomes

The following three categories of broad goals for the clerkship are not meant to be limiting you to other goals that you may want to focus on but are intended to clearly outline what we expect for you to achieve by the end of the Emergency Medicine Clerkship. Herein you can review objectives linked to three main goals; 1) Competency, 2) Patient Care/Clinical Skills, and 3) Knowledge.

1. Competency
   a. Demonstrate commitment to excellence, honesty, respect for others, integrity, and altruism in patient care.
   b. Objectives
      i. Treat all patients, patient family members, staff, and colleagues with respect, which includes maintaining a professional demeanor in speech and dress
      ii. Strive for excellence
      iii. Place the care of your patients above competing interests
      iv. Practice informed consent with patients/patient families
      v. Work effectively as a part of the treatment team
   c. Learning Activity
      vi. Professionalism should permeate all aspects of your performance and cannot really be taught in isolation. Important issues of professionalism include:
         1. Navigating the department- your role in the team, working with ancillary providers, etc.
         2. Approaching medical errors
         3. Palliative Care
         4. Communicating difficult news
   d. Evaluation
      vii. Formative and summative feedback will be obtained from the emergency team. The clerkship director will evaluate submissions and your interactions with them as well (including timeliness, attitude, initiative). How you treat staff, nurses, and all members of the health care team can play a role in this evaluation, though the clerkship does not specifically seek out formal feedback from these individuals.

2. Patient Care
   a. Evaluate and manage patients with acute illness and in an emergency medicine setting.
   b. History Taking
      i. Objective
         1. Obtain and record a patient’s history and chief complaint in a logical, organized, and thorough manner. Demonstrate effective verbal skills,
including appropriate use of open- and closed-ended questions, repetition, facilitation, explanation, summation, and interpretation.

ii. Learning Activity

1. Interview, examine, and write a history and physical (H&P) for each new patient assigned to you.

iii. Evaluation

1. H&Ps will be submitted to the clerkship director who is primarily responsible for evaluating these. The interns and residents will give ongoing feedback as well. History taking skills will also be evaluated during daily work and a final oral assessment at the end of the rotation.

c. Physical Exam

i. Objective

1. Perform and record an appropriately focused physical examination in a logical, organized, accurate and thorough manner for all new patients. Students will explain the purpose of these exams to the patient and obtain patient consent prior to doing so. Specific physical examination skill we expect students to master by the end of the emergency medicine clerkship includes:

a. Ability to establish rapport with patient.

b. Appearance. Recognize signs of acute illness by evaluating skin color, respiration, hydration, mental status, interaction.

c. Vital signs. Measure heart rate, respiratory rate, blood pressure and temperature accurately.

d. HEENT exam. Be able to identify abnormalities of the oral cavity, throat, nasal passage, gross eye/pupils, and head.

e. Cardiovascular exam. Be able to identify normal heart sounds, extra heart sounds (S3, S4, pericardial friction rubs), systolic vs. diastolic murmurs.
f. **Pulmonary exam.** Be able to identify normal breath sounds, stridor, pulmonary crackles and wheezes.

g. **Abdominal exam.** Be able to identify internal organs and abnormalities (spleenomegaly, hepatomegaly, cholecystitis, appendicitis, masses, ascites, and acute abdomen). Be able to do a rectal examination and recognize when it is indicated.

h. **Endocrine exam.** Be able to identify abnormalities of the thyroid and physical signs of thyroid disease and diabetes.

i. **Neurology exam.** Be able to test all cranial nerves, muscle strength/tone, reflexes, sensation, gait, and coordination and recognize abnormalities.

j. **Musculoskeletal exam.** Be able to identify fractures, damage to ligaments and muscle abnormalities.

k. **Genitourinary exam.** Be able to identify abnormalities of the genitals and exam findings consistent with urinary tract abnormalities (flank pain, bladder distention).

l. **Skin exam.** Be able to identify abnormalities of the skin including rashes, deformities, burns and infections.

m. Techniques for each of the following basic procedures: venipuncture, peripheral intravenous catheter, femoral vein puncture, endotracheal intubation, cardiopulmonary resuscitation, hemostasis, suturing, wound care, incision and drainage, removal of foreign bodies, splint application

ii. **Learning Activity**

1. Each student should be observed performing a focused physical examination with given feedback and opportunities for questions.

2. Students will watch and assist with basic procedures.
3. Physical findings during daily patient care will be offered to supplement students’ skills.
4. Students will record procedures in their log book.

iii. Evaluation
   1. Interns, Residents and Specialists will observe students perform physical examinations in the course of patient care and these observations will inform the summative evaluation. Physical exam skills will also be tested in the final oral assessment. Log book will be reviewed.

d. Lab Interpretation
   i. Objective
      1. Obtain and understand important supplemental information, including CBC/FBP, blood smear, blood culture, blood type and screen, arterial blood gas, serum chemistries, hepatic function panel, hepatitis serologies, cardiac biomarkers, thyroid function tests, ABG, coagulation studies, stool occult blood, ECG, chest x-ray, ultrasonography, STI testing and urinalysis.

   ii. Learning Activity
      1. **Lab Studies.** Students will have lectures on and clinical experience in different areas of the clinical lab where students will learn appropriate use and interpretation of laboratory tests.

      2. **ECG Studies.** Students will have lectures on and clinical experience in the systematic approach to reading ECGs (beginning with rate, rhythm, axis, intervals progressing through heart block and ventricular and atrial arrhythmias).

      3. **Radiologic Studies.** Students will have lectures on and clinical experience in the basics of reading plain radiographs (chest, abdomen) beginning with normal studies and progressing through abnormal studies (pulmonary infiltrates, edema, pneumothorax, effusion, etc) and introduction to CT scanning, ultrasonography, and magnetic resonance imaging.

   iii. Evaluation
1. Students’ understanding of these tests will be assessed in daily patient care and through final written examination.

e. Clinical Reasoning
   i. Objective
      1. Formulate and document an assessment that includes the relevant differential diagnoses based on data gathered to guide initial diagnostic evaluation and disease management. Students will be able to identify and prioritize urgent and life-threatening diagnoses in the differential.
   ii. Learning Activity
      1. This will be discussed during daily patient care with the team.
   iii. Evaluation
      1. This is assessed by the emergency medical team in daily patient care and review of patient notes. *Full development of this skill is a crucial component and goal of this clerkship.*

f. Presentation Skills
   i. Objective
      1. Orally present a new patient’s history and physical examination clearly and with appropriate detail.
   ii. Learning Activity
      1. This is typically performed with the intern or other member of the emergency medical team one on one and feedback is given at that time.
   iii. Evaluation
      1. Emergency medical team members who directly observe this will provide formative and summative feedback. Presentation skills will also be tested at the final oral assessment.

g. Written Skills
   i. Objective
      1. Write coherent, clear notes documenting working diagnosis and status of diagnostic evaluation and therapeutic plans.
   ii. Learning Activity
      1. Students practice this by writing evaluation notes on all their patients. These should be on the chart in a timely manner if feedback is to be given.
   iii. Evaluation
1. Emergency medical team members will evaluate notes and provide feedback.

h. Patient and Family Counselling
   i. Objective
      1. Effectively communicate with the patient (and family if given consent by the patient) their physical findings, diagnosis, and treatment plan.
      2. Educate on preventative and safety measures.
   ii. Learning Activity
      1. This is practiced on evaluation of new patients and throughout diagnosis/treatment and always observed by a member of the emergency medical team to ensure accurate information.
   iii. Evaluation
      1. Emergency medical team members will evaluate and provide feedback.

3. Knowledge
   i. Demonstrate understanding of the clinical presentation, basic physiology, key physical findings, evaluation and management of diseases frequently encountered in an emergency medical setting.
   ii. Objectives
      i. Students should be able to: 1) develop a differential of common emergent causes, 2) describe classic presentation of emergent causes, and 3) describe the initial evaluation and management of the following conditions:
         1. Abdominal pain
         2. Altered mental status/Neurological emergencies
            a. Coma
            b. Impaired consciousness
            c. Epilepsy
            d. Cerebral vascular disease
            e. Headache
            f. Paraplegia, hemiplegia
         3. Cardiac arrest
         4. Chest pain, suspected myocardial infarction and other classic chest pain syndromes
         5. Acute life threatening hypertension
         6. Acute pulmonary edema and syndromes of acute dyspnea and hemoptysis
         7. Pulmonary thromboembolism and other vascular emergencies
         8. Respiratory distress
            a. Acute
b. Acute on chronic respiratory failure
c. Acute severe asthma
d. Anaphylaxis
e. Pneumothorax

9. Gastrointestinal bleeding, Acute abdomen, Hepatic failure

10. Ear, nose and throat emergencies
   a. Acute bleeding
   b. Foreign bodies
   c. Inflammatory conditions threatening the airway

11. Ophthalmologic emergencies
   a. Trauma
   b. Sudden vision loss

12. Endocrine emergencies
   a. Diabetic ketoacidosis
   b. Hyperglycemic hyperosmolar coma
   c. Lactic acidosis
   d. Hyperglycemia
   e. Hypoglycemia
   f. Adrenal insufficiency
   g. Myxedema coma
   h. Thyrotoxic crisis

13. Metabolic disorders
   a. Disturbances of sodium and water balancer
   b. Acid/base disorders

14. Psychiatric emergencies
   a. Suicidal
   b. Homicidal
   c. Psychosis

15. Poisoning, Intoxication

16. Shock

17. Trauma
   a. Head injury
   b. Fractures
   c. Spinal injuries

18. Environmental injury
   a. Near drowning
   b. Smoke inhalation
   c. Carbon monoxide poisoning
   d. Bites and stings
   e. Anaphylactic reactions
   f. High altitude sickness

19. Burn, wound management and crush syndrome

20. Pediatric emergencies
   a. Pediatric resuscitation
   b. Febrile child
c. Convulsions
d. Meningitis
e. Foreign body ingestion
f. Abdominal pain, gastroenteritis
g. Croup

21. Gynecological and obstetric emergencies
   a. Abnormal uterine bleeding
   b. Ectopic pregnancy

22. Be able to use clinical reasoning to synthesize data into a prioritized differential diagnosis, working diagnosis, and plan.

6.52.6 Teaching and learning activities

1. Each student should be observed performing a focused physical examination with given feedback and opportunities for questions.
2. Students will watch and assist with basic procedures.
3. Physical findings during daily patient care will be offered to supplement students’ skills.
4. Students will record procedures in their log book.

6.52.7 Assessment methods

Interns, Residents and Specialists will observe students perform physical examinations in the course of patient care and these observations will inform the summative evaluation. Physical exam skills will also be tested in the final oral assessment. Log book will be reviewed.

6.52.8 Reading list


ii. In addition to the above skills, students will undergo “trade mark” training in Advanced Trauma Life Support (ATLS).

iii. Advanced Obstetric Life Support (ABLS),

iv. Advanced Pediatric Life Support (APLS),

v. Advances Cardiac Life Support (ACLS) and Basic Life Support (BLS)
6.53 Course title: Internal Medicine 2 (K8IM51053)

6.53.1 Course status: Core
6.53.2 Total credits: 13
6.53.3 Subject hours: 130
6.53.4 Course aims

The course aims to help the students to acquire a range of clinical skills and attitudes related to history taking and physical examination, in addition to acquiring the interpretative skills required to make a diagnosis and implement appropriate patient management. It is intended to produce graduates who have appropriate competencies to address the health needs of the community. The programme in years 3 and 5 will enable the student to understand the scientific basis of diseases, the clinical practice and to acquire the necessary Knowledge, Skills, Competencies and ethics relevant to the profession.

6.53.5 Course expected learning outcomes

The following three categories of broad goals for the clerkship are not meant to be limiting you to other goals that you may want to focus on but are intended to clearly outline what we expect for you to achieve by the end of the Internal Medicine Clerkship. Herein you can review objectives linked to three main goals; 1) Competency 2) Patient Care/Clinical Skills, and 3) Knowledge.

i. Competency
   a. Demonstrate commitment to excellence, honesty, respect for others, integrity, and altruism in patient care.
   b. Objectives
      i. Treat all patients, patient family members, staff, and colleagues with respect, which includes maintaining a professional demeanor in speech and dress
      ii. Strive for excellence
      iii. Place the care of your patients above competing interests
      iv. Practice informed consent with patients/patient families
      v. Work effectively as a part of the treatment team
   c. Learning Activity
      i. Professionalism should permeate all aspects of your performance and cannot really be taught in isolation. Important issues of professionalism include:
         1. Navigating the wards- your role in the team, working with ancillary providers, etc.
         2. Approaching medical errors
         3. Palliative Care
         4. Communicating difficult news
   d. Evaluation
i. Formative and summative feedback will be obtained from the ward team. The clerkship director will evaluate submissions and your interactions with them as well (including timeliness, attitude, initiative). How you treat staff, nurses, and all members of the health care team can play a role in this evaluation, though the clerkship does not specifically seek out formal feedback from these individuals.

ii. Patient Care
   e. Evaluate and manage patients hospitalized with acute illness and in clinic settings.
   f. History Taking
      i. Objective
         1. Obtain and record a patient’s history and chief complaint in a logical, organized, and thorough manner. Demonstrate effective verbal skills, including appropriate use of open- and closed-ended questions, repetition, facilitation, explanation, summation, and interpretation.
      ii. Learning Activity
         1. Interview, examine, and write a history and physical (H&P) for each new patient assigned to you, in addition to 4 summative written case reports for patients followed from admission to discharge (include H&P, problem list, differential diagnosis, additional investigation- labs, imaging, etc, proposed case management and discharge plan).
   iii. Evaluation
      1. Case reports are submitted to the clerkship director who is primarily responsible for evaluating these. The interns and residents will give ongoing feedback as well. History taking skills will also be evaluated during daily rounds and a final oral assessment at the end of the rotation.

   g. Physical Exam
      i. Objective
         1. Perform and record a complete physical examination in a logical, organized, accurate and thorough manner for new patients and an appropriately focused physical examination for follow up patients. Students will explain the purpose of these exams to the patient and obtain patient consent prior to doing so. Specific physical examination skill we expect students to master by the end of the medicine clerkship includes:
            a. Ability to establish rapport with patient.
b. **Appearance.** Recognize signs of acute illness by evaluating skin color, respiration, hydration, mental status, interaction.

c. **Vital signs.** Measure heart rate, respiratory rate, blood pressure and temperature accurately, demonstrating knowledge of the appropriate sized blood pressure cuff and normal values.

d. **HEENT exam.** Be able to identify abnormalities of the oral cavity, throat, nasal passage, gross eye/pupils, and head.

e. **Cardiovascular exam.** Be able to identify normal heart sounds, extra heart sounds (S3, S4, pericardial friction rubs), systolic vs. diastolic murmurs, and specifically aortic stenosis and mitral regurgitation.

f. **Pulmonary exam.** Be able to identify normal breath sounds, pulmonary crackles and wheezes.

g. **Abdominal exam.** Be able to identify internal organs and abnormalities (splenomegaly, hepatomegaly, cholecystitis, appendicitis, masses). Be able to recognize and describe stigmata of liver disease including findings consistent with ascites, spider angiomata, palmar erythema, jaundice/scleral icterus, hepatomegaly. Be able to do a rectal examination and recognize when it is indicated.

h. **Endocrine exam.** Be able to identify abnormalities of the thyroid and physical signs of thyroid disease and diabetes.

i. **Neurology exam.** Be able to test all cranial nerves, muscle strength/tone, reflexes, sensation, gait, and coordination and recognize abnormalities.

j. **Genitourinary exam.** Be able to identify abnormalities of the genitals and exam findings consistent with urinary tract abnormalities (flank pain, bladder distention).

k. **Skin exam.** Be able to identify abnormalities of the skin including rashes, deformities, burns and infections.

l. Techniques for each of the following basic procedures: venipuncture, blood culture, arterial blood gas, ECG, chest radiography,
nasogastric tube placement, urethral catheterization, peripheral intravenous catheter insertion, throat culture, PAP smear, digital rectal examination, urine dipstick, stool occult blood testing, subcutaneous injection, intramuscular injection, wound culture, dressing change, chest tube placement and PPD placement.

ii. Learning Activity
1. Each student should be observed performing a complete physical examination and/or targeted portions to the exam with given feedback and opportunities for questions.
2. Students will watch and assist with basic procedures.
3. Physical findings on rounds will be offered to supplement students’ skills.
4. Students will record procedures in their log book.

iii. Evaluation
1. Interns, Residents and Specialists will observe students perform physical examinations in the course of patient care and these observations will inform the summative evaluation. Physical exam skills will also be tested in the final oral assessment. Log book will be reviewed.

h. Lab Interpretation
i. Objective
1. Obtain and understand important supplemental information, including CBC/FBP, blood smear, blood culture, serum chemistries, hepatic function panel, hepatitis serologies, cardiac biomarkers, thyroid function tests, ABG, coagulation studies, stool occult blood, ECG, chest x-ray, STI testing and urinalysis.

ii. Learning Activity
1. Lab Studies. Students will have lectures on and clinical experience in different areas of the clinical lab where students will learn appropriate use and interpretation of laboratory tests.
2. ECG Studies. Students will have lectures on and clinical experience in the systematic approach to reading ECGs (beginning with rate, rhythm, axis, intervals progressing through heart block and ventricular and atrial arrhythmias).
3. Radiologic Studies. Students will have lectures on and clinical experience in the basics of reading plain radiographs (chest, abdomen) beginning with normal studies and progressing through abnormal studies.
(pulmonary infiltrates, edema, pneumothorax, effusion, etc) and introduction to CT scanning, ultrasonography, and magnetic resonance imaging. Images are presented both in a disease-specific orientation as well as in a problem-based setting (i.e. how to choose and interpret radiographic studies for the patient with hematuria; headache; abdominal pain, etc).

iii. Evaluation
   1. Students’ understanding of these tests will be assessed on rounds and through final written examination.

i. Clinical Reasoning
   i. Objective
      1. Formulate and document an assessment that includes the relevant differential diagnoses based on data gathered to guide initial diagnostic evaluation and disease management.

   ii. Learning Activity
      1. This will be discussed on daily rounds with the teams.

   iii. Evaluation
      1. This is assessed by the medical teams on daily rounds and review of progress notes. This is also assessed formally in the student’s written case reports. *Full development of this skill is a crucial component and goal of this clerkship.*

j. Presentation Skills: Initial
   i. Objective
      1. Orally present a new patient’s history and physical examination clearly and with appropriate detail.

   ii. Learning Activity
      1. This is typically performed with the intern or resident one-on-one and feedback is given at that time, and also as part of rounds.

   iii. Evaluation
      1. Medical team members who directly observe this will provide formative and summative feedback. Presentation skills will also be tested at the final oral assessment.

k. Presentation Skills: Follow-up
   i. Objective
      1. Orally present a follow-up patient’s case (including those with more than one problem) in a focused manner, including diagnostic and therapeutic plans.

   ii. Learning Activity
1. This is practiced on daily rounds with the whole team present.

iii. Evaluation
   1. Medical team members who directly observe this will provide formative and summative feedback.

l. Written Skills
   i. Objective
      1. Write coherent, clear progress notes documenting working diagnosis and status of diagnostic evaluation and therapeutic plans.

   ii. Learning Activity
      1. Students practice this by writing daily progress notes on all their patients, in addition to required case reports. These should be on the chart in a timely manner (ideally before noon) if feedback is to be given.

   iii. Evaluation
      1. Medical team members will evaluate progress notes and provide feedback. This will also be evaluated in the 4 formal case reports.

m. Patient and Family Counseling
   i. Objective
      1. Effectively communicate with the patient (and family if given consent by the patient) their physical findings, diagnosis, and treatment plan.
      2. Educate on preventative and safety measures.

   ii. Learning Activity
      1. This is practiced on initial evaluation of new patients and throughout diagnosis/treatment on rounds and always observed by a member of the medical team to ensure accurate information.

   iii. Evaluation
      1. Medical team members will evaluate and provide feedback.

iii. Knowledge

1. Demonstrate understanding of the clinical presentation, basic physiology, key physical findings, evaluation and management of diseases frequently encountered in an inpatient and outpatient medicine setting.

2. Objectives
   i. Review the pathophysiology and be able to recognize and initiate evaluation and management plans for the following disease states/clinical presentations:
   ii. Acute Coronary Syndromes
iii. Congestive Heart Failure
iv. Pneumonia
v. Pulmonary Embolism
vi. Meningitis
vii. Acute Renal Failure and Chronic Kidney Disease
viii. Fluid, Electrolyte and Acid-Base disturbance
ix. Ascites
x. Gastrointestinal bleeding
xi. Anemia
xii. Back Pain
xiii. Syncope
xiv. HIV/AIDS
xv. Other Infectious diseases- malaria, tuberculosis, schistosomiasis, etc.
xvi. Acute mental status change/delirium
xvii. Diabetes
xviii. Abdominal Pain
xix. Health Maintenance
xx. Cough
xxi. Dyspnea
xxii. Dysuria
xxiii. Fever
xxiv. Sepsis
xxv. Knee Pain
xxvi. Rash
xxvii. Upper Respiratory Complaints
xxviii. Common Cancers
xxix. COPD and Other Obstructive Airways Disease including Pneumonconiosis
xxx. Dyslipidemia
xxxi. Hypertension
xxxii. Liver Disease
xxxiii. Depression
xxxiv. Rheumatologic Problems
xxxv. Stroke
xxxvi. Peripheral Neuropathy
xxxvii. Sexual Transmitted Diseases
xxxviii. Malignancy- Lymphoma, Kaposi Sarcoma, Breast Cancer, Prostate Cancer, Lung Cancer
xxxix. Geriatric Care- key illnesses in the elderly, focusing on their often atypical presentation, and the common “geriatric syndromes” including: immobility, falls/gait and balance problems, dizziness, incontinence, weight loss/failure to thrive/malnutrition, sleep disturbance, dementia/delirium, osteoporosis, hearing and visual impairment, pressure ulcers.
xl. Be able to use clinical reasoning to synthesize data into a prioritized differential diagnosis, working diagnosis, and plan.

6.53.6 Teaching and learning activities

i. Students will receive lectures and clinical correlation teaching on rounds. Weekly conferences will provide additional knowledge on medical subjects. The above list also is intended to help guide students’ reading. Students are strongly encouraged to learn about all of their patients’ past medical problems in addition to the acute problems to further enhance their medical knowledge.

ii. Each student will keep a log book of specific diseases seen and procedures done while on their internal medicine rotation.

iii. Students will be expected to give tutorials on assigned diseases/topics during the rotation.

6.53.7 Assessment methods

Log book of diseases and procedures; oral presentation of tutorials; written examination; oral final assessment; team evaluations based on observation; and assessment of the 4 required written case reports.

6.53.8 Reading list

i. Michael Swash and Michael Glynn, Hutchison’s clinical methods of Medicine,

ii. Nicki R. Colledge, BSc, FRCP(Ed), Brian R. Walker, BSc, MD, FRCP(Ed) and Stuart H. Ralston, MD, FRCP, FMedSci, FRSE. Davidson’s principles and practice of Medicine.

iii. Parveen Kumar, Michael L. Clark. Clinical Medicine, Elsevier, Conhagen.


6.54 Course title: Pediatrics 2 (K8PE51054)

6.54.1 Course status: Core

6.54.2 Total credits: 13

6.54.3 Subject hours: 130

6.54.4 Course aims

To train a community-oriented doctor, competent enough to promote child health in a broad sense, capable of weighing priorities, and with the ability to adapt to fast changes in health care.

6.54.5 Course expected learning outcomes
The following three categories of broad goals for the clerkship are not meant to be limiting you to other goals that you may want to focus on but are intended to clearly outline what we expect for you to achieve by the end of the Pediatrics Clerkship. Herein you can review objectives linked to three main goals; 1) Competency 2) Patient Care/Clinical Skills, and 3) Knowledge.

i. Competency
   a. Demonstrate commitment to excellence, honesty, respect for others, integrity, and altruism in patient care.
   b. Objectives
      i. Treat all patients, patient family members, staff, and colleagues with respect, which includes maintaining a professional demeanor in speech and dress
      ii. Strive for excellence
      iii. Place the care of your patients above competing interests
      iv. Practice informed consent with patients/patient families
      v. Work effectively as a part of the treatment team
   c. Learning Activity
      i. Professionalism should permeate all aspects of your performance and cannot really be taught in isolation. Important issues of professionalism include:
         1. Navigating the wards- your role in the team, working with ancillary providers, etc.
         2. Approaching medical errors
         3. Palliative Care
         4. Communicating difficult news
   d. Evaluation
      i. Formative and summative feedback will be obtained from the ward team. The clerkship director will evaluate submissions and your interactions with them as well (including timeliness, attitude, initiative). How you treat staff, nurses, and all members of the health care team can play a role in this evaluation, though the clerkship does not specifically seek out formal feedback from these individuals.

ii. Patient Care
   a. Evaluate and manage children hospitalized with acute illness and in clinic settings.
   b. History Taking
      i. Objective
         1. Obtain and record a patient’s history and chief complaint (from the parent/guardian and patient as able/appropriate) in a logical, organized, and thorough manner. Demonstrate effective verbal skills, including appropriate use of open- and closed-ended questions, repetition, facilitation, explanation, summation, and interpretation.
2. In addition to standard medical history, students to include detailed:
   a. Neonatal history- including birth weight; approximate gestational age; maternal complications, such as extent of prenatal care, infections, exposure to drugs, alcohol or medications and problems in the newborn period, such as prematurity, respiratory distress, jaundice and infections.
   b. Immunizations
   c. Development
   d. Diet- noting the importance of assessing the amount, type, and method of infant feeding.
   e. Family History-including number and ages of siblings; consanguinity, known genetic disorders, early childhood deaths, cardiovascular disease, depression and alcohol abuse.
   f. Social History- including assessment of the home environment, school and peer relationships.

ii. Learning Activity
   1. Interview, examine, and write a history and physical (H&P) for each new patient assigned to you.

iii. Evaluation
   1. The interns, residents and specialists will give ongoing feedback. The student may turn in a formal written case report or H&P to the clerkship director for further assessment.

c. Physical Exam
   i. Objective
      1. Perform and record a complete physical examination in a logical, organized, accurate and thorough manner for new patients and an appropriately focused physical examination for follow up patients. Students will explain the purpose of these exams to the parent/guardian (and patient as applicable) and obtain consent prior to doing so. Specific physical examination skill we expect students to master by the end of the pediatric clerkship includes:
         a. Ability to establish rapport with patient and adapting the exam accordingly.
         b. Developmental Assessment. Evaluate for age appropriate milestones. In adolescents check Tanner staging.
         c. Appearance. Recognize signs of acute illness in an infant and child by evaluating skin color, respiration, hydration, mental status, cry and social interaction; and recognize the importance of observing the psychosocial condition of the child, including
behavior, development, body habitus (height, weight, body fat), relationship to parents and examiners, and general condition.

d. Vital signs. Measure heart rate, respiratory rate, blood pressure and temperature in an infant and child, demonstrating knowledge of the appropriate sized blood pressure cuff, interval to count respirations, and normal variation in temperature depending on the route of measurement (oral, rectal, axillary or tympanic); understand that normal values of heart rate, respiratory rate and blood pressure change with age.

e. Measurements. Accurately measure height, weight and head circumference; plot the data on an appropriate growth chart; understand the normal relationships between height, weight and head circumference; and recognize the usefulness of longitudinal data.

f. HEENT exam. Be able to identify the anterior and posterior fontanels and assess them for fullness or turgor; recognize the need for careful observation of the head size and shape, symmetry, facial features, ear size and hair whole as part of the examination for dysmorphic features; recognize the red reflex and strabismus; assess hydration of the mucous membranes; and examine the tympanic membrane using pneumatic otoscopy.

g. Neck exam. Be able to palpate lymph nodes, know what anatomic areas they drain; know that lymph nodes are more prominent during childhood; and recognize and demonstrate maneuvers that test for nuchal rigidity.

h. Cardiovascular exam. Be able to identify normal heart sounds, extra heart sounds (S3, S4, pericardial friction rubs), and systolic vs. diastolic murmurs.

i. Pulmonary exam. Be able to recognize how the rate and pattern of respirations change with age, and that abdominal respirations are normal in infants; observe the rate and effort of breathing as a measure of respiratory distress; recognize stridor, wheezing and rales and be able to distinguish between inspiratory and expiratory obstruction; and interpret less serious respiratory sounds such as transmitted upper airway sounds.

j. Abdominal exam. Understand that the liver edge, spleen tip and kidneys may be palpable in the normal
newborn; examine the umbilical cord for signs of infection; examine the abdomen for distention, tenderness, rebound and mass lesions in an infant or young child with lethargy, irritability or signs of acute illness; and be able to do a rectal examination and recognize when it is indicated.

k. Neurology exam. Be able to elicit primitive reflexes; assess tone, gait, strength and reflexes, recognizing the importance of symmetry; assess developmental milestones; and recognize that much of the neurologic examination of infants and children is accomplished through observation alone.

l. Extremities and Back exam. Be able to examine the hips of a newborn for dysplasia; recognize arthritis; and evaluate gait and limp. Know how to test for scoliosis.

m. Genital exam. Be able to identify the appearance of normal male and female genitalia in the newborn; recognize abnormalities, including cryptorchidism, hypospadias, testicular mass in the male; be able to examine the external genitalia of a female patient, and recognize the need for privacy at all ages.

n. Skin exam. Be able to recognize jaundice, petechiae, purpura, birth marks (such as nevus flammeus and Mongolian spots); vesicles, urticaria and rashes, such as erythema toxicum, impetigo, eczema, diaper dermatitis and viral exanthems; recognize common skin findings associated with child abuse; and assess skin turgor.

o. Procedures. Be able to describe and/or perform techniques for the following procedures- blood transfusion, bone marrow aspiration, capillary blood collection, cut down, endotracheal intubation, exchange transfusion (assist), gastric aspiration, intravenous fluid administration, lumbar puncture, peritoneal paracentesis, pericardiocentesis (assist), rectal temperature, restraint and positioning, urine collection (suprapubic percutaneous bladder aspiration, clean catch, bladder catheterization), thoracocentesis, umbilical vessel catheterization, and venipuncture.

ii. Learning Activity

1. Each student should be observed performing a complete physical examination and/or targeted portions to the exam with given feedback and opportunities for questions.
2. Students will observe and assist with basic procedures.
3. Physical findings on rounds will be offered to supplement students’ skills.
4. Students will record procedures in their log book.

iii. Evaluation
1. Interns, Residents and Specialists will observe students perform physical examinations in the course of patient care and these observations will inform the summative evaluation. Physical exam skills will also be tested in the final oral assessment. Log book will be reviewed.


d. Lab Interpretation
i. Objective
1. Obtain and understand important supplemental information, including CBC/FBP, blood smear, blood culture, serum chemistries, hepatic function panel, arterial blood gas, coagulation studies, newborn screening (bilirubin level, phenylketonuria, thyroid function, genetic testing), ECG, chest x-ray, STI testing, and urinalysis.

ii. Learning Activity
1. **Lab Studies.** Students will have lectures on and clinical experience in different areas of the clinical lab where students will learn appropriate use and interpretation of laboratory tests.
2. **ECG Studies.** Students will have lectures on and clinical experience in the systematic approach to reading ECGs (beginning with rate, rhythm, axis, intervals progressing through heart block and ventricular and atrial arrhythmias).
3. **Radiologic Studies.** Students will have lectures on and clinical experience in the basics of reading plain radiographs (chest, abdomen) beginning with normal studies and progressing through abnormal studies (pulmonary infiltrates, edema, pneumothorax, effusion, etc) and introduction to CT scanning, ultrasonography, and magnetic resonance imaging. Images are presented both in a disease-specific orientation as well as in a problem-based setting (i.e. how to choose and interpret radiographic studies for the patient with hematuria; abdominal pain, etc).

iii. Evaluation
1. Students’ understanding of these tests will be assessed on rounds and through final written examination.


e. Clinical Reasoning
i. Objective
1. Formulate and document an assessment that includes the relevant differential diagnoses based on data gathered to guide initial diagnostic evaluation and disease management.
ii. Learning Activity
   1. This will be discussed on daily rounds with the teams.

iii. Evaluation
   1. This is assessed by the pediatric team on daily rounds and review of progress notes/H&Ps. *Full development of this skill is a crucial component and goal of this clerkship.*

f. Presentation Skills: Initial
   i. Objective
      1. Orally present a new patient’s history and physical examination clearly and with appropriate detail.
   
   ii. Learning Activity
      1. This is typically performed daily during morning report and feedback is given at that time, though this can occur as part of rounds.
   
   iii. Evaluation
      1. Pediatric team members who directly observe this will provide formative and summative feedback. Presentation skills will also be tested at the final oral assessment.

 g. Presentation Skills: Follow-up
   i. Objective
      1. Orally present a follow-up patient’s case (including those with more than one problem) in a focused manner, including diagnostic and therapeutic plans.
   
   ii. Learning Activity
      1. This is practiced on daily rounds with the whole team present.
   
   iii. Evaluation
      1. Pediatric team members who directly observe this will provide formative and summative feedback.

 h. Written Skills
   i. Objective
      1. Write coherent, clear progress notes documenting working diagnosis and status of diagnostic evaluation and therapeutic plans.
   
   ii. Learning Activity
      1. Students practice this by writing daily progress notes on all their patients. These should be on the chart in a timely manner (ideally before noon) if feedback is to be given.
   
   iii. Evaluation
      1. Pediatric team members will evaluate progress notes and provide feedback.

 i. Patient and Family Counseling
   i. Objective
      1. Effectively communicate with the family and patient (as appropriate) the physical findings, diagnosis, and treatment plan.
2. Educate on preventative and safety measures.

ii. Learning Activity

1. This is practiced on initial evaluation of new patients and throughout diagnosis/treatment on rounds and always observed by a member of the pediatric team to ensure accurate information.

iii. Evaluation

1. Pediatric team members will evaluate and provide feedback.

iii. Knowledge

a. Demonstrate understanding of the clinical presentation, basic physiology, key physical findings, evaluation and management of diseases frequently encountered in an inpatient and outpatient pediatric setting.

b. Objectives

i. Review the pathophysiology and be able to recognize and initiate evaluation and management plans for the following disease states/clinical presentations:

1. Well Child Care

   a. Immunization schedule and major contraindications and complications of the various vaccines
   b. Necessary health maintenance procedures at various ages
   c. Significance of deviations in recorded growth from the standard growth curves and in development.
   d. Discuss common parental concerns
   e. Create a health and safety plan for the child and family

2. Assessment of Behavior and Development

   a. Recognize the importance in clinical care of the following developmental issues:

      i. Infant – changes in reflexes, tone and posture; cephalocaudal progression of motor milestones during the first year; stranger anxiety.
      ii. Toddler / child – separation and autonomy in two to three-year olds; concept of school readiness.
      iii. Adolescent – sequence of physical maturation and sexual maturity rating (Tanner); stages of emotional development.

   b. Identify the early signs of mental retardation and cerebral palsy.

c. Summarize the main developmental changes of infancy, childhood and adolescence that are important to discuss with parents and patients. Identify behavioral and psychosocial problems during the visit.

d. Discuss the typical presentation of common behavioral problems at various ages and developmental stages
i. Infant: sleep problems
ii. Toddler/preschooler: temper tantrums, toilet training, eating problems
iii. Elementary school age: enuresis, attention deficit disorder
iv. Middle school/high school: conduct disorders, eating disorders, risk taking behaviors
e. Recognize that somatic complaints may represent underlying psychosocial problems (e.g. recurrent abdominal pain or headaches, chronic fatigue, and neurological complaints).
f. Recognize the various situations where pathology in the family contributes to childhood behavior problems (e.g. alcoholism, domestic violence, depression).
g. Distinguish between age-appropriate “normative” behavior and significantly “deviant” behavior or psychiatric illness.

3. Assessment of Growth
   a. Recognize and define short stature.
   b. Meaning of primary and secondary growth disturbances.
   d. Evaluation of children with precocious or delayed puberty, including menarche.
   e. Perform and describe the Tanner sexual maturity rating.

4. Assessment of Nutrition
   a. State the calories/kg per day needed for normal growth in infants and small children.
   b. Identify the major differences between human milk and the various commonly available infant formulas.
   c. Recognize factors that contribute to the development of failure to thrive and obesity in childhood.
   d. Recognize that chronically ill children may have special nutritional needs requiring unique diets, supplements, or feeding methods, and identify ways that these special diets can be an essential aspect of patient treatment.
   e. Advise families about the dietary prevention and treatment of common pediatric mineral (e.g. iron, fluoride, calcium) and vitamin deficiencies.
   f. Obtain routine diet histories on infants that include:
      i. Type of feeding (breast vs. formula) with amount and frequency
      ii. Types and approximate amounts of solids
iii. Diet supplements given (vitamins, fluoride, iron).

5. Care of the Febrile Child
   a. Describe historical information that is important in the evaluation of a febrile child.
   b. Physical exam findings that are important in the evaluation of a febrile child.
   c. Clinical conditions that may be potentially life threatening in a febrile child and know how to differentiate them from other less threatening conditions.
   d. Provide indications for the symptomatic management of fever.

6. Assessment of the Child with Severe Infection
   a. Recognize the signs and symptoms of sepsis and meningitis.
   b. List the primary organisms associated with sepsis and meningitis during the neonatal and the post neonatal period.
   c. Recognize the signs and symptoms of other severe infections during childhood including septic arthritis, respiratory infections, and urinary tract infections.
   d. Recognize the signs and symptoms associated with streptococcal, staphylococcal, mycoplasma, chlamydial, and tuberculosis infections.
   e. Recognize the signs and symptoms associated with the major viral pathogens of childhood including adenovirus, enterovirus, parvovirus, herpes virus, cytomegalovirus, varicella zoster virus, influenza viruses, rubeola, rubella, mumps, Epstein-Barr virus, human herpes virus 6 (roseola), parainfluenza, and respiratory syncytial viruses.
   f. Recognize the signs and symptoms associated with pelvic inflammatory disease and other sexually transmitted diseases in adolescents and be able to manage them.
   g. Recognize the history and physical findings that would cause you to suspect an underlying immunodeficiency.

7. Care of the Child with Acute Respiratory Symptoms
   a. Recognize the signs and symptoms associated with tuberculosis, croup, whooping cough and epiglottitis.
   b. Discuss the common causes of pneumonia in normal infants and children as well as those that occur in the immunocompromised child.
c. Recognize the signs and symptoms of common respiratory conditions, e.g., upper respiratory infection/common cold, rhinitis, otitis media, croup, epiglottitis, bronchiolitis and asthma, and know the approach to treatment of these problems.

d. Identify symptoms and physical findings that suggest allergic disease.

8. Assessment of the Child with Cardiovascular Disease
   a. Describe the clinical features that point to the presence of a congenital heart malformation.
   b. Understand the anatomy and physiology of common congenital cardiac defects.
   c. Understand the etiology, symptoms and diagnosis of acute rheumatic fever.
   d. Describe the criteria for establishing a diagnosis of hypertension in a child.
   e. List the causes of hypertension during infancy and childhood.

9. Assessment of the Child with Suspected Endocrine Disease
   a. Recognize and discuss the symptoms, diagnosis, and management of type I and II diabetes, thyroid disease, pituitary disease, and congenital adrenal disorders in children.
   b. Know the laboratory abnormalities associated with each.

10. Assessment of the Child with Acute Abdominal Pain and/or Diarrhea
    a. Describe the initial information necessary to categorize the severity of the problem and the urgency of response.
    b. List an age appropriate differential diagnosis that reflects the degree of acuity.
    c. Describe the criteria for establishing a diagnosis of diarrhea and common diagnoses (gastroenteritis, cow’s milk intolerance, inflammatory bowel disease, parasitic infections, etc).
    d. Explain the major risks associated with diarrhea and identify the signs and symptoms that indicate high risk to the patient.
    e. Select laboratory tests that complement patient management.

11. Assessment of the Child with Suspected Genito-Urinary System Disease
    a. Identify clinical features that suggest renal or urinary tract disease.
b. Relate historical, physical, and laboratory findings to common renal pathology, including the nephrotic syndrome and glomerulonephritis.

c. Recognize clinical situations that mandate urgent intervention.

d. Develop an appropriate management plan for common renal or urinary system problems.

e. Recognize the clinical signs and symptoms of sexually transmitted disease among males and females.

f. Be able to differentiate normal from abnormal findings on a pelvic exam.

g. Identify clinical features of primary nocturnal enuresis and alternative differential (diabetes, UTI, nocturnal epilepsy).

h. Develop a differential diagnosis for abdominal masses (Wilms tumor, neuroblastoma, lymphoma, teratoma, polycystic kidney).

12. Assessment of the Child with a Suspected Neurologic Disorder

   a. Describe the features of the history and physical examination important to the evaluation of a child with a nervous system complaint.

   b. Describe the common causes of altered consciousness, weakness, and ataxia in children.

   c. Describe the clinical features obtained from the history and physical examination that indicate the need for immediate intervention or early consultation for a neurological condition.

   d. Describe the different types of seizure disorders in children.

   e. Describe the symptoms of cerebral malaria.

13. Assessment of the Child with a Fluid and/or Electrolyte Disorder

   a. Describe the physiologic processes that maintain fluid and electrolyte homeostasis.

   b. Identify the clinical signs and symptoms that suggest abnormalities of fluid and electrolyte balance.

   c. Select the laboratory procedures appropriate to clarify the clinical findings.

   d. Recognize clinical situations that mandate urgent intervention.

   e. Apply physiologic principles to the development of a fluid and/or electrolyte management plan.

   f. Describe a monitoring plan for assessing the efficacy of treatment plan.
14. Assessment of the Child with a Suspected Hematologic / Oncologic Disorder
   a. Describe the findings from the history, physical exam and blood count that suggest a hematologic or malignant disorder.
   b. Describe the laboratory findings associated with various types of anaemia.
   c. Recognize the historical, physical and laboratory findings associated with a bleeding disorder.
   d. Select procedures that assist in the diagnosis of a malignancy.
   e. Describe a monitoring plan for assessing the efficacy of treatment plan.

15. Assessment of the Child with Suspected Acute Poisoning
   a. Describe the history and physical examination findings in common childhood poisonings.
   b. Describe management measures essential to sustaining a child during a diagnostic evaluation for acute poisoning.

16. Common Pediatric Surgical Presentations (Identify presenting symptoms)
   a. Genitourinary- Undescended testicles, phimosis, torsion of testicle
   b. Gastrointestinal- inguinal hernia, intussusception, hypertrophic pyloric stenosis
   c. Lymphatic- suppurative lymphadenitis

17. Care of the Child with an Abusive Home Situation or an Emotional Disorder
   a. Discuss the clinical findings associated with psychosocial deprivation and/or physical abuse.
   b. Recognize the historical information and clinical signs that may indicate an abusive home situation.
   c. Discuss common behavioral problems including attention deficit-hyperactivity disorder, school phobias, illicit drug use, drinking alcohol, smoking, and adolescent sexual activity that may occur among children from an abusive home situation.

18. Care for the Child in Pain or with a Terminal Illness
   a. Prescribe age appropriate and situation appropriate medications for an infant or child experiencing pain.
   b. Counsel families on the common stages of grief associated with the impending or accomplished death of an infant or child.

19. General Care of the Newborn
a. Recognize factors in the maternal history that may adversely affect the fetus or newborn.
b. Identify characteristics of a normal newborn physical examination and its acceptable variations.
c. Identify preventive and screening practices used in the newborn period.
d. Recommend an appropriate diet for a newborn and know the underlying basis for their commendation.
e. Provide anticipatory guidance to parents for the period from birth to 2 months of age.
f. Discuss the changes in cardiovascular and respiratory systems physiology that occur at birth.

20. Common Problems Encountered in the Newborn
   a. Develop a differential diagnosis for jaundice occurring in the newborn period.
   b. Discuss the common causes of respiratory distress encountered in the newborn period.
   c. Discuss the possible causes of cyanosis in the newborn period.
   d. Identify the possible causes of vomiting in the newborn period.
   e. Recognize the causes of hypoglycemia in the newborn period.
   f. Recognize the signs and symptoms of sepsis in the newborn and discuss the common causes of neonatal infection and the approach to therapy.
   g. Recognize the signs and symptoms of neonatal asphyxia and list the steps required for resuscitation.

21. Congenital Malformations and Genetics
   a. Discuss physical exam findings, and the clinical implications they are from, associated with the diagnosis of common:
      i. Chromosomal abnormalities (e.g. Trisomy 21).
      ii. Sex chromosome abnormalities (e.g. Turner’s syndrome, Klinefelter’s syndrome, Fragile X syndrome).
      iii. Other genetic disorders (e.g. Cystic Fibrosis, Sickle Cell Disease).
      iv. Congenital malformations (e.g. spina bifida, cleft lip and palate, hypospadias, etc).
   b. Identify prenatal diagnostic techniques and the accepted indications for their use, e.g. alpha-fetoprotein, amniocentesis.
c. Discuss the effects of commonly recognized teratogenic agents such as alcohol, hydantoin, maternal tobacco smoking and illicit drug use

d. Be able to use clinical reasoning to synthesize data into a prioritized differential diagnosis, working diagnosis, and plan.

6.54.6 Teaching and learning activities

9. Students will receive lectures and clinical correlation teaching on rounds. Weekly conferences will provide additional knowledge on subjects. The above list also is intended to help guide students’ reading. Students are strongly encouraged to learn about all of their patients’ past medical problems in addition to the acute problems to further enhance their knowledge.

10. Each student will keep a log book of specific diseases seen and procedures done while on their paediatrics rotation.

11. The student will rotate in the 3 different paediatrics wards.

12. The student will participate in the ward rounds, outpatient clinics, lectures, tutorials and demonstration.

13. The student will be allocated 10 beds and will have to present his/her plans for his/her patients explicitly during rounds. He/she will be allowed to clerk directly into the patient’s file which will be checked by at least an intern (including the authorization for investigation and treatment proposals).

14. It will be the duty of the student to take histories, clinical examination including daily entries of management information in the case notes of all the patients occupying those beds.

15. He/she will be expected to know and understand all details regarding his/her patients. The student should also be well informed regarding the other patients in his/her ward and cases of special interest in the other wards.

16. The student will keep a record of all clinical experiences in the departmental log book and get all observations countersigned appropriately.

6.54.7 Assessment methods

Log book of diseases and procedures; written final examination; oral final assessment; team evaluations based on observation.

6.54.8 Reading list


iv. Management of the child with a serious infection or severe malnutrition. Guidelines for care at the first-referral level in developing countries, WHO.

6.55 Course title: Surgery 2 (K8SU51055)

6.55.1 Course status: Core
6.55.2 Total credits: 13
6.55.3 Subject hours: 130
6.55.4 Course aims

To enable the Student to acquire the principles of the practice of Surgery which will include the theoretical knowledge, basic skills and ethics and to graduate as a general practitioner with the ability to make surgical decisions for the patients.

6.55.5 Course expected learning outcomes

The following three categories of broad goals for the clerkship are not meant to be limiting you to other goals that you may want to focus on but are intended to clearly outline what we expect for you to achieve by the end of the Surgery Clerkship. Herein you can review objectives linked to three main goals; 1) Competency, 2) Patient Care/Clinical Skills, and 3) Knowledge.

1. Competency

i. Demonstrate commitment to excellence, honesty, respect for others, integrity, and altruism in patient care.

ii. Objectives
   a. Treat all patients, patient family members, staff, and colleagues with respect, which includes maintaining a professional demeanor in speech and dress
   b. Strive for excellence
   c. Place the care of your patients above competing interests
   d. Practice informed consent with patients/patient families
   e. Work effectively as a part of the treatment team

iii. Learning Activity
   a. Professionalism should permeate all aspects of your performance and cannot really be taught in isolation. Important issues of professionalism include:
      i. Navigating the wards- your role in the team, working with ancillary providers, etc.
      ii. Approaching medical errors
      iii. Palliative Care
      iv. Communicating difficult news
iv. Evaluation
   a. Formative and summative feedback will be obtained from the ward team. The clerkship director will evaluate submissions and your interactions with them as well (including timeliness, attitude, initiative). How you treat staff, nurses, and all members of the health care team can play a role in this evaluation, though the clerkship does not specifically seek out formal feedback from these individuals.

2. Patient Care

   a. Evaluate and manage patients hospitalized with acute illness requiring surgical intervention.

   b. History Taking
      i. Objective
         1. Obtain and record a patient’s history and chief complaint in a logical, organized, and thorough manner. Demonstrate effective verbal skills, including appropriate use of open- and closed-ended questions, repetition, facilitation, explanation, summation, and interpretation.
         2. In addition to standard medical history, students to include detailed:
            a. Surgical history
            b. Anesthesia history

      ii. Learning Activity
         1. Interview, examine, and write a history and physical (H&P) for each new patient assigned to you, in addition to 4 summative written Case Reports for patients followed from admission to discharge (include H&P, problem list, differential diagnosis, additional investigation labs, imaging, surgical procedure, proposed case management and discharge plan).

      iii. Evaluation
         1. Case reports are submitted to the clerkship director who is primarily responsible for evaluating these. The interns and residents will give ongoing feedback as well. History taking skills will also be evaluated during daily rounds and a final oral assessment at the end of the rotation.

   c. Physical Exam
      i. Objective
         1. Perform and record a complete physical examination in a logical, organized, accurate and
thorough manner for new patients and an appropriately focused physical examination for follow up patients. Students will explain the purpose of these exams to the patient and obtain patient consent prior to doing so. Specific physical examination skill we expect students to master by the end of the surgery clerkship includes:

a. Ability to establish rapport with patient.
b. Appearance. Recognize signs of acute illness by evaluating skin color, respiration, hydration, mental status, interaction.
c. Vital signs. Measure heart rate, respiratory rate, blood pressure and temperature accurately, demonstrating knowledge of the appropriate sized blood pressure cuff and normal values.
d. HEENT exam. Be able to identify abnormalities of the oral cavity, throat, nasal passage, gross eye/pupils, and head.
e. Cardiovascular exam. Be able to identify normal heart sounds, extra heart sounds (S3, S4, pericardial friction rubs), systolic vs. diastolic murmurs
f. Pulmonary exam. Be able to identify normal breath sounds, pulmonary crackles and wheezes.
g. Abdominal exam. Be able to identify internal organs and abnormalities (splenomegaly, hepatomegaly, cholecystitis, appendicitis, masses). Be able to recognize and describe stigmata of liver disease including findings consistent with ascites, spider angiomata, palmar erythema, jaundice/scleral icterus, hepatomegaly. Be able to do a rectal examination and recognize when it is indicated. Be able to identify an acute surgical abdomen.
h. Endocrine exam. Be able to identify abnormalities of the thyroid and physical signs of thyroid disease and diabetes.
i. Neurology exam. Be able to test all cranial nerves, muscle strength/tone, reflexes, sensation, gait, and coordination and recognize abnormalities.
j. **Genitourinary exam.** Be able to identify abnormalities of the genitals and exam findings consistent with urinary tract abnormalities (flank pain, bladder distention).

k. **Skin exam.** Be able to identify abnormalities of the skin including rashes, deformities, burns and infections.

l. **Surgical procedures.** Be able to identify internal organs, vessels, and other structures during surgery. Be able to perform the following procedures: aseptic technique, passing NIG tube under supervision, urethral catheter placement, performing ET intubation under supervision, retractors, IV placement, simple skin suturing, chest tube insertion, venipuncture, wound care/dressing, abdominal incision, obtaining informed consent (thus knowing risks/benefits of the specific surgical procedure), suture and staple removal, two-handed and instrument surgical knot ties.

ii. **Learning Activity**
   1. Each student should be observed performing a complete physical examination and/or targeted portions to the exam along with surgical skills with given feedback and opportunities for questions.
   2. Students will watch and assist with basic procedures/surgeries.
   3. Physical findings on rounds and in theatre will be offered to supplement students’ skills.
   4. Students will record procedures in their log book.

iii. **Evaluation**
   1. Interns, Residents and Surgeons will observe students perform physical examinations in the course of patient care and these observations will inform the summative evaluation. Physical exam skills will also be tested in the final oral assessment. Log book will be reviewed.

d. **Lab Interpretation**
   i. **Objective**
      1. Obtain and understand important supplemental information, including CBC/FBP, blood smear, blood type and screen, serum chemistries, arterial
blood gas, coagulation studies, ECG, chest x-ray, ultrasonography, STI testing and urinalysis.

ii. Learning Activity
   1. **Lab Studies.** Students will have lectures on and clinical experience in different areas of the clinical lab where students will learn appropriate use and interpretation of laboratory tests.
   
   2. **ECG Studies.** Students will have lectures on and clinical experience in the systematic approach to reading ECGs (beginning with rate, rhythm, axis, intervals progressing through heart block and ventricular and atrial arrhythmias).
   
   3. **Radiologic Studies.** Students will have lectures on and clinical experience in the basics of reading plain radiographs (chest, abdomen, bones, skull, spine) beginning with normal studies and progressing through abnormal studies (pulmonary infiltrates, edema, pneumothorax, effusion, fractures, signs of obstruction, barium tests, etc) and introduction to CT scanning, ultrasonography, and magnetic resonance imaging. Images are presented both in a disease-specific orientation as well as in a problem-based setting (i.e. how to choose and interpret radiographic studies for the patient with hematuria; headache; abdominal pain, etc).

iii. Evaluation
   1. Students’ understanding of these tests will be assessed on rounds and through final written examination.

  e. Clinical Reasoning
     i. Objective
        1. Formulate and document an assessment that includes the relevant differential diagnoses based on data gathered to guide initial diagnostic evaluation and disease management.

     ii. Learning Activity
        1. This will be discussed on daily rounds with the team and during surgical procedures.

     iii. Evaluation
        1. This is assessed by the team on daily rounds, in surgery and review of progress notes. This is also assessed formally in the student’s written case reports. *Full development of this skill is a crucial component and goal of this clerkship.*
f. **Presentation Skills: Initial**
   i. **Objective**
      1. Orally present a new patient’s history and physical examination clearly and with appropriate detail.
   ii. **Learning Activity**
      1. This is typically performed with the intern, resident or surgeon one-on-one and feedback is given at that time, though this can occur as part of rounds. Students are to present at least 4 clinical cases.
   iii. **Evaluation**
      1. Surgical team members who directly observe this will provide formative and summative feedback. This will be considered in the student’s clinical assessment.

g. **Presentation Skills: Follow-up**
   i. **Objective**
      1. Orally present a follow-up patient’s case (including those with more than one problem) in a focused manner, including diagnostic and therapeutic plans.
   ii. **Learning Activity**
      1. This is practiced on daily rounds with the whole team present.
   iii. **Evaluation**
      1. Surgical team members who directly observe this will provide formative and summative feedback.

h. **Written Skills**
   i. **Objective**
      1. Write coherent, clear progress notes documenting working diagnosis and status of diagnostic evaluation and therapeutic plans.
   ii. **Learning Activity**
      1. Students practice this by writing daily progress notes on all their patients, in addition to required case reports. These should be on the chart in a timely manner (ideally before noon) if feedback is to be given.
   iii. **Evaluation**
      1. Medical team members will evaluate progress notes and provide feedback. This will also be evaluated in the 4 formal case reports.

i. **Patient and Family Counseling**
   i. **Objective**
1. Effectively communicate with the patient (and family if given consent by the patient) their physical findings, diagnosis, and treatment plan.

2. Educate on preventative and safety measures.

ii. Learning Activity

1. This is practiced on initial evaluation of new patients and throughout diagnosis/treatment on rounds and always observed by a member of the surgical team to ensure accurate information.

iii. Evaluation

1. Surgical team members will evaluate and provide feedback.

3. Knowledge

a. Demonstrate understanding of the clinical presentation, basic physiology, key physical findings, evaluation and management of diseases frequently encountered in an inpatient and outpatient surgical setting.

b. Objectives

i. Review the pathophysiology and be able to recognize and initiate evaluation and management plans for the following disease states/clinical presentations:

1. Abdominal Masses
   a. Causes and Diagnosis of Hepatomegaly
   b. Causes and treatment of Splenomegaly
   c. Differential diagnosis of pancreatic mass
   d. Common retroperitoneal masses
   e. Evaluation and Management of Abdominal Aortic Aneurysms

2. Acute Abdominal Pain
   a. Discuss the significance of various maneuvers utilized in evaluating acute abdominal pain. *Examples: iliopsoas sign, Rovsing’s sign, obturator sign, Murphy’s sign, cough tenderness, heel tap, cervical motion tenderness.*
   b. Know abdominal quadrant areas of presentations
   c. Discuss common non-surgical presentations of acute abdominal pain *Examples: MI, pneumonia, pleuritis, hepatitis, gastroenteritis, mesenteric adenitis, sickle cell crisis, DKA, herpes zoster, nerve root compression.*
   d. Upper:
      i. Cholecystitis, Cholelithiasis, Choledocholithiasis, Cholangitis
      ii. Pancreatitis
iii. Peptic Ulcer Disease with and without perforation
iv. Gastroesophageal reflux
v. Gastritis/Duodenitis
vi. Gastric Cancer
vii. Splenomegaly/splenic rupture
viii. Liver Abscess
ix. Pancreatic Cancer
e. Mid:
   i. Appendicitis
   ii. Small Bowel Obstruction: incarcerated hernia, adhesions, tumor
   iii. Meckel's Diverticulum
   iv. Mesenteric ischemia
f. Lower:
   i. Diverticular Disease
   ii. Inflammatory Bowel Disease
   iii. Enterocolitis
   iv. Colon Ischemia
   v. Bowel Obstruction: volvulus, tumor, stricture
   vi. Hemorrhoid
   vii. Gynecologic etiologies: ectopic pregnancy, ovarian cysts, tuboovarian abscess, salpingitis, endometriosis
   viii. Genitourinary etiologies: UTI, pyelonephritis, urterolithiasis, testicular torsion
3. Gastrointestinal hemorrhage
   a. Medical vs. Surgical management of: peptic ulcer, variceal hemorrhage, Mallory-Weiss tear, gastric ulcer (benign vs. malignant), Meckel’s diverticulum, intussusception, diverticulosis, ulcerative colitis, colon cancer, rectal cancer, hemorrhoids, AV malformation
4. Abdominal Wall & Groin Masses
   a. Hernia- direct/indirect, incarcerated/strangulated/reducible
   b. Adenopathy
   c. Muscular strain
   d. Desmoid tumor
   e. Neoplasm
   f. Rectus sheath hematoma
5. Jaundice
a. Etiology: Prehepatic, intrahepatic (both non-obstructive) and posthepatic (obstructive), Painful vs. Non-painful, Benign vs. Malignant, Inflammatory vs. Non-inflammatory  
b. Cholecystitis, Choledocholithiasis, Cholangitis, Cholangiocarcinoma  
c. Hepatic abscess  
d. Pancreatic cancer  
e. Periampullary cancer  
f. Hepatic cancer  
g. Autoimmune hemolysis  
h. Hepatitis  
i. Hematobilia  
j. Periampullary duodenal diverticulum  
6. Perianal  
a. Pain- benign, malignant, inflammatory  
b. Masses  
c. Discharge  
d. Hemorrhoids  
7. Altered Neurological Status  
a. Cushing reflex in brain herniation  
b. Management of headache  
   i. Intracranial hemorrhage  
   ii. Brain tumors  
   iii. Brain abscesses, intracranial infections  
   iv. Draining of Subdural Hematomas  
   v. VP shunt placement  
c. TIA, CVA  
d. Hydrocephalus  
e. Seizure disorders  
f. Opened/Closed Head Injury  
8. Back Pain  
a. Radicular pain symptoms- Herniated disc  
b. Spondylosis/spondylolisthesis  
c. Scoliosis  
d. Osteoporosis and Degenerative disc disease  
e. Primary and Metastatic tumors of the spine  
f. Infectious: osteomyelitis, epidural and paraspinal abscess  
g. Traumatic: musculoskeletal strain, vertebral fractures/dislocation leading to cord injury  
h. Retroperitoneal sources: aortic aneurysm, GU sources, pancreatic disease  
9. Breast Complaints  
a. Masses- benign vs. malignant
b. Abscess
c. Discharge
d. Pain
10. Neck Masses
   a. Embryologic origin
   b. Inflammatory- cervical adenitis, tuberculous adenitis
   c. Neoplasm
   d. Thyroid disease
11. Chest Pain and Shortness of Breath
   a. Pneumothorax
   b. Hemothorax
   c. Pulmonary embolus
   d. Thoracic aortic dissection
   e. Esophageal rupture
   f. Gastroesophageal reflux
   g. Empyema
   h. Lesions
   i. Cancer
   j. Tuberculosis and surgical complication
12. Lung Nodule
   a. Cancer- primary vs. metastases
   b. Infectious
13. Vascular
   a. Abdominal Aortic Aneurysm
   b. Transient Ischemic Attack
   c. Carotid Bruits
   d. Acute Extremity (ischemia/necrosis/gangrene)
   e. Embolic vs. Thrombotic Occlusions
   f. Ischemia
   g. Atherosclerosis
   h. Claudication
14. ENT
   a. Ear pain- infection, trauma, neoplasm, inflammation, vascular
   b. Hearing Loss
   c. Tinnitus
   d. Epistaxis
   e. Chronic rhinitis/rhinorrhea
   f. Tonsillectomy
   g. Salivary gland mass
   h. Oral cavity pain- inflammation, infection, neoplasm
   i. Difficulty swallowing
      i. Motility disorder- neurologic or motor
ii. Extrinsic obstruction/compression
iii. Intrinsic obstruction/compression—neoplasm, inflammation, foreign body, infection

15. Urology
   a. Scrotal pain/swelling
      i. Testicular vs. Extratesticular
      ii. Benign vs. Malignant
      iii. Emergent vs. Non-emergent
   b. Hematuria
   c. Cancer
   d. Renal and ureteral calculi
   e. Incontinence
   f. Prostate cancer/elevated PSA
   g. Prostate nodule

16. Pediatrics
   a. Bowel Obstruction
   b. Tumors/Masses
   c. Undescended testicles
   d. Hernias
   e. Congenital anomalies
   f. Trauma
   g. Chronic otitis media

17. Fluid & Electrolytes: Shock & Acid/base
18. Laceration/Cellulitis/Abscess/Wound Care
19. Nutrition in surgery
20. HIV and other transmissible diseases in surgery
21. Skin Conditions
   a. Burn injury
   b. Skin growths
      i. Benign- cysts, papillomas, warts, corns, horns, neurofibromas, cylindroma, nevi
      ii. Premalignant conditions- leukoplakia, Bowens disease, Pagets disease of the nipple
      iii. Malignant tumors- basal cell carcinoma, squamous cell carcinoma, melanoma

22. Trauma
   a. Evaluation- ABC’s, types of injury and appropriate screening
   b. Classes of hemorrhagic shock
   c. Fluid resuscitation

23. Perioperative Complications
   a. Preoperative assessment- risks (pulmonary, cardiovascular, renal, metabolic); anesthesia (age,
urgency of intervention); history, physical and laboratory findings
b. Perioperative assessment- informed consent, monitoring techniques, fluid/electrolyte balance, risk of bleeding, risk of alcohol withdrawal syndrome
c. Postoperative assessment- surgical wound healing/care, level of monitoring
d. Postoperative Complications
   i. Fever
   ii. Sepsis/Septic shock
   iii. Wound infection or dehiscence
   iv. Hematoma and seroma
   v. Incisional hernia
   vi. Respiratory distress/insufficiency-atelectasis, pneumonia, aspiration, pulmonary edema, ARDS, pulmonary embolism, fat embolism
   vii. Oliguria
   viii. Hypotension- hypovolemia, sepsis, shock, medications
   ix. Chest pain, arrhythmias
   x. Abnormal bleeding- surgical site, gastroduodenal (stress ulcerations)
   xi. Nausea, vomiting, abdominal distension-paralytic ileus, acute gastric dilatation, obstruction, fecal impaction
   xii. Metabolic disorders- hyperglycemia, adrenal insufficiency, thyroid storm
   xiii. Alteration in cognitive function- hypoxia, perioperative stroke, medication effects, metabolic/electrolyte abnormalities, delirium, convulsions
   xiv. Be able to use clinical reasoning to synthesize data into a prioritized differential diagnosis, working diagnosis, and plan.

6.55.6 Teaching and learning activities

i. Students will receive lectures and clinical correlation teaching on rounds and in surgery. Weekly conferences will provide additional knowledge on medical subjects. The above list also is intended to help guide students’
reading. Students are strongly encouraged to learn about all of their patients’ past medical problems in addition to the acute problems to further enhance their medical/surgical knowledge.

ii. Each student will keep a log book of specific diseases seen and procedures done while on their surgery rotation.

iii. Students will be expected to give tutorials on assigned diseases/topics during the rotation.

6.55.7 Assessment methods

Log book of diseases and procedures; oral presentation of tutorials; written examination; oral final assessment; team evaluations based on observation; and assessment of the 4 required written case reports.

6.55.8 Reading list

i. Clinical Surgery, Das and Das.

ii. Clinical Surgery, by Michael M. Henry

iii. Principles and practice of surgery, by Garden

iv. Hamilton Bailey’s Physical Signs in Clinical Surgery


vi. J.L. Eshleman. A textbook of Urology and Nephrology in Africa

vii. Clinical Paediatric surgery: by Jones

6.56 Course title: Obstetrics and Gynaecology 2 (K8OB51056)

6.56.1 Course status: Core

6.56.2 Total credits: 13

6.56.3 Subject hours: 130

6.56.4 Course aims

This course intends to impart competency in full range of basic obstetric and gynaecology conditions. In particular, knowledge, skills and attitude toward managing obstetric and gynaecological conditions will be ascertained in a comprehensive manner in this discipline. Students will be able to gain knowledge, skill and attitude in managing diseases and conditions through attendance and participating in clinical rotations, outpatients clinical rotation, assisting obstetrics and gynaecological surgeries and procedures.

MD students will also have ample opportunity to scrub in for surgical cases, work closely with Ob/Gyn staff and residents in both the outpatient and inpatient settings, and experience hands-on training.
6.56.5 Course expected learning outcomes

The following three categories of broad goals for the clerkship are not meant to be limiting you to other goals that you may want to focus on but are intended to clearly outline what we expect for you to achieve by the end of obstetric and gynaecology clerkship. Here in you can review objectives linked to three main goals: 1) Competency 2) Patient care/clinical skills, 3) Knowledge

1. Competency

   a. Demonstrate commitment to excellence, honesty, respect for others, integrity, and altruism in patient care.
   b. Objectives
      i. Treat all patients, patient family members, staff, and colleagues with respect, which includes maintaining a professional demeanor in speech and dress
      ii. Strive for excellence
      iii. Place the care of your patients above competing interests
      iv. Practice informed consent with patients/patient families
      v. Work effectively as a part of the treatment team
   c. Learning Activity
      i. Professionalism should permeate all aspects of your performance and cannot really be taught in isolation. Important issues of professionalism include:
         1. Navigating the wards- your role in the team, working with ancillary providers, etc.
         2. Approaching medical errors
         3. Palliative Care
         4. Communicating difficult news
   d. Evaluation
      i. Formative and summative feedback will be obtained from the ward team. The clerkship director will evaluate submissions and your interactions with them as well (including timeliness, attitude, initiative). How you treat staff, nurses, and all members of the health care team can play a role in this evaluation, though the clerkship does not specifically seek out formal feedback from these individuals.

2. Patient Care

   a. Evaluate and manage women hospitalized for acute and chronic gynecological illness, childbirth, prenatal and postnatal care.
   b. History Taking
      i. Objective
         1. Obtain and record a patient’s history and chief complaint in a logical, organized, and thorough manner. Demonstrate effective verbal skills, including appropriate use of open-
and closed-ended questions, repetition, facilitation, explanation, summation, and interpretation.

2. In addition to standard medical history, students to include detailed:
   a. Menstrual cycle history
   b. Obstetric history
   c. Gynecologic history
   d. Contraceptive history
   e. Sexual history- with risk for sexually transmitted diseases
   f. Family/genetic history
   g. Social history- with risk for domestic violence

ii. Learning Activity
   1. Interview, examine, and write a history and physical (H&P) for each new patient assigned to you, in addition to 4 summative Case Reports for patients followed from admission to discharge in both obstetrics and gynecology (include H&P, problem list, differential diagnosis, additional investigation- labs, imaging, etc, proposed case management and discharge plan).

iii. Evaluation
   1. Case reports are submitted to the clerkship director who is primarily responsible for evaluating these. The interns and residents will give ongoing feedback as well. History taking skills will also be evaluated during daily rounds and a final oral assessment at the end of the rotation.

c. Physical Exam
   i. Objective
   1. Perform and record a complete physical examination in a logical, organized, accurate and thorough manner for new patients and an appropriately focused physical examination for follow up patients. Students will explain the purpose of these exams/tests to the patient and obtain patient consent prior to doing so. Specific physical examination skill we expect students to master by the end of the obstetrics and gynecology clerkship includes:
      a. Ability to establish rapport with patient.
      b. Appearance. Recognize signs of acute illness by evaluating skin color, respiration, hydration, mental status, interaction.
      c. Vital signs. Measure heart rate, respiratory rate, blood pressure and temperature accurately, demonstrating knowledge of the appropriate sized blood pressure cuff and normal values.
d. **Cardiovascular exam.** Be able to identify normal heart sounds, extra heart sounds (S3, S4, pericardial friction rubs), systolic vs. diastolic murmurs.

e. **Pulmonary exam.** Be able to identify normal breath sounds, pulmonary crackles and wheezes.

f. **Abdominal exam.** Be able to identify internal organs and abnormalities (splenomegaly, hepatomegaly, masses). Be able to do a rectal examination and recognize when it is indicated.

g. **Skin exam.** Be able to identify abnormalities of the skin including rashes, deformities, burns and infections.

h. **Neurologic exam.** Be able to identify hyperreflexia in preeclampsia.

i. **Pelvic exam.** Be able to identify both normal and abnormal findings of the vagina, cervix, uterus and ovaries via speculum and bimanual palpation. Perform a pap smear and obtain a sexually transmitted disease specimen. Be able to recognize physical signs of pregnancy.

j. **Breast exam.** Be able to identify both normal and abnormal findings of the breasts.

k. **Deliveries and perinatal exams.** Per abdominal examination be able to record fundal height, presence or absence of contractions, fetal size, lie, and presentation. Be able to count fetal heart rate. Be able to identify stages of birth through proper vaginal examination and safely deliver a child. Students will also assist in cesarean sections and D&C or evacuation for early spontaneous abortions.

l. **Other procedures.** Intravenous catheter placement, blood culture and other lab collection, nasogastric tube placement, urethral catheter insertion, endotracheal intubation during anesthesia of gynecological procedures.

m. **MD5 additional procedural requirements.** Perform 15 abdominal examinations, 15 gynecological examinations, 5 D&C or evacuations in spontaneous early abortion, 5 other minor procedures such as incision of an abscess, 10 assistance of TAH or laparotomies, 10 Pap smears, 20 normal deliveries, 10 abnormal
deliveries, 10 cesarean sections, and 5 episiotomy repairs.

ii. Learning Activity
   1. Each student should be observed performing a complete physical examination and/or targeted portions to the exam with given feedback and opportunities for questions.
   2. Students will observe and assist with basic procedures.
   3. Physical findings on rounds will be offered to supplement students’ skills.
   4. Students will record procedures in their log book.

iii. Evaluation
   1. Interns, Residents and Specialists will observe students perform physical examinations in the course of patient care and these observations will inform the summative evaluation. Physical exam skills will also be tested in the final oral assessment. Log book will be reviewed.

d. Lab Interpretation
   i. Objective
      1. Obtain and understand important supplemental information, including CBC/FBP, blood smear, blood type and screen, serum chemistries, ABG, coagulation studies, ECG, urinalysis, Pap smear, pregnancy testing, STI testing, chorionic villous sampling, potassium hydroxide examination, wet smear, scabies oil mount, Tzanck smear, ultrasound and maternal/fetal monitoring.

   ii. Learning Activity
      1. Lab Studies. Students will have lectures on and clinical experience in different areas of the clinical lab where students will learn appropriate use and interpretation of laboratory tests.
      2. ECG Studies. Students will have lectures on and clinical experience in the systematic approach to reading ECGs (beginning with rate, rhythm, axis, intervals progressing through heart block and ventricular and atrial arrhythmias).
      3. Radiologic Studies. Students will have lectures on and clinical experience in the basics ultrasonography.
      4. Maternal/Fetal monitoring. Students will have lectures and clinical experience in the various methods of monitoring conditions during pregnancy and labor/birth.

   iii. Evaluation
      1. Students’ understanding of these tests will be assessed on rounds and through final written examination.

e. Clinical Reasoning
   i. Objective
1. Formulate and document an assessment that includes the relevant differential diagnoses based on data gathered to guide initial diagnostic evaluation and disease management.

ii. Learning Activity
1. This will be discussed on daily rounds with the team.

iii. Evaluation
1. This is assessed by the team on daily rounds and review of progress notes. This is also assessed formally in the student’s written case reports. *Full development of this skill is a crucial component and goal of this clerkship.*

f. Presentation Skills: Initial
i. Objective
1. Orally present a new patient’s history and physical examination clearly and with appropriate detail.

ii. Learning Activity
1. This is typically performed with the intern or resident one-on-one and feedback is given at that time, though this can occur as part of rounds. Students are expected to give 5 formal case presentations.

iii. Evaluation
1. Team members who directly observe this will provide formative and summative feedback. Presentation skills will also be tested at the final oral assessment.

g. Presentation Skills: Follow-up
i. Objective
1. Orally present a follow-up patient’s case (including those with more than one problem) in a focused manner, including diagnostic and therapeutic plans.

ii. Learning Activity
1. This is practiced on daily rounds with the whole team present.

iii. Evaluation
1. Team members who directly observe this will provide formative and summative feedback.

h. Written Skills
i. Objective
1. Write coherent, clear progress notes documenting working diagnosis and status of diagnostic evaluation and therapeutic plans.

ii. Learning Activity
1. Students practice this by writing daily progress notes on all their patients, in addition to required case reports. These should be on the chart in a timely manner (ideally before noon) if feedback is to be given.
iii. Evaluation

1. Team members will evaluate progress notes and provide feedback. This will also be evaluated in the 8 formal case reports (4 from obstetrics and 4 from gynecology).

i. Patient and Family Counseling

   i. Objective
   
   1. Effectively communicate with the patient (and family if given consent by the patient) their physical findings, diagnosis, and treatment plan.
   2. Educate on preventative and safety measures.

   ii. Learning Activity
   
   1. This is practiced on initial evaluation of new patients and throughout diagnosis/treatment on rounds and always observed by a member of the team to ensure accurate information.

   iii. Evaluation
   
   1. Team members will evaluate and provide feedback.

3. Knowledge

   a. Demonstrate understanding of the clinical presentation, basic physiology, key physical findings, evaluation and management of diseases frequently encountered in an inpatient and outpatient obstetrics and gynecological setting.

   b. Objectives

   i. Review the pathophysiology and be able to recognize and initiate evaluation and management plans for the following normal and disease states/clinical presentations:

   1. Apply recommended prevention strategies to women throughout the life-span.
   2. Demonstrate knowledge of preconception care including the impact of genetics, medical conditions (including medications to treat these conditions) and environmental factors (substance abuse, nutrition, exercise, immunizations) on maternal health and fetal development.
   3. Explain the normal physiologic changes of pregnancy.
      a. Maternal physiologic and anatomic changes
      b. Fetal and placental physiology
      c. Interpretation of common diagnostic studies
   4. Demonstrate knowledge of antepartum care.
      a. Diagnose pregnancy
      b. Determine gestational age
      c. Identify risk factors for complications
      d. Describe appropriate diagnostic studies
      e. Describe nutritional needs of pregnant women
      f. Describe adverse effects of drugs and the environment
g. Describe approaches to assessing fetal well-being, fetal growth, amniotic fluid volume, fetal lung maturity

5. Demonstrate knowledge of intrapartum care.
   a. List the signs and symptoms of true and false labor
   b. Describe the three stages of labor and recognize common abnormalities
   c. Describe methods of monitoring the mother and fetus
   d. Describe the steps of a vaginal delivery
   e. List indications for operative delivery

6. Demonstrate knowledge of postpartum care of the mother and newborn.
   a. Discuss techniques for assessing newborn status
   b. Describe immediate care of the normal newborn
   c. Recognize situations requiring immediate intervention in newborn care
   d. Discuss the normal maternal physiologic changes of the postpartum period
   e. Describe the components of normal postpartum care
   f. Discuss the appropriate postpartum patient counseling
   g. List the normal physiologic and anatomic changes of the breast during pregnancy and postpartum
   h. Recognize and know how to treat common postpartum abnormalities of the breast
   i. List reasons why breast feeding should/should not be encouraged
   j. Fistulas
   k. Mastitis

7. Describe problems in obstetrics.
   a. Ectopic pregnancy
      i. List risk factors
      ii. Describe how it is diagnosed and treated
   b. Spontaneous abortion
      i. Differentiate the types (missed, complete, incomplete, threatened, septic)
      ii. List causes and complications
   c. Anemia
   d. Endocrine disorders including diabetes mellitus and thyroid disease
   e. Hypertension
   f. Cardiovascular disease
   g. Pulmonary disease
h. Renal disease
i. Gastrointestinal disease
j. Neurologic disease
k. Autoimmune disorders
l. Alcohol, tobacco and substance abuse
m. Surgical abdomen
n. Infectious disease
   i. Syphilis
   ii. TORCH (Toxoplasmosis, Rubella, Cytomegalovirus, Herpes)
   iii. Group B Streptococcus
   iv. Hepatitis
   v. HIV
   vi. HPV
   vii. Parvovirus
   viii. Varicella
   ix. Malaria
o. Pre-eclampsia and Eclampsia
   i. Classify types of hypertension in pregnancy
   ii. Describe pathophysiology, diagnosis, management
   iii. List maternal and fetal complications
p. Alloimmunization
   i. Describe pathophysiology and diagnosis
   ii. Discuss use of immunoglobin prophylaxis
q. Multifetal gestation
   i. Describe embryology
   ii. Describe unique maternal and fetal physiologic changes
   iii. Diagnosis and management
   iv. Potential complications
r. Fetal death
   i. Describe common causes in each trimester
   ii. Describe symptoms/physical findings and diagnostic methods for diagnosis
   iii. Medical and psychosocial management
s. Abnormal labor
   i. List abnormal patterns
   ii. Describe causes and methods of evaluation
   iii. Complications
   iv. Indications/contraindications for oxytocin
   v. Risks/benefits of trial of labor after previous Cesarean delivery

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vi. Discuss strategies for emergency management of breech, shoulder dystocia, transverse lie, and cord prolapse

t. Third Trimester Bleeding
   i. List causes
   ii. Describe initial evaluation
   iii. Differentiate signs and symptoms
   iv. Maternal and fetal complications of placenta previa and abruptio placenta
   v. Management for acute blood loss
   vi. List indications and potential complications of blood product transfusion

u. Preterm Labor
   i. Identify risk factors and causes
   ii. Describe signs/symptoms
   iii. Describe initial management
   iv. List indications/contraindications of medications used
   v. Identify adverse outcomes

v. Premature Rupture of Membranes
   i. List history, physical findings and diagnostic methods to confirm
   ii. Identify risk factors
   iii. Describe risks/benefits of expectant management vs. immediate delivery based on gestational age
   iv. Describe methods to monitor status during expectant management

w. Postpartum Hemorrhage
   i. Identify risk factors
   ii. Construct a differential diagnosis for immediate and delayed hemorrhage
   iii. Develop an evaluation and management plan

x. Postpartum Infection
   i. Identify risk factors
   ii. List common infections
   iii. Develop and evaluation and management plan

y. Anxiety and Depression
   i. Identify risk factors
   ii. Differentiate between postpartum blues, depression and psychosis
iii. Describe treatment options and recognize those appropriate for pregnancy and lactation

z. Postterm Pregnancy
   i. Identify normal duration of gestation
   ii. Identify complications of prolonged gestation
   iii. Describe the evaluation and management options

aa. Fetal Growth Abnormalities
   i. Define macrosomia and fetal growth restriction
   ii. Discuss etiologies of abnormal growth
   iii. Cite methods of detection
   iv. Describe management
   v. State associated morbidity and mortality

8. Describe menstrual cycle physiology, discuss puberty and menopause and explain normal and abnormal bleeding.
   a. Puberty
      i. Describe changes in the hypothalamic-pituitary-ovarian axis and target organs
      ii. Explain normal sequence of pubertal events and ages of occurrence
      iii. Describe precocious and delayed puberty, and evaluation of these conditions
   b. Amenorrhea an Oligomenorrhea
      i. Define and explain pathophysiology and etiology
      ii. Discuss management and consequences of no treatment
   c. Hirsutism and Virilization
      i. Recognize normal variations and abnormalities in secondary sex characteristics
      ii. Describe pathophysiology and etiologies
      iii. Describe evaluation and management
   d. Normal and Abnormal Uterine Bleeding
      i. Define the normal menstrual cycle, endocrinology and physiology
      ii. Describe the pathophysiology, etiology, evaluation and medical/surgical management of abnormal uterine bleeding
   e. Dysmenorrhea
      i. Define and distinguish primary and secondary dysmenorrhea
ii. Describe pathophysiology, etiology, evaluation and management

f. Metromenorrhagia
   i. Define
   ii. Describe pathophysiology, etiology, evaluation and management

g. Menopause
   i. Define and describe changes in the hypothalamic-pituitary-ovarian axis
   ii. Recognize symptoms and exam findings
   iii. Discuss management options
   iv. Discuss long-term changes associated with menopause

h. Premenstrual syndrome and Premenstrual Dysphoric Disorder
   i. Identify criteria for diagnosis
   ii. List treatment options

9. Describe the etiology and evaluation of infertility.

10. Develop a thorough understanding of contraception, including sterilization and abortion.
   a. Describe mechanism of action and effectiveness of contraceptive methods (oral contraceptive pills, injectables, condoms, intrauterine devices)
   b. Describe methods of male and female surgical sterilization
   c. Explain surgical and non-surgical methods of pregnancy termination, along with potential complications
   d. Post-abortion infections

11. Demonstrate knowledge of benign gynecological conditions.
   a. Vulvar and Vaginal Disease
      i. Vulvovaginitis
      ii. Describe dermatologic disorders of the vulva
      iii. Discuss evaluation and management
   b. Sexually Transmitted Infections
      i. Discuss guidelines for screening and partner notification/treatment
      ii. Describe prevention strategies, including immunization
      iii. Describe symptoms and exam findings associated with common STIs
      iv. Discuss evaluation and management
v. Describe the pathophysiology of salpingitis and pelvic inflammatory disease along with possible long-term sequelae
c. Uterine Fibroids
d. Genital tuberculosis
e. Urinary Tract Infections
   i. Describe diagnosis and treatment
f. Pelvic Organ Prolapse and Urinary Incontinence
   i. Describe normal pelvic anatomy and pelvic support
   ii. Differentiate the types of urinary incontinence
   iii. Describe evaluation and diagnosis
   iv. Describe anatomic changes associated
   v. Describe medical and surgical management
g. Endometriosis
   i. List most common sites
   ii. Describe symptoms and exam findings
   iii. Describe diagnosis and management

12. Formulate a differential diagnosis of the acute abdomen and chronic pelvic pain.
13. Describe common breast conditions and outline the evaluation of breast complaints.
   a. Describe symptoms, exam findings and initial management of benign or malignant conditions of the breast
   b. Discuss evaluation of mastalgia, mass, and nipple discharge
15. Describe gynecological malignancies including risk factors, signs and symptoms, initial evaluation and treatment options.
   a. Gestational Trophoblastic Neoplasia
      i. Recognize the difference between molar pregnancy and malignant GTN
   b. Vulvar and Vaginal Neoplasms
c. Cervical Disease and Neoplasia
d. Uterine Leiomyomas
e. Endometrial Hyperplasia and Carcinoma
f. Ovarian Neoplasms
   i. Compare functional cysts, benign ovarian neoplasms and ovarian cancers

16. Provide a preliminary assessment of patients with sexual concerns.
   a. Explain the physiology of the female sexual response
   b. Classify patterns of female sexual dysfunction
   c. Sexual Assault- Describe medical and psychosocial management
   d. Domestic Violence- Describe screening methods and communicate available resources including short-term safety

17. Be able to use clinical reasoning to synthesize data into a prioritized differential diagnosis, working diagnosis, and plan.

6.56.6 Teaching and learning activities

During this course the student will have a series of

i. Lectures and Tutorials
ii. Bedside teaching and Demonstrations and an increasing participation in practical procedures and Surgery.
iii. They will be given increasing levels of responsibility, but always under the supervision of a lecture.
iv. There will be Journal clubs and encouragement of self-directed learning.

6.56.7 Assessment methods

The student will be assessed using

i. Objective Structured Clinical Examination (OSCE)
ii. End of rotation oral examination
iii. End of semester examinations

6.56.8 Reading list

i. Hutchison’s clinical methods (24th Edition), by Robert Hutchison
v. William Gynaecology. 24th Edition
vi. Dc Dutta Obstetric. 7<sup>th</sup> Edition.
vii. Dc Dutta Gynaecology. 4<sup>th</sup> Edition.
viii. Current-Diagnosis and Treatment. Obstetrics and Gynaecology.
ix. Essentials of Obstetrics and Gynaecology Hackers &Moore. 5<sup>th</sup> Edition
x. Department Guidelines Handbook Obstetrics and Gynaecology- KCMC

6.57 Course title: Emergency Medicine 2 (K8EM51057)
6.57.1 Course status: Core
6.57.2 Total credits:
6.57.3 Subject hours:
6.57.4 Course aims
i. Introduce the student to emergency medicine and provide the student with accurate and contemporary knowledge in regard to different areas of emergency medicine.
ii. To enable and equip students with the needed knowledge and skills to responsibly manage patients in emergency situations from all major sub-specialities.
iii. To equip students with knowledge of basic and advanced life support.
iv. To contrast and highlight the differences in regard to international standard and working in a country with limited resources.

6.57.5 Course expected learning outcomes

The following three categories of broad goals for the clerkship are not meant to be limiting you to other goals that you may want to focus on but are intended to clearly outline what we expect for you to achieve by the end of the Emergency Medicine Clerkship. Herein you can review objectives linked to three main goals; 1) Competency 2) Patient Care/Clinical Skills, and 3) Knowledge.

1. Competency
a. Demonstrate commitment to excellence, honesty, respect for others, integrity, and altruism in patient care.
b. Objectives
   i. Treat all patients, patient family members, staff, and colleagues with respect, which includes maintaining a professional demeanor in speech and dress
   ii. Strive for excellence
   iii. Place the care of your patients above competing interests
   iv. Practice informed consent with patients/patient families
v. Work effectively as a part of the treatment team
c. Learning Activity
   i. Professionalism should permeate all aspects of your performance and cannot really be taught in isolation. Important issues of professionalism include:
      1. Navigating the department- your role in the team, working with ancillary providers, etc.
      2. Approaching medical errors
      3. Palliative Care
      4. Communicating difficult news
d. Evaluation
   i. Formative and summative feedback will be obtained from the emergency team. The clerkship director will evaluate submissions and your interactions with them as well (including timeliness, attitude, initiative). How you treat staff, nurses, and all members of the health care team can play a role in this evaluation, though the clerkship does not specifically seek out formal feedback from these individuals.

2. Patient Care
   a. Evaluate and manage patients with acute illness and in an emergency medicine setting.
   b. History Taking
      i. Objective
         1. Obtain and record a patient’s history and chief complaint in a logical, organized, and thorough manner. Demonstrate effective verbal skills, including appropriate use of open- and closed-ended questions, repetition, facilitation, explanation, summation, and interpretation.
      ii. Learning Activity
         1. Interview, examine, and write a history and physical (H&P) for each new patient assigned to you.
      iii. Evaluation
         1. H&Ps will be submitted to the clerkship director who is primarily responsible for evaluating these. The interns and residents will give ongoing feedback as well. History taking skills will also be evaluated during daily work and a final oral assessment at the end of the rotation.
   c. Physical Exam
      i. Objective
         1. Perform and record an appropriately focused physical examination in a logical, organized, accurate and thorough manner for all new patients.
Students will explain the purpose of these exams to the patient and obtain patient consent prior to doing so. Specific physical examination skill we expect students to master by the end of the emergency medicine clerkship includes:

a. **Ability to establish rapport with patient.**

b. **Appearance.** Recognize signs of acute illness by evaluating skin color, respiration, hydration, mental status, interaction.

c. **Vital signs.** Measure heart rate, respiratory rate, blood pressure and temperature accurately.

d. **HEENT exam.** Be able to identify abnormalities of the oral cavity, throat, nasal passage, gross eye/pupils, and head.

e. **Cardiovascular exam.** Be able to identify normal heart sounds, extra heart sounds (S3, S4, pericardial friction rubs), systolic vs. diastolic murmurs.

f. **Pulmonary exam.** Be able to identify normal breath sounds, stridor, pulmonary crackles and wheezes.

g. **Abdominal exam.** Be able to identify internal organs and abnormalities (splenomegaly, hepatomegaly, cholecystitis, appendicitis, masses, ascites, and acute abdomen). Be able to do a rectal examination and recognize when it is indicated.

h. **Endocrine exam.** Be able to identify abnormalities of the thyroid and physical signs of thyroid disease and diabetes.

i. **Neurology exam.** Be able to test all cranial nerves, muscle strength/tone, reflexes, sensation, gait, and coordination and recognize abnormalities.

j. **Musculoskeletal exam.** Be able to identify fractures, damage to ligaments and muscle abnormalities.

k. **Genitourinary exam.** Be able to identify abnormalities of the genitals and exam findings consistent with urinary tract abnormalities (flank pain, bladder distention).
l. **Skin exam.** Be able to identify abnormalities of the skin including rashes, deformities, burns and infections.

m. Techniques for each of the following basic procedures: venipuncture, peripheral intravenous catheter, femoral vein puncture, endotracheal intubation, cardiopulmonary resuscitation, hemostasis, suturing, wound care, incision and drainage, removal of foreign bodies, splint application

ii. **Learning Activity**
   1. Each student should be observed performing a focused physical examination with given feedback and opportunities for questions.
   2. Students will watch and assist with basic procedures.
   3. Physical findings during daily patient care will be offered to supplement students’ skills.
   4. Students will record procedures in their log book.

iii. **Evaluation**
   1. Interns, Residents and Specialists will observe students perform physical examinations in the course of patient care and these observations will inform the summative evaluation. Physical exam skills will also be tested in the final oral assessment. Log book will be reviewed.

**d. Lab Interpretation**

i. **Objective**
   1. Obtain and understand important supplemental information, including CBC/FBP, blood smear, blood culture, blood type and screen, arterial blood gas, serum chemistries, hepatic function panel, hepatitis serologies, cardiac biomarkers, thyroid function tests, ABG, coagulation studies, stool occult blood, ECG, chest x-ray, ultrasonography, STI testing and urinalysis.

ii. **Learning Activity**
   1. **Lab Studies.** Students will have lectures on and clinical experience in different areas of the clinical lab where students will learn appropriate use and interpretation of laboratory tests.
   2. **ECG Studies.** Students will have lectures on and clinical experience in the systematic approach to reading ECGs (beginning with rate, rhythm, axis,
intervals progressing through heart block and ventricular and atrial arrhythmias).

3. Radiologic Studies. Students will have lectures on and clinical experience in the basics of reading plain radiographs (chest, abdomen) beginning with normal studies and progressing through abnormal studies (pulmonary infiltrates, edema, pneumothorax, effusion, etc) and introduction to CT scanning, ultrasonography, and magnetic resonance imaging.

iii. Evaluation
   1. Students’ understanding of these tests will be assessed in daily patient care and through final written examination.

e. Clinical Reasoning
   i. Objective
      1. Formulate and document an assessment that includes the relevant differential diagnoses based on data gathered to guide initial diagnostic evaluation and disease management. Students will be able to identify and prioritize urgent and life-threatening diagnoses in the differential.

   ii. Learning Activity
      1. This will be discussed during daily patient care with the team.

   iii. Evaluation
      1. This is assessed by the emergency medical team in daily patient care and review of patient notes. Full development of this skill is a crucial component and goal of this clerkship.

f. Presentation Skills
   i. Objective
      1. Orally present a new patient’s history and physical examination clearly and with appropriate detail.

   ii. Learning Activity
      1. This is typically performed with the intern or other member of the emergency medical team one on one and feedback is given at that time.

   iii. Evaluation
      1. Emergency medical team members who directly observe this will provide formative and summative feedback. Presentation skills will also be tested at the final oral assessment.

g. Written Skills
   i. Objective
1. Write coherent, clear notes documenting working diagnosis and status of diagnostic evaluation and therapeutic plans.

ii. Learning Activity
   1. Students practice this by writing evaluation notes on all their patients. These should be on the chart in a timely manner if feedback is to be given.

iii. Evaluation
   1. Emergency medical team members will evaluate notes and provide feedback.

h. Patient and Family Counselling
   i. Objective
      1. Effectively communicate with the patient (and family if given consent by the patient) their physical findings, diagnosis, and treatment plan.
      2. Educate on preventative and safety measures.

   ii. Learning Activity
      1. This is practiced on evaluation of new patients and throughout diagnosis/treatment and always observed by a member of the emergency medical team to ensure accurate information.

   iii. Evaluation
      1. Emergency medical team members will evaluate and provide feedback.

3. Knowledge

   i. Demonstrate understanding of the clinical presentation, basic physiology, key physical findings, evaluation and management of diseases frequently encountered in an emergency medical setting.

   ii. Objectives

   iii. Students should be able to: 1) develop a differential of common emergent causes, 2) describe classic presentation of emergent causes, and 3) describe the initial evaluation and management of the following conditions:
   1. Abdominal pain
   2. Altered mental status/Neurological emergencies
      a. Coma
      b. Impaired consciousness
      c. Epilepsy
      d. Cerebral vascular disease
      e. Headache
      f. Paraplegia, hemiplegia
   3. Cardiac arrest
   4. Chest pain, suspected myocardial infarction and other classic chest pain syndromes
5. Acute life threatening hypertension
6. Acute pulmonary edema and syndromes of acute dyspnea and hemoptysis
7. Pulmonary thromboembolism and other vascular emergencies
8. Respiratory distress
   a. Acute
   b. Acute on chronic respiratory failure
   c. Acute severe asthma
   d. Anaphylaxis
   e. Pneumothorax
9. Gastrointestinal bleeding, Acute abdomen, Hepatic failure
10. Ear, nose and throat emergencies
    a. Acute bleeding
    b. Foreign bodies
    c. Inflammatory conditions threatening the airway
11. Ophthalmologic emergencies
    a. Trauma
    b. Sudden vision loss
12. Endocrine emergencies
    a. Diabetic ketoacidosis
    b. Hyperglycemic hyperosmolar coma
    c. Lactic acidosis
    d. Hyperglycemia
    e. Hypoglycemia
    f. Adrenal insufficiency
    g. Myxedema coma
    h. Thyrotoxic crisis
13. Metabolic disorders
    a. Disturbances of sodium and water balancer
    b. Acid/base disorders
14. Psychiatric emergencies
    a. Suicidal
    b. Homicidal
    c. Psychosis
15. Poisoning, Intoxication
16. Shock
17. Trauma
    a. Head injury
    b. Fractures
    c. Spinal injuries
18. Environmental injury
    a. Near drowning
    b. Smoke inhalation
c. Carbon monoxide poisoning
d. Bites and stings
e. Anaphylactic reactions
f. High altitude sickness
19. Burn, wound management and crush syndrome
20. Pediatric emergencies
   a. Pediatric resuscitation
   b. Febrile child
c. Convulsions
d. Meningitis
e. Foreign body ingestion
f. Abdominal pain, gastroenteritis
g. Croup
21. Gynecological and obstetric emergencies
   a. Abnormal uterine bleeding
   b. Ectopic pregnancy
22. Be able to use clinical reasoning to synthesize data into a prioritized differential diagnosis, working diagnosis, and plan.

6.57.6 Teaching and learning activities

5. Each student should be observed performing a focused physical examination with given feedback and opportunities for questions.
6. Students will watch and assist with basic procedures.
7. Physical findings during daily patient care will be offered to supplement students’ skills.
8. Students will record procedures in their log book.

6.57.7 Assessment methods

Interns, Residents and Specialists will observe students perform physical examinations in the course of patient care and these observations will inform the summative evaluation. Physical exam skills will also be tested in the final oral assessment. Log book will be reviewed.

6.57.8 Reading list

ii. In addition to the above skills, students will undergo “trade mark” training in Advanced Trauma Life Support (ATLS).
iii. Advanced Obstetric Life Support (ABLS),
iv. Advanced Pediatric Life Support (APLS),
7 FACILITIES AND SUPPORT SERVICES *(facilities here should include only those directly related to this programmes and not institutional wide facilities)*

7.42 Facilities

In order to offer a successful training a variety of Physical Facilities and resources exists. The Physical infrastructure for training and administrative functions of the college is widely located at KCMU college and KCMC. The major training facilities are housed in the main college building. Most of these facilities are accessible also to people with physical disabilities.

7.42.1 Specific facilities available for programme

Lecture Rooms

In Main College Building (MCB) there are two lecture halls each with a capacity to accommodate 200 students in one sitting. These lecture halls are dedicated to MD1 and MD2 respectively although other programs may also access them.

Both lecture halls are equipped with visual and audio systems but in addition has video conferencing facilities which allows for a remote lecturing to/from another location within MCB or outside and to serve a large group of students simultaneously. In another development, in year 2017-18 a new 3 story building has been built which will have two big lecture rooms, laboratories and dissection rooms.

As the students go to year 3 there is a well-equipped Clinical Skills laboratory located in the main Building of KCMU College. This facilitates training of large cohorts of students and reduces unnecessary practice on real patients in case of large number of students.

Additional space required for MD program

The hospital wards are utilized very well for teaching clinical practical Skills in various disciplines as they go to year 3, 4 and 5. The disciplines includes Pediatrics, Internal Medicine, General Surgery, Orthopedics and trauma, Obstetrics and Gynecology, Ear, Nose and Throat, Ophthalmology, Dental, Anaesthesia, Urology, Pharmacy, Radiology, OPD/casualty (Emergency Medicine) and Pathology. There is a very clear Memorandum of Understanding between KCMU College, KCMC and The Good Samaritan foundation regarding Sharing of resources for training.

Also through a Memorandum of understanding with Peripheral hospitals our students and faculty enjoy clinical placements in these hospitals to enhance
Practical skill Teaching and Learning. These hospitals include Mawenzi Regional Referral hospital, TPC, Kibosho Designated hospital, Ngoyoni hospital, Machame Lutheran Hospital, Marangu Hospital, Mount Meru Regional Referral Hospital, St Elizabeth Hospital, Gonja Lutheran hospital and St. Joseph Designated District Hospital to mention some few.

7.42.2 General facilities available (Kidai to provide)

Seminar rooms, lecture rooms and assembly halls

<table>
<thead>
<tr>
<th>Sn</th>
<th>Facility as per TCU guideline</th>
<th>Location</th>
<th>Number</th>
<th>Capacity</th>
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<td>Physiotherapy</td>
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<td>Occupational therapy</td>
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Laboratories and workshops

The College has state-of-the-art electronic facilities for learning and teaching. These include computer labs located in different faculties and units as shown in table 3.7. These facilities can collectively accommodate 233 students at a time. In addition, the College has established an e-library facility with maximum capacity of 300 students in one sitting and additional 120 computers have been purchased and installed.

Laboratories and workshops

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### Office space

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<td>Registration</td>
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<td><strong>Staff offices and common rooms</strong></td>
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<td>Programme coordinators</td>
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### 7.43 Library Facility

433
The main conventional library is based on a collection of books, printed journals, monographs, reports, newsletters and copies of students’ dissertations and theses. The library is located in the KCMC hospital building. It has a sitting capacity of 135 people and has about 11,000 books and over 40 journal titles. The students and faculty have access to this library. Recently the library together with its staff has been transferred to from KCMC to KCMU college for management purposes.

List of reference books in the library (Kidai/Declere)

7.44 Equipment (provide details of the type(s) of equipment currently available, which are pertinent to the proposed or reviewed programme in terms of type of equipment and quantity required as well as an average equipment: student ratio)

Tables and Chairs, Health learning materials (Computers, Projector, Moreover Wireless internet is available to all students and staff at the department.

7.45 Information and Communication Technology (provide details of the type(s) of technology/equipment currently available, which are pertinent to the proposed or reviewed programme as well as an average facility: student ratio)

Internet

All underground students have access to internet facility, and is very accessible

Presence of the art of ICT infrastructure makes it possible for faculty to upload electronic teaching and learning materials and on line examination system.

We have more than 30 wireless internet connectivity sites each with radius of 50 meters in KCMUcollege/KCMC. All the MD Students are supplied with tablet computers and as per TCU requirements we have ICT master plan.

Electronic Facilities

The college has an art of electronic facilities for learning and teaching which includes

i. Computers laboratories located in different faculties and units. These facilities can collectively accommodate 200 students at a time.

ii. E-library facility with 100 computers installed. MDs students use the facilities for online examinations. This IT facility is very successful in terms of time and resources management as opposed to the traditional way of conducting examinations.

This e-library is located in MCB and Students and faculty can access various learning/teaching materials. There is an access to electronic materials/resources.
through WHO-HINARI website from various computer laboratories. Access to other Universities libraries is available through partners.

The basic science laboratories are important for training health professionals. The laboratories which exist include Anatomy and Histology, Multipurpose (Physiology, Parasitology, Microbiology, Immunology, Biochemistry/Molecular Biology and Hematology), Biotechnology research laboratory, Animal house and Insectarium, Clinical and Pathology laboratories. Following the swelling number of students’ population at the college training in the labs is organized into two shifts to accommodate the load in order to meet the TCU requirements for minimal space.

7.46 Learner Support Services (Provide details of academic and non-academic support services available to learners like academic advisor(s), laboratories, internet, health centre(s), computers, accommodations, counselling facility(ies), sports and games facilities etc.)

Skills laboratory, LMS content management services, Academic Support (Kidai to provide)

Our key international supporters who support the academic in our college includes Duke University, Nijmegen University the Netherlands, Bill and Melinda Gates foundation, DANIDA, THRIVE, BSU, PANVEC, ABBOT foundation, MEPI. Through these we are supported with research activities and visiting lecturers including external examiners to various programs.

Other support services (Social Services) includes Restaurants, ATM, Hostel, Banks, Bus stand, CRDB branch, Sports and Games fields, shops, Glossary, Taxi stand and a Petrol station

8 Academic staff available to run the proposed or reviewed programme (Preferably in a table that indicates courses per semester, each course should be assigned with qualified academic staff)

<table>
<thead>
<tr>
<th>S/n</th>
<th>Name of academic staff</th>
<th>Courses per semester</th>
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Table: Academic staff available to run the programme and number of courses they teach per semester

<table>
<thead>
<tr>
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<th>Name of Academic Staff</th>
<th>Academic Appointment</th>
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<tr>
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<td>Prof. Nurru Mligiliche</td>
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<td></td>
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<td></td>
<td>Prof. Samweli Chugula</td>
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<td></td>
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<td></td>
<td>Dr. Syllivia Kalenga</td>
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<td></td>
<td>Dr. Professor Augustine Mallya</td>
<td>Associate Professor</td>
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<td></td>
<td>Dr. Elifuraha Maya</td>
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<td>Dr. Eusebios Maro</td>
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<td></td>
<td>Dr. Rogers Temu</td>
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<tr>
<td>Biochemistry &amp; Molecular Biology</td>
<td>Dr. Regnald Kavishe</td>
<td>Associate Professor</td>
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<td></td>
<td>Dr. Jaff Chilongola</td>
<td>Senior Lecturer</td>
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<tr>
<td></td>
<td>Dr. Ireen Kiwelu</td>
<td>Senior Lecturer</td>
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<td>Dr. Godfrey Temba</td>
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<td>Neema B Kulaya</td>
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<td>Prof. David Rober Shaw</td>
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<td>Dr. Alex Mremi</td>
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<td>Dr. Patrick Amsi</td>
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<td>Mary Mosha</td>
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<td>Ms. Bertha A. Kiwale</td>
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<td>Microbiology</td>
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<td>Paulo Kidayi</td>
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<td>Pharmacology</td>
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<td>Dr Hadija Semvua</td>
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<tr>
<td>Sociology</td>
<td>Prof Declare Mushii</td>
<td>Associate Professor</td>
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<tr>
<td></td>
<td>Rose Mwangi</td>
<td>Ass Lecturer</td>
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<td>Victor Katiti</td>
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<td>Chuki Christina Mtuya</td>
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<tr>
<td>Foundation of Faith</td>
<td>Rev Deo Msanya</td>
<td>Ass Lecturer</td>
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<td>Rev Robson Mchau</td>
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<td>Year2 Semester 4</td>
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<td>Prof. Mramba Nyindo</td>
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<td>Clinical Practical Skills Training</td>
<td>Prof Venance Maro</td>
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<td>Infectious Diseases</td>
<td>Dr. Furaha Lyamuya</td>
<td>Lecturer</td>
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<td>IMCI</td>
<td>Dr. Levina Msuya</td>
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