MBBS Curriculum

(Compilation of Amendments 2019 – 2022)

FACULTY OF MEDICINE AND ALLIED SCIENCES

RAJARATA UNIVERSITY OF SRI LANKA

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CHAPTER ONE

Introduction

Rajarata University of Sri Lanka was established on 7th November 1995 under section 21 of the Universities Act No. 16 of 1978 by amalgamating the resources of the affiliated University Colleges in the Central, North Western and North Central Provinces. The faculty was inaugurated 31st January 1996. The first Batch of medical students was recruited to the Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka (FMAS, RUSL), on 11th September 2006. The number of students admitted each year to the Faculty is 180 until 2018/2019 intake, subsequently increasing to 200-210 students in each batch.

Degrees awarded: Bachelor of Medicine and Bachelor of Surgery [MBBS]

Admission criteria: The University Grants Commission of Sri Lanka selects students for all medical schools in Sri Lanka on the basis of their performance in the G.C.E (A/L) examination held by the Department of Examination, Sri Lanka.

Curriculum of the MBBS programme:

The MBBS programme of the Faculty of Medicine and Allied Sciences is a five years course followed by one year of internship. Each academic year consists of two semesters of fifteen weeks each. The Faculty of Medicine and Allied Sciences developed its curriculum through the curriculum committee with the guidance and support from experts in curriculum development in medical education and was revised in 2015-2016 to comply with the Sri Lanka Qualification Framework and Subject Benchmark Statement in Medicine. and moving towards an outcome based curriculum.The curriculum was approved by the Faculty Board (memo 112.7.3), the Senate (memo 202.05.07) and the Council of RUSL (memo 215.19.19) in 2017. Amendments to the different components of the MBBS curriculum were done in the period 2020 – 2022, with minor revisions to the structure and learning outcomes and contents of the course units/modules, teaching-learning strategies and assessments in different disciplines.

CHAPTER TWO

Vision, Mission and Outcomes of the MBBS Programme

2.1 Vision

To be the premier institution in Sri Lanka in the training of health professionals

2.2 Mission

The Faculty of Medicine and Allied Sciences is committed to the training of health professionals with value of highest ethical conduct, professionalism, social accountability and mutual respect in an environment of excellence. This would involve holistic undergraduate or postgraduate education in local and global promotive, preventive, curative, rehabilitative and palliative health care and research with local, national and global perspectives, ensuring the graduate capabilities in proceeding through any avenue in medicine further with a desire for continuing education while recognizing responsibilities for betterment of the health of people at all levels in Sri Lanka.

The mission statement of the faculty was amended in 2022 and the approval has been obtained from the Faculty Board and the Senate of Rajarata University of Sri Lanka.

2.3 Outcomes of the MBBS Programme

At the end of the MBBS course the graduate should possess knowledge and competencies regarding

1. scientific knowledge for medical practice
2. skills essential for medical practice
3. ethics, attitudes and professionalism
4. leadership, interpersonal relationships and teamwork
5. research, evidence-based medicine and problem-solving
6. health promotion and social, cultural and environmental perspectives on health
7. continuing professional development

2.4. Rules of the MBBS Programme

1. The maximum period of study in the faculty is 10 calendar years from the date of student registration at FMAS, RUSL.
2. Examinations will be conducted by a Board of Examiners in accordance with the Regulations of the FMAS, RUSL and the University (Examination by-laws).
3. The summative examination immediately following the completion of a course – Pre-clinical, Para-clinical and Clinical shall be deemed to be the 'First Available Examination'.
4. To 'Sit an Examination' denotes taking all components of the examination required to complete the said examination, at one and the same sitting.
5. A student must sit the first available examination unless a valid excuse has been submitted to the faculty and accepted by the Senate.
6. The first available opportunity to sit an examination shall be considered the first attempt whether the student sits the examination or not. In the event of an 'excuse' submitted to the faculty for failure to sit an available examination being accepted by the Senate, that examination shall not be considered an attempt.
7. If the excuse for failure to sit the first available examination has been accepted by the Senate, the examination immediately following on the expiry of the period of postponement recommended by the Faculty of Medicine and Allied Sciences and accepted by the Senate shall be the student's first attempt. Any subsequent attempt must be taken at the very next available examination, subject to the provision in respect to a valid excuse.
8. In the absence of an acceptable excuse, failure to sit the first available examination will be considered an unsuccessful attempt at the examination.
9. Successful completion of all three subject courses (Anatomy, Biochemistry and Physiology) is a mandatory requirement to sit for the 2nd MBBS examination (successful completion includes a minimum of 80% attendance to specified components, completion of continuous assessments, and submission of assignments/tutorials or any other assigned tasks).
10. The number of attempts at the 2nd MBBS examination is limited to four and passing the 2nd MBBS examination is compulsory to proceed to the 4th semester.
11. Successful completion of Parasitology and Microbiology courses are mandatory requirements to sit for the 3rd MBBS Part-I examination (successful completion includes a minimum of 80% attendance to specified components, completion of continuous assessments, and submission of assignments/tutorials or any other assigned tasks).
12. Successful completion of Community Medicine, Forensic Medicine, Pathology, Pharmacology, And Family Medicine courses and the Research in Medicine module are mandatory requirements to sit for the 3rd MBBS Part-II examination (successful completion includes a minimum of 80% attendance to specified components, completion of continuous assessments, and submission of assignments/tutorials or any other assigned task).

13. Completion of Community Medicine, Forensic Medicine, Clinical Pathology, and Family Medicine** clinical appointments are compulsory to sit for the 3rd MBBS Part-II examination. (Successful completion of the clinical appointments includes 100% attendance clinical appointments, completion of assignments, and verification of the competence by the clinical trainer) *.
14. Successful completion of the 3rd MBBS Part-I examination and 3rd MBBS Part-II examinations are mandatory requirements to sit for the Final MBBS examination.
15. Successful completion of the clinical appointments placed before the professorial clinical training, namely introductory clinical appointment, first and second Medicine and Surgery appointments, and Paediatrics and Obstetrics and Gynaecology appointments, and short appointments Set 1 and set 2 are mandatory requirements to enter into the professorial clinical training (successful completion of the clinical appointments includes 100% attendance clinical appointments, completion of assignments, and verification of the competence by the clinical trainer) *.
16. Successful completion of the English language training is mandatory to proceed with the professorial clinical training.
17. Successful completion of the professorial clinical training is a mandatory requirement to sit for the Final MBBS examination (successful completion of the clinical appointments includes 100% attendance clinical appointments, completion of assignments, and verification of the competence by the clinical trainer) *.
18. Successful completion of the Personal and Professional Development stream is mandatory to award the degree.
19. The maximum final mark that can be achieved for a subject/discipline in the subsequent attempt of the examination is 50%.
20. If a student scores less than 25% in any one of the subjects offered in any given examination, he is deemed to have failed the whole examination.

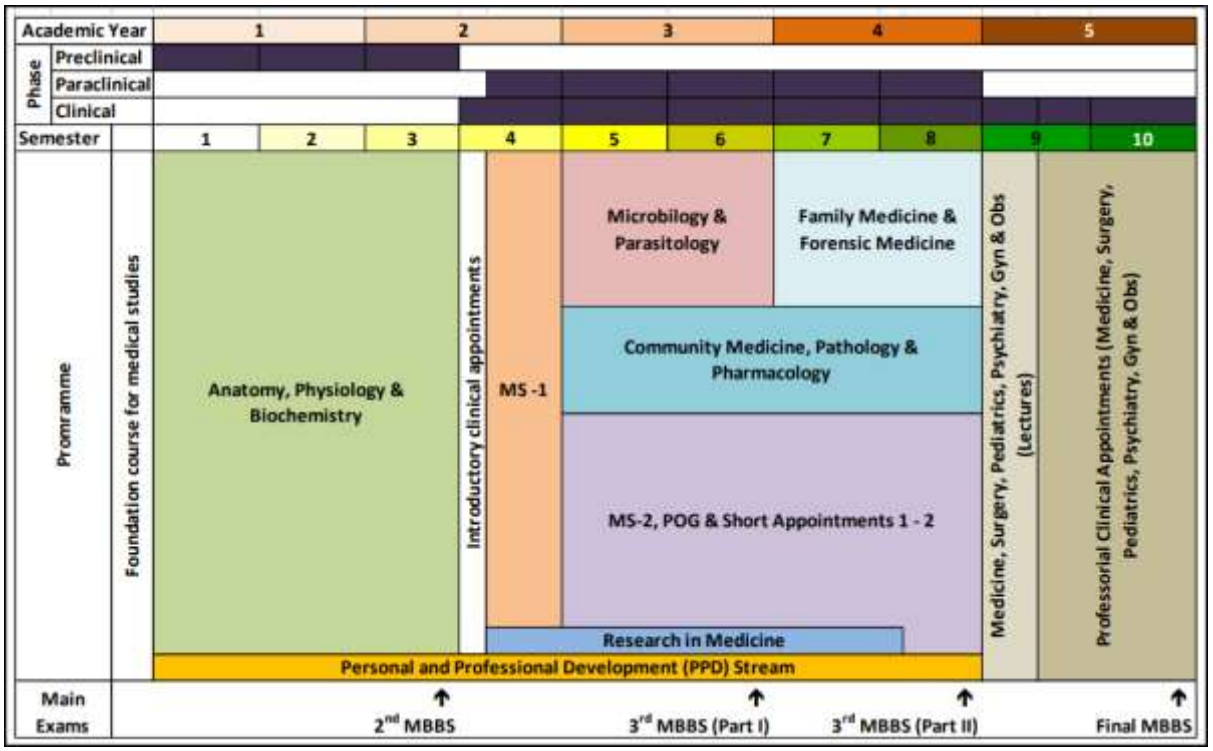
CHAPTER THREE

Structure of the MBBS Programme

The MBBS programme of FMAS, RUSL is a fulltime programme conducted over a period of five years.The curriculum of MBBS programmeconsists of the following courses, and streams.

1. Foundation and Orientation course
2. Preclinical course
3. Paraclinical course
4. Clinical course
5. Personal and Professional Development (PPD) stream
6. Research in Medicine

Structure and Timeline of the MBBS Programme



The Pre-clinical, Paraclinical and Clinical courses of the MBBS programme are logically arranged allowing steady and step-wise progression of the undergraduates. PPD stream and Research in Medicine components of the curriculum are introduced at the appropriate stages of the programme to address the specific learning outcomes on interpersonal relationships, teamwork and leadership, andethics, attitudes and professionalism, and research and evidence-based medicine. The arrangement of different components of the curriculum allow gradual enhancement of learning in cognitive, psychomotor and affective domains.

3.1 Foundation and Orientation Course

The students have to undergo a mandatory Foundation and Orientation Course at the beginning of the MBBS programme that facilitates the smooth transition of students from the academic environment of the school to the professional MBBS course. The course aims to orient students to the university education, university environment, medical profession and the healthcare system of the country, and to provide the initial guidance to acquire the knowledge, skills and attitudes required of students during the MBBS programme. The Foundation and Orientation Course is eight weeks' programme, consisting of several orientation and skills development modules. (Refer the detailed curriculum of the course)

Structure of the Foundation and Orientation course

Module	Duration
Orientation Module-I: The university, faculty and the MBBS programme	28 hours
Orientation module-II: Medical profession and the healthcare system	20 hours
Learning and life skills	48 hours
English for learning and communication	140 hours
ICT for learning and communication	20 hours

Students' English language competencies are assessed at the end of the Foundation and Orientation Course.

3.2. Year 1 and Year 2

3.2.1 Preclinical course

The preclinical course encompasses three basic science disciplines (i.e. Anatomy, Biochemistry and Physiology). It aims to provide comprehensive theoretical knowledge regarding the normal structure of the human body in connection with its integrated functions, and the basis of dysfunction. In addition, the students are provided with guidance and facilities for the development of skills in clinical and laboratory assessment of the structure and functions of the human body. The course also provides guidance and opportunities for the development of skills in self-directed learning, critical and analytical thinking and problem-solving, communication, teamwork and leadership required for the practice of medicine.

The modules and semester assessments during each of the semesters are as follows.

Year and Semester	Modules	Assessment (components of examination)
Year 1 Semester 1	Introduction to study of Man, Blood, Cardiovascular system, Respiratory system, Regional Anatomy 1A: Upper limb, Regional Anatomy 1B: Thorax	Continuous assessment 1 (CA1)- Anatomy (MCQ, SEQ, OSPE) CA1- Biochemistry (MCQ, SEQ) CA1- Physiology (MCQ, SEQ)
Year 1 Semester 2	Gastrointestinal system, Urinary system, Endocrine system, Reproductive system, Human nutrition, Regional Anatomy 2A: Abdomen, pelvis and perineum, Regional Anatomy 2B: Lower limb	CA2- Anatomy (MCQ, SEQ, OSPE) CA2- Biochemistry (MCQ, SEQ) CA2- Physiology (MCQ, SEQ)
Year 2 Semester 1	Nervous system and special senses, Regional Anatomy 3: Head, neck and spine	

An English language training course is conducted throughout the three semesters of the Preclinical course.

Successful completion of all three subject courses (Anatomy, Biochemistry and Physiology) is a mandatory requirement to sit for the 2nd MBBS examination. Successful completion includes a minimum of 80% attendance to specified components, completion of continuous assessments, and submission of assignments/tutorials or any other assigned tasks.

2nd MBBS Examination

The 2nd MBBS examination will be held at the end of the Year 2 Semester 1 (6 weeks after the end of the semester's teaching-learning activities). The components of the 2nd MBBS examination are as follows.

Subject	Components of examination
Anatomy	Final assessment 70% (MCQ-35%, SEQ-35%, OSPE-30%), CA1-10%, CA2-20%
Biochemistry	Final assessment: MCQ-30, SEQ-30, OSPE-20, CA1-10%, CA2-10%
Physiology	Final assessment: MCQ-30, SEQ-30, OSPE-15, CA1-12.5%, CA2-12.5%

Repeat examination will be held 6 weeks after the release of results of the 2nd MBBS examination. Successful completion of 2nd MBBS examination is a prerequisite for entering into the Year 3 of the MBBS programme. A student is allowed a maximum of 4 attempts to pass the above subjects. If unsuccessful after 4 attempts, the studentship will be terminated.

Award of Distinctions

At the end of the Pre-clinical course (2nd MBBS examination), students will be awarded distinctions and medals for Anatomy, Physiology, Biochemistry based on marks obtained. Distinctions will be awarded to the students who obtain a mark of 70% or above at the first attempt.

Compulsory English Examination

A compulsory English examination in written and verbal communication in English (Reading, writing, listening and speaking) is held at the time of the 2nd MBBS Examination. Students who obtain less than 50% for any of the components of the examination should re-sit the respective component of the examination with the next batch.

Successful completion of the English examination is mandatory to proceed with the Year 5 Professorial clinical training.

3.2.2 Personal and Professional Development Stream

The PPD stream has been included to MBBS curriculum in 2016, with the aim of developing a graduate with values of highest ethical conduct, professionalism and mutual respect. Further this stream was introduced to achieve the requirements of Sri Lanka Quality Framework (SLQF) level 06 learning outcomes; communication, teamwork and leadership, creativity and problem solving, networking and social skills, adaptability and flexibility, attitude values and professionalism and vision for life (SLQF learning outcomes 3, 4, 5, 8, 9, 10 and11).

PPD stream is conducted from year 1 to 4. The components/modules of the PPD stream are as follows.

	Module	Year and semester
Module 1:	Personal and Professional Skills	Year 1 Semester 1 and 2, Year 2 Semester 1
Module 2:	Human Psychology and Behaviour	Year 3 semester 1 and 2
Module 3:	Medical Ethics	Year 4 Semester 1 and 2

Assessment in Module 1 of the PPD stream is done at the end of the Year 2 Semester 1, with the 2nd MBBS Examination. Module 1 assessment of PPD stream consists of a group presentation (50%) and reflective essay (50%). An overall mark ≥50 is required to pass the module assessment.

Successful completion of all the modules of the PPD stream is mandatory to award the degree.

3.2.3 Introductory Clinical Appointments

Students are expected to follow an introductory clinical program, consisting of 1 week's appointment in each of the four major disciplines (i.e. Medicine, Surgery, Paediatrics, and Obstetrics and Gynaecology) at the Teaching Hospital Anuradhapura, following 2nd MBBS examination.

3.2.4 Research in Medicine

The Research in Medicine stream of the MBBS programme of FMAS, RUSL aims to develop knowledge and skills of the medical undergraduate to plan and conduct a research adhering to scientific and ethical principles. The research process includes the scientific inquiry, critical review of literature, designing the research method, research implementation, analysis of data using appropriate statistical methods, data interpretation and presentation of research findings. The Research in Medicine stream extends over four (4) semester. At the commencement of the Year 2 Semester 2,students are grouped in to small groups (with 5 to 6 medical undergraduates in a group) and a research should be conducted by each group under the supervision of a permanent academic staff member in the faculty. The presentations on the research findings are conducted during the Year 4 Semester 1. (Refer section 3.4.3 and 5.4)

3.2.5 MSPOG appointments

Year 2 Semester 2 of the MBBS programme consists of four clinical appointments (16 weeks); 4 weeks each in Medicine, Surgery, Paediatrics, and Obstetrics and Gynaecology clinical appointments. Clinical appointments are held either at the Teaching Hospital Anuradhapura or other suitable hospitals (District General Hospital Polonnaruwa, District General Hospital Matale) depending on the available resources.

3.3 Year 3

All students who pass 2nd MBBS examination will be allowed to proceed to the year 3 and clinical training. Students are expected to follow clinical programme on all the days other than designated holidays and the clinical programme does not follow the semester system.

3.3.1 Paraclinical Course

The Paraclinical course of FMAS, RUSL consists of several basic sciences disciplines that include Pathology, Pharmacology, Microbiology, Parasitology as well as Community Medicine, Family Medicine and Forensic Medicine disciplines. The basic medical science disciplines of the Paraclinical course provides instructions and guidance to acquire comprehensive knowledge, and skills in

laboratory-based identification of abnormal structure and functions and the disease processes, and provide foundation for the clinical sciences. The course also provides guidance and opportunities for the development of skills in self-directed learning, critical and analytical thinking and problem-solving, communication, teamwork and leadership required for the practice of medicine. The aim of the Community Medicine component of the Paraclinical course is to ensure that the medical graduate has acquired public health competencies needed to solve health problems of the community with emphasis on health promotion, disease prevention, cost-effective/evidence based interventions and follow up. It socio-cultural and environmental aspects of health, and provides comprehensive exposure in promotive and preventive health, and continuity of care in the community.

The academic programme of the Year 3 of the MBBS programme consists of teaching-learning activities in Microbiology, Parasitology, Pharmacology, Pathology and Community Medicine.

Structure of the Year 3 Academic programme of the Paraclinical course

Year and Semester	Subject	Assessments (components of examination)
Year 3 semester 1	Parasitology	CA3: Parasitology (SEQ)
	Microbiology	CA3: Microbiology (MCQ, Practical examination)
	Pharmacology	CA3: Pharmacology (MCQ)
	Pathology	
	Community Medicine	Community Medicine [Introduction to Biostatistics, Basic epidemiology, Demography and non-communicable disease epidemiology-I] module assessments (MCQ, SEQ)
Year 3 Semester 2	Parasitology	CA4: Parasitology (SEQ)
	Microbiology	CA4: Microbiology (MCQ, OSPE)
	Pharmacology	CA4: Pharmacology (MCQ)
	Pathology	CA4: Pathology (MCQ)
	Community Medicine	Community Medicine [Community nutrition, Maternal and child health] module assessments (MCQ, SEQ)

Successful completion of Parasitology and Microbiology courses are mandatory requirements to sit for the 3rd MBBS Part-I examination. Successful completion includes a minimum of 80% attendance to specified components, completion of continuous assessments, and submission of assignments/tutorials or any other assigned tasks.

3rdMBBS Part-I Examination

The 3rd MBBS Part-I examination is held at the end of the teaching-learning activities of the Year 3 of the MBBS programme. The components of the examination are as follow.

Subject	Components of examination
Parasitology	Final assessment: MCQ-25%, SEQ-25%, OSPE-20%, CA3-10%, CA4- 10%
Microbiology	Final assessment: MCQ-30%, SEQ-35%, OSPE-20%, CA3-7.5%, CA4-7.5%

A student who does not obtain pass mark for Microbiology and/or Parasitology must sit for the repeat examination. 3rd MBBS Part-I examination is not a bar examination and all students could proceed to Year 4 of the MBBS programme.However, successful completion of the 3rd MBBS Part-I examination is a mandatory requirement to sit for the Final MBBS examination.

Award of Distinctions

At the end of the 3rdMBBS Part-I examination, students will be awarded distinctions and medals for Microbiology and Parasitology based on marks obtained. Distinctions will be awarded to the students who obtain a mark of 70% or above at the first attempt.

3.3.2 Personal and Professional Development Stream (Refer section 3.2.2)

Teaching-learning activities of the Module 2- 'Human Psychology and Behaviour' is conducted during the Year 3 of the MBBS programme. Assessment in Module 2 of the PPD stream is done at the end of the Year 3 Semester 2, with the 3rd MBBS Part-I Examination. Student needs to score ≥50.00 to pass the module examination.Successful completion of all the modules of the PPD stream is mandatory to award the degree.

3.3.3 Research in Medicine (Refer section 3.4.3 and 5.4)

Medical undergraduates are expected to carry out the work related to the research project (e.g. literature review, proposal development, applying for ethics review) during the Year 3of the MBBS programme.

3.3.4 Clinical Course (Refer section 3.4.4)

During the Year 3, clinical training in major specialties and sub-specialties in Medicine and Surgery (Short appointments) is provided in the morning hours and coursework in the Paraclinical course, PPD stream and Research in Medicine module is done in the afternoon. 100% attendance is compulsory for all clinical appointments.

3.4 Year 4

3.4.1 Paraclinical course (Refer section 3.3.1)

The academic programme of the Paraclinical course in the Year 4 of the MBBS programme consists of teaching-learning activities in Pharmacology, Pathology, Forensic Medicine, Community Medicine and Family Medicine. Teaching activities in Family Medicine commences at the Year 4 of the MBBS programme, which aims to empower students with knowledge, skills and attitudes related to primary care in common clinical conditions taking into consideration the psychological, social and cultural effects on health and illness behavior. Forensic Medicine component of the Paraclinical course is also introduced at the Year 4 of the MBBS programme, focusing on the medico-legal duties of a medical practitioner, including the ethics, laws and regulations of the healthcare delivery system, medical profession and practice.

Structure of the Year 4 Academic programme of the Paraclinical course

Year and Semester	Subject	Assessments (components of examination)
Year 4 semester 1	Pharmacology Pathology Community Medicine Forensic Medicine Family Medicine	CA5: Pharmacology (MQ) CA5: Pathology (MCQ) Community Medicine [Applied epidemiology and communicable diseases, Demography and non-communicable disease epidemiology-II] module assessments (MCQ, SEQ)
Year 4 Semester 2	Pharmacology Pathology Community Medicine Forensic Medicine Family Medicine	CA6: Pathology (SEQ)

Successful completion of Community Medicine, Forensic Medicine, Pathology, Pharmacology, And Family Medicine courses and the Research in Medicine module are mandatory requirements to sit for the 3rd MBBS Part-II examination. Successful completion includes a minimum of 80% attendance to specified components, completion of continuous assessments, and submission of assignments/tutorials or any other assigned task.

Completion of Community Medicine, Forensic Medicine, Clinical Pathology, and Family Medicine clinical appointments are compulsory to sit for the 3rd MBBS Part-II examination. Successful completion of the clinical appointments includes 100% attendance clinical appointments, completion of assignments, and verification of the competence by the clinical trainer (Supervising consultant).

3rd MBBS Part-II Examination

The 3rd MBBS Part-II examination is held at the end of the teaching-learning activities of the Year 4 of the MBBS programme. The components of the examination are as follow.

Subject	Components of examination
Pharmacology	Final assessment 70% (MCQ-40%, SEQ-40%, OSPE-20%), CA3-10%, CA4-10%, CA5-10%
Pathology	Final assessment: MCQ-25%, SEQ-40%, OSPE-20%, CA4-5%, CA5-5%, CA6-5%
Forensic Medicine	SEQ-I-50%, SEQ-II (SAQ)-20%, OSPE-30%
Family Medicine	MCQ-40%, SEQ-40%, OSPE-20%
Community Medicine	Public Health in Practice-I (Family study programme)- Viva and project report, Public Health in Practice-II (Clerkship programme)- OSPHE, Public Health in Practice-III- MCQ, SEQ

Overall Assessment in Community Medicine

Final marks will be calculated using weighted average of all modular assessments. Weighted average will be calculated based on notional hours assigned to each module. (For details of assessment please refer to curriculum documents).

Criteria to obtain a pass in Community Medicine

A student should,

1. Score a minimum weighted average of 50% for the course
2. Not have a score of less than 30% for a given module
3. Score a minimum of 50% for the Public Health in Practice I module (Family Study Programme)

Students obtaining marks less than 30 for a given module should sit for the particular module paper again. However, the maximum mark allocated for subsequent attempts is limited to 50 marks.

A student who does not obtain the pass mark for Pharmacology, Pathology, Forensic Medicine and Family Medicine must sit for the repeat examination. 3rd MBBS Part-II examination is not a bar examination and all students could proceed to year 5.However, successful completion of the 3rd

MBBS Part-I examination and 3rd MBBS Part-II examinations are mandatory requirements to sit for the Final MBBS examination.

Award of Distinctions

At the end of the 3rdMBBS Part-II examination, students will be awarded distinctions and medals for Pharmacology, Pathology, Forensic Medicine, Community Medicine and Family Medicine based on the marks obtained. Distinctions will be awarded to the students who obtain a mark of 70% or above at the first attempt.

Distinctions in Community Medicine will be awarded to the students who obtain a minimum weighted average score of 70% with the minimum of 50% for each module at the first attempt and who pass the examination at the first attempt.

3.4.2 Personal and Professional Development Stream (Refer section 3.2.2)

Teaching-learning activities of the Module 3- 'Medical Ethics' is conducted during the Year 4 of the MBBS programme. Assessment in Module 3 of the PPD stream is done at the end of the Year 4 Semester 2, with the 3rd MBBS Part-II Examination. Student needs to score ≥50.00 to pass the module examination. Completion of all the modules of the PPD stream is mandatory to award the degree.

3.4.3 Research in Medicine

Medical undergraduates are expected to carry out the work related to the research project (e.g. data collection and analysis and presentation of research findings) during the Year 4 Semester 1 of the MBBS programme.

Assessment of the Research in Medicine stream

Individual student assessment is conducted by allocated research supervisors at the middle of the research process, and at the completion of the research according to a prescribed evaluation format. All research groups need to do a research presentation at the Undergraduate Research Symposium of the FMAS, RUSL at the completion of the stream. A review panel of experts (who are not research supervisors) evaluates the student presentations according to a prescribed evaluation format.

At the end of the stream, individual undergraduate receives a mark out of 100 according to the following breakdown.

Component I: Evaluation by the supervisor: 50 marks (for mid-stream and end-stream evaluation 25 marks each)

Component II: Average mark of the evaluation of the research presentation by the review panel of experts: 50 marks

In order to successfully complete the stream, each undergraduate needs to obtain 50% each for both components I and II.

If an undergraduate obtains less than 50% for component I, - He/she should submit an assignment addressing the deficiencies highlighted by the research supervisor. Three independent reviewers, appointed by the stream coordinator would evaluate the assignment. The average mark given by the reviewers would be considered for the evaluation. (However, the maximum average mark would be limited to 50%.)

If an undergraduate obtains less than 50% for component II, all research group members should submit a report addressing the deficiencies highlighted by the review panel of experts (with the approval of the research supervisor). Three independent reviewers, appointed by the coordinator of the stream would evaluate the report. The average mark given by the reviewers would be considered for the evaluation. (However, the maximum average mark would be limited to 50%.)

Successful completion of Research in Medicine moduleis a mandatory requirement to sit for the 3rd MBBS Part-II examination.

3.4.4 Clinical Course

The Clinical course consists of different clinical sciences disciplines that include General Medicine and its subspecialties, Surgery and its subspecialties, Paediatrics, Obstetrics and Gynaecology, Psychiatry and Forensic Medicine, Clinical Pathology and Family Medicine. The aim of the Clinical course of FMAS, RUSL is to nurture and train medical undergraduates to become competent in gathering patient related information and interpreting them, planning and carrying out patient management at a level sufficient for a competent, confident and compassionate house officer, with correct attitudes adhering to the principles of medical ethics and professionalism. The course permits the development of skills and mindset for lifelong learning in order to improve patient care based on scientific evidence, and provides foundation for future career/post-graduate training in any field of medicine.

The Clinical course of FMAS, RUSL begins in the Year 2 Semester 2 of the MBBS Programme and runs throughout the Year 3, Year 4 and Year 5 of the programme.

Outline of the Clinical Course

Appointment	Hospital	Duration	
1. Introductory Clinical Appointment (Year 2 Semester 2)			
Medicine	TH-Anuradhapura	1 week	4 weeks

	Surgery		1 week	
	Paediatrics		1 week	
	Obstetrics and Gynaecology		1 week	
2.	**MSPOG appointments (Year 2 Semester 2)**			
	Medicine	TH-Anuradhapura/	4 weeks	16 weeks
	Surgery	DGH-Polonnaruwa,	4 weeks	
	Paediatrics	DGH-Matale	4 weeks	
	Obstetrics and Gynaecology		4 weeks	
3.	**Year 3 and Year 4**			
	Medicine 1	TH-Anuradhapura	6 weeks	78 weeks
	Surgery 1		6 weeks	
	Cardiology		2 weeks	
	Respiratory Medicine		2 weeks	
	Neurology		2 weeks	
	Rheumatology		2 weeks	
	Dermatology		2 weeks	
	Oncology		2 weeks	
	Sexually Transmitted Diseases		2 weeks	
	Nephrology		2 weeks	
	Orthopaedic Surgery		4 weeks	
	Ophthalmology		2 weeks	
	Otorhinolaryngology/ ENT Surgery		2 weeks	
	Urology/ Urological Surgery		2 weeks	
	Radiology		2 weeks	
	Neurosurgery		2 weeks	
	Anesthesiology		2 weeks	
	Clinical Pathology		2 weeks	
	Forensic Medicine		2 weeks	
	Family Medicine		2 weeks	
	Community Medicine		4 weeks	
	Psychiatry		4 weeks	
	Paediatrics		4 weeks	
	Obstetrics and Gynaecology		4 weeks	
	Medicine 2		6 weeks	
	Surgery 2		6 weeks	

4. Year 5: Professorial Appointments			
Medicine	TH-Anuradhapura	8 weeks	40 weeks
Surgery		8 weeks	
Paediatrics		8 weeks	
Obstetrics and Gynaecology		8 weeks	
Psychiatry		8 weeks	
		Total duration	**138 weeks**

100% attendance is compulsory for all clinical appointments.

Successful completion of all the clinical appointments placed before the professorial clinical training, is a mandatory requirement to enter into the professorial clinical training. Successful completion of the clinical appointments includes 100% attendance clinical appointments, completion of assignments, and verification of the competence by the clinical trainer/ Supervising consultant.

Successful completion of the English language training is mandatory to proceed with the professorial clinical training.

3.5 Year 5

Year 5 of the MBBS programme is spent entirely in clinical training in professorial units at the TH Anuradhapura. Professorial clinical training includes 5 clinical appointmentsin Medicine, Surgery, Paediatrics, Obstetrics and Gynaecology, and Psychiatry, each 8 weeks' duration.

100 % attendance is compulsory for all clinical appointments.

At the end of the year 5, Final MBBS Examination will be held.

Successful completion of the 3rd MBBS Part-I examination and 3rd MBBS Part-II examinations are mandatory requirements to sit for the Final MBBS examination.

Successful completion of the professorial clinical training is a mandatory requirement to sit for the Final MBBS examination.

Components of Final MBBS Examination

Subject	Components of assessment
Medicine	Common MCQ-20%, SEQ-20%, Long case-20%, Short cases-20%,

	Continuous assessment (OSCE, portfolio assessment, 360^0 in-course assessment) -20%
Surgery	Common MCQ-20%, SEQ-20%, Long case-20%, Short cases-20%, Continuous assessment (OSCE, viva, 360^0 in-course assessment) -20%
Obstetrics and Gynaecology	Common MCQ-20%, SEQ-20%, Obstetrics case -20%, Gynaecology case-20%, Continuous assessment (End-appointment OSCE and viva, Log book/portfolio assessment, 360^0 in-course assessment) -10%
Paediatrics	Common MCQ-20%, SEQ-20%, Long case-20%, Short cases-20%, End-appointment OSCE-15%, Portfolio assessment-5%
Psychiatry	Common MCQ-25%, SEQ-25%, Long case-25%, MOCE-15%, Continuous assessment-10%

The MCQ paper is common to all Faculties of Medicine and is held on the same day at the same time in all the Faculties. The common MCQ examination is held twice a year. The pass mark with respect to each subject is described by the UGC standing committee document (section IV). Distinctions will be awarded to the students who obtain a mark of 70% or above at the first attempt. The students will have to complete the final MBBS examination within ten academic years from the date of entering the university.

3.6 Criteria for grading and awards in the MBBS programme

3.6.1. Criteria for awarding classes and distinctions

Honours/Classes shall only be awarded to candidates who pass the whole examination on the first attempt and at the same examination. Marks in all subjects shall be given out of 100. Honours /Classes shall be awarded based on the average mark of the examination.

Average for whole examination

<50.00	Referred
≥ 50.00	Pass
59.50 ≤ 64.50	Second class lower
64.51 ≤ 69.50	Second class upper
≥ 69.51	First class

Overall assessment of a subject

< 50.00	Failure
≥ 50.00	Pass
≥ 69.51	Distinction

Distinctions are awarded for

- Anatomy, Biochemistry and Physiology at the 2nd MBBS examination
- Microbiology and Parasitology at the 3rd MBBS Part-I examination
- Pathology, Pharmacology, Forensic Medicine, Family Medicine and Community Medicine at the 3rd MBBS Part-II examination
- Medicine, Surgery, Paediatrics, Obstetrics and Gynaecology and Psychiatry at the Final MBBS examination

Distinctions shall be awarded to candidates who obtain a mark of 69.51% or above on the first attempt and pass all components of a given examination.

Refer Section 3.4.1 for the criterial for overall assessment in Community medicine

3.6.2 Criteria for awarding gold medals

Name of the gold medal Performance of the students	Criteria
Prof. Malkanthi Chandrasekera gold medal in Anatomyfor Best Performance in Anatomy	Minimum of second-class upper division in 2nd MBBS examination & distinction in Anatomy, highest aggregate in Anatomy
Prof. Malini Udupihille gold medal in Physiologyfor Best Performance in Physiology	Minimum of second-class upper division in 2nd MBBS examination & distinction in Physiology, highest aggregate in Physiology
Prof. PAJ Perera gold medal in Biochemistryfor Best Performance in Biochemistry	Minimum of second-class upper division in 2nd MBBS examination & distinction in Biochemistry, highest aggregate in Biochemistry
Prof. PAJ Perera gold medal for overall best Performance in the 2nd MBBS Examination	Minimum of second-class upper division in 2nd MBBS Examination, highest aggregate in 2nd MBBS examination
Prof. Sarath Edirisinghe gold medal in Parasitologyfor Best Performance in Parasitology	Minimum of second-class upper division in 3rd MBBS examination & distinction in Parasitology, highest aggregate in Parasitology
Prof. Danister Weilgama gold medal in Microbiologyfor Best Performance in Microbiology	Minimum of second-class upper division in 3rd MBBS examination & distinction in Microbiology, highest aggregate in Microbiology
Prof. Anura Weerasinghe gold medal in Pharmacologyfor Best Performance in Pharmacology	Minimum of second-class upper division in 3rd MBBS examination & distinction in Pharmacology, highest aggregate in Pharmacology
Dr. Vasana Mendis gold medal in Pathologyfor Best Performance in Pathology	Minimum of second-class upper division in 3rd MBBS examination & distinction in Pathology, highest aggregate in Pathology
Dr. Dhananjaya Waidyaratne gold medal in Forensic Medicinefor Best Performance in Forensic Medicine	Minimum of second-class upper division in 3rd MBBS examination & distinction in Forensic Medicine, highest aggregate in Forensic Medicine

Prof. Suneth Agampodi gold medal for outstanding performance in Community Medicine	Minimum of second-class lower division in 3rd MBBS examination & distinction in Community Medicine, highest aggregate in field practice & research
Department of Community Medicine gold medal for highest aggregate in Community Medicine	Minimum of second-class upper division in 3rd MBBS examination & distinction in Community Medicine, highest aggregate in Community Medicine
Dr. A.B. Senavirathna gold medal for best overall Performance in 3rd MBBS Examination	Minimum of second-class upper division in 3rd MBBS examination, highest aggregate in 3rd MBBS Examination
Prof. Sisira Siribaddana gold medal in Medicinefor Best Performance in Medicine	Minimum of second-class upper division in final MBBS examination & distinction in Medicine, highest aggregate in Medicine
Dr. Nandana Hettigama gold medal in Obstetrics & Gynaecologyfor Best Performance in Obstetrics & Gynaecology	Minimum of second-class upper division in final MBBS examination & distinction in Obstetrics & Gynaecology, highest aggregate in Obstetrics & Gynecology
Dr. Mohamed Rayes Musthafa gold medal in Paediatricsfor Best Performance in Paediatrics	Minimum of second-class upper division in final MBBS examination & distinction in Paediatrics, highest aggregate in Paediatrics
Prof. Arjuna Panchkori Ram Aluvihare gold medal in Surgeryfor Best Performance in Surgery	Minimum of second-class upper division in final MBBS examination & distinction in Surgery, highest aggregate in Surgery
Prof. Diyanath Samarasinghe gold medal in Psychiatryfor Best Performance in Psychiatry	Minimum of second-class upper division in final MBBS examination & distinction in Psychiatry, highest aggregate in Psychiatry
Dr. N.J. Dahanayake gold medal for overall best performance at the final MBBS examination	Minimum of second-class upper division in final MBBS examination, highest aggregate in final MBBS examination

3.7 Notional hours of the MBBS programme

Course/ Stream/ Discipline	Number of notional hours
Preclinical course (Anatomy, Biochemistry and Physiology)	2406
Community Medicine	750
Forensic Medicine	320
Microbiology	370
Parasitology	195
Pathology	577
Pharmacology	368
Family Medicine	252
Research in Medicine	400
Personal and Professional Development Stream	145
Medicine	1719
Surgery	1507
Paediatrics	859
Obstetrics and Gynaecology	868
Psychiatry	595
Total	**11331**

CHAPTER FOUR

Alignment of the outcomes of the MBBS programme with the categories of learning outcomes in the Sri Lanka Qualification Framework (SLQF) and Subject Benchmark Statement (SBS) in Medicine- 2021

SLQF/SBS outcomes* / Programme outcomes	1	2	3	4	5	6	7	8	9	10	11	12
Scientific knowledge for medical practice	X											
Skills essential for medical practice		X			X				X			
Ethics, attitudes and professionalism										X	X	
Leadership, interpersonal relationship and teamwork			X	X		X		X	X			
Research, evidence based medicine and problem solving					X		X					
Health promotion and social, cultural and environmental perspectives on health		X							X			
Continuing Professional Development											X	X

*Learning outcomes of SLQF and SBS in Medicine-2021

1. Subject / Theoretical Knowledge
2. Practical Knowledge and Application
3. Communication
4. Teamwork and Leadership
5. Creativity and Problem Solving
6. Managerial and Entrepreneurship
7. Information Usage and Management
8. Networking and Social Skills
9. Adaptability and Flexibility
10. Attitudes, Values and Professionalism
11. Vision for Life
12. Lifelong Learning

CHAPTER FIVE

Detailed course structure

5.1 Foundation and Orientation Course

Foundation and Orientation Course facilitates the smooth transition of students from the academic environment of the school to the professional MBBS course. This course aims to orient students to the university education, university environment, medical profession and the healthcare system of the country, and to provide the initial guidance to acquire the knowledge, skills and attitudes required of students during the MBBS programme.

Learning Outcomes

At the end of the course, the student should possess

1. knowledge and awareness regarding the
    a. university and faculty structure, environment, and processes/procedures
    b. MBBS programme
    c. medical profession; duties and responsibilities, ethics, attitudes and professionalism
    d. healthcare systems of the country
    e. history, recent developments and future prospects in medicine
    f. research and evidence-based practice of medicine
    g. scientific thinking and scientific process in higher education
2. skills in
    a. English language use for personal and professional communication and learning
    b. responsible and efficient use of information and communication technology for learning and communication
    c. learning in the university setting and life-long learning
    d. communication and interpersonal interaction
    e. organizational behavior, managerial skills, creativity, flexibility and adaptability
    f. facing challenges and coping skills

Detailed structure of the Foundation and Orientation Course

The Foundation and Orientation Course is eight weeks' programme at the beginning of the MBBS programme. The course consists five modules.

Course	Foundation and Orientation Course
Module No.	**MF1**
Module Title	**Orientation Module-I: The university, faculty and the MBBS programme**
Core / Optional	Core
Intended learning outcomes	The student should be able to, 1. orient themselves to the university and the faculty and familiarize with the administrative structure, resources and facilities, and support systems of the university and the faculty 2. demonstrate awareness of the rules and regulations, and the procedures/processes of the university and the faculty 3. demonstrate awareness of the outcomes, structure, teaching-learning methods, and the assessment system of the MBBS programme
Module Content	University and Faculty environment • Introduction to the ancient city of Anuradhapura • History of RUSL and FMAS • Administrative structure of the university and the faculty • Orientation to the Teaching Hospital- Anuradhapura • Orientation to the medical library • Orientation to the ICT laboratory • Accommodation facilities available at the FMAS • Health care facilities available at the FMAS • Sports facilities available at the faculty and the university Students counselling and mentoring • Financial support systems available at the RUSL and FMAS The MBBS programme • An introduction to the medical course • Introduction to pre-clinical course Rules, regulations and procedures of the university and the faculty • Etiquette of a medical student • Prevention of ragging, gender-based violence and other forms of violence in university setting • Examination procedures of the FMAS
Teaching/Learning activities	Lectures 10 hours, Site visits/ field visits 14 hours; Staff seminars/ Panel discussions 4 hours
Time Allocation	28 hours

Course	Foundation and Orientation Course
Module No.	**MF2**
Module Title	**Orientation Module-II: Medical profession and the healthcare system**
Core / Optional	Core
Intended learning outcomes	The student should be able to, 1. demonstrate awareness of the history of Medicine and the healthcare systems of the country including the complementary and alternative healthcare systems 2. discuss the recent advances in medicine and their implications for healthcare delivery 3. discuss the role of a doctor at various levels of healthcare delivery 4. discuss the role of a doctor in the society beyond doctor-patient interaction 5. discuss the basic principles of ethics and professionalism in healthcare 6. discuss the importance of research and evidence-based practice in medicine 7. discuss the importance of scientific thinking and the scientific process in higher education
Module Content	Healthcare systems of the country • History of medicine in Sri Lanka • Healthcare systems of the country • Alternative and complementary medicine • Health promotion and public health • Recent advances and future prospects in medicine • Research in medicine and evidence-based practice of medicine • Scientific thinking and scientific process in higher education • Introduction to medical anthropology and sociology Role of a doctor • Duties and responsibilities of a doctor • Doctor in society Attitudes, medical ethics and professionalism • Attitudes to be a good doctor • Introduction to bioethics and professionalism
Teaching/Learning activities	Lectures/ Interactive, case-based lectures and discussions 18 hours; Panel discussions/ staff seminars 2 hours
Time Allocation	20 hours

Course	Foundation and Orientation Course
Module No.	**MF3**
Module Title	**Learning and life skills**
Core / Optional	Core
Intended learning outcomes	The student should be able to, 1. evaluate their own learning style and recognize the potential for improvement of learning 2. recognize the importance of self-directed learning, peer-assisted learning and collaborative learning in university education 3. discuss the importance of life-long learning 4. manage time efficiently and prioritize work effectively 5. demonstrate skills in communication, teamwork and leadership, organizational behaviour (including time and resource management), flexibility and adaptability 6. recognize and respect diversity and interact effectively with those with different values, views and beliefs, and from different ethnic, sociocultural and religious backgrounds 7. recognize the challenges in achieving personal, academic and professional goals and discuss the effective ways of facing those 8. recognize the stressors and discuss the effective ways of managing stress, stressors and risk-taking behaviours
Module Content	Learning in the university setting • Learning as an undergraduate: Self-directed learning, peer-assisted learning and collaborative learning • Life-long learning Learning skills and life skills • Introduction to life skills • Time management • Presentation skills • Communication skills • Social skills and interpersonal interactions: Teamwork, leadership, recognizing and respecting diversity • Organizational and managerial skills • Flexibility and adaptability • Sinhala/Tamil for general communication Recognizing and facing challenges; Stress, stressors, coping skills, and managing stress and risk-taking behaviours • Enjoying university life • Importance of healthy lifestyle and nutrition for an undergraduate

	• Hardships during undergraduate medical training and their relevance to capacity building as a doctor • Stress and stress management • Management of emotions and coping skills • Effect of tobacco, alcohol and other substances • Relationships, gender issues and reproductive health • Health and sociological perspectives of self-harm
Teaching/Learning activities	Group activities/ students' presentations/ cultural show/ activity-based skills development programmes/ sports and extra-curricular activities 32 hours; Interactive lectures and discussions 16 hours
Time Allocation	48 hours

Course	Foundation and Orientation Course
Module No.	**MF4**
Module Title	**English for learning and communication**
Core / Optional	Core
Intended learning outcomes	The student should be able to, 1. understand English speaking at ordinary speed and respond effectively 2. communicate with peers, teachers, administrative staff, patients and general public competently in the English language in the verbal and written forms 3. analytical reading, present information in the written form and produce records; in English in a professional manner, relating to the practice of medicine
Module Content	Language structure in English • Listening: Listening scanning, Listening comprehension • Speaking: Introduction to the functions of verbal communication, Describing, giving instructions (e.g. patient education), Dialogues and conversations, Public speaking • Reading: Scanning and skimming, Analytical reading • Writing: Planning and organizing information, Summarizing, Record keeping, documentation and note-taking, Transferring information from graphs, tables, figures, etc. Professional written communication: writing letters, notes, e-mails, Creative writing Approach to learning Medicine in English language • Preparing for the medium change • Introduction to basic medical terminology • How to use textbooks effectively?
Teaching/Learning activities	Interactive lectures and discussions, Group activities, Note taking tasks, Dictation, Q/A sessions, Role plays, Debates, Mini dramas, Speeches, Comprehension Activities, Summarization, Essay writing, Professional writing tasks, Free writing
Time Allocation	140 hours
Assessment	End of the Foundation and Orientation Course English assessment - The students who obtain less than 50 marks for any of the components in English assessment should follow the mandatory remedial English language programme during the Pre-clinical phase of the MBBS programme.

Course	Foundation and Orientation Course
Module No.	**MF4**
Module Title	**ICT for learning and communication**
Core / Optional	Core
Intended learning outcomes	The student should, 1. acquire/develop basic skills in using computer and information technology for medical education 2. be able to access and retrieve reliable information from online resources for learning 3. produce records and present information in electronic form 4. be aware of the responsible and ethical use of online resources and technology for learning and communication
Module Content	Basic ICT skills for learning and communication • MS Word, Excel and PowerPoint • Internet and e-mail • Video conferencing (Zoom) Approach to using ICT for learning and communication • Introduction to E-learning and online learning • Introduction to the learning management system (LMS) of the faculty • Introduction to open educational resources (OERs) • How to use e-books effectively? • Responsible and ethical use of online resources and technology for education and communication
Teaching/Learning activities	Guided hands-on training sessions 10 hours; Group project/assignment 6 hours; Interactive lectures/ lecture demonstrations and discussions 4 hours
Time Allocation	20 hours

5.2 Preclinical Course

The Preclinical course of the Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka (FMAS, RUSL) aims to provide comprehensive theoretical knowledge regarding the normal structure of the human body in connection with its integrated functions, and the basis of dysfunction. In addition, the students are provided with guidance and facilities for the development of skills in clinical and laboratory assessment of the structure and functions of the human body. A variety of teaching-learning strategies are used to promote self-directed learning, critical thinking, interpersonal communication, teamwork, and leadership among students.

Learning outcomes of the Pre-clinical course

At the end of the Pre-clinical academic programme, the student should be able to

1. describe the normal structure of the human body in relation to its functions
2. perform the basic clinical examination in a systematic manner adhering to ethical principles, to evaluate normal structure and functions
3. perform selected basic laboratory tests to identify biological functions
4. state the common dysfunctions (diseases) affecting different organ systems and regions in the human body and describe the basis of these dysfunctions
5. apply the basic scientific knowledge and skills in clinical and laboratory assessment to recognize and interpret structural, biochemical, and functional alterations and complications in common clinical situations/illnesses
6. utilize a variety of resources to locate information, organize and disseminate the knowledge regarding the normal structure and functions of the human body and the common clinical problems
7. critically evaluate the clinical situations with regard to their scientific basis and the psychological and social attributes
8. demonstrate desire for learning, and professional and ethical behavior and attitudes during interaction with teachers, other staff members, peers and patients.
9. demonstrate skills in interpersonal communication, leadership, and teamwork

Structure and timeline of the Pre-clinical academic programme

The Pre-clinical course occupies the first three (3) semesters (in Year 1 and Year 2) of the MBBS programme of FMAS, RUSL. The three (3) disciplines in the Pre-clinical course (i.e. Anatomy, Physiology and Biochemistry) are horizontally integrated in to system-based modules for the teaching- learning purposes. A regional anatomy course, arranged into five separate modules is

conducted along with the system-based modules. The modules are logically arranged, ensuring the maximum possible integration and coordination between the two sets of modules.

Year (Y) Semester (S)	System-based modules (duration in weeks)		Regional Anatomy modules (weeks)	Assessments
Y1S1	**M1101**: Introduction to study of Man **M1102**: Blood (08)		Introduction to Anatomy **M1105**: Regional Anatomy 1A- Upper limb (08)	
				FA1
	M1103: Cardiovascular system (04) **M1104**: Respiratory system (03)		**M1106**: Regional Anatomy 1B- Thorax (07)	
				CA1
Y1S2	**M1207**: Gastrointestinal system (04) **M1208**: Urinary system (04) **M1209**: Endocrine system (04) **M1210**: Reproductive systems (03)	**M1211**: Human Nutrition (15)	**M1212**: Regional Anatomy 2A- Abdomen, pelvis and perineum (10) **M1213**: Regional Anatomy 2B- Lower limb (05)	**FA2**
				CA2
Y2S1	**M2314**: Nervous system and special senses (10)		**M2315**: Regional Anatomy 3- Head, neck and the spine (10)	
		Revision Special topics (05)		
				2nd MBBS

CA: Continuous assessment, FA: Mid-semester formative assessment

Volume of learning – Preclinical course modules

Module No.	Title	Direct contact (hours)	SL and assessment (hours)	Total number of notional hours
M1101	Introduction to study of Man	136	198	334
M1102	Blood	48	57	105
M1103	Cardiovascular system	78	106	184
M1104	Respiratory system	52	71	123
M1105	Regional anatomy 1A: Upper limb	59	60	119
M1106	Regional anatomy 1B: Thorax	28	27	55
M1207	Gastrointestinal system	104	138	242
M1208	Urinary system	63	90	153
M1209	Endocrine system	65	93	158
M1210	Reproductive systems	71	92	163
M1211	Human nutrition	56	82	138
M1212	Regional anatomy 2A: Abdomen and pelvis	39	41	80
M1213	Regional anatomy 2B: Lower limb	40	40	80
M2314	Nervous system	110	161	271
M2315	Regional anatomy 3: Head, neck and the spine	66	83	149
	Total	1015	1339	**2354**

Students seminars in Biochemistry conducted during the Year 2 Semester 1 of the Preclinical course carries 52 notional hours*(refer Annex I- 'Teaching-learning methods in the Preclinical course')*

Detailed structure of the preclinical course

Course	Preclinical course (Year 1 Semester 1 of the MBBS programme)
Module No.	**M1101**
Module title	**Introduction to study of Man**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	Student should be able to: 1. describe the structure and function of the cell, cell organelles and cell components 2. relate the roles of the biomolecules to the maintenance of normal structure functions of the human body 3. apply the knowledge on enzymes to their effects in metabolic and hormonal regulation of the body 4. describe the gene functions and genetic makeup of humans in relation to genetic variation, inheritance and genetic disorders 5. describe the energy production and storage, and metabolic regulation in human cells 6. describe the processes of gametogenesis, fertilization, implantation and embryonic and fetal development 7. describe the organization of basic tissue types in human 8. explain how the human body is organized for homeostatic, transport, excitatory, regulatory and protective functions 9. apply basic sciences to explain the signs, symptoms and complications of diseases involving functional organization 10. adopt good laboratory practice including basic microscopic techniques
Module Content	• The mammalian cell • Biomolecules • How does the gene express itself? • Cell cycle • Energy for life • Metabolic regulation • Body waste • Genetic makeup • Human embryonic and fetal development • Organization of cells into tissues • Organization of the body for function – Homeostatic functions – Body fluids; Regulation of extra cellular fluid volume and tonicity

	– pH and buffers; Introduction to regulation of pH – Transport across capillary walls – Body composition and Body mass index – Autonomic regulation of body function – Membrane potentials and excitable tissues • Body defenses and immune mechanisms • Human variation
Teaching/Learning activities	Lectures 86 hours, Practical 24 hours; Problem based tutorials/small group discussions/clinical case discussions 16 hours, Videos/Film 4 hours; Fixed learning modules (FxLM) 2 hours, Student presentations and discussions 4 hours *(Refer annex-I for the details of teaching-learning activities are attached) (Annex I)*
Time allocation	Direct contact -136 hours Self-learning and assessment - 198hours
Assessment	Formative assessment 01: Multiple choice questions (MCQ),Structured essay questions (SEQ), Objective structured practical examination (OSPE) Continuous assessment 1 (CA1): MCQ, SEQ, OSPE 2nd MBBS examination: MCQ, SEQ, OSPE*(Refer Annex-II for the details of the assessments)*
Recommended Reading/ References	*Annex III*
Coordinating department/s	Department of Anatomy and Department of Biochemistry

Course	Preclinical course (Year 1 Semester 1 of the MBBS programme)
Module No.	**M1102**
Module title	**Blood**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	Student should be able to 1. discuss the process of formation of blood cells, their structure and function 2. perform venipuncture and analysis of blood 3. deduce and interpret the data of hypothetical clinical cases related to biochemical aspects of blood 4. discuss the process of haemostasis 5. discuss the basis of blood groups and transfusion 6. discuss the basis of common serological and haematological tests in interpretation of diseases 7. discuss the pathophysiology of anaemia 8. apply knowledge on biochemical and physiological aspects of blood to solve clinical problems in haematology 9. analyze a haematological report in order to arrive at a tentative diagnosis
Module Content	• Blood as a circulating body fluid • Biochemical aspects of blood • Haemostasis • Blood groups and transfusion • Haemoglobin • Plasma Proteins • Blood analytes • Pathophysiology of anaemia
Teaching/Learning activities	Lectures 20 hours; Practicals 16 hours; Clinical case discussions/ problem-based tutorials/ small group discussions 12 hour
Time allocation	Direct contact - 48 hours Self-learning and assessment - 57hours
Assessment	Formative assessment 01: MCQ; CA1: MCQ, SEQ; 2nd MBBS examination: MCQ, SEQ, OSPE (*Annex II)*
Recommended Reading/ References	*Annex III*
Coordinating department	Department of Biochemistry

Course	Preclinical course (Year 1 Semester 1 of the MBBS programme)
Module No.	**M1103**
Module title	**Cardiovascular System**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	Student should be able to, 1. describe the anatomy of the heart and vascular system 2. discuss development of the heart and vascular system 3. describe the normal functioning of the heart, arteries, arterioles, capillaries, venules and veins 4. interpret the anthropometric and biochemical data of clinical cases in evaluating cardiovascular risk 5. apply knowledge of cardiovascular physiology to explain the signs and symptoms in hypothetical clinical scenarios and clinical situations with disturbances of normal cardiovascular function 6. identify the cardiovascular structures seen on radiological imaging modalities and apply the knowledge to interpret and correlate clinically
Module Content	• Spatial organizations and structure of the CVS - Surface anatomy of the heart and great vessels - Anatomy of the heart and great vessels - Histology of the heart and vascular system • Development of the heart and vascular system • Normal functioning of the heart and blood vessels - Properties of cardiac muscle - Electrical activity of the heart; Principles / interpretation of Electrocardiogram (ECG) - Heart as a pump; Cardiac cycle - Cardiovascular regulatory mechanisms - Blood vessels; Dynamics of blood flow; Microcirculation - Arterial and Venous pressures, Blood pressure measurement - Circulation through special regions - Cardiovascular adjustments in muscular exercise and gravitational effects • Disturbances of normal cardiovascular functions - Shock - Heart failure - Biochemical basis of atherosclerosis and cardiovascular risk factors - Cardiac markers - Lipid profile

	• Cardiovascular assessment - Examination of the cardiovascular system - Anthropometry in cardiovascular disease risk assessment
Teaching/Learning activities	Lectures 42 hours; Practicals (including simulation-based practical sessions) 16 hours; Clinical case discussions/ problem-based tutorials/ small group discussions 12 hours, Dissection 8 hours, Fixed learning modules (FxLM)
Time allocation	Direct contact - 78 hours Self-learning and assessment - 106 hours
Assessment	CA1: MCQ, SEQ, OSPE 2nd MBBS examination: MCQ, SEQ, OSPE (*Annex II)*
Recommended Reading/ References	*Annex III*
Coordinating department	Department of Physiology

Course	Preclinical course (Year 1 Semester 1 of the MBBS programme)
Module No.	**M1104**
Module title	**Respiratory System**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	Student should be able to 1. describe the applied and functional anatomy of thoracic region and the bronchopulmonary system 2. describe the development of the respiratory system and the common congenital anomalies 3. describe the lung volumes and apply the knowledge to interpret clinical scenarios 4. explain the mechanics of breathing 5. discuss the exchange of gases in alveoli and tissues 6. discuss the transport of gases in blood and apply the knowledge clinically 7. explain the control of respiration 8. describe the non-respiratory functions of the lung 9. describe the pulmonary circulation 10. perform cardiopulmonary resuscitation 11. perform an examination of the respiratory system 12. discuss the physiology of high altitude and deep sea diving 13. apply knowledge of respiratory physiology to describe/ interpret clinical problems in respiratory illnesses
Module Content	• Applied and functional anatomy of the respiratory system • Development of the respiratory system • Lung volumes and its subdivisions • Mechanics of breathing • Exchange of gases in alveoli and tissues – Transport of gases in blood – Oxygen and Carbon dioxide transport – Role of respiration in maintenance of acid-base balance – Transport of gases and buffering • Control of respiration • Respiratory insufficiency • Non-respiratory functions of the lung • The pulmonary circulation • Physiology of high altitude and deep sea diving

	• Clinical examination of the respiratory system • Cardiopulmonary resuscitation (CPR)
Teaching/Learning activities	Lectures 28 hours; Practicals 8 hours; Clinical case discussion/ Problem-based tutorials/ Small group discussion 12 hours; Dissection 4 hours
Time allocation	Direct contact – 52 hours Self-learning and assessment –71 hours
Assessment	CA1: MCQ, SEQ, OSPE 2nd MBBS examination: MCQ, SEQ, OSPE (*Annex II)*
Recommended Reading/ References	*Annex III*
Coordinating department	Department of Physiology

Course	Preclinical course (Year 1 Semester 1 of the MBBS programme)
Module No.	**M1105**
Module title	**Regional Anatomy1A: Upper Limb**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	Student should be able to: 1. describe the musculoskeletal and neurovascular organization of the upper limb with reference to its functions 2. identify and describe the macroscopic, radiological and surface anatomy of the musculoskeletal and neurovascular structures of the upper limb 3. describe the anatomy of the female breast 4. describe the anatomical basis of common injuries of the upper limb relating to clinical features, diagnosis and management of these injuries 5. apply the anatomical knowledge to recognize and solve clinical problems related to upper limb and the breast 6. utilize a variety of resources (faculty, peers, textbooks, specimens, internet, etc.) to locate information on anatomy of the upper limb and related clinical problems
Module Content	• Osteology of the upper limb • Anatomy of the pectoral region and axilla and shoulder joint • Macroscopic and applied anatomy of the female breast • Anatomy of forearm, cubital fossa, elbow, forearm, wrist, carpal tunnel and the hand • Arterial system of the upper limb and collateral circulation • Venous and lymphatic drainage of the upper limb • Brachial plexus and the nerves of the upper limb • Radiological and surface anatomy of the upper limb • Clinical/applied anatomy of the upper limb
Teaching/Learning activities	Lectures 19 hours, Dissections 28 hours, Practical 4 hours, Problem-based tutorials/ clinical case discussions 8 hours, FxLM
Time allocation	Direct contact - 59 hours Self-learning and assessment –60 hours
Assessment	Formative assessment 01: MCQ, OSPE; CA1: MCQ, SEQ, OSPE; 2nd MBBS examination: MCQ, SEQ, OSPE (*Annex II)*
Recommended Reading/ References	*Annex III*
Coordinating department	Department of Anatomy

Course	Preclinical course (Year 1 Semester 1 of the MBBS programme)
Module No.	**M1106**
Module title	**Regional Anatomy 1B: Thorax**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	Student should be able to: 1. identify and describe the general topography/ surface anatomy of the thorax 2. describe the anatomy of the bony thoracic case, muscles of the thoracic wall, the diaphragm and neurovascular structures of the thoracic wall in relation to their function 3. describe the arrangement, divisions and contents of the thoracic cavity/ mediastinum 4. identify and describe the radiological anatomy of the thorax 5. describe the anatomical basis of the common thoracic injuries and procedures 6. apply the anatomical knowledge to recognize and describe clinical problems related to thorax 7. utilize a variety of resources (faculty, peers, textbooks, specimens, internet, etc.) to locate information on anatomy of the thorax and related clinical problems
Module Content	• General topography of the thorax • Osteology of the thoracic spine and rib cage • Anatomy of the thoracic wall and intercostal muscles • Arrangement of intercostal neurovascular structures • Anatomy of diaphragm • Arrangement, divisions and contents of the mediastinum • Surface anatomy of the intrathoracic organs/ structures • Radiological anatomy of the thorax • Applied anatomy of thoracic injuries and procedures *Macroscopic, microscopic, developmental and applied anatomy of the heart and great vessels, lungs and the tracheobronchial tree is done with the respective system-based modules.* **Incorporated into M2149: Human Biology for Clinical Medicine module*
Teaching/Learning activities	Lectures 8 hours, Dissections 10 hours, Practical 4 hours, Problem-based tutorials/ clinical case discussions 4 hours, Group activity
Time allocation	Direct contact - 28 hours Self-learning and assessment –27 hours

Assessment	CA1: MCQ, SEQ, OSPE 2nd MBBS examination: MCQ, SEQ, OSPE (*Annex II)*
Recommended Reading/ References	*Annex III*
Coordinating department	Department of Anatomy

Course	Preclinical course (Year 1 Semester 2 of the MBBS programme)
Module No.	**M1207**
Module title	**Gastrointestinal System**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	Student should be able to: 1. describe the anatomy and histology of the gastrointestinal tract, hepatobiliary system and the pancreas 2. describe the development of the gastrointestinal system and associated congenital anomalies 3. describe the physiology of gastrointestinal motility 4. describe the secretory functions of the gastrointestinal system 5. describe the normal process of digestion and absorption 6. apply the knowledge on structure, and biochemical and physiological functions of the gastrointestinal system identify and describe the gastro-intestinal disorders 7. analyze and interpret serum biochemical data related to dysfunctions of the liver and biliary tract compared to the normal function 8. perform abdominal examination 9. identify the normal anatomy of GIT, hepatobiliary system and pancreas using common imaging techniques and apply the knowledge to identify, interpret and correlate clinically
Module Content	• Structure and organization of the gastrointestinal system, oral cavity, tongue and salivary glands • Applied anatomy and histology of esophagus, stomach, small intestine, large intestine, liver, pancreas and extrahepatic biliary apparatus • Radiological anatomy of the gastrointestinal system • Development of the gastrointestinal system • Gastrointestinal motility – Electrical and contractile properties of gastrointestinal smooth muscle – Neuroendocrine control of gastrointestinal function – Mastication and swallowing – Motor functions of the stomach – Movements of the small intestine and the colon – Defecation

	• Secretory functions of the alimentary tract
	  – Gastrointestinal secretions
	  – Secretion of saliva
	  – Gastric secretion
	  – Pancreatic exocrine secretion
	  – Secretion of bile
	  – Secretions of small intestine
	• Digestion of carbohydrates, fat and proteins
	• Absorption
	• Gastrointestinal disorders
	  – Diarrhoea and vomiting
	  – Malabsorption
	• Liver functions and dysfunction, jaundice, gallstones
	• Abdominal examination

Teaching/Learning activities	Lectures 54 hours; Practicals 8 hours; Clinical case discussion/ Problem-based tutorials/ Small group discussion 24 hours, Dissection 12 hours, Student presentations
Time allocation	Direct contact - 104 hours Self-learning and assessment –138 hours
Assessment	Formative assessment 02: MCQ, Viva CA2: MCQ, SEQ, OSPE 2nd MBBS examination: MCQ, SEQ, OSPE (*Annex II)*
Recommended Reading/ References	*Annex III*
Coordinating department	Department of Physiology

Course	Preclinical course (Year 1 Semester 2 of the MBBS programme)
Module No.	**M1208**
Module title	**Urinary System**
Prerequisites	
Core/ Optional	Core
	Student should be able to 1. describe the macroscopic and microscopic anatomy of the urinary system 2. describe the development of the urinary system and the associated congenital anomalies 3. identify the normal anatomy of the urinary system using common imaging techniques and apply the knowledge to recognize common congenital and acquired clinical conditions 4. compare the constituents of normal urine with abnormal urine in various pathological conditions and perform urinalysis 5. interpret the results of renal function tests and the laboratory investigations of given hypothetical clinical conditions 6. discuss the process of urine formation under the following headings: a. Glomerular filtration b. Tubular functions c. Renal handling of water d. Control of extra cellular fluid osmolality and Na^+ e. Control of extra cellular fluid and blood volume f. Control of K^+ g. Acid base balance 7. describe the process of micturition and describe the associated clinical abnormalities 8. apply knowledge regarding the structure and functions of the urinary system to explain clinical features, complications and the basis of management of the disorders of the urinary system
Module Content	• Structure and organization of the urinary system: kidney, ureter, bladder and urethra • The Development of the Urinary System • Urine formation • Glomerular filtration • Tubular functions • Renal handling of water • Control of extra cellular fluid osmolality and Na+

	• Control of extra cellular fluid and blood volume • Control of K+ • Acid base balance • Micturition • Urinary constituents and their composition in health and disease • Renal functions tests • Urine analysis • Disorders of urinary system: Renal disease, urinary stone disease
Teaching/Learning activities	Lectures 36 hours; Practicals 10 hours; Problem based tutorials/ Clinical case discussions 12 hours; Dissections/ demonstration of prosected specimens 5 hours, Student presentations
Time allocation	Direct contact - 63 hours Self-learning and assessment - 90 hours
Assessment	Formative assessment 02: MCQ, Viva CA2: MCQ, SEQ, OSPE 2nd MBBS examination: MCQ, SEQ, OSPE (*Annex II)*
Recommended Reading/ References	*Annex III*
Coordinating department	Department of Biochemistry

Course	Preclinical course (Year 1 Semester 2 of the MBBS programme)
Module No.	**M1209**
Module title	**Endocrine System**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	Student should be able to, 1. discuss the structure and organization of the endocrine organs 2. discuss physiology, synthesis of hormones, pathophysiology, biochemistry and clinical disorders with respect to the following endocrine glands • Hypothalamus and pituitary gland • Thyroid gland • Parathyroid glands • Adrenal cortex and medulla • Endocrine pancreas 3. discuss blood glucose homeostasis 4. discuss calcium and phosphorus metabolism 5. discuss the endocrine functions of gut, kidney and vascular endothelium 6. apply the knowledge in biochemical and physiological aspects of hormones to explain the clinical features of endocrine disorders 7. identify the normal anatomy of endocrine organs using common imaging techniques and apply the knowledge to recognize common clinical conditions
Module Content	• Organization of the endocrine system and the structure of endocrine organs • Hypothalamus and Pituitary gland • Thyroid gland • Parathyroid glands and Calcium and phosphorus metabolism • Adrenal cortex and medulla • Endocrine pancreas, Blood glucose homeostasis and Diabetes mellitus (DM) • Endocrinology of gut, kidney and vascular endothelium • Endocrine disorders • Investigating the endocrine system: Endocrine function tests, endocrine imaging
Teaching/Learning activities	Lectures 36 hours; Practicals 5 hours; Problem-based tutorials/ Clinical case discussion 16 hours, FxLMs
Time allocation	Direct contact - 65 hours Self-learning and assessment –93 hours

Assessment	Formative assessment 02: MCQ, Viva CA2: MCQ, SEQ, OSPE 2nd MBBS examination: MCQ, SEQ, OSPE (*Annex II)*
Recommended Reading/ References	*Annex III*
Coordinating department	Department of Biochemistry

Course	Preclinical course (Year 1 Semester 2 of the MBBS programme)
Module No.	**M1210**
Module title	**Reproductive System**
Prerequisites	
Core/ Optional	Core
	Student should be able to 1. discuss the synthesis and metabolism of sex hormones 2. describe the microscopic, macroscopic and applied anatomy of male reproductive system 3. describe the composition and functions of seminal fluid, functions of male sex hormones and regulation of male sexual functions 4. describe the microscopic, macroscopic and applied anatomy of female reproductive system 5. describe the functions of the female sex hormones 6. describe the female reproductive cycles 7. describe the development of the reproductive systems and sexual differentiation and associated disorders 8. identify the normal anatomy of the reproductive systems using common imaging techniques and apply the knowledge to recognize common congenital and acquired clinical conditions 9. discuss the features of puberty and menopause 10. describe the sexual act 11. describe the biochemical and physiological aspects of pregnancy and lactation 12. discuss physiology of fetus 13. discuss the genetic basis of menstrual and reproductive problems 14. discuss the biochemical aspects of cancers related to reproductive systems 15. apply the basic science knowledge to describe clinical and laboratory diagnostic features, and basic principles of the management of reproductive disorders 16. describe the common types and causes, and basic principles in management and prevention of birth defects 17. discuss the biochemistry of inborn errors of metabolism 18. discuss physiology of contraception
Module Content	• Structure and organization of male and female reproductive system • Synthesis, metabolism and functions of sex hormones

	• Seminal fluid, male sex hormones and regulation of male sexual functions • Female reproductive cycles • The development of the reproductive systems and sexual differentiation • Physiology of puberty and menopause, and the sexual act • Pregnancy and lactation • Fetal Physiology • Reproductive genetics • Biochemical aspects of cancers related to reproductive systems • Birth defects and inborn errors of metabolism • Contraception
Teaching/Learning activities	Lectures 38 hours; Practicals 9 hours; Problem based tutorials/ Clinical case discussions 16 hours; Dissections/ demonstration of prosected specimens 6 hours, FxLMs
Time allocation	Direct contact –71 hours Self-learning and assessment –92 hours
Assessment	CA2: MCQ, SEQ, OSPE 2nd MBBS examination: MCQ, SEQ, OSPE (*Annex II)*
Recommended Reading/ References	*Annex III*
Coordinating department	Department of Physiology

Course	Preclinical course (Year 1 Semester 2 of the MBBS programme)
Module No.	**M1211**
Module title	**Human Nutrition**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	Student should be able to: 1. describe the process and factors affecting digestion and absorption of nutrients stating the end products 2. calculate the protein and energy requirements at various stages of life giving reasons for the variations 3. explain various forms of protein energy malnutrition and state their adverse effects on health 4. describe the metabolism and health effects of water soluble and fat soluble vitamins 5. describe the metabolism and health effects of micro-minerals and macro-minerals 6. describe the effects of dietary fibers on human health 7. deduce growth and health status of adults applying standard anthropometric indices 8. plan the dietary interventions for common diseases 9. calculate nutritional value of a diet using food composition tables 10. state the changes in dietary patterns at different stages of life 11. describe the nutritional value of commonly consumed foods of plant origin and animal origin in Sri Lanka and factors affecting food quality 12. relate the effects of different food processing methods to the nutritional quality 13. analyze and interpret the data and plan basic management procedures of common clinical situations related to nutritional deficiency disorders using the knowledge in basic sciences
Module Content	• Digestion and absorption – *done in the Module on the gastrointestinal system* • Energy and protein – Energy requirements and sources – Proteins in nutrition – Protein-energy deficiency • Vitamins – Fat soluble vitamins – Water soluble vitamins • Minerals (Calcium, iron, fluoride, iodine, other microminerals) • Dietary fiber

	• Foods of plant origin and foods of animal origin • Diet and food composition • Nutrition throughout life cycle • Nutritional deficiencies • Diet therapy • Adult anthropometry
Teaching/Learning activities	Lectures 36 hours; Practicals 6 hours; Clinical case discussions/ Problem-based tutorials 14 hours; FxLMs
Time allocation	Direct contact - 56 hours Self-learning and assessment - 82 hours
Assessment	Formative assessment 02: MCQ CA2: MCQ, SEQ 2nd MBBS examination: MCQ, SEQ, OSPE (*Annex II)*
Recommended Reading/ References	- Wickramanayake T.W.1996. Food and nutrition.3rd edition - Jayawardena R, My rice plate, Edition: 1, Publisher: Colombo Medical Faculty Publisher
Coordinating department	Department of Biochemistry

Course	Preclinical course (Year 1 Semester 2 of the MBBS programme)
Module No.	**M1212**
Module title	**Regional Anatomy 2A: Abdomen, Pelvis and Perineum**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	Student should be able to: 1. identify and describe the general topography/ surface anatomy of the abdomen, pelvis and male and female perineum 2. describe the anatomy of the lumbosacral spine and the pelvic girdle in relation to the reproductive functions in females and weight bearing and transmission 3. identify and describe the fascial and muscular arrangement of the anterorolateral and posterior abdominal walls and the pelvis 4. describe the developmental, macroscopic and applied anatomy of the inguinal canal 5. describe the arrangement, divisions and contents of the peritoneal and pelvic compartments 6. describe the arrangement of the neurovascular structures of the abdomen and pelvis 7. identify and describe the radiological anatomy of the abdomen and pelvis 8. apply the anatomical knowledge to recognize and solve clinical problems related to abdominal and pelvic regions 9. utilize a variety of resources (faculty, peers, textbooks, specimens, internet, etc.) to locate information on anatomy of the abdomen and pelvis and related clinical problems
Module Content	• General topography and surface anatomy of the abdomen • Osteology of the lumbosacral spine and pelvis • Anterolateral abdominal wall and abdominal incisions • Inguinal canal and inguinal herniae • Peritoneum and peritoneal compartments • Posterior abdominal wall • Pelvic wall and pelvic floor • Male and female perineum • Abdominal and pelvic vasculature • Lumbosacral plexus and the nerves of the abdomino-pelvic region • Radiological anatomy of the abdomen and pelvis • Clinical anatomy of the abdomen and pelvis *Macroscopic, microscopic, developmental and applied anatomy of the gastrointestinal and genitourinary organs is done with the respective system-based modules.*

Teaching/Learning activities	Lectures 13 hours; Dissections/ demonstrations 14 hours; Practical 4 hours; Problem-based tutorial/ Clinical case discussion 6 hours
Time allocation	Direct contact - 39 hours Self-learning and assessment –41 hours
Assessment	Formative assessment 02: Viva CA2: MCQ, SEQ, OSPE 2nd MBBS examination: MCQ, SEQ, OSPE (*Annex II)*
Recommended Reading/ References	*Annex III*
Coordinating department	Department of Anatomy

Course	Preclinical course (Year 1 Semester 2 of the MBBS programme)
Module No.	**M1213**
Module title	**Regional Anatomy 2B: Lower Limb**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	Student should be able to, 1. describe the musculoskeletal and neurovascular organization of the lower limb with reference to its functions 2. identify and describe the macroscopic, radiological and surface anatomy of the musculoskeletal and neurovascular structures of the lower limb 3. describe the anatomical basis of the common injuries of the lower limb relating to the clinical features, diagnosis and management of these injuries 4. apply the anatomical knowledge to recognize and solve clinical problems related to lower limb 5. utilize a variety of resources (faculty, peers, textbooks, specimens, internet, etc.) to locate information on anatomy of the lower limb and related clinical problems
Module Content	• Osteology of the lower limb • Gluteal region and the hip joint • Compartmental organization of the thigh and the leg • Popliteal fossa and the knee joint • Ankle joint and the foot • Weight-bearing and propulsion • Neurovascular structures of the lower limb • Radiological anatomy of the lower limb • Clinical/applied anatomy of the skeletal and neurovascular injuries of the lower limb
Teaching/Learning activities	Lectures 12 hours; Dissections/ Demonstration of prosected specimens 16 hours; Practical 4 hours; Problem-based tutorials/ Clinical case discussions 6 hours
Time allocation	Direct contact - 40 hours Self-learning and assessment –40 hours
Assessment	CA2: MCQ, SEQ, OSPE 2nd MBBS examination: MCQ, SEQ, OSPE (*Annex II)*
Recommended Reading/ References	*Annex III*
Coordinating department	Department of Anatomy

Course	Preclinical course (Year 2 Semester 1 of the MBBS programme)
Module No.	**M2314**
Module title	**Nervous System and Special Senses**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	Student should be able to: 1. describe the structure and organization of the nervous system 2. describe the functional and applied anatomy of spinal cord, brainstem, cerebrum, cerebellum, internal capsule and diencephalon 3. describe the blood supply, venous drainage and coverings of the central nervous system 4. identify the normal anatomy of the nervous system and related structures using common neuroimaging techniques and apply the knowledge to identify, interpret and correlate clinically 5. discuss the physiology of cerebrospinal fluid and the clinical relevance 6. discuss the biochemistry of neurotransmitters 7. describe the development of the nervous system and associated congenital anomalies 8. describe the sensory receptors and pathways 9. discuss the physiology of pain and inhibitory pathways 10. discuss the physiology of motor system 11. discuss physiology of spinal cord, brainstem and basal ganglia and cerebellum in motor functions 12. discuss how posture is maintained 13. describe the applied anatomy of the cranial nerves 14. perform clinical examination of • sensory system • motor system • cerebellar functions • cranial nerves and apply knowledge to identify neurological signs, interpret and correlate clinically 15. discuss the physiology of temperature regulation 16. discuss the physiology of speech 17. discuss the physiology of sleep, arousal and electrical activity of the brain 18. discuss the limbic system, intellectual and behavioural functions of the brain 19. analyze the signs and symptoms observed in clinical situations involving the nervous system

	20. discuss the pathophysiology of central nervous system lesions and apply the knowledge to interpret clinical problems* 21. discuss anatomy and physiology of vision 22. discuss anatomy and physiology of hearing and equilibrium 23. discuss anatomy and physiology of olfaction and taste 24. perform clinical examination of the vision, hearing and equilibrium 25. analyze and interpret the clinical scenarios of the defects in vision, hearing and equilibrium
Module Content	• Structure and organization of the nervous system – The spinal cord and the ascending and descending tracts – The brainstem – Cranial nerves – The cerebrum and functional localization of the cerebral cortex – Thalamus, hypothalamus and internal capsule – Coverings of the brain and spinal cord, and intracranial venous sinuses – Blood supply of the brain and spinal cord – Cerebrospinal fluid – Radiological anatomy of the nervous system • Development of the nervous system • Neurotransmitters • Sensory and motor functions of the nervous system – Sensory receptors and pathways – Pain – Temperature regulation – Motor functions of the spinal cord, motor cortex, basal ganglia and the cerebellum – Posture • Higher functions of the nervous system – Speech – Sleep, arousal and electrical activity of the brain – Intellectual and behavioural functions of the brain • Clinical examination of the nervous system – Examination of the motor and sensory systems – Examination of cerebellar functions – Examination of cranial nerves • Central nervous system lesions • Special senses – Vision – Hearing and equilibrium – Olfaction and taste

Teaching/Learning activities	Lectures 70 hours; Practicals (including anatomy demonstration sessions) 18 hours; Problem-based tutorials/ Clinical case discussions/ Small group discussion 20 hours
Time allocation	Direct contact - 108 hours Self-learning and assessment – 161 hours
Assessment	2nd MBBS Examination: MCQ, SEQ, OSPE (*Annex II)*
Recommended Reading/ References	*Annex III*
Coordinating department	Department of Anatomy and Department of Physiology

Course	Preclinical course (Year 2 Semester 1 of the MBBS programme)
Module No.	**M2315**
Module title	**Regional Anatomy 3: Head, Neck and the Spine**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	Student should be able to: 1. identify and describe the osteological, radiological and applied anatomy of the skull and the vertebral column 2. describe the fascial and muscular arrangement of the scalp, face and the neck 3. describe the macroscopic and applied anatomy of the thyroid gland, salivary glands, oral cavity and the tongue, nasal cavity and paranasal sinuses, pharynx and larynx, eye and the ear with reference to the function and dysfunction of each 4. describe the arrangement of the neurovascular structures and the lymphatics of the head and neck region 5. describe the embryological development of the head and neck region 6. apply the anatomical knowledge to recognize and solve clinical problems related to the structures in head and neck region 7. utilize a variety of resources (faculty, peers, textbooks, specimens, internet, etc.) to locate information on anatomy of the abdomen and pelvis and related clinical problems
Module Content	• Osteology and radiology of the skull and the spine • The scalp, face and temporomandibular joint • Muscles and fasciae of the neck • Thyroid gland and parathyroid glands • Salivary glands • Oral cavity, tongue and palate • Nasal cavity and paranasal sinuses • Larynx and pharynx • Ear, eye and orbit • Nerves, vessels and lymphatics of the head and neck region • Development of the head and neck region • Clinical/applied anatomy of the head and neck region *Anatomy of the brain and other intracranial structures and the spinal cord and the related clinical anatomy is done in M2114*
Teaching/Learning activities	Lectures 32 hours; Dissections/ Demonstration of prosected specimens 18 hours; Practical 4 hours; Problem-based tutorials/ Clinical case discussions 12 hours

Time allocation	Direct contact - 66 hours Self-learning and assessment –83 hours
Assessment	2nd MBBS examination: MCQ, SEQ, OSPE (*Annex II)*
Recommended Reading/ References	*Annex III*
Coordinating department	Department of Anatomy

Annex I

Teaching-learning methods used in the Preclinical Course

Lectures: Lectures are large group (whole batch) teaching sessions that are used to provide background information, to explain basic concepts and to provide guidance for self-directed learning. Most of the lectures are conducted in an interactive manner and a variety of teaching-learning methods are incorporated in to lectures (e.g. videos, quizzes) to promote understanding and to stimulate interest.

Problem-based tutorials/ Clinical case discussions (CCD): Tutorials/CCDs are small group learning and self-evaluation sessions that commonly use real-life clinical scenarios to promote understanding of the basic science concepts and to enhance critical thinking and problem solving abilities using the knowledge acquired through other teaching-learning activities. These sessions are expected to improve skills in interpersonal communication, teamwork and leadership among students. Tutors act as facilitators for the small groups and the active participation of students are encouraged.

Practical classes: Practical classes are conducted as group sessions providing opportunities for the students to enhance practical skills in identification, clinical examination and laboratory (biochemical) evaluation and to improve theoretical knowledge acquired by other means. Simulators are used in some practical sessions to train the students on clinical diagnostic and therapeutic procedures. The practical sessions are planned as self-directed learning activities with guidelines provided by each department.

Fixed-learning modules (FxLM): Fixed-learning modules are self-directed, active learning sessions in which the learning materials are displayed for a pre-defined period of time (1 week). The learning materials include course content and the important supplementary material (such as research papers, newspaper articles, specimens, images, etc.) to enhance learning. These activities allow learning at student's own pace and time.

Dissections: During dissections, the students carry out systematic dissection of a human cadaver as a professional team in small-groups. Dissections is a self-directed learning process using a guiding manual and other resources such as prosected specimens, models, radiographs and internet. Students are also expected to take turns to function as leaders in the respective groups. Formative mini assessments with immediate feedback are done by the lecturers/demonstrators during the dissection sessions.

Student presentations: Student presentations/seminars promote self-directed learning and deep learning on a clinically important topic that is of national, regional and/or global significance. Students work in teams to collect information utilizing variety of resources, organize the content and disseminate the knowledge in a creative manner.

Students' Seminars in Biochemistry

Department of Biochemistry conductsthe students' seminarprogramme during the year 2 Semester 1 of the Preclinical course. It provides students an opportunity to apply their Biochemistry and basic science knowledge to understand locally or globally significant scientific topics related to human health. Students are working as groups under the supervision of the Department academic staff for a period of 10 weeks to create and deliver an effective seminar on a given topic.

Course	Preclinical course (Year 2 Semester 1 of the MBBS programme)
Prerequisites	Completed all the Biochemistry-related content in the Modules of the Preclinical course
Core/ Optional	Core
Intended learning outcomes	Student should be able to, 1. work efficiently and cooperatively in a team, positively interacting with the colleagues to achieve a common goal 2. hold responsibilities of a leader in a group of peers 3. fulfill a series of academic tasks in an allocated time period 4. demonstrate proficiency in understanding a novel scientific topic of discussion 5. recognize and utilize a variety of standard and appropriate resources to explore an area/field of scientific study 6. communicate effectively with medical/scientific and non-scientific communities to obtain relevant information/data to fulfil the allocated task 7. analyze and critically evaluate the scientific findings/ data 8. organize the collected information/data to compile an effective scientific presentation intended for an academic audience 9. use standard scientific referencing styles in the presentation 10. demonstrate confidence, creativity and proficiency in scientific presentations 11. use effective verbal and non-verbal communication skills in scientific presentation (including questioning and answering) 12. demonstrate academic integrity and professionalism and adhere to ethical standards in data exploration and extraction, data analysis, reporting and presentation 13. volunteer representing a group of colleagues and represent the work of the group allocating due credit 14. improve interpersonal skills by self-reflection and identifying their own strengths and weaknesses 15. critically and constructively appraise the scientific work presented by others

Teaching/Learning activities	Introductory lecture 2 hours; Meetings with supervisor/s 12 hours, Group project/ team-based learning/ preparation for the seminar 30 hours, Student presentations (case studies, role-plays, dramas) and, discussion and feedback 8 hours
Time allocation	52 hours
Assessment	Seminar evaluation
Coordinating department	Department of Biochemistry

Annex II

Assessments in the Preclinical Course

Assessment	Time of assessment	Assessment structure (marks allocated)	Content assessed	Contribution to 2nd MBBS examination
Formative assessment 01 (FA1)	End of 8 weeks of Y1S1	Anatomy MCQ	M1101, M1105	-
		Anatomy OSPE		
		Physiology MCQ	M1101, M1102	
		Biochemistry MCQ	M1101, M1102	
Continuous assessment 01 (CA1)	End of Y1S1	Anatomy MCQ (35)	M1101, M1103, M1104, M1105, M1106	10 marks
		Anatomy SEQ (35)		
		Anatomy OSPE (30)		
		Biochemistry MCQ (50)	M1101, M1102, M1103, M1104	10 marks
		Biochemistry SEQ (50)		
		Physiology MCQ (50)	M1101, M1102, M1103, M1104	12.5 marks
		Physiology SEQ (50)		
Formative assessment 02 (FA2)	During the 8th week of Y1S2	Anatomy Viva	M1207, M1208, M1212	-
		Physiology MCQ	M1207, M1208	
		Biochemistry MCQ	M1207, M1208, M1211	
Continuous assessment 02 (CA2)	End of Y1S2	Anatomy MCQ (35)	M1207, M1208, M1209, M1210, M1212, M1213	20 marks
		Anatomy SEQ (35)		
		Anatomy OSPE (30)		
		Biochemistry MCQ (50)	M1207, M1208, M1209, M1210, M1211	10 marks
		Biochemistry SEQ (50)		
		Physiology MCQ (50)	M1207, M1208, M1209, M1210	12.5 marks
		Physiology SEQ (50)		
Formative assessment 03 (FA3)	End of 10th week of Y2S3	Anatomy OSPE	M2314, M2315	-
		Biochemistry OSPE	ALL (Except M1105, M1106, M1212, M1213, M2315)+M1211 in Biochemistry	
		Physiology OSPE		
2nd MBBS (Main) examination	6 weeks after the end of preclinical course (Y2S1)	Anatomy MCQ (35%)	ALL (except M1102, M1211)	70 from final exam 30 from CAs
		Anatomy SEQ (35%)		
		Anatomy OSPE (30%)		
		Biochemistry MCQ (30)	ALL (Except M1105, M1106, M1212, M1213, M2315)	80 from final exam 20 from CAs
		Biochemistry SEQ (30)		
		Biochemistry OSPE(20)		
		Physiology MCQ (30)	ALL (Except M1105, M1106, M1211, M1212, M1213, M2315)	75 from final exam 25 from CAs
		Physiology SEQ (30)		
		Physiology OSPE (15)		
2nd MBBS (Repeat) examination	6 weeks after the release of results of the 2nd MBBS (main) examination	Anatomy MCQ (35)	ALL (except M1102, M1211)	Marks of the CAs are not considered
		Anatomy SEQ (35)		
		Anatomy OSPE (30)		
		Biochemistry MCQ (40)	ALL (Except M1105, M1106, M1212, M1213, M2315)	
		Biochemistry SEQ (40)		
		Biochemistry OSPE (20)		
		Physiology MCQ (40)	ALL (Except M1105, M1106, M1211, M1212, M1213,	
		Physiology SEQ (40)		

		Physiology OSPE (20)	M2315)	

Annex III

Recommended Reading/ References

Anatomy

- Richard Drake, A. Wayne Vogl. *Gray's Anatomy for Students*, 4th ed.: UK: Churchill Livingstone; 2019.
- B. D. Chaurasia. *Human Anatomy*, 8th ed.: India: CBS publishers; 2019.
- Chummy S. Sinnatambi. *Last's Anatomy: Regional and Applied*, 12th ed.: UK: Churchil Livingstone; 2011.
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- Harold Ellis, Vishy Mahadevan. *Clinical Anatomy: Applied Anatomy for Students and Junior Doctors*, 14th ed.: Wiley-Blackwell; 2018.
- Anne M. R. Agur and Arthur F. Dalley. *Grant's Atlas of Anatomy*, 13th ed.: UK: Wolters Kluwer; 2012.
- Peter H. Abrahams, Jonathan D. Spratt MA, Marios Loukas. *McMinn and Abrahams' Clinical Atlas of Human Anatomy:* 7th ed.: Netherlands: Elsevier Health Sciences; 2015.
- Patrick W. Tank. *Grant's Dissector (Tank, Grant's Dissector)*, 17th ed.: UK: Wolters Kluwer; 2020.
- Barbara Young, Geraldine O'Dowd, Phillip Woodford. *Wheater's Functional Histology: A Text and Colour Atlas*, 6th ed.: Elsevier; 2013.
- Thomas W. Sadler. *Langman's Medical Embryology*, 14th ed.: Wolters Kluwer; 2018
- Inderbir Singh. *Human Embryology*, 11th ed.: India: Jaypee Brothers; 2018.
- Richard Snells. *Clinical Neuroanatomy,* 7th ed.:UK: Wolters Kluwers; 2014.

Biochemistry

- Denise R. Ferrier. *Lippincott's Illustrated Reviews: Biochemistry*, 7th ed.: UK: Wolters Kluwer; 2017.
- Victor W. Rodwell, David A. Bender, Kathleen M. Botham, Peter J. Kennelly, Anthony Weil. *Harpers Illustrated Biochemistry,* 31st ed.: Lange; 2018.
- Sareen S. Gropper, Jack L. Smith. *Advanced Nutrition and Human Metabolism*, 7th ed.: Wadsworth; 2017.
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Physiology

- Kim E. Barrett, Susan M. Barman, Scott Boitano, Heddwen Brooks. *Ganong's Review of Medical Physiology*, 26th ed.: Lange; 2019.
- John E. Hall. *Guyton and Hall Textbook of Medical Physiology*, 14th ed.: Elsivier; 2021.

5.3 Personal and Professional Development (PPD) Stream

The PPD stream encompasses both individual aspects of professional formation, characterized as the development of professional values, actions and aspirations, as well as overarching concepts of global professional attributes. The PPD stream provides a comprehensive exposure to a variety of aspects in personal and professional development, which include study skills, communication, teamwork and leadership, networking and social skills, creativity and problem solving, personality and behavior, adaptability and flexibility, attitudes, values, medical ethics, professionalism and vision for life.

Structure and timeline of the PPD stream

PPD stream is conducted from year 1 to 4. The components/modules of the PPD stream are as follows.

	Module	Year and semester
M1113	Personal and Professional Skills	Year 1 Semester 1 and 2, Year 2 Semester 1
M3113	Human Psychology and Behaviour	Year 3 semester 1 and 2
M4113	Medical Ethics	Year 4 Semester 1 and 2

Detailed structure of the PPD stream

Course	PPD stream (Year 1-Semester 1 and 2, and Year 2- Semester1)
Module No.	**M1113**
Module title	**Personal and Professional Skills**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	Student should be able to: 1. gain a better understanding of themselves as persons 2. improve interpersonal skills by identifying their own strengths and weaknesses 3. improve study skills 4. follow accepted personal and professional behaviors
Module Content	Section I • Adaptation to a new environment • Stress management, coping skills, relaxation techniques • Self-esteem, building a positive self-image, how self-talk affects your attitudes • Learning to be happier with work, leverage attitudes for optimum performance in academia and career • Setting goals and achieving them, overcoming distraction • Time management • Reflective behavior • Impulse control and anger management • Conflict resolution Section II • Intelligence and thinking • Leadership, teamwork and group dynamics • Effective presentations • Study skills - Different study styles - Ways to improve study skills and overcoming weaknesses - Resources for study skills development - Directions for self-assessment on own progression in studies - Reading and listening skills, note taking, mind maps - Peer-learning and independent learning • Dealing with examinations

Teaching/Learning activities	Lectures discussions, small group discussions, small group activities/ workshops, students' presentations/ students' seminars
Time allocation	Direct contact - 28 hours, Self-learning and assessment - 22 hours
Assessment	Group presentations, Reflective writing
Recommended Reading/ References	- Susan Nolen-Hoeksema, Geoffrey Loftus, Willem Wagenaar. Atkinson & Hilgard's Introduction to Psychology, 15th ed. UK: Cengage Learning.; 2009. - Basant K. Puri, I. H. Treasaden. Sciences Basic to Psychiatry, 2nd ed. Edinburgh, UK: Churchill Livingstone; 1998. - Barbara Fadem. Behavioral Science in Medicine, 2 nd ed/ Kindle Edition. Philadelphia, USA: Lippincott Williams & Wilkins; 2012. - S. R. Waldstein. Behavioral and Social Science in Medicine: Principles and Practice of Biopsychosocial Care. US: Springer; 2017.
Coordinating department/s	Medical Education Unit

Course	PPD stream (Year 3 Semester1 and 2 of the MBBS programme)
Module No.	**M3213**
Module title	**Human Psychology and Behaviour**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	Student should be able to: 1. understand the fundamental concepts of human psychology 2. describe the biological and psychological bases of human behaviour 3. acquire professional communication skills
Module Content	Section I • Learning, memory and perceptions • Values and attitudes; Stereotypes and prejudice • Interpersonal attraction, attachment and bonding • Normal physical, psychosexual and cognitive development • Personality • Gender, gender issues and human sexuality Section II • Changing behavior • Counselling, Breaking bad news • Care of the bereaved
Teaching/Learning activities	Lectures discussions, small group discussions
Time allocation	Direct contact - 16 hours, Self-learning and assessment - 34 hours
Assessment	Group presentations/ case discussions, MCQ, OSCE/OSPE
Recommended Reading/ References	- Susan Nolen-Hoeksema, Geoffrey Loftus, Willem Wagenaar. Atkinson & Hilgard's Introduction to Psychology, 15th ed. UK: Cengage Learning.; 2009. - Basant K. Puri, I. H. Treasaden. Sciences Basic to Psychiatry, 2nd ed. Edinburgh, UK: Churchill Livingstone; 1998. - Barbara Fadem. Behavioral Science in Medicine, 2 nd ed/ Kindle Edition. Philadelphia, USA: Lippincott Williams & Wilkins; 2012. - S. R. Waldstein. Behavioral and Social Science in Medicine: Principles and Practice of Biopsychosocial Care. US: Springer; 2017. - Chantal Simon, Hazel Everitt, Francoise van Dorp, and Matt Burkes.

	Oxford Handbook of General Practice (Oxford Medical Handbooks), 4thed. Oxford, UK: Oxford University Press; 2014.
Coordinating department/s	Medical Education Unit
Course	PPD stream (Year 4 Semester1 and 2 of the MBBS programme)
Module No.	**M4213**
Module title	**Medical Ethics**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	Student should be able to: 1. understand the legal and ethical framework within which doctors provide curative and preventive care 2. recognize and distinguish an ethical issue from other issues related to healthcare (e.g. law, culture and religion) 3. explain the principles of bioethics 4. explain and apply the concepts of human dignity and human rights 5. justify decisions taking harms and benefits into account 6. understand the relationship between autonomy and individual responsibility 7. explain how the principle of consent is applied in different interventions and research 8. explain why patient privacy and confidentiality should be respected and recognize legitimate exceptions to confidentiality 9. identify and deal with the ethical issues involved in allocating scarce health care resources 10. identify different contexts and bases of discrimination and stigmatization and their implications 11. deal with cultural diversity and take into consideration cultural specificities (appropriate approach, positive inputs and limits) with respect to the fundamental principles of bioethics and human rights
Module Content	• Introduction to bioethics and medical ethics • Harms and benefits in healthcare settings • Human dignity, rights and autonomy • Privacy and confidentiality • Consent • Discrimination, stigmatization and justice
Teaching/Learning activities	Case-based lectures discussions, Video, Small group discussions

Time allocation	Direct contact - 15 hours, Self-learning and assessment - 30 hours
Assessment	Scenario/case-based SEQs
Recommended Reading/ References	- Division of Ethics of Science and Technology, UNESCO, 2008. Bioethics Core Curriculum (SHS/EST/EEP/2008/PI/1/Rev), UNESCO: Paris, 68 pp. - UNESCO, 2005. Universal Declaration on Bioethics and Human Rights - UNESCO, 2011. Casebook on Human Dignity and Human Rights, Bioethics Core Curriculum Casebook Series, No. 1, UNESCO: Paris, 144 pp. - UNESCO, 2011. Casebook on Benefit and Harm, Bioethics Core Curriculum Casebook Series, No. 2, UNESCO: Paris, 140 pp. - UNESCO, 2011. Bioethics Core Curriculum – Section 2: Study Materials , UNESCO: Paris, 92 pp
Coordinating department/s	Medical Education Unit

Assessments in the PPD stream

Module	Timing	Assessment method
Personal and Professional Skills	End of Year 2 Semester 1 (with 2nd MBBS examination)	Reflective writing (50%) Group presentation (50%)
Human Psychology and Behaviour	End of Year 3 Semester 2 (with 3rd MBBS Part-I examination)	Group presentation/ case discussion MCQ/OSPE
Medical Ethics	End of Year 4 Semester 2 (with 3rd MBBS Part-II examination)	SEQ (Case discussion)

5.4Research in Medicine

The Research in Medicine module of the MBBS programme of FMAS, RUSL aims to provide guidance and experience on the research process that include the scientific inquiry, research design, review of literature, research implementation, data interpretation and presentation, and research ethics.

At the commencement of the Year 2 Semester 2, students are grouped, and each group should conduct a research study under the supervision of a permanent academic staff member in the faculty. Four (4) semesters are allocated for the Research in Medicine. The presentations on the research are done during the Year 4 Semester 2.

Course	Research in Medicine (Year 2-Semester 2 to Year 4 Semester 1)
Module No.	**M2416**
Module title	**Research in Medicine**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	Students should be able to 1. conduct a comprehensive literature search on a health related topic 2. describe different research designs used in health research 3. design an appropriate research method to answer a health-related research question 4. write a research proposal based on an identified health related problem 5. collect and analyze data using appropriate methods 6. present the findings of a research
Module Content	The following broad content areas are covered by lectures • The role of research in medicine and in other contexts related to medicine • Research design and the research process • Conducting literature review • Introduction to Mendeley Reference Manager • Formulating objectives/hypothesis • Research proposal writing • Study designs • Sample size calculation

	• Sampling techniques • Developing questionnaire • Data analysis techniques • Ethics in research Ethic • Data presentation
Teaching/Learning activities	Lectures, Small group discussions, Online learning, Group research project, Students presentation
Time allocation	Total 400 notional hours extending over a period of four semesters
Assessment	At the end of the stream, individual undergraduate receives a mark out of 100 according to the following breakdown. • Component I: Evaluation by the supervisor: 50 marks (for mid-stream and end-stream evaluation 25 marks each) • Component II: Average mark of the evaluation of the research presentation by the review panel of experts: 50 marks In order to successfully complete the stream, each undergraduate needs to obtain 50% each for both components I and II. If less than 50% for component I- Individual student should submit an assignment addressing the deficiencies highlighted by the research supervisor. Three independent reviewers, appointed by the stream coordinator would evaluate the assignment. The average mark given by the reviewers would be considered for the evaluation. (However, the maximum average mark would be limited to 50%.) If less than 50% for component II- All research group members should submit a report addressing the deficiencies highlighted by the review panel of experts (with the approval of the research supervisor). Three independent reviewers, appointed by the coordinator of the stream would evaluate the report. The average mark given by the reviewers would be considered for the evaluation. (However, the maximum average mark would be limited to 50%.)
Recommended Reading/ References	- Statistics at Square One by MJ Campbell, TDV Swinscow - Survey methods in Community Medicine by JH Abramson, ZH Abramson - Learning Research- A guide to medical students, junior - doctors and related professionals by C Sivagnanasundaram - Epidemiology in Medicine by CH Hennekens, J Buring - Basic Epidemiology by R Bonita, R Beaglehole, T Kjellstrom
Coordinating department/s	Department of Community Medicine

5.5 Paraclinical Course

The Paraclinical course of FMAS, RUSL consists of several basic sciences disciplines that include Pathology, Pharmacology, Microbiology, Parasitology as well as Community Medicine, Family Medicine and Forensic Medicine disciplines. The basic medical science disciplines of the Paraclinical course provides instructions and guidance to acquire comprehensive knowledge regarding abnormal structure and functions and the disease processes, and skills in laboratory-based identification of abnormal structure, functionsand the disease processes, laying down the foundation for the clinical sciences. The course also provides guidance and opportunities for the development of skills in self-directed learning, critical and analytical thinking and problem-solving, communication, teamwork and leadership required for the practice of medicine.

Structure and timeline of the Paraclinical course

The Paraclinical course is a discipline-based course which spans through the Year 3 and Year 4 of the MBBS programme.

Year (Y) and Semester (S)	Disciplines	Assessment
Y3S1	Parasitology Microbiology	Continuous assessment 03
Y3S2	Pharmacology Pathology Community Medicine	Continuous assessment 04
		3rd MBBS Part-I examination
Y4S1	Pharmacology Pathology Community Medicine	Continuous assessment 05
Y4S2	Forensic Medicine Family Medicine	Continuous assessment 06
		3rd MBBS Part-II examination

Detailed structure of the Paraclinical course

5.5.1 Parasitology

Course	Paraclinical course (Year 3 Semester 1 of the MBBS programme)
Module No.	**M3517**
Module title	**Introduction to medical parasitology parasitic infections of blood and circulatory system-1**
Prerequisites	Completed the module on structure and function of the cardiovascular system in the preclinical course
Core/ Optional	Core
Intended learning outcomes	On completion of the module the students should be able to, 1. explain the terms and definitions used in Medical Parasitology 2. name the major parasitic infections of the Cardiovascular system 3. name the parasitic infections of the Cardiovascular system prevalent in Sri Lanka 4. discuss the historical background 5. make a diagnosis based on the history,clinical examination and results of laboratory investigations 6. describe and discuss the transmission of the infection 7. discuss the epidemiology and social factors that promote transmission and the consequences 8. critically review the current control programs 9. advise patients and travelers effectively and efficiently regarding treatment, prevention and prophylaxis against these infections
Module Content	• Malaria – *P. vivax, P. falciparum, P. ovale, P. malariae* Each infection presented in the order of; - Geographical distribution - Morphology of the parasite - Location in host - Life cycle - Pathogenesis and pathology - Clinical features - Differential diagnosis - Investigations - Diagnosis - Management and treatment

	- Prevention and control - National Control Program • Trypanosomiasis – *Trypanosoma brucei brucei* group. (as above, not in detail) • Leishmaniasis – *Leishmania donovani* (as above, see also module no.M3632)
Teaching/Learning activities	Lectures,Practical demonstrations, Tutorials, Case-based learning (CBL), Presentations by invited experts
Time allocation	Lectures 5 ½ hours, Practical demonstrations 1 ½ hours, Tutorials/CBL 1 ½ hours
Assessment	Continuous Assessment: SEQ 3rd MBBS Part-I examination: MCQ, SEQ, OSPE
Recommended Reading/ References	Department handouts; Manson's Tropical Diseases, 23 ed.: Saunders; 2014; Online sources - eMedicine/Medscape (https://emedicine.medscape.com/), Centers for disease control and prevention (CDC - https://www.cdc.gov/), World Health Organization (WHO), Antimalaria campaign, Ministry of Health, Sri Lanka(http://www.malariacampaign.gov.lk), Edirisinghe, J.Sarath. Parasites of Man. Vishwa Leka publishers; 1999.
Coordinating department/s	Department of Parasitology

Course	Paraclinical course (Year 3 Semester 1 of the MBBS programme)
Module No.	**M3518**
Module title	**Parasitic infections of the lymphatic system**
Prerequisites	Knowledge on structure and function of the lymphatic system (Preclinical course)
Core/ Optional	Core
Intended learning outcomes	On completion of the module the students should be able to; 1. name the major parasitic infections of the lymphatic system 2. discuss the historical background 3. make a diagnosis after formulating a differential diagnosis based on the history, clinical examination and results of laboratory investigations 4. describe and discuss the transmission of the infections 5. discuss the epidemiology and social factors that promote transmission and consequences 6. critically review the current control programs and provide your opinion to improve same 7. advise patients and travelers effectively and efficiently regarding treatment, prevention and prophylaxis against these infections
Module Content	Parasitic infections of the lymphatic system • *Wuchereria bancrofti* • *Brugia malayi* • *Toxoplasma gondii* (offered in the order under Intended learning outcomes)
Teaching/Learning activities	Lectures, Tutorials/CBL, Laboratory demonstrations
Time allocation	Lectures 5hours, Practical 1 ½ hours, Tutorials/CBL1 ½ hours
Assessment	Continuous Assessment: SEQ 3rd MBBS Part-I examination: MCQ, SEQ, OSPE
Recommended Reading/ References	Department handouts; Manson's Tropical Diseases, 23 ed.: Saunders; 2014; Online sources - eMedicine/Medscape (https://emedicine.medscape.com/), Centers for disease control and prevention (CDC - https://www.cdc.gov/), World Health Organization (WHO), Edirisinghe, J.Sarath. Parasites of Man. Vishwa Leka publishers; 1999.Ralph Muller. Worms and disease: A manual of medical helminthology. : Heinemann Medical; 1975
Coordinating department/s	Department of Parasitology

Course	Paraclinical course (Year 3 Semester 1 of the MBBS programme)
Module No.	**M3519**
Module title	**Parasitic infections of blood and circulatory system- 2** **Parasitic infections causing diarrhea**
Prerequisites	Completed the module on structure and function of the cardiovascular and gastrointestinal systems (Preclinical course)
Core/ Optional	Core
Intended learning outcomes	On completion of the module the students should be able to; 1. name the major parasitic infections that cause diarrhea 2. discuss the historical background 3. make a diagnosis after formulating a differential diagnosis based on the history, clinical examination and results of laboratory investigations 4. describe and discuss the transmission of the infections 5. discuss the epidemiology and social factors that promote transmission and consequences 6. make a critical evaluation of the current control programs and propose ways of improving 7. advise patients and travelers regarding treatment, prevention and prophylaxis against these infections
Module Content	Watery diarrhea: Strongyloidiasis, cryptosporidiosis, Trichinosis Blood and mucus diarrhea: Amoebiasis, Balantidiosis, Trichuris Dysentery syndrome, Intestinal Schistosomiasis Steatorrhea: Giardiasis, Severe Strongyloidiasis
Teaching/Learning activities	Lecture discussions, Practicals
Time allocation	Lecture discussions 2 ½ hours, Practical 1 ½ hours
Assessment	Continuous Assessment: SEQ 3rd MBBS Part-I examination: MCQ, SEQ, OSPE
Recommended Reading/ References	Department handouts; Manson's Tropical Diseases, 23 ed.: Saunders; 2014; Online sources - eMedicine/Medscape (https://emedicine.medscape.com/), Centers for disease control and prevention (CDC - https://www.cdc.gov/), World Health Organization (WHO), Edirisinghe, J.Sarath. Parasites of Man. Vishwa Leka publishers; 1999. Ralph Muller. Worms and disease: A manual of medical helminthology. : Heinemann Medical; 1975
Coordinating department/s	Department of Parasitology

Course	Paraclinical course (Year 3 Semester 1 of the MBBS programme)
Module No.	**M3520**
Module title	**Parasitic infections of the gastrointestinal system**
Prerequisites	Completed the module on structure and function of the gastrointestinal systems (Preclinical course)
Core/ Optional	Core
Intended learning outcomes	On completion of the module the students should be able to; 1. name the major parasitic infections of gastrointestinal system 2. name the parasitic infections of the Gastrointestinal system prevalent in Sri Lanka 3. discuss the historical background 4. make a diagnosis based on the history, clinical examination and results of laboratory investigations 5. critically review the epidemiological and social factors that promote malnutrition in children infected with above parasites in Sri Lanka 6. describe and discuss the transmission of the infection 7. discuss the epidemiology and social consequences 8. analyze the factors promoting transmission and plan a feasible and effective prevention and control program 9. discuss the preventive measures 10. advise patients and travelers regarding treatment, prevention and prophylaxis against these infections
Module Content	• Intestinal Protozoan infections • Intestinal Nematode infections • Intestinal Cestode infections • Intestinal Trematode infections Each infection presented in the order of - Geographical distribution - Morphology of the parasite - Location in host - Life cycle - Pathogenesis and pathology - Clinical features - Differential diagnosis - Investigations - Diagnosis - Management and treatment

	- Prevention and control - National Control Programs if any
Teaching/Learning activities	Lecture discussions, Tutorials/CBL, Practicals
Time allocation	Lecture discussions 2 ½ hours, Practical 2 ½ hours, Tutorial/CBL 1 ½ hours
Assessment	Continuous Assessment: SEQ 3rd MBBS Part-I examination: MCQ, SEQ, OSPE
Recommended Reading/ References	Department handouts; Manson's Tropical Diseases, 23 ed.: Saunders; 2014; Online sources - eMedicine/Medscape (https://emedicine.medscape.com/), Centers for disease control and prevention (CDC - https://www.cdc.gov/), World Health Organization (WHO), Edirisinghe, J.Sarath. Parasites of Man. Vishwa Leka publishers; 1999. Ralph Muller. Worms and disease: A manual of medical helminthology. : Heinemann Medical; 1975
Coordinating department/s	Department of Parasitology

Course	Paraclinical course (Year 3 Semester 2 of the MBBS programme)
Module No.	**M3529**
Module title	**Parasitic infections of the liver** **Parasitic infections leading to anaemia** **Parasitic infections causing pulmonary symptoms**
Prerequisites	Completed the modules M3517, M3518, M3519
Core/ Optional	Core
Intended learning outcomes	On completion of the module the students should be able to, 1. name the major parasitic infections of the liver 2. name the parasites that can cause anaemia 3. name the parasites that cause pulmonary symptoms 4. discuss the historical background 5. formulate a differential diagnosis based on the history, clinical examination and results of laboratory 6. investigations in each case 7. describe and discuss the transmission of the infections 8. discuss the epidemiology and social consequences 9. discuss the current control programs 10. advise patients and travelers effectively and efficiently regarding treatment, prevention and prophylaxis against these infections
Module Content	• Parasitic infections of the liver: Fascioliasis, Clonorchiasis, Amoebic liver abscesses, Hydatid cysts, Schistosomiasis,Kala Azar (recall) • Parasitic infections leading to anaemia: Malaria, Hookworm infection and disease, Kala Azar, Diphyllobothriasis (recall) • Parasitic infections causing pulmonary symptoms: Lofflers syndrome, Tropical Pulmonary Eosinophilia, Visceral Larva Migrans, Paragonimiasis, Hydatid cysts, Ruptured Amoebic liver abscesses (recall)
Teaching/Learning activities	Lecture discussions, Practicals
Time allocation	Lecture discussions 4 hours, Practical 1 ½ hours
Assessment	Continuous Assessment: SEQ 3rd MBBS Part-I examination: MCQ, SEQ, OSPE
Recommended Reading/ References	Department handouts; Manson's Tropical Diseases, 23 ed.: Saunders; 2014; Online sources - eMedicine/Medscape (https://emedicine.medscape.com/), Centers for disease control and

	prevention (CDC - https://www.cdc.gov/), World Health Organization (WHO), Edirisinghe, J.Sarath. Parasites of Man. Vishwa Leka publishers; 1999. Ralph Muller. Worms and disease: A manual of medical helminthology. : Heinemann Medical; 1975
Coordinating department/s	Department of Parasitology

Course	Paraclinical course (Year 3 Semester 2 of the MBBS programme)
Module No.	**M3530**
Module title	**Parasitic infections of the central nervous system** **Parasitic infections of the eye** **Parasitic infections of the urinary system**
Prerequisites	Completed the modules on structure and functions of the central nervous system, eye and urinary system (Preclinical course)
Core/ Optional	Core
Intended learning outcomes	On completion of the module the students should be able to; 1. name the major parasitic infections that cause lesions in the Central Nervous System, Eye and the Urinary system 2. discuss the historical background 3. make a diagnosis after formulating a differential diagnosis based on the history, clinical examination and results of laboratory investigations 4. describe and discuss the transmission of the infections 5. do a critically review of the epidemiology and social factors promoting spread of above infections and the consequences 6. discuss the current control programs 7. advise patients and travelers regarding treatment, prevention and prophylaxis against these infections
Module Content	• Central Nervous System: Infections with Free living amoebae (not in detail),Malaria (recall), Cysticercosis (recall), Hydatid cysts (recall), Trypanosomiasis (recall) • Eye: Toxoplasmosis (recall), Hydatid cysts (recall), Onchocerciasis and Loasis (recall), Free-living amoebic infections (recall) • Urinary system: Trichomoniasis, Schistosomiasis (recall), Lymphatic filariasis (recall)
Teaching/Learning activities	Lecture discussions, Practicals
Time allocation	Lecture discussions 2 ½ hours, Practical 1 ½ hours
Assessment	Continuous Assessment: SEQ 3rd MBBS Part-I examination: MCQ, SEQ, OSPE
Recommended Reading/ References	Department handouts; Manson's Tropical Diseases, 23 ed.: Saunders; 2014; Online sources - eMedicine/Medscape (https://emedicine.medscape.com/), Centers for disease control and prevention (CDC - https://www.cdc.gov/), World Health Organization (WHO),

	Edirisinghe, J.Sarath. Parasites of Man. Vishwa Leka publishers; 1999. Ralph Muller. Worms and disease: A manual of medical helminthology. : Heinemann Medical; 1975
Coordinating department/s	Department of Parasitology

Course	Paraclinical course (Year 3 Semester 2 of the MBBS programme)
Module No.	**M3531**
Module title	**Medical Entomology**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	On completion of the module the students should be able to; 1. name the medically important mosquitoes of Sri Lanka 2. describe the morphology of medically important mosquitoes, their breeding habits and sites and the life cycles 3. state the parasitic infections transmitted by these vectors and the mechanisms involved. 4. identify when given a specimen 5. provide a critical review of the preventive and control measures currently used in Sri Lanka and make suggestions to improve 6. describe and discuss the role of national and global control programs flies, lice, fleas, ticks and mites 7. state the medical importance 8. name the parasitic infections transmitted by each of the above groups 9. discuss the modes of transmission and their role as vectors 10. communicate effectively and efficiently your knowledge on prevention and control to the general public promoting advocacy
Module Content	• Mosquitoes: Culicines- *Culex quinquefasciatus, Aedes eagypti, aedes albopictus, Mansonia uniformis and Mansonia annulifera,* Anophelines – *Anopheles culicifacies* • Flies: House fly, Blue bottle fly,*Sarcophaga*spp. Tsetse fly, Sand fly, Black fly, Tabenids • Lice: Head louse, body louse and *Pthirus pubis* • Fleas: Combless fleas – *Pulex irritans*, *Tunga penetrans,* Plague transmitters: *Xenopsylla cheopsis* and *Astia,* Combed fleas: *Ctenochephalides canis, Nosopsyllus fasciatus* • Ticks: Hard ticks and soft ticks • Mites: typhus transmitters • Scabies: Parasite, morphology, life cycle, pathology, clinical features, diagnosis, treatment and prevention
Teaching/Learning activities	Lecture discussions, Practicals
Time allocation	Lecture discussions 2 ½ hours, Practical 1 ½ hours

Assessment	Continuous Assessment: SEQ 3rd MBBS Part-I examination: MCQ, SEQ, OSPE
Recommended Reading/ References	Department handouts; Manson's Tropical Diseases, 23 ed.: Saunders; 2014; Online sources - eMedicine/Medscape (https://emedicine.medscape.com/), Centers for disease control and prevention (CDC - https://www.cdc.gov/), World Health Organization (WHO)
Coordinating department/s	Department of Parasitology

Course	Paraclinical course (Year 3 Semester 2 of the MBBS programme)
Module No.	**M3532**
Module title	**Parasitic infections leading to lesions in the skin and subcutaneous tissue**
Prerequisites	Completed modules M3518, M3519, M3520
Core/ Optional	Core
Intended learning outcomes	On completion of the module the students should be able to; 1. Cutaneous leishmaniasis 1.1 name the causative parasite in Sri Lanka 1.1 describe the geographical distribution in Sri Lanka 1.2 describe the clinical presentations 1.3 describe the laboratory investigation tools currently available in Sri Lanka 1.4 make a provisional diagnosis based on the history and clinical examination of a patient 1.5 make a definite diagnosis with based on the laboratory investigations 1.6 describe transmission of infection to humans name the vector 1.7 state the methods of treatment available in Sri Lanka 1.8 communicate effectively and efficiently the preventive measures adopted by the public 1.9 identify the parasite in a stained smear / biopsy 1.10 analyze the environmental, social and economic factors that may contribute to dissemination of the disease leading to visceral disease 2. Infections with animal filariae 2.1 name the filarial worm that infects humans in Sri Lanka 2.2 outline the clinical consequences of infection 2.3 arrive at a differential diagnosis followed by a definite diagnosis based on the history, results of physical examination and laboratory findings. 2.4 outline the preventive measures 3. Cutaneous larva migrans CLM 3.1 name the causative organisms 3.2 describe the pathology in the above two conditions 3.3 describe the clinical presentation 4. Dracunculosis 4.1 identify the adult worm 4.2 identify the intermediate host 4.3 outline the life cycle 4.4 outline the clinical features of the infection 4.5 outline the preventive measures

	5. Trichinellosis (recall) 6. Cysticercosis (recall) 7. Onchocerciasis (recall) 8. Scabies (recall)
Module Content	• Cutaneous leishmaniasis • Animal filarialinfections • Cutaneous Larva Migrans (CLM) • Dracunculosis • Trichinellosis • Cysticercosis • Onchocerciasis • Scabies
Teaching/Learning activities	Lecture discussions, Practical demonstrations, Tutorials/CBL
Time allocation	Lecture discussions 2 ½ hours, Practical 2 ½ hours, Tutorial/CBL 1 ½ hours
Assessment	Continuous Assessment: SEQ 3rd MBBS Part-I examination: MCQ, SEQ, OSPE
Recommended Reading/ References	Department handouts; Manson's Tropical Diseases, 23 ed.: Saunders; 2014; Online sources - eMedicine/Medscape (https://emedicine.medscape.com/), Centers for disease control and prevention (CDC - https://www.cdc.gov/), World Health Organization (WHO)
Coordinating department/s	Department of Parasitology

Course	Paraclinical course (Year 3 Semester 2 of the MBBS programme)
Module No.	**M3533**
Module title	**Zoonoses and insecticides**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	On completion of the module the students should be able to; 1. define the term 'Zoonoses" 2. explain different types of zoonoses 3. state the different classes of insecticides and modes of application 4. explain the actions of each insecticide in general 5. state the specific insecticides and their uses in SriLanka 6. critically review the current National Control Programs highlighting the defects and methods of possible improvements
Module Content	• Zoonoses - Domestic zoonoses, peri-domestic zoonoses and sylvatic zoonoses - Parasitic infections directly transmitted from pets, livestock and poultry and wild animals to humans, • Insecticides - Organochlorines, organophosphates and carbamates - Insecticide formulations - Insecticides used medical practice - Insecticides used against vectors of parasitic infections
Teaching/Learning activities	Lecture discussions, Practical
Time allocation	Lecture discussions 2 ½ hours, Practical 1 ½ hours
Assessment	Continuous Assessment: SEQ 3rd MBBS Part-I examination: MCQ, SEQ, OSPE
Recommended Reading/ References	Department handouts; Manson's Tropical Diseases, 23 ed.: Saunders; 2014; Online sources - eMedicine/Medscape (https://emedicine.medscape.com/), Centers for disease control and prevention (CDC - https://www.cdc.gov/), World Health Organization (WHO)
Coordinating department/s	Department of Parasitology

Course	Paraclinical course (Year 3 Semester 2 of the MBBS programme)
Module No.	**M3534**
Module title	**Medical Toxinology**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	On completion of the module, the students should be able to; 1. name the common non-venomous and venomous snakes of Sri Lanka 2. explain the characteristics of Colubrides, Elapids and Vipers 3. identify common venomous and non-venomous snakes and name them (local and common names) when given specimens 4. state the important physiological and pharmacological effects of snake venom 5. diagnose snake bite envenoming, based on the history, clinical examination and results of laboratory investigations 6. compare and contrast the clinical features of an elapid and a viper envenoming 7. plan the management of a patient with an elapid and a viper bite envenoming 8. critically review the epidemiology and the social and cultural practices in the treatment of snakebite poisoning in Sri Lanka 9. communicate effectively the preventive measures, first aid and available treatment options in the local health institutions 10. name the common venomous arthropod and aquatic animal bites/stings, in Sri Lanka 11. understand the distribution and epidemiology of common venomous arthropod and aquatic animal bites/stings, in Sri Lanka 12. state the important pathophysiological and clinical effects of arthropod and jellyfish envenoming. 13. plan the first aid and management of arthropod and jellyfish envenoming. 14. advise the community including travelers, regarding the preventive strategies of arthropod and marine envenoming 15. critically appraise the basic conservational principles in relation to medially important snakes, arthropods and marine animals.

Module Content	• Snake bite - Epidemiology - General features of snakes - Elapids (venomous) in Sri Lanka:Common cobra (*Najanajanaja*), Ceylon krait (*Bungarusceylonicus*), Indian krait (*Bungaruscaeruleus*), Viperids (venomous) in Sri Lanka: Russell's viper (*Daboiarusselii*), Saw- scaled viper (*Echiscarinatus*), Hump-nosed viper (*Hypnale sp.*) and Green-pit vipers (*Trimeresurustrigonocephalus*) - Sea snakes - Medically lesser important snakes in Sri Lanka: Non-venomouscolubrids– E.g. Rat snake (*Ptyasmucosus*), mildly venomous colubrids –E.g. Cat snakes (*Boiga*spp.), Constrictors – Python (*Python molurus*) andFossorialsnakes. - Diagnosis of envenoming - Treatment of envenoming - Prevention and first aid of snakebite. • Arachnids: scorpion stings, spider bites • Myriapoda: centipede stings / bites • Hymenoptera: ant stings, bee stings, vespids stings (wasp, yellow jackets, hornets) • Aquatic animals of medical importance: e.g.jellyfish, lionfish stingrays, anemones, corals and stinging catfish. • Prevention, first aid and treatment of arthropod and aquatic animal bites and stings.
Teaching/Learning activities	Lecture discussions, Practical demonstrations
Time allocation	Lecture discussions 4 ½ hours, Practical demonstrations 2 ½ hours
Assessment	Continuous Assessment: SEQ 3rd MBBS Part-I examination: MCQ, SEQ, OSPE
Recommended Reading/ References	Department handouts; Manson's Tropical Diseases, 23 ed.: Saunders; 2014; Online sources - eMedicine/Medscape (https://emedicine.medscape.com/), Centers for disease control and prevention (CDC - https://www.cdc.gov/), World Health Organization (WHO)
Coordinating department/s	Department of Parasitology

Students seminars and creative activities in Parasitology

Students seminars and creative activities are introduced to enhance student-centered learning, particularly within the purview of existing learning outcomes of the Parasitology programme. All students will be working in groups (approximately 6 groups per batch) to prepare and conduct a short public seminar on a given topic related to Medical Parasitology including toxinology, global health and tropical medicine. Moreover, the group will be engaged in a creative activity to benefit/support the community, patients and/or health care team in regard to the topic given.

Course	Paraclinical course (Year 3 Semester 1 and Semester 2)
Title	**Parasitology students seminars and creative activities**
Core/ Optional	Core
Intended learning outcomes	1. Identifying reliable and relevant sources of evolving scientific information 2. Knowledge/information acquisition from reliable sources (physical, electronic, human resource) 3. Information acquisition/data extraction, critical review, and processing, for knowledge upgrading and sharing 4. Effective use of communication strategies for knowledge sharing 5. Group work / leadershipon conducting a service project for a target population 6. Conducting group activities as effective peer- teaching/learning opportunities 7. Learning/understanding the ethical conduct of knowledge sharing, including copyright concerns in material reuse, appropriate acknowledgements and citation of previous work.
Content	1. Preparation and conducting a short public seminar on a given topic related to Medical Parasitology including toxinology, global health and tropical medicine. 2. A creative activity to benefit/support the community, patients and/or health care team in regard to the topic given.
Teaching/Learning activities	Group project, student presentation, team-based learning, case studies, role-plays, formal interviews
Time allocation	Introductory lecture 2 hours, meetings with supervisor/s 6 hours, Self-learning and preparation for seminar 35 hours, Presentation/ discussion and feedback 5 hours - Total Time Allocation 48 hours
Assessment	End of presentation seminar evaluation 3rd MBBS Part-I examination: MCQ, SEQ, OSPE

Assessments in Parasitology

Assessment	**Timing**	**Component/method**(Contribution to final score)
Continuous assessment 3 (CA3)	End of Year 3 Semester 1	SEQ (10%)
Continuous assessment 4 (CA4)	Mid Semester- Year 3 Semester 2	SEQ (10%)
3rd MBBS Part-I examination	End of Year 3 Semester 2	MCQ (25%), SEQ (25%), OSPE (30%) CA3 (10%), CA4 (10%)

5.5.2 Microbiology

Course	Paraclinical course (Year 3 Semester 1 of the MBBS programme)
Module No.	**M3521**
Module title	**General Microbiology**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	At the end of this module, students should be able to 1. describe the basics of microbiology inclusive of history, classification, bacterial growth and genetics 2. describe the prokaryotic cell structure 3. perform Gram stain and identify organisms based on morphological characteristics 4. apply Kochs postulates to prove disease causation 5. select appropriate methods for sterilization and disinfection in the laboratory and in clinical practice 6. select appropriate antimicrobial agents for treatment
Module Content	• Introduction to Microbiology - Landmark discoveries leading to the development of microbiology as a science - Characteristics of micro-organisms on which the classification is based - Bacterial growth curve - Growth requirements of bacteria - Culture media used for bacterial growth - Structure and functions of prokaryotic cell - Gram stain procedure - Differentiation of bacteria based on Gram stain and morphological appearance - Other staining methods used to identify bacterial structures • Host-Microbe relationship, pathogenesis and proof of disease causation - Types of host-microbe interactions - Formation of microbe- human associations - Sources and reservoirs of infections - Differentiation between exogenous and endogenous infections - Currently known modes of transmission - differences between communicable and non-communicable infectious diseases

	- steps in microbial infection – attachment, invasion and mechanism of damage - how viruses and fungi cause disease - importance of proving disease causation - Kochs postulates • Sterilization and disinfection - Mechanisms of action of methods used in sterilization and - disinfection - Advantages, disadvantages and quality control - Selection of appropriate agents for cleaning /sterilizing/disinfecting • Bacterial Genetics - Types of mutations – spontaneous and induced - Major forms of prokaryotic genetic exchange and their clinical importance • Antibiotics - History of development of antimicrobials - Bactericidal and bacteriostatic agents - Types of antimicrobials and mechanisms of action of antimicrobials - Mechanisms of resistance - Epidemiology of antimicrobial resistance of specific organisms and its implications in therapy (MRSA, VRSA, ESBL etc.) - Selection of appropriate antimicrobial agents - Empiric therapy and prophylaxis - Antibiotics used in synergy - Application of Kochs postulates to prove disease causation - limitations of applying Kochs postulates
Teaching/Learning activities	Lectures, Tutorials (any topic on general microbiology- bacterial genetics, Koch's postulates), Practicals (Gram staining- practical and revision practical), Students seminars
Time allocation	Lectures 10 hours, Practical 6 hours, Tutorial 3 hours, Students seminars (Total 15 hours)
Assessment	Continuous Assessment 03: MCQ, Practical examination 3rd MBBS Part-I examination: MCQ, SEQ, OSPE Seminar evaluation
Recommended Reading/ References	- Greenwood David. Medical Microbiology ,17th Edition, London: Churchill Livingstone - Richord Goering, Hazel Dockrell, Mark Zuckerman, Ivan Roitt, Peter L. Chiodini. Mim's Medical Microbology05th Edition, Saunders - Geo F.Brooks, Karen C.Carroll, Jarwetz S.Butel, Stephen A.Morse. Jawetz, Melnickand Adelberg's Medical Microbiology.

	27thEdition, McGraw-Hill, Lange - Medscape and other trusted e-sources including reviews from indexed journals in science citation index and science citation index expanded
Coordinating department	Department of Microbiology

Course	Paraclinical course (Year 3 Semester 1 of the MBBS programme)
Module No.	**M3522**
Module title	**Systemic Microbiology**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	At the end of this module, students should be able to 1. describe the pathogenecity of medically significant micro-organisms 2. relate clinical features to pathogenesis of microorganisms 3. select relevant laboratory investigations to establish an aetiological diagnosis 4. describe the epidemiology of infectious diseases 5. select appropriate antibiotics for treatment based on antibiotic sensitivity patterns and national guidelines 6. construct preventive strategies against infectious diseases 7. outline the functions of special preventive programmes for infectious diseases in Sri Lanka (e.g.Tuberculosis and leprosy)
Module Content	• Bacteriology - Staphylococci - Streptococci, enterococci - Gram positive bacilli - Small gram negative bacteria- parvobacteria - Legionella, Campylobacter - Neisseria, Moraxella - Vibrionaceae - Pseudomonas - Enterobacteriaceae – Shigella, Salmonella, Escherichia, Klebsiella, Proteus - Ricketssia, Mycoplasma - Spirochaetes - Mycobacteria and Actinomycetes - Chlamydia - Anaerobes • Virology - Introduction to virology - Viruses of respiratory tract - Pox viruses - Papilloma viruses - Slow viral infections - Retro virus and Human immunodeficiency virus - Herpes group of viruses

	- Mumps - Measles - Rubella - Enteroviruses - Arboviruses - Hepatitis viruses - Diarrhogenic virus - Rabies • Mycology - Dermatophytes - Candida species - Aspergillus species and other opportunistic mould infections - Systemic Fungi – Cryptococcus, Histoplasmosis, Pneumocystis infections
Teaching/Learning activities	Lectures 37 hours Practicals 21 hours 1. Gram positive cocci 2. Gram positive bacilli and Gram-negative cocci 3. Enterobacteriaceae and non-fermenters 4. Virology with immunology 5. Mycology and novel diagnostics in infectious diseases 6. 4hrs for seminar presentation- full evening 7. 4hrs for seminar presentation- full evening Tutorials 2 hours - Rabies Case-based discussion 15 hours 1. CBD-1 (*Staphylococcus* spp. and*Streptococcus* spp.) 2. CBD-2 (Gram negative cocci) 3. CBD-3 (*Haemophilus* spp.) 4. CBD-4 (*Rickettsia* spp.) 5. CBD-5 (Enterobacteriaceae) 6. CBD-6 (non-Fermenters) 7. CBD-7 (Gram positive bacilli) 8. CBD-8 (Atypical bacteria) 9. CBD-9 (Viral ARTI) 10. CBD-10 (Viral hepatitis) 11. CBD-11 (Viral encephalitis) or any other topics 12. CBD-12 (Fungal infection) Student seminar (3 topics)
Time allocation	Lectures 37 hours, Practical 21 hours, Tutorial 2 hours, Case-based discussions 15 hours, Students seminars (Total 15 hours)
Assessment	Continuous Assessment 04: MCQ, OSPE 3rd MBBS Part-I examination: MCQ, SEQ, OSPE

	Seminar evaluation
Recommended Reading/ References	- Greenwood David. Medical Microbology,17th Edition, London: Churchill Livingstone - Richord Goering, Hazel Dockrell, Mark Zuckerman, Ivan Roitt, Peter L. Chiodini. Mim's Medical Microbiology, 05th Edition, Saunders - Geo F.Brooks, Karen C.Carroll, Jarwetz S.Butel, Stephen A.Morse. Jawetz, Melnickand Adelberg's Medical Microbiology. 27thEdition, McGraw-Hill, Lange - Medscape and other trusted e-sources including reviews from indexed journals in science citation index and science citation index expanded
Coordinating department	Department of Microbiology

Course	Paraclinical course (Year 3 Semester 2 of the MBBS programme)
Module No.	**M3635**
Module title	**Immunology**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	At the end of this module, students should be able to 1. explain the basis of immunology 2. outline the organization of immune system 3. explain the role of each component of the immune system 4. state the disorders of immune system 5. apply immunological concepts for diagnosis, prevention and treatment of infectious diseases)
Module Content	• Introduction to Immunology and Immune system - Overview of immune system, the need for immune system, structure and functions - Innate immunity, mechanism of action and components of innate immunity - Complement system - Cytokines - Acquired immunity - Humoral immunity - Cell mediated immunity • Clinical Immunology - Hypersensitivity - Tolerance and autoimmune disorders - Immunodeficiency - Immunity to infections - Methods of acquiring immunity and immunization
Teaching/Learning activities	Lectures 14 hours, Tutorial 1 hour, Case-based discussion 2.5 hours (CBD-13: Infections in immunocompromised host or any other topic in immunology), Student seminar (1 topic)
Time allocation	Lectures 14 hours, Tutorial 1 hour, CBD 2.5 hours, Students seminars (Total 15 hours)
Assessment	Continuous Assessment 04: MCQ, OSPE 3rd MBBS Part-I examination: MCQ, SEQ, OSPE Seminar evaluation
Recommended Reading/ References	- Abdul K. Abbas, Andrew H.H Lichtman,Shiv Pillai. Cellular and Molecular Immunology. 8th Edition, Saunders, 2015 - Geo F.Brooks, Karen C.Carroll, Jarwetz S.Butel, Stephen A.Morse.

	Jawetz, Melnickand Adelberg's Medical Microbiology. 27th edition, McGraw-Hill, Lange - Greenwood David. Medical Microbiology ,17th Edition, London: Churchill Livingstone - Medscape and other trusted e-sources including reviews from indexed journals in science citation index and science citation index expanded
Coordinating department	Department of Microbiology

Course	Paraclinical course (Year 3 Semester 2 of the MBBS programme)
Module No.	**M3636**
Module title	**Clinical Microbiology**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	At the end of this module, students should be able to: 1. Analyze signs and symptoms from clinical history, examination and find out the focus of infection as localized (body system or within the system) or generalized (multi-system or whole body). 2. Analyze clinical history and the examination and find out the site of onset of infection as community-acquired and hospital-acquired. 3. Analyze clinical history, examination and utilize clinical scores to assess the severity of infection. 4. List the organisms that cause infections with relevant to the focus of infection 5. Acquire an up-to-date knowledge on antimicrobial resistance of each organism. 6. Decide an appropriate empiric antimicrobial/s based on above mentioned objectives and available national and international guidelines. 7. Understand the importance of the provision of an appropriate dosage of antimicrobials. 8. Understand the importance of timely introduction of appropriate empiric/targeted antimicrobials for the patient 9. Select relevant investigations to establish an aetiological diagnosis 10. Instruct and coordinate the patients and health care staff in order to collect and transport appropriate specimens for microbiological investigations 11. Outline the essential steps for collection and transport of specimens 12. Understand the importance of timing of the clinical specimen: before the introduction of empiric antimicrobials and tracing the report within the timeframe 13. Interpret the laboratory test results 14. Evaluate clinical manifestations and results of investigation to arrive at an aetiological diagnosis 15. Select appropriate targeted antibiotics for treatment based on antibiotic sensitivity patterns and the patient dynamics

	16. Recommend the appropriate clinical/microbiology management including monitoring the response to the therapy and the follow up 17. Assess the complications of infectious diseases 18. Assess the complications of antimicrobial therapy 19. Optimize the therapy 20. Describe the principles of universal precautions and infection control strategies including chemoprophylaxis and immune prophylaxis 21. Understand the concepts of antimicrobial stewardship to minimize the emergence of antimicrobial resistance 22. Understand the concepts of clinical audit and the clinical governance
Module Content	• Urinary Tract Infections • Sexually Transmitted Infections • Skin and soft tissue infections • Bone and Joint Infections • Upper and Lower Respiratory Tract Infections • Abdominal, Gastro Intestinal Infections and Food poisoning • Congenital, Perinatal and Neonatal infections • Central Nervous System Infections • Hospital Acquired infections • Infective Endocarditis • Bacteremia • Device-related infections • Ear and Eye Infections • Pyrexia of Unknown origin and sepsis • Collection and transport of specimens • Infection control • Diagnostics including molecular and novel methods
Teaching/Learning activities	Lectures 22 hours, Practical 3 hours (Sterilization and disinfection, specimen collection and transport), Tutorial 5 hours (Extended programme of immunization, Clinical audit and clinical governance), Case-based discussion 5 hours (CBD-14: Use of antimicrobials including monitoring the response to therapy and therapeutic drug monitoring, CBD-15: Sepsis), Student seminar (1 topic)
Time allocation	Lectures 22 hours, Practical 3 hours, Tutorial 5 hours, Case-based discussion 5 hours, Students seminars (Total 15 hours)
Assessment	Continuous Assessment 04: MCQ, OSPE 3rd MBBS Part-I examination: MCQ, SEQ, OSPE Seminar evaluation
Recommended Reading/ References	- Praveen Kumar, Michal Clark. Kumar &Clark Clinical Medicine 9th Edition, Elsevier

	- Greenwood David. Medical Microbiology ,17th Edition, London: Churchill Livingstone - Richord Goering, Hazel Dockrell, Mark Zuckerman, Ivan Roitt, Peter L. Chiodini. Mim's Medical Microbology05th Edition, Saunders - Geo F.Brooks, Karen C.Carroll, Jarwetz S.Butel, Stephen A.Morse. Jawetz, Melnickand Adelberg's Medical Microbiology. 27th Edition,Mcgraw-Hill, Lange - Medscape and other trusted e-sources including reviews from indexed journals in science citation index and science citation index expanded
Coordinating department	Department of Microbiology

Learning objectives for Clinical Microbiology appointment

At the end of the appointment, student should be able to,

1. decide the appropriate microbiology sample
2. decide the appropriate specimen container and transport conditions
3. fill a specimen request form appropriately
4. describe the processing of
    a. urine sample
    b. sputum sample
    c. blood culture
    d. antimicrobial susceptibility testing
5. interpret a microbiology report andselect appropriate antimicrobials

Assessments in Microbiology

Assessment	**Timing**	**Component/method**(Contribution to final score)
Continuous assessment 3 (CA3)	End of Year 3 Semester 1	MCQ (6.25%), Practical examination (0.75%)
Continuous assessment 4 (CA4)	Mid Semester- Year 3 Semester 2	MCQ (3.75%), OSPE (3.75%)
3rd MBBS Part-I examination	End of Year 3 Semester 2	MCQ (30%), SEQ (35%), OSPE (20%) CA3 (7.5%), CA4 (7.5%)

5.5.3 Pharmacology

Course	Paraclinical course (Year 3 Semester 1 of the MBBS programme)
Module No.	**M3523**
Module title	**Introduction to Pharmacology**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	On completion of the module the students should be able to, 1. list branches of Pharmacology. 2. describe the history of Pharmacology. 3. state the WHO definition of a drug. 4. explain the names used to identify a drug and state the advantages of using the generic name. 5. explain the terms- Generic name, Therapeutic group, Indications, Contraindications, Pharmacodynamics, Pharmacokinetics, Dose, Duration, Registration status and schedule, Half-life. 6. explain the terms Pharmacological effect, Therapeutic effect, Side effect, Toxic effect, Placebo effect, Efficacy, Safety, Quality, 7. explain benefits and risks of drug therapy. 8. describe drug-induced disease. 9. Explain evidence-based medicine, Essential medicines, Rational prescribing, Geriatric prescribing, Paediatrics prescribing and Drug regulation acts. 10. describe drug information and compliance to drugs.
Module Content	• Introduction to Pharmacology • Adverse drug reactions and Drug allergy • Evidence-based medicine and Essential medicines • Rational prescribing, Geriatric prescribing and Paediatric prescribing • Drug regulation acts, Complementary and Alternative medicines • Compliance to drugs and Drug information
Teaching and learning activities	Lectures, Tutorials
Time allocation	Lectures 6 hours, Tutorial 6 hours
Assessment	Continuous Assessment 3 (CA3): MCQ 3rd MBBS Part-II examination: MCQ, SEQ, OSPE

Recommended Reading / References	- Jayakody, R.L. Foundations of Pharmacology for students of medicine and allied health sciences. University of Colombo: Faculty of Medicine, University of Colombo; 2009. - James Ritter, Rod Flower, Graeme Henderson, Humphrey Rang. Rang &Dale's Pharmacology, Churchill Livingstone - Karen Whalen. Lippincott Illustrated Reviews: Pharmacology - Wolters Kluwer- Morris Brown Peter Bennett. Clinical Pharmacology, Churchill Livingstone - British National Formulary, British Medical Association, UK.
Coordinating Department	Department of Pharmacology

Course	Paraclinical course (Year 3 Semester 1 of the MBBS programme)
Module No.	**M3524**
Module title	**Discovery and development of drugs**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	On completion of the module the students should be able to, 1. describe the methods used in identifying compounds to be developed as drugs. 2. explain why drug development is a difficult process and the reasons for developing drugs. 3. explain the term pre-clinical trial and clinical trial 4. describe the pre-clinical safety and toxicity tests that are performed. 5. explain the role of animal testing in the drug development process. 6. state the ethical considerations about animal experimentation and how these issues are addressed. 7. describe how clearance is obtained for clinical (human) studies. 8. explain designs and different phases of clinical trials. List the objectives of each phase. 9. explain the principles and the limitations of phase 3 clinical trials. 10. explain how approval to market a drug is obtained. 11. explain the term research ethics and its relevance to pharmacology. 12. state the Hippocratic Oath and Helsinki declaration. 13. explain the terms autonomy, beneficence, non-maleficence, justice. 14. explain the importance of getting consent. 15. explain orphan drugs and diseases
Module Content	• Development of new drugs • Pre-clinical and Clinical phases of drug evaluation • Clinical trials • Research ethics
Teaching and learning activities	Lectures, Tutorials
Time allocation	Lectures 4 hours, Tutorial 2 hours
Assessment	Continuous Assessment 3 (CA3): MCQ 3rd MBBS Part-II examination: MCQ, SEQ, OSPE
Recommended Reading / References	- Jayakody, R.L. Foundations of Pharmacology for students of medicine and allied health sciences. University of Colombo:

	Faculty of Medicine, University of Colombo; 2009. - James Ritter, Rod Flower, Graeme Henderson, Humphrey Rang. Rang & Dale's Pharmacology, Churchill Livingstone - Karen Whalen. Lippincott Illustrated Reviews: Pharmacology - Wolters Kluwer- Morris Brown Peter Bennett. Clinical Pharmacology, Churchill Livingstone - British National Formulary, British Medical Association, UK.
Coordinating Department	Department of Pharmacology

Course	Paraclinical course (Year 3 Semester 1 of the MBBS programme)

Module No.	**M3525**
Module title	**General Pharmacology**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	On completion of the module the students should be able to, 1. describe the terms Pharmacokinetics and Pharmacodynamics. 2. explain the individual processes of pharmacokinetics - Absorption - Distribution - Metabolism - Elimination 3. classify mechanisms of action of drugs and describe the individual types. 4. explain the terms - Placebo effects - Dose response - Potency - Therapeutic efficacy - Tolerance - Tachyphylaxis - Therapeutic index - Pharmacogenomics - Biological variations in drug response 5. interpret dose - response curves. 6. classify drug interactions and describe the individual types.
Module Content	• Pharmacokinetics • Pharmacodynamics • Drug interactions
Teaching and learning activities	Lectures, Tutorials
Time allocation	Lectures 4 hours, Tutorial 4 hours
Assessment	Continuous Assessment 3 (CA3): MCQ 3rd MBBS Part-II examination: MCQ, SEQ, OSPE
Recommended Reading / References	- Jayakody, R.L. Foundations of Pharmacology for students of medicine and allied health sciences. University of Colombo: Faculty of Medicine, University of Colombo; 2009. - James Ritter, Rod Flower, Graeme Henderson, Humphrey Rang. Rang & Dale's Pharmacology, Churchill Livingstone - Karen Whalen. Lippincott Illustrated Reviews: Pharmacology

	- Wolters Kluwer- Morris Brown Peter Bennett. Clinical Pharmacology, Churchill Livingstone - British National Formulary, British Medical Association, UK.
Coordinating Department	Department of Pharmacology

Course	Paraclinical course (Year 3 Semester 2 of the MBBS programme)
Module No.	**M3637**
Module title	**Drugs affecting the nervous system**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	On completion of the module the students should be able to, 1. explain the pharmacology of - cholinergic drugs and anticholinergic drugs - adrenergic drugs, α and β receptor blockers - skeletal muscle relaxants 2. explain the pharmacological basis of pain management. 3. explain the pharmacological actions and clinical use of - local anesthetics - general anesthetics and pre-anesthetic medications 4. explain the pharmacological actions and clinical use of - Antidepressants - Antipsychotic drugs - Mood stabilizers - Anxiolytics - Hypnotics - Drugs for dementia - Drugs for Attention Deficit Hyperactivity Disorder 5. explain the pharmacological actions and clinical use of - Levodopa - Anticonvulsants - Drugs used in migraine 6. describe the pharmacology of drugs used in alcohol abuse. 7. plan a management (including pharmacological methods) of the diseases involving the nervous system and in psychiatric disorders.
Module Content	• Drugs affecting the Autonomic nervous system • Drugs affecting the peripheral nervous system • Analgesics • Local anesthetics • General anesthetics • Antidepressants • Antipsychotic drugs • Sedatives and hypnotics • Drugs for dementia • Drugs for Attention Deficit Hyperactivity Disorder • Anti-Parkinson drugs

	• Anticonvulsants • Drugs used in migraine • Drugs used in alcohol abuse
Teaching and learning activities	Lectures, Tutorials
Time allocation	Lectures 14 hours, Tutorial 8 hours
Assessment	Continuous Assessment 4 (CA4): MCQ 3rd MBBS Part-II examination: MCQ, SEQ, OSPE
Recommended Reading / References	- James Ritter, Rod Flower, Graeme Henderson, Humphrey Rang. Rang & Dale's Pharmacology, Churchill Livingstone - Karen Whalen. Lippincott Illustrated Reviews: Pharmacology - Morris Brown, Peter Bennett. Clinical Pharmacology, Wolters Kluwer Churchill Livingstone - British National Formulary, British Medical Association, UK.
Coordinating Department	Department of Pharmacology

Course	Paraclinical course (Year 3 Semester 2 of the MBBS programme)
Module No.	**M3638**
Module title	**Drugs affecting the cardiovascular system**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	On completion of the module the students should be able to, 1. state the classification of anti-hypertensive drugs. 2. describe the pharmacology of - Anticoagulants, Anti-platelet drugs, Thrombolytics - Vasodilators - Calcium channel blockers - Diuretics and Anti-diuretics - Anti-arrhythmic drugs - Anti-hyperlipidaemic drugs 3. describe the management of - Angina - Hypertension - Cardiac failure - Arrhythmia - Hyperlipidaemia 4. plan a management (including pharmacological methods) of the diseases involving the cardiovascular system.
Module Content	• Anti-coagulants, Anti-platelet drugs, Thrombolytics • Vasodilators • Calcium channel blockers • Anti-arrhythmic drugs • Anti-dyslipidaemic agents • Diuretics and Anti-diuretics
Teaching and learning activities	Lectures, Tutorials
Time allocation	Lectures 12 hours, Tutorial6 hours
Assessment	CA4: MCQ, 3rd MBBS Part-II examination: MCQ, SEQ, OSPE
Recommended Reading / References	- James Ritter, Rod Flower, Graeme Henderson, Humphrey Rang. Rang & Dale's Pharmacology, Churchill Livingstone - Karen Whalen. Lippincott Illustrated Reviews:Pharmacology - Morris Brown, Peter Bennett. Clinical Pharmacology, Wolters Kluwer Churchill Livingstone - British National Formulary, British Medical Association, UK.
Coordinating Department	Department of Pharmacology

Course	Paraclinical course (Year 4 Semester 1 of the MBBS programme)
Module No.	**M4743**
Module title	**Drugs affecting the endocrine system**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	On completion of the module the students should be able to, 1. explain the pharmacological actions and clinical use of - Anterior and posterior pituitary hormones and related drugs - Adrenocortical hormones - Estrogens, progesterone and androgens - Oral contraceptives - Vitamin D, calcitonin - Insulin - Oral hypoglycaemic agents 2. discuss the management of diabetes. 3. plan the management (including pharmacological methods) of the diseases involving the endocrine system.
Module Content	• Adrenocortical hormones • Thyroid hormonesand anti-thyroid hormones • Anti-diabetic drugs • Sex hormones and Oral contraceptives • Calcium and Phosphate metabolism • Hypothalamic, anterior and posterior pituitary hormones
Teaching and learning activities	Lectures, Tutorials
Time allocation	Lectures 12 hours, Tutorial 8 hours
Assessment	CA5: MCQ, 3rd MBBS Part-II examination: MCQ, SEQ, OSPE
Recommended Reading / References	- James Ritter, Rod Flower, Graeme Henderson, Humphrey Rang. Rang & Dale's Pharmacology, Churchill Livingstone - Karen Whalen. Lippincott Illustrated Reviews:Pharmacology - Morris Brown, Peter Bennett. Clinical Pharmacology, Wolters Kluwer Churchill Livingstone - British National Formulary, British Medical Association, UK.
Coordinating Department	Department of Pharmacology

Course	Paraclinical course (Year 4 Semester 2 of the MBBS programme)
Module No.	**M4850**

Module title	**Antibiotics**
Prerequisites	
Core/ Optional	Core
Intended learning outcomes	On completion of the module the students should be able to, 1. explain the term antibiotic. 2. list the classes of antibiotics. 3. explain the term 'spectrum'. 4. explain the terms 'bacteriostatic' and 'bactericidal'. 5. explain the factors affecting clinical effectiveness of antibiotics. 6. explain the factors that affect isolation of pathogenic organisms. 7. explain the significance of taking specimens in relation to antibiotic therapy. 8. explain how antibiotics act. 9. explain the terms 'antibiotic therapy' and 'antibiotic prophylaxis'. 10. explain how antibiotics are selected. 11. describe the problems encountered with antibiotic use. 12. explain the mechanism of action, absorption, distribution, metabolism, excretion, adverse effects and cost effectiveness of each antibiotic. 13. plan a management (including pharmacological methods) of common types of infection and malignancies.
Module Content	• Principles of antibiotic drug use and resistance • Penicillins and Cephalosporins • Aminoglycosides, Macrolides, Tetracyclines, Chloramphenicol • Sulphonamides, Quinolones, Azoles • Clinical use of antibiotics • Anti-fungal and Anti-viral drugs • Anti-tuberculosis drugs • Anti-leprosy drugs • Anti-malarial drugs, Anti-helminticsand Anti-protozoal agents • Cancer chemotherapy
Teaching and learning activities	Lectures, Tutorials
Time allocation	Lectures 18 hours, Tutorial 14 hours
Assessment	3rd MBBS Part-II examination: MCQ, SEQ, OSPE

Recommended Reading / References	- James Ritter, Rod Flower, Graeme Henderson, Humphrey Rang. Rang & Dale's Pharmacology, Churchill Livingstone - Karen Whalen. Lippincott Illustrated Reviews: Pharmacology

	- Morris Brown, Peter Bennett. Clinical Pharmacology, Wolters Kluwer Churchill Livingstone - British National Formulary, British Medical Association, UK.
Coordinating Department	Department of Pharmacology

Course	Paraclinical course (Year 4 Semester 2 of the MBBS programme)
Module No.	**M4851**
Module title	**Special topics in Pharmacology**

Prerequisites	
Core/ Optional	Core
Intended learning outcomes	On completion of the module the students should be able to, 1. Explain the pharmacological actions and clinical use of drugs used for - Asthma and Chronic Obstructive Pulmonary Disease - Diarrhea, Constipation and Vomiting - Peptic ulcer disease - Chronic liver disease - Skin and Eye 2. Explain the pharmacological actions and clinical use of - Vitamins - Hematinics - Intravenous fluids and Plasma expanders 3. Explain the pharmacological actions and clinical use of drugs used in the management of poisoning. 4. Explain the pharmacological basis of immunization and immunotherapy.
Module Content	• Drugs used in the management of asthma andchronic obstructive pulmonary disease • Autocoids • Drugs for diarrhea, constipation and anti-emetics • Drugs used in peptic ulcer disease • Drugs used in chronic liver disease • Vitamins • Drugs used in anemia and other hematological disorders • Drugs used on the skin and eye • Drugs used in the management of poisoning • Immunization • Immunotherapy • Intravenous fluids and Plasma expanders
Teaching and learning activities	Lectures, Tutorials
Time allocation	Lectures 20 hours, Tutorial 12 hours
Assessment	3rd MBBS Part-II examination: MCQ, SEQ, OSPE

Recommended Reading / References	- James Ritter, Rod Flower, Graeme Henderson, Humphrey Rang. Rang & Dale's Pharmacology, Churchill Livingstone - Karen Whalen. Lippincott Illustrated Reviews: Pharmacology - Morris Brown, Peter Bennett. Clinical Pharmacology,

	Wolters Kluwer Churchill Livingstone - British National Formulary, British Medical Association, UK.
Coordinating Department	Department of Pharmacology

Assessments in Pharmacology

Assessment	**Timing**	**Component/method**(Contribution to final score)
Continuous assessment 3 (CA3)	End of Year 3 Semester 1	MCQ (10%)
Continuous assessment 4 (CA4)	Mid Semester- Year 3 Semester 2	MCQ (10%)
Continuous assessment 5 (CA5)	End of Year 4 Semester 1	MCQ (10%)
3rd MBBS Part-II examination	End of Year 3 Semester 2	Final examination 70% -MCQ (40%), SEQ (40%), OSPE (20%) CAs 30%

5.5.4 Forensic Medicine

Course	Paraclinical course (Year 4 Semester 1 of the MBBS programme)

Module No.	**M4749**
Module Title	**Medicolegal Aspects of Injuries & Forensic Pathology 1**
Prerequisites	
Core/Optional	Core
Moduleobjectives	At the end of the module the student be able to, 1. handle the medico-legal duties of an intern medical officer and medical officer of other disciplines and possess a good knowledge of the relevant sections of the Penal Code and the Criminal Procedure Code of Sri Lanka. 2. examine victims and suspects in cases of assault, accidents, sexual assaults, and other instances where medico-legal examinations are required. 3. identify, record, form an opinion, and report on different types of injuries and describe their medico-legal significance. 4. describe the different injury patterns and circumstances under which they occur. 5. perform a medico-legal autopsy, form an opinion, complete reports and submit them to Courts. 6. give oral evidence in a court of law.
Module contents	1. Introduction to forensic medicine and basic injuries. (3Hr) 2. Regional injuries - Head, Neck, Facial, Thoracic, and Abdominal injuries. (6Hr) 3. The mechanisms of causation, sequelae of injuries, and category of hurt. (3Hr) 4. Classification of injuries for legal purposes. (2Hr) 5. Patterns of injuries, assault, self-inflicted, homicidal, and accidental injuries. (1Hr) 6. Timing of injuries. (3Hr) 7. Pathology and pathophysiology of trauma. (1Hr) 8. History taking and examination of medico-legal cases. (3Hr) 9. Transportation injuries. (3Hr) 10. Thermal injuries. (3Hr) 11. Firearms and firearm injuries. (3Hr)
Teaching and learning activities	Lectures, handouts, tutorials, post-mortem demonstrations, clinical demonstrations/SGD
Time Allocation	Lectures 31 hours, Tutorial 6 hours

Assessment	3rd MBBS Part-II examination Theory - SEQ-1: 5 questions, 30 min each, SEQ-2: 4 questions, 15 min each; OSPE– 15 stations, 3 min each

Recommended Reading/ References	- Simpson's Forensic Medicine; Jason Pane-James, Richard Jones, Steven Karch, John Manlove13th Edition - Margaret M Stark: Clinical Forensic Medicine, A physician's Guide 2nd Edition - PekkaSaukko& Bernard Knight: Knight's Forensic Pathology: 3rdEdition - Vincent JM DiMaio and Zuzanna E Dana: Handbook of Forensic Pathology; 2nd edition - Pathology of trauma by JK Mason & BN Purdue 3rd Edition 1999 - Forensic Medicine Clinical and Pathological Aspects Jason Pane-James, Anthony Busuttil, William Smock 2002 - Prof. Ravindra Fernando: Management of Poisoning; 4th revised edition - L B L De Alwis: Lecture Notes in Forensic Medicine; volumes I, II, III, IV - Dominic J Di Maio & Vincent J M Di Maio: Forensic Pathology. - Narayan Reddy K S & Murty O P: The essentials of Forensic Medicine and Toxicology
Coordinating Department	Department of Forensic Medicine

Course	Paraclinical course (Year 4 Semester 1 of the MBBS programme)
Module No.	**M4750**

Module Title	**Forensic Pathology 2**
Prerequisites	
Core/Optional	Core
Moduleobjectives	At the end of the module the student is able to; 1. examine victims and suspects in cases of assault, accidents, sexual assaults, and other instances where medico-legal examinations are required. 2. identify, record, form an opinion, and report on different types of injuries and describe their medico-legal significance. 3. describe the different injury patterns and circumstances under which they occur. 4. Perform a medico-legal autopsy, form an opinion, complete reports and submit them to Courts. 5. give oral evidence in a court of law.
Module contents	1. Asphyxia. (3Hr) 2. Drowning. (1Hr) 3. Sexual offense (3Hr) 4. Criminal miscarriage (3 Hr) 5. Child abuse (3 Hr) 6. Infanticide and sudden infant death syndrome (1 Hr) 7. Torture and deaths in custody (1 Hr) 8. Starvation and neglect (1 Hr)
Teaching and learning activities	Lectures, handouts, tutorials, post-mortem demonstrations, clinical demonstrations/ S G D
Time Allocation	Lectures 15 hours, Tutorial 4 hours
Assessment	3rd MBBS Part-II examination Theory - SEQ-1: 5 questions, 30 min each, SEQ-2: 4 questions, 15 min each; OSPE– 15 stations, 3 min each
Recommended Reading/ References	- W D S McLay: Clinical Forensic Medicine, 2nd Edition - Margaret M Stark: Clinical Forensic Medicine, A physician's Guide 2nd Edition - Hobbs Christoper J, Hanks Helga G I & Wynne Jane M: Child Abuse and Neglect, A Clinician's Handbook - PekkaSaukko & Bernard Knight: Knight's Forensic Pathology; 3rdEdition - Vincent JM DiMaio and Zuzanna E Dana: Handbook of Forensic Pathology; 2nd edition - Pathology of trauma by JK Mason & BN Purdue 3rd Edition 1999 Jason Pane-James, Anthony Busuttil, William Smock: Forensic Medicine Clinical and Pathological Aspects 2002 - Prof. Ravindra Fernando: Management of Poisoning; 4th revised edition

	- L B L De Alwis: Lecture Notes in Forensic Medicine; volumes I, II, III, IV - Dominic J Di Maio & Vincent J M Di Maio: Forensic Pathology. - Narayan Reddy K S & Murty O P: The essentials of Forensic Medicine and Toxicology
Coordinating Department	Department of Forensic Medicine

Course	Paraclinical course (Year 4 Semester 2 of the MBBS programme)
Module No.	**M4858**
Module Title	**Forensic Pathology and Forensic Science**

Prerequisites	
Core/Optional	Core
Moduleobjectives	At the end of the module the student is able to; 1. explain the methods for establishing the identity of the deceased or the living. 2. evaluate post-mortem changes to estimate the time since death. 3. visit and examine a scene of a crime, collect evidence and formulate conclusions. 4. describe the medico-legal investigations of sudden, unexplained, unexpected, obscure, and suspicious deaths. 5. issue certificates/reports to courts. 6. outline the principles of sampling, storage, chain of custody, analysis, and interpretation of findings in suspected cases of poisoning and drug abuse/overdose.
Module contents	1. Inquest procedure. (1Hr) 2. Routine autopsy and technique. (1Hr) 3. Introduction to unnatural deaths murder, homicide, accident suicide, COD, mode of death, and circumstances of death. (1Hr) 4. Changes after death and estimation of time since death. (2Hr) 5. Death and death-related issues. (1 Hr) 6. Sudden natural deaths. (2Hr) 7. Post-mortem artifacts(1Hr) 8. Negative autopsy. (1Hr) 9. Identification for medico-legal purposes(2Hr) 10. Scene of crime and investigation of crime(1Hr) 11. Trace evidence. (1Hr) 12. Exhumation and excavation. (1Hr)
Teaching and learning activities	Lectures, handouts, tutorials, post-mortem demonstrations, clinical demonstrations/SGD
Time Allocation	Lectures 15 hours, Tutorial 2 hours
Assessment	3rd MBBS Part-II examination Theory - SEQ-1: 5 questions, 30 min each, SEQ-2: 4 questions, 15 min each; OSPE– 15 stations, 3 min each
Recommended Reading/ References	- PekkaSaukko& Bernard Knight: Knight's Forensic Pathology, 3rdEdition - Vincent JM DiMaio and Zuzanna E Dana: Handbook of Forensic Pathology; 2nd edition - Pathology of trauma by JK Mason & BN Purdue 3rd Edition 1999 - Prof. Ravindra Fernando: Management of Poisoning; 4th revised edition - Narayan Reddy K S & Murty O P: The essentials of Forensic Medicine and Toxicology - L B L De Alwis: Lecture Notes in Forensic Medicine; volume II, III,

	IV - Dominic J Di Maio & Vincent J M Di Maio: Forensic Pathology.
Coordinating Department	Department of Forensic Medicine

Course	Paraclinical course (Year 4 Semester 2 of the MBBS programme)
Module No.	**M4859**
Module Title	**Toxicology and Medical Ethics**

Prerequisites	
Core/Optional	Core
Module objectives	At the end of the module the student is able to; 1. identify the types and circumstances of poisoning/drug overdose. 2. apply principles of management of common poisons in Sri Lanka. 3. describe the action, tissue damage, the cause of death, and the laboratory investigations in cases of poisoning/ drug overdose. 4. outline the principles of sampling, storage, chain of custody, analysis, and interpretation of findings in suspected cases of poisoning and drug abuse/overdose. 5. apply the principles of ethics, rights, and law to solve problems that arise during medical practice. 6. issue certificates/reports to courts. 7. identify the health care rights of individuals. 8. define the disciplinary procedure and the functions of the SLMC.
Module contents	1. Plant poisons. (1 ½ Hr) 2. Agrochemicals. (1 ½ Hr) 3. Drugs (therapeutic & drugs of abuse). (2Hr) 4. Corrosives & Methyl alcohol. (2 Hr) 5. Heavy metals (Pb. As). (1Hr) 6. Body fluid and tissue analysis in forensic practice. (1Hr) 7. Drunkenness. (3Hr) 8. Medical ethics –introduction, and concepts(1Hr) 9. Role and responsibilities of a doctor in maintaining relationships. (1 Hr) 10. Medical negligence. (2Hr) 11. Medical malpractice (professional misconduct) and illegal medical practice. (1Hr) 12. Testimonial capacity, testamentary capacity, fitness to pleased, dying declaration, and dying deposition. (1Hr) 13. Court procedure and expert testimony in Courts. (1 Hr) 14. Legal system of Sri Lanka (1 Hr) 15. Sri Lanka medical council.(1 Hr)
Teaching and learning activities	Lectures, handouts, tutorials
Time Allocation	Lectures 20 hours, Tutorials 2 hours
Assessment	3rd MBBS Part-II examination Theory - SEQ-1: 5 questions, 30 min each, SEQ-2: 4 questions, 15 min each; OSPE– 15 stations, 3 min each
Recommended Reading/ References	- Prof. Ravindra Fernando: Management of Poisoning; 4th revised edition - L B L De Alwis: Lecture Notes in Forensic Medicine; volume II, III, IV

	- Narayan Reddy K S & Murty O P: The essentials of Forensic Medicine and Toxicology
Coordinating Department	Department of Forensic Medicine

Course	Paraclinical course (Year 4 Semester 2 of the MBBS programme)
Module No.	**M4860**
Module Title	**Forensic Pathology and Clinical training**

Prerequisites	
Core/Optional	Core
Module objectives	At the end of the module the student is able to; 1. Identify, record, form an opinion, and report on different types of injuries and describe their medico-legal significance. 2. Describe the different injury patterns and circumstances under which they occur. 3. Examine victims and suspects in cases of assault, accidents, sexual offences, abortion, child abuse, wife battery/gender-based violence, elder abuse, torture, drug & alcohol abuse, and any such person that the Court directs. 4. Perform post-mortem examinations, record observations, formulate causes of death, carry out further investigations and draw conclusions. 5. make the diagnosis of death, issue the Certificate of Cause of Death and describe the procedure involved in the disposal of death. 6. Fill relevant medico-legal reports and give oral evidence in the court of law as an expert witness.
Module contents	Forensic Pathological and clinical training at Judicial Medical Officer's Office at Teaching Hospital Anuradhapura.
Teaching and learning activities	Demonstrations and SGD
Time Allocation	50 Hours
Assessment	3rd MBBS Part-II examination Theory - SEQ-1: 5 questions, 30 min each, SEQ-2: 4 questions, 15 min each; OSPE– 15 stations, 3 min each
Recommended Reading/ References	- PekkaSaukko& Bernard Knight: Knight's Forensic Pathology:3rdEdition. - Vincent JM DiMaio and Zuzanna E Dana: Handbook of Forensic Pathology; 2nd edition - Pathology of trauma by JK Mason & BN Purdue 3rd Edition 1999 - Jason Pane-James, Anthony Busuttil, William Smock: Forensic Medicine Clinical and Pathological Aspects, 2002 - Prof. Ravindra Fernando: Management of Poisoning; 4th revised edition - L B L De Alwis: Lecture Notes in Forensic Medicine; volumes I, II, III, IV - Dominic J Di Maio & Vincent J M Di Maio: Forensic Pathology. - Narayan Reddy K S & Murty O P: The essentials of Forensic Medicine and Toxicology
Coordinating Department	Department of Forensic Medicine

Assessments in Forensic Medicine

Assessment	Timing	**Component/method**(Contribution to final score)
3rd MBBS Part-II examination	End of Year 3 Semester 2	SEQ-1 (50%) SEQ-2 (20%) OSPE (30%)

5.5.5 Pathology

Course	Paraclinical course (Year 3 Semester 1 of the MBBS Programme)

Module No.	**M3526**
Module Title	**General pathology**
Prerequisites	Completed the Preclinical course
Core/Optional	Core
Module objectives	On completion of the module students should be able to, 1. Explain terms and definitions used in general pathology 2. Describe the concepts of reversible and irreversible cell injury, necrosis and apoptosis, thrombosis and embolism, ischaemia and infarction, oedema, pathological calcification, amyloidosis 3. Describe in detail the acute and chronic inflammatory responses including the macroscopical, cellular, microcirculatory, and biochemical changes involved 4. Describe the general pathological processes involved in tissue regeneration, repair, wound healing and fracture healing 5. Discuss the clinical consequences of the general pathological concepts named above in the context of a given clinical scenario
Module content	• Cell response to injury • Cellular adaptations • Intracellular accumulation and pigmentation • Necrosis • Apoptosis • Tissue response to injury which include acute and chronic inflammation • Tissue regeneration, repair, wound healing and fracture healing • Thrombosis and embolism • Ischaemia and infarction • Pathological calcification • Amyloidosis In relation to each of the above, the following facts (according to what is appropriate) will be presented - Causative factors - Pathogenesis - Pathology of the lesions - Varying morphological types - Outcome and complications - Clinical and laboratory manifestations
Teaching and learning activities	Lectures, Tutorials and Practical demonstrations Presentations by invited experts
Time Allocation	Lectures 12 hours, Tutorial 3 hours, Practical demonstrations 3 hours

Assessment	Continuous assessment 4 (CA4): MCQ 3rd MBBS Part-II examination: MCQ, SEQ, OSPE
Recommended Reading/ References	- Kumar, V., Abbas, A. K., & Aster, J. C. (2017). Robbins Basic Pathology (10thed.). Elsevier. - Walter, J.B. & Israel, M.S. (1996). General Pathology (7th ed.), Churchill Livingstone, Edinburgh
Coordinating department	Department of Pathology

Course	Paraclinical course (Year 3 Semester 2 of the MBBS Programme)
Module No.	**M3639**

Module Title	**Tumour pathology**
Prerequisites	Completed the module on General pathology
Core/Optional	Core
Module objectives	On completion of the module students should be able to, 1. Define the terms Tumour, Hamartoma 2. Differentiate neoplasia from hypertrophy, hyperplasia, metaplasia and dysplasia 3. Explain tumour nomenclature according to biological behavior and histogenesis 4. Compare and contrast benign and malignant tumour 5. Describe the four main features distinguishing malignant from benign tumors namely anaplasia, rate of growth, invasion and metastasis 6. Explain the terms “grading” and “staging” of a malignant tumour and its clinical importance 7. Explain the concept of multistep theory of oncogenesis, mode of damage and targets of damage to genetic material and concepts of initiation and promotion 8. Explain “monoclonality”, “tumour progression”, “angiogenesis” and “adenomacarcinoma sequence” of tumors 9. Describe the processes of chemical carcinogenesis, viral oncogenesis and radiation oncogenesis 10. Discuss the relationship between immunodeficiency and development of tumors 11. Describe the importance of early diagnosis of tumors and the methods used with examples 12. Describe the clinical aspects of neoplasia – local and systemic effects 13. Describe paraneoplastic syndrome including causative factors and associated clinical problems 14. Describe the various methods of metastasis 15. Differentiate carcinoma-in-situ from invasive tumor 16. List different groups of tumor markers and explain their clinical use
Module content	• Dysplasia, tumour, hamartoma • Tumour nomenclature according to biological behavior and histogenesis • Concepts of grading and staging of a tumour • Macroscopy and clinical effects of benign and malignant tumours • Multistep theory of oncogenesis • Protective mechanisms of a cell to ward off neoplastic stimuli a. Tumour suppressor genes b. Apoptosis controlling genes c. DNA repair genes

	• Modes of damage and targets of genetic material in oncogenesis • Concepts of pre-malignant lesions, monoclonality, tumour progression, angiogenesis, adenoma-carcinoma sequence, recurrence • Oncogenesis - Chemical carcinogenesis - Viral oncogenesis - Radiation oncogenesis - Nutritional agents, hormones, chronic inflammatory diseases and inherited conditions associated with cancer • Immune surveillance as protection against cancer • Early diagnosis of tumour - Mammography - Pap smear - Fine-needle aspiration cytology • Spread the of malignant tumour • Paraneoplastic syndrome
Teaching and learning activities	Lectures, Tutorials and Practical demonstrations Presentations by invited experts
Time Allocation	Lectures 12 hours, Tutorial 3 hours, Practical demonstrations 3 hours
Assessment	Continuous assessment 4 (CA4): MCQ 3rd MBBS Part-II examination: MCQ, SEQ, OSPE
Recommended Reading/ References	- Kumar, V., Abbas, A. K., & Aster, J. C. (2017). Robbins Basic Pathology (10th ed.). Elsevier. - Walter, J.B. & Israel, M.S. (1996). General Pathology (7th ed.), Churchill Livingstone, Edinburgh
Coordinating department	Department of Pathology

Course	Paraclinical course (Year 4 Semester 1 of the MBBS Programme)

Module No.	**M4743**
Module Title	**A. Gastrointestinal pathology** **B. Musculoskeletal pathology**
Prerequisites	Completed the course on Anatomy and Physiology of the Gastrointestinal System and Musculoskeletal System Completed modules on general pathology and tumour pathology
Core/Optional	Core
Module objectives	On completion of the module students should be able to, **A. Gastrointestinal pathology** 1. Describethecommoncongenitalanomaliesoftheglitractincludingoesophagealatresia, pyloric stenosis,Meckel's diverticulum andHirschsprung's disease 2. Describepremalignant lesions oftheoralcavity 3. Describethepathologyofsialadenitis,sialolithiasis andtumours of thesalivaryglands 4. Listthecommoncausesofoesophagealobstructionexcludingtumours 5. Brieflydescribethepathophysiologyofachalasiacardia,plummer-vinsonsyndrome 6. Describethepathophysiology,clinicalfeatures,pathologicalfeaturesandcomplications ofgastroesophagealrefluxdisease 7. Describethepathophysiology,pathologicalfeatures andanalyzethecomplicationsandclinicalaspectsof Barret'soesophagus 8. Describetheaetiology,pathogenesisandpathologicalfeaturesofcommonoesophageal malignanttumoursand workout theclinicalaspectsandspreadof thetumours 9. Discusstheinvestigationsavailabletodetect oesophageal cancer 10. DescribethePathogenesis,morphology andsequelofacutegastritis. 11. Statetheclassificationofchronicgastritis 12. DescribethePathogenesis,morphologyandsequala&workoutthe clinicalimplicationsofdifferenttypesof chronicgastritis 13. CompareandcontrastTypeAandTypeBChronicgastritis 14. Describetheaetiopathogenesis,pathologyandcomplicationsofbenigngastriculcers 15. Describetheaetiologicalfactors,clinicalfeatures,pathologyandspreadofgastric cancer 16. Discussthe investigationsavailableinthediagnosisofthe abovegastricdiseases 17. Describethepathogenesisofintestinalobstruction,intussusception 18. Describetheincidence,clinicalfeatures,pathogenesis,pathologyandcomplicationsand extraintestinal manifestationsofinflammatory bowel disease 19. CompareandcontrastUC(ulcerativecolitis)andCD(Crohn'sdisease) 20. Brieflydescribethepathologicalchangesintheintestineandthecomplicationsofpseud omembranouscolitis,intestinaltuberculosis,CMVcolitis,typhoidandamoebiasis. 21. Define, pathophysiology, causes, morphological changes, clinical features and complications of ischemic colitis. 22. Describethepathologyof acuteappendicitis andcarcinoid tumourofthe appendix

	23. List the types of intestinal polyps, briefly describe the pathology of hamartomatous polyps andneoplastic polyps 24. Briefly describe familial adenomatous polyposis and hereditary non-polyposis colonic cancer(HNPCC), outline the pathogenesis of colonic cancer with regard to adenoma-carcinomasequence 25. Describetheepidemiology,pathology,spreadandprognosisofcolorectalcancer **Musculoskeletal pathology:** 1. Describe the aetiology, pathogenesis, pathology and complications of pyogenic osteomyelitis and tuberculous osteomyelitis 2. List the common sites of osteomyelitis with regard to the age of the patient 3. Describe the aetiology, pathogenesis and clinical manifestations of osteoporosis, osteomalacia/rickets, Paget's disease and hyperparathyroidism 4. Describe how you would interpret the laboratory investigations with regards to the diagnosis of the above 5. Describe the aetiology and morphology of common benign and malignant bone tumours 6. Briefly describe the clinical presentations of the above and explain how radiological findings aid in the pathological diagnosis 7. Describe the pathology of metastatic bone disease
Module content	**Gastrointestinal Pathology** • congenitalanomalies–oesophagealatresia,pyloricstenosis,Meckel'sdiverticulum,Hirschsprung's disease • premalignantlesionsoftheoralcavity–leukoplakia,erythroplakia • sialadenitisandsialolithiasis • BenignandMalignantlesionsofthesalivaryglands–pleomorphicadenoma/mucoepidermoidcarcinoma • GERD • Premalignantlesionsofoesophagus–barret'soesophagus • Squamouscarcinomaofoesophagus • Adenocarcinomaofoesophagus • Acutegastritis • Chronicgastritis • Pepticulcerdiseaseofthestomach • Gastriccarcinoma • Gut infections - Typhoid - IntestinalTuberculosis - Amoebiasis - Pseudomembranouscolitis - CMV Colitis • Inflammatoryboweldisease - Crohn'sdisease - Ulcerativecolitis

	• Acuteappendicitis andcarcinoidtumoroftheappendix • Intestinalpolyps - Hamartomatouspolyps-Peutz-Jegherssyndrome, cowden'sSyndrome - Neoplasticpolyps –tubular,villous,tubulovillous • Familialadenomatous polyposis • HNPCC • Adenomacarcinomasequence • Colorectaladenocarcinoma **Musculoskeletal pathology** • Pyogenic osteomyelitis • Tuberculous osteomyelitis • Benign bone tumours - Osteoma - Osteoblastoma - Osteoid osteoma • Malignant bone tumours - Osteosarcoma - Chondrosarcoma - Ewing tumour • Metastatic bone disease • Metabolic bone diseases - Osteoporosis - Osteomalacia - Rickets - Paget's disease - Hyperparathyroidism
Teaching and learning activities	Lectures, Tutorials and Practical demonstrations Presentations by invited experts
Time Allocation	Lectures 22 hours, Tutorial 4 hours, Demonstrations 3hours
Assessment	Continuous assessment 5 (CA4): MCQ 3rd MBBS Part-II examination: MCQ, SEQ, OSPE
Recommended Readin	- Kumar, V., Abbas, A. K., & Aster, J. C. (2017). Robbins Basic Pathology (10th ed.). Elsevier. - Walter, J.B. & Israel, M.S. (1996). General Pathology (7th ed.), Churchill Livingstone, Edinburgh

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Coordinating department	Department of Pathology

Course	Paraclinical course (Year 4 Semester 1 of the MBBS Programme)
Module No.	**M4744**
Module Title	**A. Pathology of the cardiovascular system** **B. Pathology of the central nervous system**
Prerequisites	Completed the course on anatomy and physiology of the cardiovascular system and nervous system Completed the module on general pathology and tumour pathology
Core/Optional	Core
Moduleobjectives	On completion of the module students should be able to, **Cardiovascular system** 1. List the clinical syndromes included under the ischemic heart disease 2. Define stable angina, unstable angina and prinzmetal variant angina 3. List causes of and risk factors for acute myocardial infarction

	4. Describe the pathogenesis of coronary artery occlusion leading to acute coronary syndromes and the consequent myocardial response 5. Explain the terms transmural infarction and a subendocardial infarction 6. Describe the morphological changes, in the heart at the following time intervals after acute myocardial infarction - within 4 hours, after 4 to 12 hours, 12 to 24 hours, 1 to 3 days, 3 to 7 days, 7 to 14 days, 2 to 8 weeks 7. Name the regions of the myocardium involved and procedure/s used to identify blockages of the left circumflex coronary artery, left anterior descending artery, right coronary artery. 8. Explain the changes in cardiac biomarkers in myocardial infarction 9. Analyze the structural and functional complications of myocardial infarction 10. Workout the investigations done in a patient with myocardial infarction 11. Define systemic hypertension. 12. State the classification and causes 13. Describe the pathogenesis of essential and secondary hypertension and pathological features of hypertension 14. Work out the Clinical evaluation (symptoms, signs and investigations) of a patient with hypertension 15. Explain the pathogenesis of rheumatic carditis 16. Describe the pathological features of carditis in acute and chronic rheumatic carditis. 17. Describe the appearance of Aschoff bodies in various stages 18. Describe the diagnostic steps of acute RF (clinical and laboratory) 18. Describe the clinical features of chronic rheumatic valvular disease 19. Describe clinicopathological complications of acute and chronic RHD 20. Define Infective endocarditis 21. Classify infective endocarditis according to the etiological agents 22. Describe the pathogenesis of infective endocarditis including the development of cardiac vegetation 23. Explain the pathological features and clinical features of infective endocarditis 24. Workout the laboratory investigations needed to diagnose infective endocarditis and the treatment 25. Briefly discuss nonbacterial thrombotic endocarditis and SLE associated endocarditis 26. Briefly describe morphological features and clinical features of

	dilated cardiomyopathy, hypertrophic cardiomyopathy and restrictive cardiomyopathy 27. List the causes and types of pericarditis 28. Describe the morphological appearances of the different types of pericarditis-serous, fibrinous, serofibrinous, purulent, caseous, hemorrhagic 29. Define concepts, morphological types, causes, clinical features, and investigations of pericardial effusion and cardiac tamponade. 30. List the common tumors of the heart and blood vessels 31. Describe the risk factors, their contribution, pathogenesis, major arteries involved, macroscopic and microscopic appearances, sequelae, complications, clinical effects of atherosclerosis. 32. Define aneurysm 33. Classify aneurysms 34. Describe the pathophysiology of aneurysms 35. Describe the pathological features and clinical features of Abdominal aortic aneurysm 36. Define aortic dissection 37. Describe the pathogenesis, morphology, clinical consequences and diagnostic evaluation of aortic dissection 38. Define the term vasculitis 39. List the common types of vasculitides 40. Outline the pathological changes and common clinical manifestations in Takayasu's disease, Giant cell arteritis, Polyarteritis nodosa, Kawasaki's disease, Wegener's granulmatosis, Microscopic polyangiitis. **Central nervous system** 1. Describe the pathogenesis, risk factors, morphology, affected sites of brain and pathological effects in hypoxic and ischemic injury to the brain 2. List the causes of cerebral ischemia 3. Describe the causes, risk factors, pathogenesis morphology and clinical features of cerebral infarction including venous infarction 4. List types, causes clinical features, and lab investigations of a cerebral hemorrhage 5. Define terms 'Encephalitis' and 'Meningitis' 6. Describe organisms, route of infection, macroscopy and microscopy, clinical features, complications of bacterial meningitis and cerebral abscess 7. Describe tuberculosis, meningitis, and syphilitic meningitis 8. List the routes of entry and common organisms and changes seen in the brain in viral, fungal, and parasitic infections of the

	brain. 9. List Central Nervous System infections in immunocompromised patients 10. List primary brain tumors and tumors of peripheral nerves 11. Describe pathogenesis, morphology, and clinical features of primary and secondary brain tumors 12. List the methods available to detect brain tumors 13. Describe types, mechanisms, and examples macroscopic appearance of cerebral edema (vasogenic and cytotoxic) 14. Define hydrocephalus 15. List the clinical features and systemic effects of raised intracranial pressure 16. List the types of cerebral herniation 17. Describe the macroscopic appearance, clinical features of transtentorial herniation, and subfalcine herniation 18. Describe the importance of tonsillar herniation
Module content	**Cardiovascular system** • Myocardial infarction • Hypertension - Systemic hypertension - Malignant hypertension • Rheumatic valvular diseases and rheumatic carditis • Infective endocarditis • Non-infective endocarditis • Cardiomyopathy • Pericardial diseases ○ Acute pericarditis – serous, fibrinous, seropurulent, purulent • Atherosclerosis • Aneurysms • Aortic dissection • Vasculitis - Takayasu's diseases - Giant cell arteritis - Polyarteritis nodosa - Kawasaki's disease - Wegener's granulamatosis - Microscopic polyangitis **Central nervous system** • Hypoxia and ischemic injury of brain • Cerebral ischemia • Brain infarction • Intracranial hemorrhage • Encephalitis and meningitis • Bacterial meningitis

	• Cerebral abscess • Tuberculous and syphilitic meningitis • Viral meningitis • Central Nervous System changes in Human immunodeficiency virus infection • Primary and secondary brain tumours • Tumours of peripheral nerves • Vasogenic cerebral edema • Cytogenic edema • Hydrocephalus • Cerebral herniation - Subfalcine herniation - Tonsillar herniation
Teaching and learning activities	Lectures, Tutorials and Practical demonstrations Presentations by invited experts
Time Allocation	Lectures 18 hours, Tutorial 4 hours, Demonstrations 3 hours
Assessment	Continuous assessment 5 (CA4): MCQ 3rd MBBS Part-II examination: MCQ, SEQ, OSPE
Recommended Reading/ References	- Kumar, V., Abbas, A. K., & Aster, J. C. (2017). Robbins Basic Pathology (10th ed.). Elsevier. - Walter, J.B. & Israel, M.S. (1996). General Pathology (7th ed.), Churchill Livingstone, Edinburgh - Roberts,F. & MacDuff, E. (2018). Pathology Illustrated (8th ed.), Elsevier.
Coordinating department	Department of Pathology

Course	Paraclinical course (Year 4 Semester 1 of the MBBS Programme)
Module No.	**M4745**
Module Title	**A. Endocrine Pathology** **B. Pathology of the respiratory system**
Prerequisites	Completed the course on anatomy and physiology of the endocrine and respiratory systems Completed the module on general pathology and tumour pathology
Core/Optional	Core
Moduleobjectives	On completion of the module students should be able to, **Endocrine pathology** 1. List the disorders of thyroid function 2. List the causes and clinical features of hyperthyroidism and hypothyroidism

	3. Describe the pathogenesis and clinical features of Grave's disease 4. List the types of thyroiditis 5. List the causes for diffuse enlargement of the thyroid gland, multi nodular goiter, solitary nodule of the thyroid 6. Describe the pathogenesis, macroscopy and microscopy of Hashimoto's thyroiditis 7. List the benign and malignant neoplasms of the thyroid 8. Describe the pathology of follicular adenoma 9. Describe the macroscopy and microscopy of, the clinical presentation and outcome of the histological types of thyroid carcinoma 10. List the causes of hyper and hypoparathyroidism 11. Describe the clinical features and complications of hyper and hypoparathyroidism 12. Describe the investigations helpful in the diagnosis and management of hypo and hyperparathyroidism 13. Describe the pathogenesis and clinical features of congenital adrenal hyperplasia 14. List the causes for excessive secretion of cortisol 15. Describe Cushing's syndrome and list the clinical features and investigations 16. Define primary and secondary hyperaldosteronism 17. Describe the pathology and clinical features of Addison's disease, pheochromocytoma, and neuroblastoma 18. Describe multiple endocrine neoplasia syndrome with examples 19. List the causes for hyper secretion of anterior pituitary hormones 20. Describe the macroscopy and microscopy of pituitary adenoma **Respiratory Pathology** 1. Brieflydescribethepulmonarydefenses 2. Listtheetiologicalagentscausingupperrespiratorytract infections 3. Define and classify pneumonia according to clinical and pathological/radiologicalfeatures and listthe etiological agents 4. Describethepathogenesis ofpneumonia 5. Stateandbrieflydescribe thefourstagesoflobarpneumonia 6. Describethemorphology oflobarpneumoniaandbronchopneumonia 7. Workoutthecomplicationsofpneumonia 8. Statethepredisposingfactors,macroscopyandmicroscopyoflungabscess 9. Describe the risk factors, clinical features, pathogenesis and morphology oftuberculosis 10. Describetheclinicalfeatures andpathologicalfeaturesofsarcoidosis 11. define chronic bronchitis and describe the pathogenesis, predisposing factors,macroscopic,microscopicfeatures and complications 12. Describe the etiology, pathogenesis, clinical features and complications ofemphysema

	13. State the types of emphysema according to the anatomical distribution and brieflydescribetheirpathological features 14. Describe the predisposing factors, pathogenesis, pathological features and clinicalfeatures of bronchial asthma 15. Describethecauses,macroscopy,microscopyandcomplicationsofbronchiectasis 16. Describetheetiology andpathogenesis ofacute interstitiallungdisease 17. Listtheconditionsassociatedwithchronicinterstitiallungdiseaseleadingtofibrosis 18. Describethepathogenesis ofhoneycomblung 19. Describethepathogenesis andpathologicalfeaturesofasbestosis 20. Discusstheetiologicalagents andpathophysiologyofpulmonaryhypertension 21. Discuss the pathogenesis and sequale of pulmonary embolism, haemorrage,infarctionandpulmonary oedema 22. Discussthemorphologyoflunginpulmonaryinfarctionand oedema 23. Describe the etiology and pathogenesis of lung tumors. Outline the classification andprevalenceof lung tumors 24. Describe the pathological features of squamous cell carcinoma, small cell carcinoma,adenocarcinoma of the lung 25. Describeparaneoplasticsyndromesanditsassociationwithlungtumors. 26. Describethelocalcomplicationsandmetastaticspreadoflungtumors
Module content	**Endocrine pathology** • Thyroid gland normal anatomy • Disorders of thyroid function- hyperthyroidism, hyperthyroidism • Grave's disease • Thyroiditis - Acute thyroiditis - Granulomatous thyroiditis - Autoimmune thyroiditis - Riedel's thyroiditis • Thyroid goiter • Hashimoto's thyroiditis • Neoplasms of the thyroid • Thyroid carcinoma • Hypo and hyperparathyroidism • Congenital adrenal hyperplasia • Cushing's syndrome • Primary and secondary hyperaldosteronism • Addisons disease • Pheochromocytoma and neuroblastoma

	• Multiple endocrine neoplasia syndrome • Abnormal secretion of anterior pituitary hormones-pituitary adenoma **Respiratory pathology** ▪ Pneumonia - Lobarandbronchopneumonia - Acuteinterstitialpneumonia ▪ Lungabscess ▪ Tuberculosis ▪ Sarcoidosis ▪ Chronicbronchitis ▪ Emphysema ▪ Asthma ▪ Bronchiectasis ▪ Acuteinterstitiallung disease ▪ Chronicinterstitial lungdisease - Pneumoconiosis-asbestosis ▪ Pulmonaryhypertension ▪ Pulmonaryembolism,haemorrage,infarctionandpulmonaryoedema ▪ Lungtumours - Squamouscellcarcinoma - Adenocarcinoma - Smallcellcarcinoma - Metastaticdeposits
Teaching and learning activities	Lectures, Tutorials and Practical demonstrations Presentations by invited experts
Time Allocation	Lectures 16 hours, Tutorial 3 hours, Demonstrations 2 hours
Assessment	Continuous assessment 5 (CA4): MCQ 3rd MBBS Part-II examination: MCQ, SEQ, OSPE
Recommended Reading/ References	- Kumar, V., Abbas, A. K., & Aster, J. C. (2017). Robbins Basic Pathology (10th ed.). Elsevier. - Walter, J.B. & Israel, M.S. (1996). General Pathology (7th ed.), Churchill Livingstone, Edinburgh - Roberts,F. & MacDuff, E. (2018). Pathology Illustrated (8th ed.), Elsevier.
Coordinating department	Department of Pathology

Course	Paraclinical course (Year 4 Semester 2 of the MBBS Programme)
Module No.	**M4852**
Module Title	**A. Chemical pathology** **B. Renal pathology**
Prerequisites	Completed the course on Anatomy and Physiology of the genito-urinary tract Completed the modules on General pathology and tumour pathology
Core/Optional	Core
Moduleobjectives	On completion of the module students should be able to, **Chemical pathology** 1. Describe and interpret the laboratory tests performed at the diagnosis, follow up and during the management of complications of diabetes mellitus 2. Describe the biochemical and hormonal changes that occur in the following conditions – hyperthyroidism, hypothyroidism, subclinical hypothyroidism, Grave's disease, acromegaly, Cushing's syndrome, Addisons disease, diabetes insipidus and syndrome of inappropriate antidiuretic hormone secretion 3. Explain the procedure and evaluate the results of the following tests- glucose suppression test, Synacthen test, dexamethasone suppression test, water deprivation test 4. Differentiate the laboratory findings in cranial diabetes insipidus from nephrogenic diabetes insipidus 5. Describe the biochemical changes occurring in a normal pregnancy and the biochemical changes involved in gestational diabetes and liver disease in pregnancy 6. Interpret the results of biochemical tests done to establish the above abnormalities 7. List the causes of male and female infertility and list the biochemical markers useful in identifying the cause of female

	infertility 8. Interpret the test results in the diagnostic work up of female infertility 9. List the various tumour markers and indicate the diseases associated with them 10. Describe tumour lysis syndrome 11. Describe diagnostic and prognostic implications of biochemical features associated with acute and chronic pancreatitis **Renal pathology:** 1. List the common congenital anomalies and cystic diseases of the kidney and describe briefly the pathology 2. Describe the predisposing factors, aetiology, pathogenesis, pathology clinical features and complications of acute and chronic pyelonephritis 3. List the types of primary glomerulonephritis and describe the aetiology, clinicopathological effects macroscopy and microscopy(light and electron) of acute proliferative glomerulonephritis and rapidly progressive glomerulonephritis 4. List the causes and describe the clinical response to glomerular injury in nephritic and nephrotic syndromes 5. Describe clinicopathological effects of chronic glomerulonephritis 6. Describe the pathology of the glomerular changes in the secondary glomerular diseases - hypertension, diabetes mellitus, Systemic lupus erythematosus 7. List the common renovascular diseases and describe the pathology of the renal lesions caused 8. List the common causes of urinary tract obstruction 9. Describe predisposing factors, pathogenesis and morphology and biochemistry of different types of urolithiasis 10. Discuss the complications of urolithiasis
Modulecontent	**Chemical pathology** • Chemical Pathology in endocrine diseases - Diabetes mellitus - Pituitary hypothalamic axis and trophic hormones for pituitary - thyroid disorders, - growth hormone disorders, - adrenal failure - Cushing disease/syndrome - cranial and nephrogenic diabetes insipidus - syndrome of inappropriate antidiuretic hormone secretion

	- polycystic ovarian disease • Chemical pathology in obstetrics and gynaecology - Biochemistry of normal and abnormal pregnancy - pregnancy related complications- diabetes and liver disease - Tumour markers of ovarian malignancy - male and female infertility • Chemical pathology for surgery - Acute and chronic pancreatitis - Tumour markers associated with hepatocellular carcinoma, prostate carcinoma, gastrointestinal, thyroid and germ cell tumours, and their clinical importance **Renal pathology** • Pathology and inheritance of the following cystic diseases - Adult polycystic kidney disease - Infantile polycystic kidney disease • Infections of the kidney and urinary bladder - Acute pyelonephritis - Chronic pyelonephritis - Tuberculous pyelonephritis - Cystitis • Primary glomerular diseases - Minimal change glomerulonephritis - Rapidly progressive glomerulonephritis - Membranoproliferative glomerulonephritis - Membranous glomerulonephritis - Focal segmental glomerulosclerosis - IgA nephropathy - chronic glomerulonephritis • Secondary glomerular diseases - glomerular lesions in benign and malignant hypertension - benign nephrosclerosis - renal lesions in diabetes mellitus and Systemic lupus erythematosus - renal lesions in amyloidosis • Renal vascular lesions - renal artery stenosis - renal infarction • Urolithiasis - obstructive uropathy - urolithiasis - urolithiasis • Tumours

	- Renal cell carcinoma - Nephroblastoma - Transitional cell carcinoma of the bladder
Teaching and learning activities	Lectures, Tutorials and Practical demonstrations Presentations by invited experts
Time Allocation	Lectures 20 hours, Tutorial 3 hours, Demonstrations 2 hours
Assessment	3rd MBBS Part-II examination: MCQ, SEQ, OSPE
Recommended Reading/ References	- Kumar, V., Abbas, A. K., & Aster, J. C. (2017). Robbins Basic Pathology (10th ed.). Elsevier. - Walter, J.B. & Israel, M.S. (1996). General Pathology (7th ed.), Churchill Livingstone, Edinburgh - Kumar, P. & Clark, M. (2016) Clinical Medicine (9th ed.), Elsevier
Coordinating department	Department of Pathology

Course	Paraclinical course (Year 4 Semester 2 of the MBBS Programme)
Module No.	**M4853**
Module Title	**Haematology and lymphoreticular system**
Prerequisites	Completed the course on Anatomy and Physiology of blood and the reticuloendothelial system
Core/Optional	Core
Moduleobjectives	On completion of the module students should be able to, 1. Recall haemopoiesis (erythropoiesis, granulopoiesis, thrombopoiesis and lymphopoiesis)- the sites, growth factors involved and their various clinical uses, processes with different stages and cells involved, investigations performed to study its abnormalities 2. Recall the clinical features of anaemia and describe the adaptive responses to anaemia and morphological classification of anaemia 3. Recall metabolism, dietary sources, stages and progression, mode of presentation and all changes involved in the red cells in iron, vitamin B_{12} and folate deficiency 4. Discuss the approach to diagnosis and principles of treatment of above deficiencies 5. Discuss the differential diagnoses of hypochromic microcytic and macrocytic anaemia 6. Describe the mode of inheritance, biochemical basis, clinical and laboratory features and treatment approaches to hereditary haemolytic anaemias and hemoglobinopathies 7. Describe pathophysiology of haemolysis and discuss the laboratory features of acquired immune and non-immune haemolytic anaemia 8. Formulate a diagnostic work up for a patient presenting with haemolysis 9. Describe the benign and malignant white cell disorders including their pathogenesis, clinical features and laboratory

	features 10. List the causes of pancytopenia and describe aetiology, investigations and management approach of aplastic anaemia 11. Discuss the differential diagnoses of polycythaemia and thrombocytosis 12. Describe the pathogenesis, clinical and laboratory manifestations, the natural history of chronic myeloproliferative disorders and current approaches to therapy 13. Define paraproteinaemia and discuss the differential diagnoses 14. Describe the pathology, clinical features and laboratory diagnosis, radiological features, diagnostic approach and treatment outline of multiple myeloma 15. Describe the clinical presentation, methods of diagnosis and principles of treatment of hereditary and acquired bleeding disorders 16. State the blood products, their constituents and storage requirements and give a brief description on preparation 17. Discuss the use of safe blood transfusion practices including the detection of transfusion reactions and approaches to management 18. Describe the patterns of reactive changes in lymph nodes and give examples for each pattern 19. Compare and contrast lymphoma and leukaemia 20. State the classification of Hodgkin Lymphoma, describe the basic histological features of Hodgkin Lymphoma and describe AnnArbor staging for Hodgkin Lymphoma 21. Discuss the prognosis of each histological type of Hodgkin Lymphoma 22. Outline the different systems used to classify Non-Hodgkin Lymphoma (details not necessary) 23. List the differences between Hodgkin Lymphoma and Non-Hodgkin Lymphoma 24. Describe how a lymph node biopsy should be sent to the laboratory for histology
Modulecontent	• Haemopoiesis • Anaemia-Definition, adaptive responses, clinical features, morphological classification and diagnostic approach • Red cell abnormalities leading to anaemia: - Deficiency anaemias (iron, vitamin B12, folate) - Haemolytic anemias (hereditary and acquired) - Haemoglobinopathies (thalassaemias and sickle cell anaemia) • White cell abnormalities - Neutrophilia, neutropenia, eosinophilia, monocytosis,

	lymphocytosis - The acute leukaemias - The chronic leukaemias - Pancytopenia and aplastic anaemia • Myeloproliferative disorders - Primary Polycythaemia - Chronic myeloid leukaemia - Essential thrombocythaemia - Myelofibrosis • Paraproteinaemia and multiple myeloma - Definition and causes of paraproteinaemia - multiple myeloma • Bleeding disorders - The principles on tests for defects in the intrinsic, extrinsic and final common pathway of blood coagulation and laboratory work up of investigation of a bleeder - clinical manifestations, laboratory diagnosis and principles of management will be taught on the following diseases 1. Immune thrombocytopenic purpura 2. Abnormal platelet function 3. Haemophilia A and B 4. VonWillebrand disease 5. Disseminated intravascular coagulation - Effects of vitamin K deficiency and liver disease on coagulation **Transfusion Medicine** ○ Types of blood products, the preparation and their storage requirements, indications and dosage of transfusion products and the importance of cross matching ○ Identifying a transfusion reaction by clinical and lab features, management and prevention of transfusion reactions **Lymphoreticular system** ○ Causes of generalized lymphadenopathy ○ Histological patterns of acute and chronic reactive lymphadenitis ○ Classification, histological criteria, staging and prognosis of Hodgkin lymphoma ○ Classification of basic histological criteria of common forms and staging of non-Hodgkin lymphoma
Teaching and learning activities	Lectures, Tutorials and Practical demonstrations Presentations by invited experts

Time Allocation	Lectures 20 hours, Tutorial 7 hours, Demonstrations 4 hours
Assessment	3rd MBBS Part-II examination: MCQ, SEQ, OSPE
Recommended Reading/ References	- Kumar, V., Abbas, A. K., & Aster, J. C. (2017). Robbins Basic Pathology (10th ed.). Elsevier. - Hoffbrand, A.V.. & Moss, P.A.H. (2011). Essential Haematology (6th ed.). BlackwellPublishing, Oxford, UK.
Coordinating department	Department of Pathology

Course	Paraclinical course (Year 4 Semester 2 of the MBBS Programme)
Module No.	**M4854**
Module Title	**Breast pathology, Pathology of the male and female reproductive tracts**
Prerequisites	Completed the course on Anatomy and Physiology of the Breast and Male and Female Reproductive Tracts Completed modules on general pathology and tumour pathology
Core/Optional	Core
Module objectives	On completion of the module students should be able to, 1. list the congenital abnormalities of the breast 2. describe the pathogenesis and morphology of the inflammatory conditions of the breast 3. describe the morphology and the factors contributing to fibrocystic disease of the breast 4. describe the features of epithelial hyperplasia and discuss its significance 5. describe the pathological features of duct papilloma 6. describe the pathological features of in–situ-carcinoma of the breast 7. describe the macroscopy and microscopy of invasive ductal and lobular carcinoma 8. name other types of breast carcinoma 9. describe the clinical features, macroscopy and microscopy of Paget's disease of the breast 10. describe the underlying pathology of Peau d' orange appearance of the breast 11. describe the spread of breast carcinoma 12. describe the significance of hormone receptors in the treatment of breast carcinoma 13. describe the macroscopy and microscopy of the stromal tumours- fibroadenoma and phylloides tumour 14. discuss the types of biopsies performed in a patient with a

	breast lump 15. describe the inflammatory conditions and tumours (benign and malignant) arising from the ureter 16. List the causes of obstruction of the ureter 17. Briefly describe the congenital abnormalities of the urinary bladder 18. Describe the predisposing factors, macroscopy and microscopy, clinical features and aetiological agents of cystitis 19. Describe the aetiology, clinical features, macroscopy and microscopy and spread of transitional carcinoma of the bladder 20. Briefly describe the WHO grading of urothelial neoplasias 21. Describe the pathogenesis, macroscopy and microscopy, clinical features and complications of benign prostatic hyperplasia 22. Describe the term prostatic intra epithelial neoplasia 23. List the aetiological factors for carcinoma of the prostate 24. Describe the macroscopy and microscopy, staging, clinical features, outcome and spread of carcinoma of prostate 25. List the causes of testicular enlargement 26. Briefly describe clinical features and pathology of acute epididymo-orchitis and tuberculous epididymo-orchitis 27. Classify testicular neoplasia and list the tumour markers useful in the diagnosis 28. Describe clinical manifestations, macroscopy and microscopy and the complications of testicular neoplasia 29. Briefly describe chronic vulval dystrophies, inflammatory conditions of the vulva, vulval intraepithelial neoplasia and squamous cell carcinoma of the vulva 30. Describe the pathogenesis, and morphology of (all 3 grades) cervical intraepithelial neoplasia(CIN) and discuss the importance of screening for detection of cervical intraepithelial neoplasia 31. describe clinical features, risk factors, morphology and spread of cervical carcinoma 32. give brief descriptions of morphology and clinical features of adenomyosis, endometriosis, endometrial hyperplasia 33. describe the clinical features and pathology of endometrioid adenocarcinoma 34. describe the pathological features of leiomyoma and leiomyosarcoma 35. list the cystic diseases of ovary and describe the clinical features, morphology and hormonal changes of polycystic ovarian syndrome 36. classify ovarian tumours according to the tissue of origin 37. describe the pathological features of surface epithelial tumours and germ cell tumours

	38. describe the morphology of gestational trophoblastic tumour (complete, partial, invasive) 39. briefly describe the pathological features of choriocarcinoma
Module content	• Inflammatory conditions and tumours (benign and malignant) arising from the ureter • Congenital abnormalities of the urinary bladder cystitis • Transitional carcinoma of the bladder • Benign prostatic hyperplasia • Describe the term prostatic intra epithelial neoplasia • Carcinoma of the prostate • List the causes of testicular enlargement • Acute epididymo-orchitis and tuberculous epididymo-orchitis • Testicular neoplasms • Pathology of vulva - Chronic vulval dystrophies - Inflammatory conditions - Vulval intra epithelial neoplasia - Squamous cell carcinoma • Pathology of cervix - Cervical intraepithelial neoplasia - Pap smear - Squamous cell carcinoma • Pathology of the uterus - Endometritis - Adenomyosis - Endometriosis - Endometrial hyperplasia - Endometrioid adenocarcinoma - Leiomyoma - Leiomyosarcoma • Pathology of the ovary - Non neoplastic cysts - Polycystic ovarian disease - Surface epithelial tumours (benign, border line, malignant) - Dysgerminoma - Teratoma (mature, immature) • Brenner tumour (benign, borderline, malignant) • Diseases of pregnancy - Gestational trophoblastic tumours - Complete hydatiform mole, partial hydatiform mole, invasive mole - Choriocarcinoma • Benign disorder of the breast

	• Malignant disorders of the breast
Teaching and learning activities	Lectures, Tutorials and Practical demonstrations Presentations by invited experts
Time Allocation	Lectures 12 hours, Tutorial 3 hours, Demonstrations 3 hours
Assessment	3rd MBBS Part-II examination: MCQ, SEQ, OSPE
Recommended Reading/ References	- Kumar, V., Abbas, A. K., & Aster, J. C. (2017). Robbins Basic Pathology (10th ed.). Elsevier. - Roberts,F. & MacDuff, E. (2018). Pathology Illustrated (8th ed.), Elsevier.
Coordinating department	Department of Pathology

Course	Year 4 Semester 1 and Semester 2 of the MBBS programme
Module No.	
Module Title	**Clinical Pathology in practice/ Clinical Pathology appointment**
Prerequisites	
Core/Optional	Core
Moduleobjectives	**Clinical Pathology in practice**; • Clinical correlation of knowledge on systemic and general pathology, and relevant laboratory procedures of a given case scenario **Clinical pathology appointment;** **A) Chemical pathology** • To know what services are provided by the Chemical Pathology section of the laboratory • To familiarize with the laboratory request form and be rational in ordering laboratory tests. • To know how to prepare the patient for certain laboratory testing. To know precautions in drawing blood for testing • To know how to transport specimens to the laboratory. • To know how to interpret test results and what test to request as further investigations. • To know the ethics of laboratory medicine for example maintenance of confidentiality of test results etc. **B) Histopathology** • Observe and explain the types of investigations available for the study of diseases in tissue; routine paraffin sections, frozen sections, exfoliative cytology • Know the correct method of transporting a specimen to the histopathological lab. • Observe and describe how to dispatch samples and explain complications of the following - Fine needle aspiration cytology

	- Bone marrow aspiration - Liver biopsy - Peritoneal and pleural tap **C) Haematology** • Identify the following in stained blood film - Normal RBC, WBC, platelets - Macrocytes and microcytes - Target cells, spherocytes and sickle cells - Fragmented RBC and EDTA changes - WBC abnormalities such as reactive lymphocytes - Hematological malignancies - CML, CLL, ALL, AML. • Observe setting up of ESR • Observe the functions of the automated cell counter • Observe methods of BT/ CT • Observe the preparation of a blood film • Know how a manual PCV is done (microcentrifuge method) • Observe the procedure of bone marrow biopsy **D) Transfusion Medicine** **Blood Bank** • Know the principles of blood component preparation and storage • Donor selection • Blood grouping and compatibility check During the clinical appointments inward, the students should • Fill the request form for routine laboratory investigations & transfusion of blood components. You should • Acquire the skill of venepuncture • Know how to set up a transfusion • Know the indications of transfusion • Know how to identify and manage adverse effects of transfusion
Module content	**Clinical Pathology in practice:** Discussion of a case scenario in relation to pathophysiology, morphology, and practical aspects of commonly used laboratory procedures
Teaching/Learning activities	Lectures, small group discussions, and practical demonstrations Presentations by invited experts, Student presentations
Time Allocation	Clinical training 48 hours, Lectures 11 hours, Practical 8 hours
Assessment	Viva: 10 minutes per each candidate
Recommended	- Kumar, V., Abbas, A. K., & Aster, J. C. (2017). Robbins Basic

Reading/ References	Pathology (10th ed.). Elsevier. - Roberts,F. & MacDuff, E. (2018). Pathology Illustrated (8th ed.), Elsevier. - Kumar, P. & Clark, M. (2016) Clinical Medicine (9th ed.), Elsevier

Assessments in Pathology

Assessment	**Timing**	**Component/method**(Contribution to final score)
Continuous assessment 4 (CA4)	Mid Semester- Year 3 Semester 2	MCQ (5%)
Continuous assessment 5 (CA5)	End of Year 4 Semester 1	MCQ (5%)
Continuous assessment 6 (CA6)	Mid Semester- Year 4 Semester 2	SEQ (5%)
3rd MBBS Part-II examination	End of Year 3 Semester 2	MCQ (25%), SEQ (40%), OSPE (20%) CAs 15%

5.5.6 Community Medicine

The Community Medicine teaching programme extends over a period of four semesters during the third and fourth years of undergraduate training. The intended learning outcomes (ILOs) of the Community Medicine teaching programme are adopted from the main objectives of the undergraduate training programme of Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka. The ILOs are also in line with the WHO Guidelines for teaching of Public Health at undergraduate level in Medical schools (2011).

Mission: To contribute to the development of a holistic medical professional, who will demonstrate knowledge and competence with compassion in dealing with primary health care, desire for lifelong learning, evidence-based practice, interdisciplinary teamwork, and professional and ethical behaviour in practice in order to improve and sustain the health of the population.

Goal: The overall goal of the Community Medicine teaching programme is to ensure that the medical graduate has acquired public health competencies needed to solve health problems of the community with emphasis on health promotion, disease prevention, cost-effective/evidence based interventions and follow up.

Intended learning outcomes

After completing the Community Medicine course, students will be able to,

1. Appraise health promotion, disease prevention and public health as major components of health and appraise the role of public health in providing individual healthcare in the local, regional and global context.
2. Apply appropriate statistical techniques for presentation, analysis and interpretation of health data and critically appraise the statistical analysis in medical literature.

3. Identify the demographic changes in the community by accessing the demographic data sources and critically appraise the causal factors and implications of such changes pertaining to public health.
4. Describe the basic concepts of maternal and child health, promote maternal and child health through practical application of these concepts and critically appraise the current national family health programme of Sri Lanka.
5. Explain nutrition related problems in the community/individuals by conducting appropriate nutritional assessment methods and/or by interpreting secondary data to formulate appropriate strategies to address immediate, underlying and basic causative factors.
6. Describe the distribution and determinants of health related events in a community by using appropriate epidemiological measures, explain basic concepts of causation and critically appraise the epidemiological methods used in scientific literature.
7. Explain the epidemiology of common communicable diseases in the global and local context and apply the knowledge for the control and prevention of the communicable diseases in the community in parallel with the public health system.
8. Explain the epidemiology of common non communicable diseases in the global and local contextand to apply the knowledge for the control and prevention of the non-communicable diseases in the community by addressing the modifiable and non-modifiable risk factors in the context of the national programme.
9. Apply the basic concepts in occupational health to promote health in working places; to prevent and control common occupational hazards at work settings.
10. Recognize the environmental health issues at household and community levels and to formulate appropriate environmental friendly interventions.
11. Access and appraise scientific information, design and carry out simple epidemiological research by identifying gaps in scientific literature and present the findings of the research in a scientific format.
12. Promote health of individuals and families focusing on priority health needs and health related problems at individual/family level considering the given social, cultural, economic and demographic context.

Intellectual and practical skills to be developed (outcomes)

1. Inquiry and analysis
2. Critical and creative thinking
3. Written and oral communication
4. Quantitative literacy
5. Information literacy
6. Team work and problem solving
7. Ethical reasoning and action

8. Self-learning and learning through observations

Course Structure

Module	Credit Value	No of Hours		
		Lectures	Tutorials/ Small Group discussions	Clinical/research/ self-study/ assessment
Introduction to Biostatistics	1	12	6	32
Basic Epidemiology	1	13	4	33
Maternal and Child Health	2	24	12	64
Community Nutrition	1	12	6	32
Public Health in Practice-I (Family Study Programme)*	3	6	12	132
Public Health in Practice-II (Clerkship Programme)**	3	15	30	105
Applied Epidemiology and Communicable Diseases	1	13	4	33
Demography and Non Communicable Disease Epidemiology	1	12	6	32
Public Health in Practice-III	2	24	12	64
Total	15	131	92	527M

* Public Health in Practice-I:Small group discussions are mainly conducted at filed visits.
** Public Health in Practice-II: This four-week public health training appointment is conducted in parallel with other rotational clinical appointments.

Detailed structure of the modules in Community Medicine

Course	Paraclinical course (Year 3 Semester 1 of the MBBS Programme)
Module No.	**M3528**
Module Title	**Introduction to Biostatistics**
Prerequisites	
Core/Optional	Core
Module Objectives	To be able to, 1. describe a data set using descriptive statistics 2. summarize and present data using measures of central tendency and measures of dispersion 3. apply basic inferential statistical methods and draw conclusions from such analysis 4. critically appraise the statistical analysis in the scientific literature
Module Contents	• Type of data • Variables • Summarization and presentation of data • Measures of central tendency • Measures of dispersion • Normal Distribution, Standard Normal Distribution and Z test • Sampling • Significance testing and inferential statistics
Teaching and learning Activities	Lectures, Small group discussions, Tutorials, Online learning
Time allocation	Lectures 12 hours, Tutorials 6 hours, Self-Learning 32 hours
Assessment	Formative assessments: Assignments, OSPHE, Online/offline quizzes Summative assessments: MCQ (SBA AND T/F), SEQ
Recommended Reading / References	- Statistics at Square One, 11th Edition. Michael J. Campbell, T. D. V. Swinscow. 2010, BMJ Books

	- Principles of Epidemiology in Public Health Practice, 3rd Edition. An Introduction to Applied Epidemiology and Biostatistics, Centers for Disease Control and Prevention (CDC), Atlanta, GA - Epidemiology in Medicine by Charles H. Hennekens, Julie Buring - Basic Epidemiology 2nd Edition (Bonita R, Beaglehole R, Kjellstrom T), World Health Organization
Coordinating department	Department of Community Medicine

Course	Paraclinical course (Year 3 Semester 1 of the MBBS programme)
Module No.	**M3641**
Module Title	**Basic Epidemiology**
Prerequisites	
Core/Optional	Core
Module Objectives	To be able to, 1. describe the concept of epidemiology 2. discuss probable sources of error and methods of minimizing errors in such data 3. describe and be able to compute measures of disease frequency 2. describe and calculate measures of risk of exposure 3. state the principles underlying and the application of different study designs 4. describe the concepts of measurement of test performance of screening tests 5. describe the basic epidemiological concepts in establishing causation 6. critically appraise the epidemiological methods in the scientific literature
Module Contents	• Introduction to epidemiology • Measures of disease frequency • Measures of association • Observational studies • Experimental studies • Errors in epidemiological studies • Causation • Screening • Introduction to clinical epidemiology
Teaching and learning Activities	Lectures, Small group discussions, Tutorials, Online learning

Time Allocation	Lectures 13 hours, Tutorials 4 hours, Self-Learning 33 hours
Assessment	Formative assessments: Assignments, OSPHE, Online/offline quizzes Summative assessments: MCQ (SBA AND T/F), SEQ
Recommended Reading / References	- Principles of Epidemiology in Public Health Practice,3rd Edition. An Introduction to Applied Epidemiology and Biostatistics, Centers for Disease Control and Prevention (CDC), Atlanta, GA - Basic Epidemiology 2nd Edition (Bonita R, Beaglehole R, Kjellstrom T), World Health Organization - British Medical Journal -Epidemiology series Articles 1-12 - Methods in Epidemiologic Research, 1st edition (Ian Dohoo, Wayne Martin and Henrik Stryhn) - Epidemiology in Medicine by Charles H. Hennekens, Julie Buring
Coordinating department	Department of Community Medicine

Course	Paraclinical course (Year 4 Semester 1 of the MBBS programme)
Module No.	**M4747**
Module Title	**Demography and Non communicable disease Epidemiology**
Prerequisites	
Core/Optional	Core
Module Objectives	**Demography** To be able to, 1. define the term Demography 2. list and describe the sources of demographic data in Sri Lanka 3. describe the basic measures in demography 4. list, define and calculate the fertility measures and mortality measures used in demography 5. describe the concept of population growth and compare growth rates of different countries 6. define and describe the terms “Demographic transition”, “Age dependency ratio”, “Demographic dividend” and “Life Expectancy” 7. describe the fertility transition and demographic transition in Sri Lanka in terms of reasons and its implications 8. critically appraise the validity of demographic data of different sources in Sri Lanka **Non-communicable disease epidemiology** To be able to, 1. describe the classification of non-communicable diseases 2. list the important non-communicable diseases in the world, region and in Sri Lanka 3. describe the epidemiology of specific non-communicable diseases and important risk factors of public health relevance in the world, region and in Sri Lanka 4. describe the national programmes available for the prevention of non-communicable diseases in Sri Lanka 5. discuss the application of principles of applied epidemiology for

	effective prevention of specific non-communicable diseases of public health relevance 6. apply the knowledge to control and prevent relevant non-communicable diseases in an allocated family
Module Content	Demography • Introduction to demography • Age structure and population transition • Fertility and mortality • Life expectancy and quality of life • Migration and health • Urbanization and health • Special populations Non communicable disease epidemiology • Chronic NCDs - Cancer epidemiology: breast, cervical, bronchial and oral cancers - Cardio vascular diseases - Diabetes Mellitus - Chronic renal diseases - Chronic respiratory diseases • Acute NCDs • Mental health • National NCD programme • NCD surveillance • Alcohol and tobacco
Teaching/Learning Activities	Lectures, Small group discussions, Tutorials, Online learning
Time Allocation	Lectures 12 hours, Tutorials 6 hour, Self-Learning 32 hours
Assessment	Formative assessments: Assignments, OSPH, Online/offline quizzes Summative assessments: MCQ (SBA AND T/F), SEQ
Recommended Reading / References	Demography - Ageing Population in Sri Lanka: Issue and Future Prospects, Colombo, UNFPA Publication: 7-43. (2004) - Demographic and Health Survey 2006/7 - Census of Population and Housing 2012 - Final Report - Park, K. "Park's textbook of preventive and social medicine." (2007) Non-Communicable diseases - Global status report non communicable diseases-2010 - Scaling up action against non-communicable diseases: How much will it cost? WHO - WHO report on global tobacco epidemic 2011

	- Brief profile on tobacco control in Sri Lanka-ministry of Health Care and Nutrition. - Prevention and control of selected NCDs in Sri Lanka-*Policy Options and Action.* 2010. Michael Engelgau, Kyoko Okamoto, Kumari Vinodhani Navaratne and Sundararajan Gopalan. - WHO. Diet, Physical Activity and Health. Geneva: World Health Organization, 2002 - Low- and Middle-Income Countries From Burden to "Best Buys"**:** Reducing the Economic Impact of Non-Communicable Diseases
Coordinating department	Department of Community Medicine
Course	Paraclinical course (Year 3 Semester 1 of the MBBS programme)
Module No.	**M3640**
Module Title	**Maternal and Child Health**
Prerequisites	
Core/Optional	Core
Module Objectives	To be able to, 1. describe the concept of safe motherhood and discuss the importance of provision of maternal care at different stages in pregnancy 2. describe the classification, epidemiology, investigation and prevention of maternal deaths and discuss its impact to family and community 3. describe the concepts of "Early Childhood Care and Development", "Infant and Young Child Feeding", "Growth Monitoring and Promotion", immunization in relation to maternal and child health programme in Sri Lanka 4. discuss the current health status of the maternal and child health in Sri Lanka and discuss the future challenges to be met 5. discuss sexual and reproductive health as a means of providing a continuum of care during the life cycle of individuals and discuss the role of gender with regard to reproductive health 6. discuss biological/social factors related to family planning and acquire knowledge, skills and attitudes to conduct family planning counseling 7. describe the Sri Lankan school health programme, the concept of health promoting school and discuss how the school child can be utilized to enhance health of the community 8. describe the current health status and future challenges of adolescents in Sri Lanka 9. critically evaluate the services provided by the National Family Health Programme, Sri Lanka

	10. Apply the knowledge and skills acquired in relation to maternal and child health to promote the health of an allocated family
Module Contents	• MCH in global agenda • Introduction to Family Health Programme • Safe Motherhood • Maternal care • Maternal mortality • Newborn care • Infant and young child feeding • Growth Monitoring and Promotion • Early Childhood Care and Development • Sexual and reproductive health • Family planning • Gender and health • Health of school children • Adolescent health
Teaching/Learning Activities	Lectures, Small group discussions, Tutorials, Online learning
Time Allocation	Lectures24 hours, Tutorials12 hours, Self-Learning 64 hours
Assessment	Formative assessments: Assignments, OSPHE, Online/ offline quizzes Summative assessments: MCQ (SBA AND T/F), SEQ
Recommended Reading/ References	- Maternal care package –A guide to Field Healthcare workers – FHB, 2011 - National Guidelines for Maternal Care - Ministry of Health, 2013 - Breast Feeding Counseling: A Training Course – WHO 1993 - Training Manual on Integrated Early Childhood Care and Development – GOSL, UNICEF, 2004 - Decision Making Tool for Family Planning Clients and Providers – WHO, 2005 - Family Planning Counseling: Training Manual – UNFPA, 2007
Coordinating department	Department of Community Medicine

Course	Paraclinical course (Year 4 Semester 1 of the MBBS programme)
Module No.	**M3642**
Module Title	**Public Health in Practice I (Family Study)**
Prerequisites	
Core/Optional	Core
Module Objectives	To be able to, 1. use clinical knowledge and skills to identify diseases, health related issues and risk factors in individuals in the allocated families 2. acquire knowledge and skills to assess causation, complications, management and prevention of identified issues 3. practically involve in management of the identified diseases or risk factors 4. acquire knowledge and skills and use them for prevention of diseases and risk factors in individuals 5. promote health of each family member and the family unit using concepts and principals of public health and primary healthcare 6. use life cycle approach and care provided by public health services during specific stages of lifecycles to promote health of the allocated family. 7. develop learning skills on self-studying, abstracting relevant and reliable information for evidence based practices, and using technology for learning purposes. 8. develop skills on communication and counseling, creativity, team work, leadership and scientific writing. 9. respect different attitudes, views, cultural and social norms of people and working together within ethical framework, empowering and facilitating them to achieve health goals.
Module Content	• Maternal care including antenatal, intra natal and post-natal care • Child Health

	• Adolescent Health • Elderly care • Occupational Health • Environmental Health • Communicable Disease Prevention • Non Communicable Disease Prevention • Health Promotion
Teaching and learning activities	Small group discussions, Direct supervision by facilitators
Time allocation	Lectures 6 hours, Small group discussion, Self-learning and field work 144 hours
Assessment	Formative assessments: Activity plans for family visits, Quarterly Progress reports Summative assessments: Family study - project report and viva voce
Recommended Reading / References	All relevant material in other Community Medicine modules
Coordinating department	Department of Community Medicine

Course	Paraclinical course (Year 4 Semester 1 of the MBBS programme)
Module No.	**M4746**
Module Title	**Applied Epidemiology and Communicable Diseases**
Prerequisites	
Core/Optional	Core
Module Objectives	To be able to, 1. apply basic epidemiological tools in practice 2. describe complex interactions between man, agent and the environment in disease causation 2. 3.describe the four levels of prevention 1. describe the principles of communicable disease prevention 3. 5.describe the steps, procedure and analysis of outbreak investigation in communities 4. describe the principles of infectious disease surveillance system and identify the disease surveillance system in Sri Lanka 5. list the important communicable diseases in the world, region and in Sri Lanka 6. describe the epidemiology of specific communicable diseases of public health relevance in the world, region and in Sri Lanka 7. describe the national programmes available for the prevention and control of communicable diseases in Sri Lanka 8. 10. discuss the application of principles of applied epidemiology for effective control/prevention of specific communicable diseases of public health relevance
Module Content	• Epidemiological triad and principals of disease prevention • Principles of communicable disease prevention • Outbreak investigation • Disease surveillance • One health approach in epidemiology • Health in emergencies

	• Epidemiology, prevention and control of Dengue, Leptospirosis, Typhus, Typhoid, Leishmaniasis, Vaccine preventable diseases, Leprosy, Cholera, Tuberculosis, Malaria, Sexually Transmitted Infections (STI), Emerging and reemerging infectious diseases
Teaching and learning Activities	Lectures, Small group discussions, Tutorials, Online learning
Time Allocation	Lectures13 hours, Tutorials 4 hours, Self-learning 33 hours
Assessment	Formative assessments: Assignments, OSPHE, Online/ offline quizzes Summative assessments: MCQ (SBA AND T/F), SEQ
Recommended Reading / References	- Principles of Epidemiology in Public Health Practice,3rd Edition. An Introductionto Applied Epidemiology and Biostatistics, Centers for Disease Control and Prevention (CDC), Atlanta, GA - Basic Epidemiology 2nd Edition (Bonita R, Beaglehole R, Kjellstrom T), World Health Organization - Methods in Epidemiologic Research, 1st edition (Ian Dohoo, Wayne Martin and Henrik Stryhn) - Web sites of individual campaigns - Annual reports of special campaigns - Annual Health Bulletin
Coordinating department	Department of Community Medicine

Course	Paraclinical course (Year 3 Semester 2 of the MBBS programme)
Module No.	**M4748**
Module Title	**Community Nutrition**
Prerequisites	
Core/Optional	Core
Module Objectives	To be able to, 1. describe the concepts of nutrition, healthy diet and dietary reference intakes 2. describe the direct and indirect methods used for nutritional assessment at individual level and population level 3. describe the concepts of malnutrition, double burden of malnutrition 4. describe the classification, epidemiology and public health significance of macronutrient malnutrition in Sri Lanka 5. critically discuss the causative factors of malnutrition in the Sri Lankan context 6. describe the magnitude, distribution and public health significance of micronutrient deficiencies in Sri Lanka 7. discuss the necessity and the contents of National Nutrition Policy of Sri Lanka 8. discuss the health and non-health interventions for malnutrition in Sri Lanka 9. conduct nutritional assessment and plan for appropriate nutritional interventions of an allocated family
Module Contents	• Basic concepts in nutrition • Food Based Dietary Guidelines • Nutritional assessment • Malnutrition: Classification, Prevalence, Causes, Implications • Micronutrient deficiencies • National Nutrition Policy • Nutritional interventions – health and non health
Teaching and learning	Lectures, Small group discussions, Tutorials, Online learning

Activities	
Time Allocation	Lectures 12 hours, Tutorials 6 hours, Self-learning 32 hours
Assessment	Formative assessments: Assignments, OSPHE, Online/ offline quizzes Summative assessments: MCQ (SBA AND T/F), SEQ
Recommended Reading / References	- Food Based Dietary Guidelines -Nutrition Division, Ministry of Health - National Nutrition Policy -Ministry of Health. - Desk Review on Nutrition Surveys 2006-2011 - Nutrition Coordination Division/UNICEF - Maternal care package –A guide to Field Healthcare workers - FHB 2011 - Guidelines for NCD prevention -Ministry of Health. - Demographic and Health Survey (DHS) 2006-07. - Assessment of Anaemia Status in Sri Lanka – MRI. - Management of severe under nutrition- Manual for health workers in Sri Lanka- Ministry of Health 2007
Coordinating department	Department of Community Medicine

Course	Paraclinical course (Year 4 Semester 1 and 2)
Module No.	**M4856**
Module Title	**Public Health in Practice II (Clerkship Programme)**
Prerequisites	
Core/Optional	Core
Module Objectives	To be able to, 1. describe the hierarchy of public health system in Sri Lanka 2. describe the roles and responsibilities of a Medical Officer of Health (MOH) and to appraise the functions, roles and responsibilities of other health care professionals in Public health filed practice 3. incorporate the theoretical knowledge on public health to critically appraise public health issues in the field practice area 4. critically appraise public health programmes and the work of public health workers as the major force of health of the community 5. develop a plan of action to address a given public health problem based on the available resources in the field practice area 6. conduct health promotion programmes for a given target population on identified priority health issues 7. develop skills on peer learning and inter professional learning
Module Content	The "Public Health in Practice II" module includes following field visits/appointments/lecture discussions. • Medical Officer of Health Office • Supervisory Public Health Inspector, Supervisory Public Health Nursing Sister, Supervisory Public Health Midwife • Public Health Midwife • Public Health Inspector • RDHS office / Regional Epidemiologist/Medical Officer -Maternal and Child Health • Field polyclinic • Well Woman Clinic

	• School health programme • Medical registrar • Food sanitation (with PHI) • Water Purification • Factory visit • Home for the Elders • Care of the disabled • Medical Statistics Unit • Divisional Hospital • Research methodology workshop • Journal club • Epidemiological study
Teaching/Learning Activities	Field work, Lectures, Small group discussions
Time Allocation	Lectures15 hours, Small group discussion, Field work and self-learning 135 hours
Assessment	Formative assessments: Group presentations, Health promotion programmes, OSPHE Summative assessments: Clerkship programme - OSPHE
Recommended Reading / References	All relevant material in other Community Medicine modules
Coordinating department	Department of Community Medicine

Course	Paraclinical course (Year 4 Semester 1 and 2)
Module No.	**M4857**
Module Title	**Public Health in Practice III**
Prerequisites	
Core/Optional	Core
Module Objectives	To be able to, 1. describe the concepts of health, primary health care and health promotion 2. describe the concept of social determinants of health and discuss the implications of SDH in promoting health 3. describe the basic concepts in public health ethics 4. critically discuss the MIS in Sri Lanka 5. describe the basic concepts in health economics 6. describe the role of public health in special situations/disaster management 7. discuss the basic concepts of Occupational and Environmental health related to public health practice
Module Content	• Primary health care and Health • Social determinants of health • Public health ethics • Health systems and healthcare management • Planning, monitoring and evaluation in public health • Public health in special situations/disaster management • Management Information System and International Classification of Diseases • Health economics • Overview of public health programmes in Sri Lanka • Basic Concepts of Occupational Health • Basic concepts of Environmental Health
Teaching/Learning Activities	Lectures, Small group discussions, Tutorials, Online learning
Time Allocation	Lectures 24 hours, Tutorials 12 hours, Self-learning 64 hours

Assessment	Formative assessments: Assignments, OSPHE, Online/offline quizzes Summative assessments: MCQ (SBA AND T/F), SEQ
Recommended Reading / References	General reading - The Ottawa Charter for Health Promotion - Draft Sri Lanka National Health Promotion Policy - Health Education Bureau: Services - Environmental Health in Emergencies and Disasters - Practical Guide – WHO. - Humanitarian Charter and Minimum Standards in Humanitarian Response – Sphere Project Handbook 2011. Reading materials for Occupational and Environmental Health - Textbook of Occupational Medicine Practice. David Koh, Chia Kee Seng, J. Jeyarathnam - Research Methods in Occupational Epidemiology. Harvey Checkoway, Neil Pearce, David Kriedel - Occupational Health – A Manual for Primary Healthcare Workers. World Health Organization - Current Occupational and Environmental Medicine. Joseph LaDou - A practical approach to Occupational and Environmental Medicine. Robert. J. McCunney - Textbook of Clinical Occupational and Environmental Medicine. Linda Rosenstock, Mark. R. Cullen, Carl.A. Bradkin
Coordinating department	Department of Community Medicine

Teaching and learning methods in Community Medicine

The community Medicine course is delivered via following student-centred teaching and learning methods.

- TL 1 – Interactivelectures
- TL 2 – Tutorials
- TL 3 – Small group learning (Problem-based learning, Team-basedlearning)
- TL 4 – Assignments
- TL 5 – Independent learning activities (including online learning)
- TL 6 –Student presentations
- TL 7 –Group projects
- TL 8 – Simulated training
- TL 9 –Reflective practice

Assessments in Community Medicine

Both formative and summative assessments are conducted in the Community Medicine teaching programme.

Formative Assessments

Formative assessments are conducted by following assessment methods.

- A 1 – Assignments
- A 2 – Online/offline quizzes
- A 3 – Progress reports
- A 4 – Student presentations
- A 5 – Objectively Structured Public Health Examination (OSPHE)

Summative Assessments

Summative assessments are based on modular assessments. Except for the Public Health in Practice I and II modules (and Research in Medicine modules), for all the other modules, a written examination (A 6) will be conducted as follows.

- For modules with 1 credit – 1 hour written examination
- For modules with 2 credits – 2 hour written examination

Public Health in Practice I module,

360-degree assessment will be carried out for Public Health in Practice I module. Feedback assessment (A 7) from facilitators, group supervisors, peers, family members and healthcare staff will be obtained for this assessment. Communication, presentation, group work, community health activities, subject knowledge, attitudes and practices of the student will be considered for the feedback assessment.

At the end of the 7th semester, all student groups are expected to submit a Family Study Report (A 8) and a group wise assessment will be based on the final report submitted.

A viva voce (A 9) will be conducted based on the Family Study Programme, at the end of the 7th semester, in which individual student assessment will be conducted.

Public Health in Practice II module,

At the end of the 7th semester, an OSPHE (A 5) will be conducted.

Overall Assessment of the Community Medicine course

Final marks will be calculated using weighted average of all modular assessments.

Criteria to obtain a pass in Community Medicine course

A student should,

1. Score a minimum weighted average of 50% for the course
2. Not have a score of less than 30% for a given module
3. Score a minimum of 50% for the Public Health in Practice I module (Family Study Programme)

Students obtaining marks less than 30 for a given module should sit for the particular module paper again. However, the maximum mark allocated for subsequent attempts is limited to 50 marks.

Criteria to obtain a distinction in Community Medicine course

1. Score a minimum weighted average of 70
2. Score a minimum of 50% for all modules on first attempt

5.5.7 Family Medicine

Course	Paraclinical course (Year 4 Semester 1 of the MBBS programme)
Module Title	**Principles in Family Medicine**
Prerequisites	
Core / Optional	Core
Intended Learning Outcomes	Student should be able to: 1. understand how illness affects individuals, their families and society at large 2. describe the health care provided by the family physician 3. acquire good communication and documentation skills 4. acquire general clinical skills in primary care
Module Content	• Introduction to the principles of family medicine and the focus on 'family' in family practice • The process of care in general practice and hospital settings • Clinical decision making in family practice • Health promotion and disease prevention • Counselling and supportive psychotherapy • How to set-up and manage a family practice with team work, quality and safety • Patient management and referral in family practice • House calls and home care • Barriers to access for primary care • The consultation and doctor-patient relationship • Medical records in family practice • Ethical and legal issues in family practice • Breaking bad news, palliative care, the dying patient and bereavement • Clinical audit in family practice • Diet, nutrition and related health issues

Teaching and learning Activities	Lectures, Tutorials/ Case-based learning, Quizzes, LMS-based learning
Time Allocation	Lectures 13.5 hours, Tutorials/ Case-based learning/ Quizzes/LMS-based learning 6 hours
Assessment	At the 3rd MBBS Part II Examination: MCQ, SEQ, OSPE
Recommended Reading/ References	- Lecture notes in Family Medicine (Prof Nandani de Silva) - Essentials of Family Practice (Prof Antoinette Perera) - John Murtagh's General Practice (McGraw-Hill) - Oxford Handbook of General Practice (Oxford) - Mc Whinney's Textbook of Family Medicine (Oxford) - Robert Rakel and David Rakel Textbook of Family Medicine (Elsevier) - Essentials of Family Medicine (Lippincott)
Coordinating Department	Department of Family Medicine

Course	Paraclinical course (Year 4 Semester 1 of the MBBS programme)
Module Title	**Primary care practice - I**
Prerequisites	
Core / Optional	Core
Intended Learning Outcomes	Student should be able to: 1. acquire clinical skills in primary care related to common medical and surgical conditions.
Module Content	• Approach to a patient presenting with abdominal pain • Approach to fever in adults • Approach to a patient presenting with Headache • Approach to a patient presenting with cough, SOB and other common respiratory symptoms • Approach to a patient presenting with Backache • Approach to a patient presenting with Joint pain • Approach to a patient presenting with Leg swelling • Approach to a patient presenting with Wounds and injuries • Approach to a patient presenting with Dysuria and other urinary symptoms • Approach to a patient presenting with Chest pain • Approach to a patient presenting with earache, dizziness, discharge and impaired hearing • Approach to a patient presenting with palpitations • Approach and follow up of a patient with common NCDs
Teaching and learning Activities	Lectures, Tutorials/ Case-based learning/ Quizzes/LMS-based learning
Time Allocation	Lectures 13 hours, Tutorials/ Case-based learning/ Quizzes/LMS-based learning7 hours
Assessment	At the 3rd MBBS Part II Examination: MCQ, SEQ, OSCE
Recommended Reading/ References	- Lecture notes in Family Medicine (Prof Nandani de Silva) - Essentials of Family Practice (Prof Antoinette Perera) - John Murtagh's General Practice (McGraw-Hill)

	- Oxford Handbook of General Practice (Oxford) - Mc Whinney's Textbook of Family Medicine (Oxford) - Robert Rakel and David Rakel Textbook of Family Medicine (Elsevier) - Essentials of Family Medicine (Lippincott)
Coordinating Department	Department of Family Medicine

Course	Paraclinical course (Year 4 Semester 2 of the MBBS programme)
Module Title	**Primary care practice - II**
Prerequisites	
Core / Optional	Core
Intended Learning Outcomes	Student should be able to: 1. acquire clinical skills in primary care related to common paediatrics, gynaecological and obstetrics conditions. 2. acquire clinical skills in primary care related to common mental health and substance use conditions. 3. acquire clinical skills in primary care related to the management of special groups.
Module Content	• Approach to fever in infancy and childhood • Presentation and follow-up of common mental health issues and suicidal risk assessment • Approach to a patient presenting with substance use disorders • Approach to pregnancy and sexual health • Detection and management of the somatizing patient • Care of the elderly • Approach to a patient presenting with Fatigue • Approach to a patient presenting with Common menstrual problems and vaginal discharge • The consultation with sick children and their parents • Approach to a patient presenting with facial pain and red eye • Approach to a patient presenting with skin rashes and lesions • Presentation and management of common emergencies • Common medications used in family practice
Teaching and learning Activities	Lectures, Tutorials/ Case-based learning/ Quizzes/LMS-based learning
Time Allocation	Lectures13.5 hours, Tutorials/ Case-based learning/ Quizzes/LMS-based learning 7 hours
Assessment	At the 3rd MBBS Part II Examination: MCQ, SEQ, OSPE

Recommended Reading/ References	- Lecture notes in Family Medicine (Prof Nandani de Silva) - Essentials of Family Practice (Prof Antoinette Perera) - John Murtagh's General Practice (McGraw-Hill) - Oxford Handbook of General Practice (Oxford) - Mc Whinney's Textbook of Family Medicine (Oxford) - Robert Rakel and David Rakel Textbook of Family Medicine (Elsevier) - Essentials of Family Medicine (Lippincott)
Coordinating Department	Department of Family Medicine

Course	
Module Title	**Family Medicine Clinical Appointment and Continuing Clinical Skills Development (CCSD) programme**
Prerequisites	
Core / Optional	Core
Intended Learning Outcomes	The students should be able to: 1. explain how illness affects individuals, their families, and society at large 2. describe the health care provided by the family physician 3. demonstrate good communication and documentation skills 4. demonstrate general clinical skills in primary care 5. demonstrate clinical skills in primary care related to common medical and surgical conditions 6. demonstrate clinical skills in primary care related to common paediatrics, gynaecological and obstetrics conditions 7. demonstrate clinical skills in primary care related to common mental health and substance use conditions 8. demonstrate clinical skills in primary care related to the management of special groups 9. explain how diet and nutrition affect the human health 10. identify and deal with the ethical issues involved in primary care practice 11. describe the procedure of clinical audits and research primary care 12. explain the importance and use of evidence generated through research in primary care practice 13. identify and deal with the medicolegal issues involved in primary care practice 14. identify the common pharmacological and non-pharmacological treatment modalities 15. appraise the rational prescription practices
Module Content	1. Introduction to the principles of family medicine and the focus

	on 'family' in family practice 2. The process of care in general practice and hospital settings 3. Clinical decision-making in family practice 4. Health promotion and disease prevention 5. How to set up and manage a family practice with teamwork, quality, and safety 6. Patient management and referral in family practice 7. House calls and home care 8. Barriers to access to primary care 9. The consultation and the doctor-patient relationship 10. The consultation with sick children and their parents 11. Medical records in family practice 12. Ethical and legal issues in family practice 13. Breaking bad news, palliative care, the dying patient, and bereavement 14. Clinical audit in family practice 15. Approach to fever in adults 16. Approach to fever in infancy and childhood 17. Approach to a patient presenting with Headache 18. Approach to a patient presenting with cough, SOB, and other common respiratory symptoms 19. Approach to a patient presenting with abdominal pain 20. Approach to a patient presenting with Leg swelling 21. Approach to pregnancy and sexual health 22. Care of the elderly 23. Presentation and follow-up of common mental health issues and suicidal risk assessment 24. Approach to a patient presenting with substance use disorders 25. Detection and management of the somatizing patient 26. Counselling and supportive psychotherapy 27. Approach to a patient presenting with Backache 28. Approach to a patient presenting with Joint pain 29. Approach to a patient presenting with wounds and injuries 30. Approach to a patient presenting with fatigue 31. Approach to a patient presenting with dysuria and other urinary symptoms 32. Approach to a patient presenting with common menstrual problems and vaginal discharge 33. Approach to a patient presenting with chest pain 34. Approach to a patient presenting with palpitations 35. Approach to a patient presenting with facial pain and red eye 36. Approach to a patient presenting with earache, dizziness, discharge and impaired hearing 37. Approach to a patient presenting with skin rashes and lesions 38. Approach and follow up of a patient with common NCDs

	39. Presentation and management of common emergencies 40. Diet, nutrition, and related health issues 41. Common medications used in family practice
Teaching/Learning Activities	**Clinical Appointment:** Case-Based Learning/Small Group Discussion The Family Medicine Clinical Appointment will be conducted as a structured rotational training at OPD - TH Anuradhapura, Emergency Treatment Unit - TH Anuradhapura, Primary Medical Care Unit - Puliyankulama, and private sector general practice, during the Year 4 Semester 1 and Semester 2 of the MBBS programme **Continuing clinical skills development (CCSD) programme**: Logbook / LMS based self-learning The continuing clinical skills training will be conducted during the 5th, 6th, 7th and 8th semesters as a student-centred programme in which the students are encouraged to gather the essential clinical skills during the clinical rotations of other specialties. In addition, a self-learning package will be made available in the LMS to facilitate the process.
Time Allocation	**Clinical Appointment**: 02 weeks (4 hours x 12 days = 48 hours) during the Year 4 of the MBBS programme **Continuing clinical skills development (CCSD) programme**: 50 hours during the Year 3 and Year 4 of the MBBS programme
Assessment	The final assessment will be done at the 3rd MBBS Part-II examination. **Components:** MCQ, SEQ, OSPE (details under' assessment in Family Medicine' below) **Prerequisite for the Final Assessment*** (*In addition to the prerequisite mentioned under 'Assessment in Family Medicine') - Successful completion of the Family Medicine clinical appointment and continuing clinical skills development programme (CCSD) - Successful completion of the Family Medicine clinical appointment includes; (1) 100% attendance to the Family Medicine clinical appointment, and, (2) 100% completion of the *Section 8 - Log of Patients clerked during the Family Medicine Clinical Appointment* in the *"Family Medicine Student Logbook for Clinical Appointment"* by the end of the 8th semester - Successful completion of the CCSD programme includes; 100% completion of *Section 7 (A) - General Skills* and *Section 7 (B) General Communication Skills* and 80% completion of *Section 7 (C) - Communication with special groups* listed in the *"Family Medicine Student Logbook for Clinical Appointment"* by the end of the 8th

	semester. (The student handbook will be issued at the beginning of the 5th semester with the commencement of clinical rotations. Students are expected to gather the competencies mentioned in the *"Family Medicine Student Logbook for Clinical Appointment"* throughout the clinical rotation during the 5th, 6th, 7th and 8th semesters)

Recommended Reading/ References	- Lecture notes in Family Medicine (Prof Nandani de Silva) - Essentials of Family Practice (Prof Antoinette Perera) - John Murtagh's General Practice (McGraw-Hill) - Oxford Handbook of General Practice (Oxford) - Mc Whinney's Textbook of Family Medicine (Oxford) - Robert Rakel and David Rakel Textbook of Family Medicine (Elsevier) - Essentials of Family Medicine (Lippincott)
Coordinating Department	Department of Family Medicine

Structure of Family Medicine Clinical Appointment

Timing of the Appointment

Two weeks during the 7th / 8th semester

Week 1					
Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Saturday**
OPD	OPD	PMCU	PMCU	ETU	GP

Week 2					
Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Saturday**
OPD	OPD	PMCU	PMCU	ETU	GP

ETU - Emergency Treatment Unit, Teaching Hospital Anuradhapura

GP - General Practitioner, Private Sector, Anuradhapura

OPD - Outpatient Department, Teaching Hospital Anuradhapura

PMCU - Primary Medical Care Unit, Puliyankulama, Anuradhapura

Appointment structure is subjected to re-structuring and such will be informed before the start of the clinical appointment

Assessments in Family Medicine

Schedule: 8th semester - 3rd MBBS Part II main examination

Prerequisite*

1. Candidates should have 80% attendance for the tutorials and case-based learning conducted by the Department of Family Medicine. If a candidate has an attendance of less than 80%, only one valid medical certificate approved by the University Medical Officer will be considered.
2. Those who fail to fulfill the attendance for the tutorials and case-based learning can sit for the 3rd MBBS Part II repeat examination. The format will be same as for 3rd MBBS Part II main examination. However, that candidate will not be eligible for honors.
3. A candidate who could not sit the 3rd MBBS Part II main examination due to illness will be considered a "First timer" at the repeat examination provided he/she submits a valid medical certificate approved by the University Medical Officer (covering the period of the examination).

Content of the examination will be based on

a. Lectures conducted by the department
b. Tutorials conducted by the department
c. Case-based learning conducted by the department
d. LMS (Moodle) platform teaching conducted by the department

Examination format	***Marking***
1 ½ - hour MCQ paper (15 True/False and 15 Best of Five)	40%
1 ½ - hour SEQ paper (3 Questions)	40%
10 OSPEs (3 minutes each; a total of 30 minutes per student)	20%

- A candidate is considered to have passed in Family Medicine if he/she scores 50% or more marks in 3rd MBBS Part II main examination.
- A candidate, scoring 70% or more marks, is eligible for a distinction in Family Medicine.

Repeat examination

- Those who fail to fulfill the prerequisite for attendance and those who fail in the 3rd MBBS Part II main examination will have to sit for the repeat examination in Family Medicine (3rd MBBS Part-II repeat examination). The format will be same as for the main examination.
- A candidate is considered to have passed in the repeat examination if he/she scores 50% or more marks in the repeat examination.If they pass the exam, only a maximum of 50% marks will be given. He/she is not eligible for honours.

5.6 Clinical Course

The Clinical course consists of different clinical sciences disciplines that include General Medicine and its subspecialties, Surgery and its subspecialties, Paediatrics, Obstetrics and Gynaecology, Psychiatry and Forensic Medicine, Clinical Pathology and Family Medicine. The aim of the Clinical course of FMAS, RUSL is to nurture and train medical undergraduates to become competent in gathering patient related information and interpreting them, planning and carrying out patient management at a level sufficient for a competent, confident and compassionate house officer, with correct attitudes adhering to the principles of medical ethics and professionalism. The course permits the development of skills and mindset for lifelong learning in order to improve patient care based on scientific evidence, and provides foundation for future career/post-graduate training in any field of medicine.

The Clinical course of FMAS, RUSL begins in the Year 2 Semester 2 of the MBBS Programme and runs throughout the Year 3, Year 4 and Year 5 of the programme.

Outline of the Clinical Course

Appointment	Hospital	Duration	
1. Introductory Clinical Appointment (Year 2 Semester 2)			
Medicine	TH-Anuradhapura	1 week	4 weeks
Surgery		1 week	
Paediatrics		1 week	
Obstetrics and Gynaecology		1 week	
2. MSPOG appointments (Year 2 Semester 2)			
Medicine	TH-Anuradhapura/	4 weeks	16 weeks
Surgery	DGH-Polonnaruwa,	4 weeks	

	Paediatrics	DGH-Matale	4 weeks	
	Obstetrics and Gynaecology		4 weeks	
3.	**Year 3 and Year 4**			
	Medicine 1	TH-Anuradhapura	6 weeks	78 weeks
	Surgery 1		6 weeks	
	Cardiology		2 weeks	
	Respiratory Medicine		2 weeks	
	Neurology		2 weeks	
	Rheumatology		2 weeks	
	Dermatology		2 weeks	
	Oncology		2 weeks	
	Sexually Transmitted Diseases		2 weeks	
	Nephrology		2 weeks	
	Orthopaedic Surgery		4 weeks	
	Ophthalmology		2 weeks	
	Otorhinolaryngology/ ENT Surgery		2 weeks	
	Urology/ Urological Surgery		2 weeks	
	Radiology		2 weeks	
	Neurosurgery		2 weeks	
	Anesthesiology		2 weeks	
	Clinical Pathology		2 weeks	
	Forensic Medicine		2 weeks	
	Family Medicine		2 weeks	
	Community Medicine		4 weeks	
	Psychiatry		4 weeks	
	Paediatrics		4 weeks	
	Obstetrics and Gynaecology		4 weeks	
	Medicine 2		6 weeks	
	Surgery 2		6 weeks	
4.	**Year 5: Professorial Appointments**			
	Medicine	TH-Anuradhapura	8 weeks	40 weeks
	Surgery		8 weeks	
	Paediatrics		8 weeks	
	Obstetrics and Gynaecology		8 weeks	
	Psychiatry		8 weeks	

Total duration138 weeks

Successful completion of all the clinical appointments placed before the professorial clinical training, is a mandatory requirement to enter into the professorial clinical training. Successful completion of the clinical appointments includes 100% attendance clinical appointments, completion of assignments, and verification of the competence by the clinical trainer/ Supervising consultant.

Year 5 of the MBBS programme is spent entirely in clinical training in professorial units at the TH Anuradhapura. Professorial clinical training includes 5 clinical appointmentsin Medicine, Surgery, Paediatrics, Obstetrics and Gynaecology, and Psychiatry, each 8 weeks' duration.

5.6.1 Medicine

Broad learning outcomes

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

1. Possess necessary scientific knowledge to practice as a safe doctor.
2. Demonstrate the ability to take a comprehensive medical history to identify medical and psycho-social problems.
3. Perform complete physical examination, and be able to elicit common physical signs.
4. Construct logical differential diagnosis and be able to identify medical and psychosocial problems after the clinical assessment.
5. Interpret commonly performed medical investigations and prioritize them for individual patients.
6. Request and arrange medical investigations according to local protocols.
7. Create a rational patient-centered management plan for acute and long-term care for your patients.
8. Perform practical procedures for investigative and therapeutic purposes for the expected level of competency.
9. Accurately and legibly document case notes and write discharge summaries.
10. Communicate confidently with patients from different socio-cultural back grounds and their families with particular reference to giving information about obtaining consent and breaking bad news.
11. Critically appraise the ethical issues related to the practice of clinical medicine.
12. Discuss and respect for the roles of other health care professionals and the need to collaborate with others, and to take leadership when caring for patients.
13. Develop a commitment to research, knowledge on evidence-based practice, and the ability to retrieve, manage and utilize biomedical information to solve problems.

14. Recognise risk factors for disease and threats to health in populations at risk, and know how to modify them at the community level.
15. Implement appropriate screening programmes, and collaborate with relevant professionals and organizations.
16. Recognize and accept limitations in one's knowledge and clinical skills and have the commitment to improve knowledge and skills throughout the career.

Outline of the clinical training in Medicine and related subspecialties

	Appointment	Hospital		Duration
1.	Introductory Clinical Appointment	TH-Anuradhapura		1 week
2.	MSPOG appointments - Medicine	TH-Anuradhapura/ DGH-Polonnaruwa, DGH-Matale		4 weeks
3.	General Medicine 1	TH-Anuradhapura		6 weeks
4.	Clinical appointments in Medicine-related subspecialties			
	Cardiology	TH-Anuradhapura	2 weeks	16 weeks
	Respiratory Medicine		2 weeks	
	Neurology		2 weeks	
	Rheumatology		2 weeks	
	Dermatology		2 weeks	
	Oncology		2 weeks	
	Sexually Transmitted Diseases		2 weeks	
	Nephrology		2 weeks	
5.	General Medicine 2	TH-Anuradhapura		6 weeks
6.	Professorial Appointments	TH-Anuradhapura		8 weeks
			Total duration -	41 weeks

First Medicine appointment

Intended learning outcomes

At the end of the first clinical appointment, students should be able to;

1. Demonstrate the ability to analyze the nature and progression of common symptoms.
2. Demonstrate the ability to gather and analyze relevant information from the past medical and social history.
3. Demonstrate the ability to perform complete physical examination with correct techniques.
4. Recognize common physical signs.
5. Present findings from the history and examination.
6. Summarize the findings of history and examination.
7. Recognize acute medical emergencies.
8. Accurately and legibly document medical history and physical findings.
9. Observe or perform practical procedures under direct supervision for the expected level of competency.
10. Demonstrate the ability to build up rapport with patients and their family members.
11. Communicate confidently with patients from different socio-cultural back grounds and their families.
12. Critically appraise the ethical issues related to the practice of clinical medicine.
13. Respect patient's rights and safeguard the confidentiality.
14. Understand and respect for the roles of other health care professionals and the need to collaborate with others in taking care of the patients.

General guidelines for the 1st Medicine appointment

During the first medical appointment, students should concentrate on history taking and clinical examination. You are not expected to study the details of patient management in the first medical appointment, however follow the instructions of your supervisors.

History Taking

Take histories from patients who are allocated to you giving particular importance to those presenting with the following symptoms.

Abdominal pain	Fever
Anaemia	Headache
Arthritis	Hematemesis
Bleeding disorder	Haemoptysis
Body swelling	Jaundice
Chest pain	Stroke (acute focal neurological weakness)
Cough	Vomiting
Dyspnoea	Weight loss
Diarrhoea	Wheezing

Clinical Examination

Students should learn how to perform a complete physical examination with correct techniques, and be able to elicit common physical signs.

General Examination

Temperature
Hydration status
Height, weight and BMI
Eye – Icterus, pallor
Mouth – Pallor, central cyanosis, dental hygiene, evidence of nutritional deficiencies
Lymphadenopathy
Hand examination – clubbing etc.
Skin
Ankle oedema

Self-study – Causes of clubbing
Causes of generalized lymphadenopathy

Cardiovascular system

Pulse Examination

Radial pulse – rate & rhythm, radio-femoral delay / radio-radial delay & collapsing pulse
Carotid pulse – volume & character
Peripheral pulse

Self-study – study various characters of pulse, Reference – Kumar & Clark

Jugular Venous Pulse

Be able to correctly measure the venous pressure

Self-study – Normal wave pattern of JVP *Common abnormalities (large a wave, cannon wave, CV wave and absent a wave)*

Blood Pressure

Know how to take brachial pressure correctly, and measure BP on both sides

Precordial Examination

- Inspection: Chest wall deformities, scars etc.
- Palpation

Palpate for the position and nature of apex beat.

Palpate for heaves, thrills and heart sounds

- Auscultation

Auscultate major auscultatory areas, and appreciate,

Heart sounds - Systolic & diastolic heart sounds

Additional sounds - Systolic clicks & opening snaps

Cardiac murmurs

Respiratory System

- Inspection

Chest wall deformities

Surgical scars

Respiratory rate and rhythm

- Palpation

Tracheal position

Check chest movements and expansion

Vocal fremitus

- Percussion

Percuss over three zones, axilla and over the liver and heart

- Auscultation

Type of breath sounds –Vesicular / bronchial

Presence of added sounds – Crackles (coarse / fine), Rhonchi

Self-study – Causes of fine and coarse crackles, Causes of bronchial breathing

Abdomen

- Inspection

Distension

Scars

Visible masses

- Palpation

Superficial palpation- to assess any tenderness

Deep palpation – feel for masses and organomegaly

Feel for liver, spleen and ballottement of the kidneys

Self-study – Causes of hepatomegaly & splenomegaly, Causes of ballotable masses

- Percussion

Percuss for organs –liver and spleen

Percuss for ascites

- Auscultation

Bowels sounds

Renal artery bruits

- Genital Examination

Nervous System

Level of consciousness (use Glasgow coma scale)

Speech

MOCA cognitive assessment

Cranial Nerve Examination

	Nerve	**Examination**
i	Olfactory	Olfactory sensation
ii	Optic	Visual acuity, Visual fields, colour vision, Pupillary reflexes, Ophthalmoscopy
iii	Oculomotor	Eye movements
iv	Trochlear	
vi	Abducent	
v	Trigeminal	Facial sensation, muscles of mastication, corneal jerk, jaw jerk
vii	Fascial	Muscle of fascial expressions
viii	Vestibulo-cochlear	Whispering test, Rennie and Weber test
ix	Glossopharyngeal	Palatal movements, gag reflex
x	Vagus	
xi	Accessory	Trapezius and sternocleidomastoid muscles
xii	Hypoglossal	Muscles of tongue

Self-study

Eyes

- *Study the visual pathway and common disorders of vision*
- *Study the physiology of pupillary disorders and know the common pupillary abnormalities*
- *Know common disorders of eye movements*

Facial nerve

- *Study the facial nerve pathway and common disorders. Be able to differentiate LMN from UMN lesion.*

Other cranial nerves

- *Study the neuroanatomy and common abnormalities*

Upper and Lower Limb Examination

Tone

Power – study the muscle power grading

Reflexes

Coordination

Babinski response

Sensory signs – check at least one sensory modality from each column

- Lateral Spinothalamic tracts – Pain / Temperature
- Posterior column- Vibration / Joint position sense

Clinically important movements in upper limbs

Movement	Muscle (s)	Nerve Supply	Nerve Roots
Shoulder			
Abduction	Deltoid	Axillary	C5, C6
Elbow			
Flexion	Biceps	Musculocutaneous	C5, C6
Extension	Triceps	Radial	C7
Flexion of partially supinated forearm	Brachioradialis	Radial	C6, C7
Wrist			
Flexion	Long flexors	Ulna & median	C7
Extension	Long extensors	Long extensors	C7
Fingers			
Flexion (Terminal phalanx)	Long flexors	Ulna & Median	C8
Extension	Long extensors	Radial	C7
Abduction	Dorsal interosseous	Ulna	T1
Adduction	Palmer interosseous	Ulna	T1
Thumb			
Flexion	Flexor pollicis	Median	
Extension	Extensor pollicis	Radial	
Abduction	Abductor pollicis	Median	
Adduction	Adductor pollicis	Ulna	

Clinically important movements in lower limbs

Movement	Muscle (s)	Nerve Supply	Nerve Roots
Hip			
Flexion	Iliopsoas	Ant rami of L1-L4	L1 L2
Adduction	Adductors	Obturator	L2 L3
Abduction	Gluteus medius & minimus	Superior gluteal	L4 L5

Extension	Gluteus maximus	Inferior gluteal	L5 S1
Knee Flexion Extension	 Hamstrings Quadriceps	 Sciatic Femoral	 S1 L3 L4
Ankle Plantar flexion Dorsiflexion Inversion Eversion	 Gastrocnemius & Soleus Tibialis anterior Tibialis posterior Peroneus muscles	 Tibial Deep peroneal Tibial Superf. peroneal	 S1 L4 L4 L5 L5 S1
Big toe extension	Ext. hallucis longus	Deep peroneal	L5

Procedural skills

No	Procedure	
1	Perform venepuncture	**Perform Under Supervision**
2	Collecting blood culture	
3	Administer IV/IM/SC injections	
4	Insert an intravenous cannula	
5	Setting up an IV infusion	
6	Measuring capillary blood sugar	
7	Estimation of haematocrit using capillary tubes	
8	Measuring peak flow rate (PEFR)	
9	Spirometry	
10	Doing a 12 lead ECG	
11	Advising patients on inhaler device	
12	Nebulization	
13	Setting up a blood transfusion	**Observe**
14	Urinary catheterization	
15	Nasogastric tube insertion	
16	Arterial sampling and blood gas analysis	
17	Pleural fluid aspiration	
18	Aspiration of pneumothorax	
19	Peritoneal fluid aspiration & paracentesis	
20	Lumbar puncture	
21	Knee joint aspiration	
22	Renal biopsy	
23	Liver biopsy	
24	Bone marrow biopsy	

25	Advising patients on inhaler device	
26	Non-invasive ventilation	

Recommended books and other resources

1. Kumar and Clark's Clinical Medicine
2. Macleod's Clinical Examination
3. Macleod's clinical examination YouTube videos (https://www.youtube.com/playlist?list=PLGESeMFkgqnxC3Yvkgq7_sdfUszaRvlpr)
4. Clinical Examination: A Systematic Guide to Physical Diagnosisby Nicholas J. Talley , Simon O'Connor

Second and third Medicine Appointments

Intended learning outcomes

At the end of the 2nd& 3rd clinical appointment, students should be able to;

1. Demonstrate the ability to analyze current symptoms comprehensively, and come to a differential diagnosis.
2. Demonstrate the ability to gather and analyze relevant information from the past medical, social history, previous investigations and management.
3. Demonstrate the ability to perform complete physical examination with correct techniques, and to identify common physical signs.
4. Demonstrate the ability to present findings from the history and examination.
5. Summarize the findings of history and examination.
6. Arrive at a diagnosis or differential diagnosis by analyzing history and examination.
7. Identify acute and chronic medical problems, psychosocial problems and management problems.
8. Request and arrange medical investigations according to local protocols.
9. Formulate a rational patient-centered management plan for acute and long-term care for your patients.
10. Recognize acute medical emergencies.
11. Accurately and legibly document medical history and physical findings.
12. Observe or perform practical procedures under direct supervision for the expected level of competency.
13. Demonstrate the ability to build up rapport with patients and their family members.
14. Communicate confidently with patients from different socio-cultural back grounds and their families.
15. Critically appraise the ethical issues related to the practice of clinical medicine.

16. Respect patient's rights and safeguard the confidentiality.
17. Understand and respect for the roles of other health care professionals and the need to collaborate with others in taking care of the patients.
18. Demonstrate a commitment to update the knowledge and develop clinical skills and other soft skills.

History taking skills

Demonstrate the ability to take complete medical histories from patients presenting with following symptoms.

Abdominal pain	Headache
Abdominal distension	Haematuria
Anaemia	Hematemesis
Ankle swelling	Haemoptysis
Anuria/Oliguria	Loss of appetite
Arthritis & arthralgia	Loss of consciousness
Back pain	Loss of weight
Bleeding disorder	Numbness of hands and feet
Chest pain	Palpitations
Cough	Polyuria
Dyspneoa	Seizures
Diarrhoea	Skin rash
Dysphagia	Syncope
Fever	Vertigo
Focal neurological weakness	Vomiting
Generalized weakness of body	Wheezing
	Weakness of limbs

Clinical examination skills

Demonstrate the ability to perform and identify the common abnormalities of General, CVS, RS, Abdominal and Nervous systems. (Please refer the guidance for 1st medical appointment)

Procedural skills

No	Procedure	
1	Perform venepuncture	**Perform Under Supervision**
2	Collecting blood culture	
3	Administer IV/IM/SC injections	
4	Insert an intravenous cannula	
5	Setting up an IV infusion	
6	Measuring capillary blood sugar	
7	Estimation of haematocrit using capillary tubes	
8	Measuring peak flow rate (PEFR)	
9	Spirometry	
10	Doing a 12 lead ECG	
11	Advising patients on inhaler device	
12	Nebulization	
13	Setting up a blood transfusion	**Observe**
14	Urinary catheterization	
15	Nasogastric tube insertion	
16	Arterial sampling and blood gas analysis	
17	Pleural fluid aspiration	
18	Aspiration of pneumothorax	
19	Peritoneal fluid aspiration & paracentesis	
20	Lumbar puncture	
21	Knee joint aspiration	
22	Renal biopsy	
23	Liver biopsy	
24	Bone marrow biopsy	
25	Advising patients on inhaler device	
26	Non-invasive ventilation	

Recommended books and other resources

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4. Clinical Examination: A Systematic Guide to Physical Diagnosisby Nicholas J. Talley , Simon O'Connor

Objectives and guidelines for the clinical appointments in Medicine-related subspecialties

Learning outcome for short appointments in Medicine

Level of competency for theory knowledge

A – Demonstrate understanding of pathophysiology, causes, clinical features, investigations, management, follow up and prognosis.

B – Demonstrate understanding of pathophysiology, causes, clinical features, investigations, and immediate management, know how to make an appropriate referral.

C – Demonstrate the understanding of acute management and refer appropriately.

D – Have a basic idea about clinical features and diagnosis.

Level of competency for procedural skills

Skill level A: Required to acquire knowledge and skill using teaching aids such as models, Audio-Visuals, etc.

Skill level B: Required to observe the task when performed by the trainer.

Skill level C: Required to assist the trainer to perform the task.

Skill level D: Required to perform the task under the supervision of the trainer.

Skill level E: Required to perform the task independently.

A) Cardiology

Learning outcomes for the Cardiology rotation

At the end of 2 weeks of cardiology rotation, students should be able to:

1. Demonstrate the ability to take a thorough medical history, including details of current symptoms, previous cardiology history and investigations, management and risk factors that could impact the diagnosis or management of their current problem.
2. Conduct a physical exam with an emphasis on the cardiovascular system, and be able to elicit common cardiovascular physical signs.
3. Demonstrate correct appraisal of cardiac symptoms and signs.
4. Apply clinical reasoning skills to formulate a rational differential diagnosis and a problem list.
5. Formulate a management plan for acute and long-term care for common cardiac conditions.
6. Recognize serious cardiac conditions requiring urgent interventions and be able to make an appropriate referral.
7. Demonstrate understanding and application of medical and surgical management of patients with cardiovascular diseases.
8. Perform relevant procedures as required within the scope of competent practice.
9. Undertake, justify, prioritize and interpret common diagnostic tests.
10. Screen, recognize and modify cardiovascular risk factors.
11. Appreciate the psychosocial issues that potentially impact the patient's cardiac problems.
12. Appreciate the importance of functional assessment and physical rehabilitation in patients with cardiovascular diseases.
13. Appreciate the role of other health care workers in managing patients with cardiovascular diseases.

Cardiovascular system

Topic	Level of Competency

Coronary artery disease	A
Heart failure	A
Hypertension	A
Cardiac arrhythmia	C
Venous thromboembolism	B
Valvular heart disease	C
Congenital heart disease	C
Infective endocarditis	B
Cardiomyopathy	C
Pericardial disease.	C
Dyslipidaemia	B

Procedural skills in Cardiology

Procedure	Level of Competency
Recording an ECG	E
Carotid sinus massage	D
CPR	D
Echocardiography	B
Coronary angiogram	B
Insertion of a temporary pacemaker	B

B) Respiratory Medicine

Learning outcomes for the Respiratory rotation

At the end of 2 weeks of respiratory rotation, students should beable to:

1. Demonstrate the ability to take a complete medical history in common respiratory disorders.
2. Conduct a physical examination focusing on the respiratory system, including related systems examination. Be able to elicit common respiratory signs.
3. Demonstrate correct appraisal of respiratory symptoms and signs.
4. Apply clinical reasoning skills to formulate a rational differential diagnosis and a problem list.
5. Formulate a management plan for acute and long-term care for common respiratory diseases
6. Recognize serious respiratory conditions requiring urgent interventions, and be able to make an appropriate referral.
7. Demonstrate understanding and application of medical and surgical management of respiratory patients.
8. Perform relevant procedures as required within the scope of competent practice.
9. Undertake, justify, prioritize and interpret common diagnostic tests.
10. Offer smoking cessation counselling for smokers.
11. Appraise the psychosocial issues that potentially impact the patient's respiratory problems.
12. Appraise the importance of functional assessment and physical rehabilitation.
13. Appraise the role of other health care workers in managing patients with respiratory diseases.

Respiratory system

Topic	Level of Competency
Asthma	A
COPD	A
Pneumonia and LRTI	A
Tuberculosis	A
Bronchiectasis	B

Pleural disease	B
Lung cancer	B
Pulmonary fibrosis	D
Pulmonary hypertension	D

Procedural skills in Respiratory Medicine

Procedure	Level of Competency
Peak flow measurement	E
Spirometry	E
Pleural fluid aspiration	B/C
Release of tension pneumothorax	B
Chest tube insertion	B
Bronchoscopy	B
Thoracoscopy	B

C) Nephrology

Learning outcomes for the Nephrology rotation

At the end of 2 weeks of nephrology rotation, students should be able to:

1. Demonstrate the ability to take a complete history in common renal disorders.
2. Conduct a physical examination focusing on the genitourinary system, and be able to illicit common clinical signs.
3. Apply clinical reasoning skills to formulate a rational differential diagnoses and a problem list.
4. Formulate a management plan for acute and long-term care for nephrology patients.
5. Recognize serious renal conditions requiring urgent interventions, and be able to make an appropriate referral.
6. Demonstrate understanding and application of medical and surgicalmanagement of common nephrological diseases.
7. Demonstrate understanding of principles of renal replacement therapy.
8. Perform relevant procedures as required within the scope of competent practice.
9. Undertake, justify, prioritize and interpret common investigations in nephrology.
10. Appraise the psychosocial issues that are potentially associated withchronic kidney disease.
11. Appreciate the role of other health care workers in managing patients with kidney disease.

Nephrology

Topic	Level of Competency
Acute kidney injury	A
Chronic kidney disease	B
Acute and chronic glomerulonephritis	B
Nephrotic and Nephritic syndrome	B
UTI	A
Calculi disease	B

Procedural skills in nephrology

Procedure	Level of Competency
Peritoneal dialysis	B
Haemodialysis	B
Renal biopsy	B

D) Neurology

Learning outcomes for the Neurology rotation

At the end of 2 weeks of nephrology rotation, students should be able to:

1. Demonstrate the ability to take a complete neurology history in common neurological disorders.
2. Conduct complete neurological examination, and be able to elicit common neurological signs.
3. Demonstrate correct appraisal of neurological symptoms and signs.
4. Apply clinical reasoning skills to formulate a rational differential diagnosis and a problem list.
5. Formulate a rational management plan for acute and long-term care for neurology patients.
6. Recognize serious neurological conditions requiring urgent interventions, and make an appropriate referral.
7. Demonstrate understanding and application of medical and surgical management of neurology patients.
8. Perform relevant procedures as required within the scope of competent practice.
9. Undertake, justify, prioritize and interpret common neurological investigations.
10. Demonstrate the ability to maintain neurological observation chart.
11. Appraisepsychosocial issues that are potentially associated withchronic neurology problems.
12. Appreciate the importance of functional assessment and rehabilitation in neurology patients.
13. Appraise the role of physical and occupational therapists in managing chronic neurology patients.

Neurology

Topic	Level of Competency
Stroke and TIA	A
Epilepsy	A
CNS infections	A
Polyneuropathy	B

Neuromuscular junction disorders	B
Myopathies	C
Motor neuron disease	C
Parkinson's disease	C
Dementia	C

Procedural skills in neurology

Procedure	Level of Competency
Lumbar puncture	B
Nerve conduction studies	B

E) Rheumatology

Learning outcomes for the Rheumatology rotation

At the end of 2 weeks of rheumatology rotation, students should be able to:

1. Demonstrate the ability to take a complete and accurate rheumatological history.
2. Perform a physical examination with a focus on examining the musculoskeletal system.
3. Formulate a rational differential diagnosis and a problem list.
4. Formulate a rational management plan for acute and long-term care for rheumatology patients.
5. Recognize serious rheumatological conditions requiring urgent interventions, and make an appropriate referral.
6. Demonstrate understanding and application of the relevant non-pharmacological, medical and surgical management in treating musculoskeletal disorders.
7. Perform relevant procedures as required within the scope of competent practice.
8. Undertake, justify, prioritize and interpret common investigations in rheumatology.
9. Appraise the psychosocial issues that are potentially associated withchronic rheumatology problems.
10. Appraise the importance of functional assessment and physical rehabilitation.
11. Recognize and appraise the role of physical and occupational therapists, nutritionists, and rehabilitation/skill nursing care facilities in chronic rheumatology patients.

Rheumatology

Topic	Level of Competency
Rheumatoid arthritis	A
Septic arthritis	A
SLE and anti-phospholipid syndrome	B

Systemic sclerosis	B
Spondyloarthropathy & Reactive arthritis	B
Crystal arthritis	C
Systemic vasculitis	D
Inflammatory myopathy	B
Osteoporosis and osteomalacia	B

Procedural skills in rheumatology

Procedure	Level of Competency
Knee joint aspiration and injection	B
Shoulder joint injection	B
Steroid injection for rheumatology problems	B

F) Dermatology

Learning outcomes for Dermatology rotation

At the end of the 2 weeks' rotation, students should be able to:

1. Demonstrate the ability to take a detailed history from a patient with a dermatological disorder.
2. Conduct a physical examination with an emphasis on dermatology, and be able to elicit common physical signs.
3. Demonstrate correct appraisal and assessment of dermatological symptoms and signs.
4. Demonstrate the ability to describe a skin rash using correct terminology.
5. Apply clinical reasoning skills to formulate a rational differential diagnosis and a problem list.
6. Undertake, justify, prioritize and interpret common diagnostic tests.
7. Formulate a management plan for acute and long-term care for common dermatological conditions.
8. Demonstrate the ability to recognize and manage dermatological emergencies, and make an appropriate referral.
9. Perform relevant procedures as required within the scope of competent practice.
10. Appraise the ethical issues related to management of disorders of skin.
11. Provide psychological support for those who need it.
12. Appreciate the importance of other health care professionals involved in taking care of patients with chronic dermatological problems.

Dermatology

Topic			Level of competency
Dermatological infections	Bacterial	• Leprosy • Staphylococcus skin infections	**B** **A**

	Fungal	• Dermatophyte infections • Candida infections	**A** **A**
	Viral	• Viral warts • Herpes virus	**A** **A**
	Parasitic	• Scabies • Leishmaniasis	**A** **B**
Allergic & inflammatory disorders		• Urticaria • Dermatitis • Psoriasis • Lichen planus • Pityriasis rosea	**A** **A** **B** **B** **B**
Dermatological manifestations of systemic diseases		• Diabetes • Chronic kidney disease • Chronic liver disease • Connective tissue disorders • Internal malignancies	**B** **B** **B** **B** **B**

G) Sexually transmitted infections

Learning outcomes for the STI rotation

At the end of the 2-week rotation, students should be able to:

1. Complete a thorough medical history, including details of current symptoms, travel history, recreational activities, hygiene, any risk behaviour and previous infections.
2. Conduct a physical examination, and be able to elicit common physical signs related to STIs.
3. Apply clinical reasoning skills to formulate a rational differential diagnosis and a problem list.
4. Formulate a management plan according to local protocols.
5. Recognize serious infections requiring urgent interventions and be able to make an appropriate referral.
6. Perform relevant procedures as required within the scope of competent practice.
7. Undertake, justify, prioritize and interpret common diagnostic tests.
8. Promote safe sexual practices and vaccination in the community to prevent the spread of STIs in the community.
9. Conduct educational programmes about sexually transmitted infections in the community.
10. Critically appraise the psychosocial issues and address the stigma related to STIs.
11. Provide psychological support for patients with sexually transmitted infections.
12. Safeguard the confidentiality of patients.
13. Promote rational use of antibiotics in your practice and update knowledge about local antibiotic sensitivity patterns.
14. Demonstrate the ability to provide post-exposure counselling and prophylaxis to healthcare workers who sustain needlestick injuries.

Sexually transmitted infections

Topic	Level of competency
Genital ulcers	B
Urethral discharge	B
Vaginal discharge	B
Genital warts	B
Epididymo-orchitis	B
Pelvic inflammatory disease	B
HIV infection	B
Opportunistic infections in AIDS	C

Course content in Medicine

Cardiology

1. Stable angina
2. Acute coronary syndrome (Unstable Angina /Non ST Segment Elevation Myocardial Infarction/ST Segment Elevation Myocardial Infarction)
3. Heart failure
4. Common arrhythmias (Atrial fibrillation/ Supraventricular tachycardia/ventricular tachycardia/ventricular fibrillation)
5. Common valvular disorders
6. Infective endocarditis
7. Emergencies
    a. Management of Acute coronary syndrome including thrombolysis in ST Segment Elevation Myocardial Infarction
    b. Management of Acute Pulmonary Oedema
    c. Cardio pulmonary resuscitation
    d. Management of bradyarrhythmias and tachyarrhythmias
8. Procedures
    a. Thrombolysis
    b. Trans thoracic and trans oesophageal echocardiography
    c. Exercise ECG
    d. DC cardioversion
    e. Holter monitoring
    f. Temporary pace maker insertion
    g. Coronary angiogram

Respiratory

1. Bronchial asthma
2. Chronic obstructive pulmonary disease
3. Pneumonia

	4. Pulmonary tuberculosis 5. Bronchial carcinoma 6. Interstitial lung disease 7. Pleural effusion 8. Respiratory emergencies 9. Management of acute exacerbation of Bronchial asthma /Chronic obstructive pulmonary disease a. Pneumothorax a. Pulmonary embolism 10. Procedures a. Nebulization b. Usage of different types of inhalers c. Pleural aspiration and biopsy d. Intercostal tube insertion e. Bronchoscopy f. Direct observation therapy in tuberculosis 11. Investigations a. Chest radiograph b. CT chest c. Lung function tests d. Interpretation of pleural fluid analysis e. Mantaoux test
Neurology	1. Epilepsy 2. Stroke 3. Speech disorders 4. Headache 5. Common cranial nerve and spinal root lesions 6. Peripheral neuropathy 7. Common gait disorders 8. Spinal cord compression 9. Meningitis and encephalitis 10. Parkinson's disease 11. Myasthenia gravis 12. Motor neuron disease and syringomylia 13. Neurological Emergencies: a. Unconscious patient b. Status epilepticus c. Acute stroke d. Meningitis/Encephalitis e. Respiratory muscle paralysis 14. Neurological investigations and imaging a. Lumbar puncture (does) b. Tensilon test (Shows how) c. Nerve conduction study (knows)

	d. EEG (knows) e. EMG (knows) f. X-ray(knows) g. CT(knows) h. MRI(knows)
Rheumatology	1. Rheumatoid arthritis 2. Osteoarthritis 3. Sero- negative arthritis (spondyloarthropathies) 4. Connective tissue diseases such as Systemic lupus erythematosus 5. Crystal arthropathies such as gout 6. Rehabilitation
Dermatology	1. Eczema and Glandular Diseases 2. Nail Disease 3. Follicular Disease 4. Dermatologic Infections (Bacterial, Viral, Fungal) 5. Dermatologic eruptions of Insects and Infestations 6. Papulosquamous and Inflammatory Diseases 7. Benign and Malignant skin lesions
Oncology	1. Breast cancer Cervical cancer Oesophageal cancer Thyroid cancer Lung cancer Head and neck cancer treatment modalities 2. paraneoplastic syndrome 3. Tumor markers 4. cancer prevention 5. cancer screening-cervical, breast, colo-rectal 6. educate / make public awareness regarding self-breast examination, well women clinic, self-oral cavity examination 7. palliative care of cancer patients
Sexually transmitted diseases	1. Syphilis 2. Gonorrhea 3. Herpes 4. Genital warts 5. Human immunodeficiency virus

	6. Trichomoniasis 7. Non gonococcal urethritis 8. Candidiasis 9. Chancroid counsel suspected and diagnosed patients with common Sexually transmitted diseases
Medical emergency	1. Acute ST elevation myocardial infarction 2. Other acute coronary syndromes 3. Acute left ventricular failure 4. Arrhythmia- tachyarrhythmia 5. Arrhythmia- bradyarrhythmia 6. Hypertensive Emergencies 7. Acute respiratory failure 8. Acute severe asthma 9. Pneumothorax 10. Haematemesis 11. An unconscious patient 12. Stroke 13. Seizure 14. Acute renal failure 15. Snake bite envenoming 16. Organophosphate poisoning 17. Paracetomol over dose 18. Hypokalaemia and hyperkalaemia 19. Diabetes keto acidosis 20. Dengue shock syndrome or hemorrhagic shock

Teaching-learning methods in Medicine

- Lectures 90 hours
- Clinical teaching sessions/ ward-based teaching: Teaching ward rounds, ward classes
- Procedural skills in Medicine: Skills laboratory session
- Log book, case book
- CPR workshop
- Ethics and communication skills session

Procedural skills in Medicine: Skills laboratory session

Course	Medicine
Module	**Procedural skills**
Core/optional	Core
Intended learning outcomes	Student should be able to, 1. Perform practical procedures for investigative and therapeutic purposes for the expected level of competency. 2. Possesses a sound knowledge about indications, contraindications and post-procedural care of commonly performed procedures. 3. Prepare patients for various procedures. 4. Take valid consent for investigative and therapeutic procedures. 5. Accurately and legibly document in case notes. 6. Communicate confidently with patients and their families with particular reference to giving information about obtaining consent for investigative and therapeutic procedures. 7. Appreciate the ethical issues related.
Time allocation	3 hours
Coordinating department	Department of Medicine

No	**Procedure (Content)**	**Teaching learning strategy**	**Assessments**
1	Perform venipuncture	Live demonstration on patients	End appointment
2	Collecting blood culture	Live demonstration on patients	

3	Administer IV/IM/SC injections	Live demonstration on patients	OSCE Log book
4	Insert an intravenous cannula	Live demonstration on patients	
5	Setting up an IV infusion	Live demonstration on patients	
6	Setting up a blood transfusion	Live demonstration on patients	
7	Urinary catheterization	Videos/on dummies	
8	Nasogastric tube insertion	Videos/on dummies	
9	Arterial sampling and blood gas analysis	Videos/dummies	
10	Measuring capillary blood sugar	Live demonstration on volunteers	
11	Estimation of hematocrit using capillary tubes	Live demonstration on volunteers	
12	Measuring peak flow rate (PEFR)	Live demonstration on volunteers	
13	Spirometry	Live demonstration on volunteers	
14	Doing a 12 lead ECG	Live demonstration on volunteers	
15	Pleural fluid aspiration	Videos	
16	Aspiration of pneumothorax	Videos	
17	Peritoneal fluid aspiration & paracentesis	Videos	
18	Lumbar puncture	Videos	
19	Knee joint aspiration	Videos	
20	Central venous cannulation	Videos	
21	Renal biopsy	Videos	
22	Liver biopsy	Videos	
23	Bone marrow biopsy	Videos	
24	Advising patients on inhaler device	Live demonstration on patients	
25	Nebulization	Live demonstration on patients	
26	Devices of oxygen delivery	Live demonstration on volunteers	
27	Non-invasive ventilation	Live demonstration on patients/volunteers	
28	Focused USS in diagnosing DHF	Live demonstration on patients/volunteers	
29	Epley maneuver	Live demonstration on volunteers	
30	Modified Valsalva maneuver	Live demonstration on volunteers	
31	Carotid sinus massage	Live demonstration on volunteers	
32	Pleural fluid aspiration	Self-study	
33	Paracentesis	Study the indications,	

34	Lumbar puncture	contraindications and complications and know how to prepare the patients for these procedures	
35	Knee joint aspiration		
36	Central venous cannulation		
37	Renal biopsy		
38	Liver biopsy		
39	Bone marrow biopsy		
40	Aspiration of large pneumothorax		

Basic and advanced life support: Cadiopulmonary resuscitation (CPR) workshop

Course	Medicine
Module	**Basic and advanced life support**
Core/optional	Core
Intended learning outcomes	At the end of this course students should be able to, 1. Recognize a cardiac arrest. 2. Identify a deteriorating patient. 3. Perform basic and advanced life support. 4. Perform airway maneuvers and chest compressions accurately. 5. Carry out intubation on dummies. 6. Carry out safe defibrillation. 7. Appreciate ethical principles that govern end of life care.
Content	1. Basic life support 2. Advanced life support
Teaching learning strategy	Lectures 1. Introduction and overview 2. Identifying deteriorating patient 3. Rhythm recognition and peri-arrest arrhythmias 4. ALS algo rhythm Skills stations (hands on sessions) 1. Airway maneuvers, adjuncts and bag-mask ventilation 2. Intubation 3. Safe defibrillation 4. Chest compressions

Time allocation	8 hours
Assessments	• End workshop MCQs • OSCE • VIVA • Long case • Case based discussions
Recommended reference	UK resuscitation counsel guidelines
Coordinating department	Department of Medicine in collaboration with Department of Anesthesiology (Consultant Anaesthetists, MO-Anaesthesia)

Ethics and Communication

Course	Medicine
Module	**Ethics and Communication**
Core/optional	Core
Intended learning outcomes	Students should be able to, 1. Appreciate the ethical issues related to the practice of clinical medicine. 2. Possess a practical knowledge about four main ethical principles in medicine. 3. Communicate confidently and effectively with patients from different socio-cultural back grounds and their families 4. Be confident in obtaining informed consent. 5. Respect patient's autonomy. 6. Be confident in breaking bad news.
Content	Basic ethical principles • Autonomy • Justice • Beneficence • Non-maleficence Informed consent Breaking bad news
Teaching learning strategy	1. Introductory lecture 2. Role plays – Obtaining informed consent, breaking bad news

	3. Case studies
Time allocation	3 hours
Assessments	• OSCE • VIVA • Long case • Case based discussions
Coordinating department	Department of Medicine

Assessment in Medicine

Formative assessment

- Case presentations evaluations
    - Long case: case-based discussions
    - Short cases- Mini clinical evaluation exercises (MiniCEX)
- Direct observation of procedural skills (DOPS) evaluations
- Ward round discussion
- Shadow house officer evaluation

End of the Professorial appointment evaluation

- OSCE
- Acute Medicine viva
- Student presentation
- Log book evaluation
- Case book assessment

Final MBBS examination

- MCQ (common MCQ) - 20%
- SEQ - 20%
- Long case - 20%

- Short cases - 20%
- In-course assessment - 20%

Recommended reading/ references(most recent editions)

- Praveen Kumar, Michal Clark. Kumar and Clark Clinical Medicine, Elsevier.
- Graham Douglas Fiona Nicol Colin Robertson. Macleod's Clinical Examination. UK: Churchill Livingstone
- Macleod's Clinical Examination YouTube videos (https://www.youtube.com/playlist?list=PLGESeMFkgqnxC3Yvkgq7_sdfUs zaRvlpr)
- Nicholas Talley Simon O'Conno. Clinical Examination, Australia: Churchill Livingstone
- Dan Longo, Anthony Fauci, Dennis Kasper, Stephen Hauser, J. Jameson, Joseph Loscalzo. Harrison's Principles of Internal Medicine, UK: McGraw-Hill Education

5.6.2 Surgery

The undergraduate surgical course of the University of Rajarata Sri Lanka is designed to provide training in the main stream of surgery to undergraduates. It is a skills development course. The students are expected to acquire skills of history taking and examination to arrive at a basic clinical diagnosis, order and interpret relevant investigations & formulate a plan of management. They should establish a good rapport with the staff in addition to development of good discipline and attitudes. The course is aimed at helping the undergraduates to develop skills knowledge and attitudes in the discipline of surgery enabling him to function as a doctor of the future.

Indented learning outcomes

The purpose of undergraduate surgical training is to prepare the medical students for internship and subsequently to practice medicine as a skillful doctor. The goals in clinical training in surgery are to acquire adequate knowledge, achieve clinical skills to diagnose and treat the most common surgical diseases including surgical emergencies.

On completion of clinical training in Surgery, students should be able to

1. Acquire required surgical knowledge to practice as a clinician
2. Obtain a comprehensive history, elicit physical signs and interpret those findings of a surgical patient and come to a reasonable diagnosis/ differential diagnoses.
3. Request relevant investigations to narrow down the differential diagnoses.

4. Formulate a basic management plan.
5. Plan appropriate pre-operative assessment of a surgical patient.
6. Acquire adequate knowledge about the operative theatre practices, universal precautions, sterilization and disinfection procedures, assisting a surgery, handle basic instruments.
7. Plan appropriate post-operative management that includes monitoring, analgesics, administration of antibiotics, fluid management & subsequent management e.g.: discharge plan, rehabilitation, medical education
8. Understand and manage common surgical emergencies.
9. Understand the principles of management of critically injured patients.
10. Acquire skills in performing simple surgical procedures such as suturing of a wound.
11. Appreciate the importance and need for the careful, accurate and speedy decision making in the setting of the surgical ward.
12. Be familiar with the spectrum of surgical care available and to develop a critical attitude to assess its risks and benefits.
13. Acquire communication skills to advise, counsel and explain about the disease condition, management options with possible outcomes in simple lay terms.
14. Emphasize the important ethical, moral and social issues involved in surgical practice and to induce discussion on cost benefit analysis.
15. Understand the role of surgical services to the community with a view of how to prevent possible surgical conditions and know methods on how surgical patients should be rehabilitated.
16. Acquire knowledge and skills to deal with social aspects of patients and families when delivering health care.
17. Understand the role of surgical audit and research to improve the quality of surgical care. And acquire a suitable level of skills on information and data handling.
18. Show enthusiasm update knowledge and skills by means of continuous medical education, that will improve the quality of the practice
19. Demonstrate abilities to take leadership when required and work as a team member maintaining good rapport between medical and non-medical health care personnel.

Organization of the surgical course

The main components in the program include

- Clinical skills training
- Surgical lectures
- Surgical tutorials
- Periodic ward classes
- Seminars/workshops recommended by the department

- Regular in-course and final assessment on completion of the course

Outline of the clinical training in Surgery and related subspecialties

	Appointment	Hospital		Duration
1.	Introductory Clinical Appointment	TH-Anuradhapura		1 week
2.	MSPOG appointments - Surgery	TH-Anuradhapura/ DGH-Polonnaruwa, DGH-Matale		4 weeks
3.	Surgery 1	TH-Anuradhapura		6 weeks
4.	Clinical appointments in Surgery-related subspecialties			
	Orthopaedic Surgery	TH-Anuradhapura	4 weeks	16 weeks
	Ophthalmology		2 weeks	
	Otorhinolaryngology (ENT surgery)		2 weeks	
	Urology/ Urological Surgery		2 weeks	
	Neurosurgery		2 weeks	
	Anaesthesiology		2 weeks	
	Radiology		2 weeks	
5.	Surgery 2	TH-Anuradhapura		6 weeks
6.	Professorial Appointments	TH-Anuradhapura		8 weeks
			Total duration -	41 weeks

First Surgery appointment

Objective of the appointment	To have a general idea about the surgical course, have a basic idea of how to approach patients with a view to taking history and performing general and specific examinations, acquire some knowledge on common surgical problems.
Supervisor	Consultant Surgeon of the surgical unit
Place of the appointment	Off site from Anuradhapura teaching hospital e.g.: DGH Matale or DGH Polonnaruwa
Duration	4 weeks
Number of the students	Quarter of the batch
Pre-requisites	Successful completion of the preclinical course, 2nd MBBS examination and the Introductory clinical appointment
Time to attend the clinical work	8am – 12 noon Monday to Saturday, All casualty days and other days as agreed by the supervisor
Additional requirements	Students should be punctual with accepted professional dress code. They should be ready with clinical information of their allocated patients for the ward round by 8am. Allocate patients for clerking
Places where students are expected to attend clinical work	Surgical wards, Surgical clinics, Operation theatres, Primary care units of the hospital, ICUs and HDUs, Clinical skills laboratories, Other relevant places where investigations/procedures are performed.
Level of knowledge to develop	On common surgical conditions, History and Examination.

Skills to develop	Take a history, perform general and specific examinations, and elicit clinical features and logical analysis of them to arrive at a list of problems or differential diagnoses.
Other relevant requirements	Importance of sterility, scrubbing technique, assist surgical procedures in the theatre, fluid management, pre/post op preparation.
Assessment method	Optional by the supervisor
Authorization of completion of the appointment (Signing the record book)	By supervisor if he is satisfied with attendance and knowledge and clinical skills acquired. The supervisor may have an assessment before authorization.
Relevant references	Baily and Love's Short Practice of Surgery *Hamilton Bailey's* Demonstrations of *Physical Signs* in Clinical Surgery *Norman L. Browse's* Introduction to the Symptoms & Signs of *Surgical* Disease

Second and third Surgery appointments

Objective of the appointment	Taking history and performing general and specific examinations, acquire knowledge on common surgical problems. 'Consolidation and Expansion' of the clinical knowledge and skillsacquired in previous General Surgery appointment/s
Supervisor	Consultant Surgeon of the surgical unit
Place of the appointment	TH Anuradhapura
Duration	6 weeks
Number of the students	Quarter of the batch
Pre-requisites	Successful completion of the first surgical appointment
Time to attend the clinical work	8am – 12 noon Monday to Saturday, All casualty days and other days as agreed by the supervisor
Additional requirements	Students should be punctual with accepted professional dress code. They should be ready with clinical information of their allocated patients for the ward round by 8am. Allocate patients for clerking
Places where students are expected to attend clinical work	Surgical wards, Surgical clinics, Operation theatres, Primary care units of the hospital, ICUs and HDUs, Clinical skills laboratories, Other relevant places where investigations/procedures are performed.
Level of knowledge to develop	Deeper knowledge on surgical diseases
Skills to develop	Specific history, examination, coming to differential diagnoses, ordering relevant investigations and interpreting those, Be more proficient on skills acquired in the 1st surgical appointment, Develop communication skills
Other relevant	Importance of sterility, scrubbing technique, assist surgical

requirements	procedures in the theatre, fluid management, pre/post op preparation.
Assessment method	Log book and in-course assessment
Authorization of completion of the appointment (Signing the record book)	By supervisor if he is satisfied with attendance and progress of the student
Relevant references	Baily and Love's Short Practice of Surgery *Scott, an Aid to Clinical Surgery* *Hamilton Bailey's* Demonstrations of *Physical Signs* in Clinical Surgery *Norman L. Browse's* Introduction to the Symptoms & Signs of *Surgical* Disease

Professorial Surgery appointments

Objective of the appointment	Refer ILOs of the surgical course
Supervisor	Consultant Surgeons of the Department of Surgery
Place of the appointment	Professorial Surgical Unit, TH Anuradhapura
Duration	8weeks
Number of the students	One fifthof the batch
Pre-requisites	Successful completion of all other surgical appointment
Time to attend the clinical work	Full time
Additional requirements	Students should be punctual with accepted professional dress code. They should be ready with clinical information of their allocated patients for the ward round by 8am. Allocate patients for clerking
Places where students are expected to attend clinical work	Surgical wards, Surgical clinics, Operation theatres, Primary care units of the hospital, ICUs and HDUs, Clinical skills laboratories, Other relevant places where investigations/procedures are performed.
Level of knowledge to develop	Deeper knowledge on surgical diseases
Skills to develop	Specific history, examination, coming to differential diagnoses, ordering relevant investigations and interpreting those, elicit clinical features and logical analysis of them to arrive at a list of problems or differential diagnosis
Other relevant requirements	Importance of sterility, scrubbing technique, assist surgical procedures in the theatre, fluid management, pre/post op preparation, carry out suturing, suture removal
Assessment method	See details below
Authorization of completion	By supervisor if he is satisfied with attendance and knowledge and

of the appointment (Signing the record book)	clinical skills acquired.
Relevant references	Baily and Love's Short Practice of Surgery *Scott, an Aid to Clinical Surgery* *Hamilton Bailey's* Demonstrations of *Physical Signs* in Clinical Surgery *Norman L. Browse's* Introduction to the Symptoms & Signs of *Surgical* Disease

Vascular surgery

This component is covered in the general surgical appointments

Objective of the appointment	To develop knowledge and skills on common vascular diseases and trauma
Supervisor	Consultant Surgeons of the surgical unit
Place of the appointment	TH Anuradhapura
Places where students are expected to attend clinical work	Surgical wards, Surgical clinics, Operation theatres, Primary care units of the hospital, ICUs and HDUs, Clinical skills laboratories, Other relevant places where investigations/procedures are performed.
Level of knowledge to develop	Basic knowledge on common vascular diseases encountered in surgical practice such as occlusive arterial disease, varicose veins, thromboembolization, limb ischaemia and emergency approaches, knowledge on various ulcers
Skills to develop	Elicit clinical features of vascular diseases and their logical analysis Perform ABPI and know principles of ABPI
Assessment method	Optional by the supervisor
Relevant references	Baily and Love's Short Practice of Surgery *Hamilton Bailey's* Demonstrations of *Physical Signs* in Clinical Surgery *Norman L. Browse's* Introduction to the Symptoms & Signs of *Surgical* Disease

Students are expected to fulfill the following objectives at the end of the professorial appointment. There will not be a separate vascular appointment but this discipline is covered by the general surgical and professorial appointment. Given below is the list of vascular surgical conditions that the student should be familiar with. The student should achieve the following by exposing to vascular surgery.

- take a history, elicit physical signs accurately, identify problems, plan out investigations and management
- know special investigations done for vascular patients, should have a basic idea of interpreting them
- understand principles behind conservative management
- know special pre, per and post-operative management.
- Be aware of rehabilitation available for vascular patient

Paediatric Surgery

This component is covered in the general surgical appointments

Objective of the appointment	To learn common emergency and non-emergency paediatric surgical problems
Supervisor	Consultant Surgeons of the surgical unit
Place of the appointment	TH Anuradhapura and off site e.g. DGH-Polonnaruwa
Additional requirements	Students should be punctual with accepted professional dress code. They should be ready with clinical information of their allocated patients for the ward round by 8am. Allocate patients for clerking
Places where students are expected to attend clinical work	Surgical wards, Surgical clinics, Operation theatres, Primary care units of the hospital, ICUs and HDUs, Clinical skills laboratories, Other relevant places where investigations/procedures are performed.
Level of knowledge to develop	On common paediatric surgical emergencies, herniae, hydrocele, testicular maldescent, burns, intussusceptions
Skills to develop	Specific history, examination, coming to differential diagnoses, ordering relevant investigations and interpreting those, elicit clinical features and logical analysis of them to arrive at a list of problems or differential diagnosis
Assessment method	Final MBBS examination: MCQ, SEQ
Relevant references	Baily and Love's Short Practice of Surgery *Scott, an Aid to Clinical Surgery* *Hamilton Bailey's* Demonstrations of *Physical Signs* in Clinical Surgery *Norman L. Browse's* Introduction to the Symptoms & Signs of *Surgical* Disease

Objectives and guidelines for the clinical appointments in Medicine-related subspecialties

A) Orthopaedic Surgery

Objective of the appointment	To understand the basic disease patterns in Orthopaedics and trauma. To learn basic management of fractures. To learn how to manage emergency orthopaedic conditions
Supervisor	Consultant Orthopedic Surgeon of the unit
Place of the appointment	TH Anuradhapura (can be off site from TH-Anuradhapura)
Duration	4 weeks
Number of the students	1/8 of the batch
Pre-requisites	Should have completed at least one surgical and one medical appointment
Time to attend the clinical work	8am – 12 noon Monday to Saturday, All casualty days and other days as agreed by the supervisor
Additional requirements	Students should be punctual with accepted professional dress code. They should be ready with clinical information of their allocated patients for the ward round by 8am. Allocate patients for clerking
Places where students are expected to attend clinical work	Orthopedic wards, clinics, Operation theatres, Primary care units of the hospital, ICUs and HDUs, Clinical skills laboratories, Other relevant places where investigations/procedures are performed.
Level of knowledge to develop	Basic Orthopaedic conditions including fractures, tumours and joint problems, limb trauma

Skills to develop	Elicit clinical features and their logical analysis to arrive at list of problems or differential diagnoses with relevance to Orthopaedics. Ability to interpret XRs of basic orthopaedic problems, Ability to manage common orthopaedic conditions
Other relevant requirements	Importance of sterility, scrubbing technique, assist surgical procedures in the theatre
Assessment method	MCQ, SEQ, Clinical examination in Final MBBS examination
Authorization of completion of the appointment (Signing the record book)	By supervisor if he is satisfied with attendance and knowledge and clinical skills acquired. The supervisor may have and assessment before authorization.
Relevant references	Baily and Love's Short Practice of Surgery *Hamilton Bailey's* Demonstrations of *Physical Signs* in Clinical Surgery *Norman L. Browse's* Introduction to the Symptoms & Signs of *Surgical* Disease

At the end of the surgical program a student should be able to handle the following orthopedic conditions by means of detailed clinical assessment and plan out investigations and management

Traumatic orthopaedic conditions

1. Principles of fracture and management
2. Fractures around the shoulder
3. Humeral fractures
4. Fractures around the elbow
5. Forearm fractures
6. Fractures around the wrist
7. Fractures around the hip
8. Femoral fractures
9. Fractures around the knee
10. Tibial fractures
11. Fractures around the ankle
12. Fractures in the foot
13. Pelvic fractures
14. Spinal fractures
15. Joints dislocation(shoulder,elbow,hip, knee)
16. Common sports injuries
17. Fracture related soft tissue complications

Paediatrics Orthopaedic conditions

1. Congenital deformities of musculoskeletal system(e.g. congenital talipes equinovarus)
2. Problems associated with walking, delayed walking and toe walking
3. Knock knees and bow legs
4. Cubitus valgus and varus
5. Painful hip joint and limping child (CDH, Perthes disease)
6. Acute and chronic osteomyelitis
7. Common fractures (e.g. supracondylar fracture)
8. Spinal scoliosis and kyphosis
9. Common bone tumours in childhood

Orthopaedic conditions seen in adult and elderly patients

1. Metabolic bone disease
2. Bone tumors
3. Degenerative joint disease
4. Inflammatory joint disease
5. Pain around the shoulder
6. Pain around the knee
7. Bone and joint infection
8. Peripheral neuropathies
9. Soft tissue pathologies
10. Pathology related to spine
11. Common orthopaedic conditions in the upper limb & lower limb

    E.g. Carpal tunnel syndrome
    Trigger finger
    Mallet finger
    Claw hand
    Tennis elbow
    Nerve palsies
    Golfers elbow

They also should have awareness about

1. Management of POP casts
2. Walking aids
3. Rehabilitation of a patient with musculoskeletal and spinal injuries

B) Ophthalmology

Objective of the appointment	To acquire knowledge and skills on basic and simple ophthalmic conditions. Learn about ophthalmic emergencies and know when to refer a patient for special care
Supervisor	Consultant Ophthalmologist of the unit
Place of the appointment	TH Anuradhapura (can be off site from TH-Anuradhapura)
Duration	2 weeks
Number of the students	1/8 of the batch
Pre-requisites	Knowledge on Anatomy and Physiology of the eye. Should have completed at least one surgical and one medical appointment
Time to attend the clinical work	8am – 12 noon Monday to Saturday, All casualty days and other days as agreed by the supervisor
Additional requirements	Students should be punctual with accepted professional dress code. They should be ready with clinical information of their allocated patients for the ward round by 8am. Allocate patients for clerking
Places where students are expected to attend clinical work	Eye wards, clinics, Operation theatres, Primary care units of the hospital, ICUs and HDUs, Clinical skills laboratories, Other relevant places where investigations/procedures are performed.
Level of knowledge to develop	On ophthalmological conditions and how to treat them. When to refer a patient with eye problems for specialized care. Appreciate the importance of the preservation of the eye sight and take prompt suitable actions to achieve it.
Skills to develop	Elicit clinical signs of eye conditions, removal of FBs, instillation of eye drops and eye irrigation. Ophthalmoscopy.
Other relevant requirements	Importance of sterility, scrubbing technique, assist surgical procedures in the theatre
Assessment method	Final MBBS examination

Authorization of completion of the appointment (Signing the record book)	By supervisor if he is satisfied with attendance and knowledge and clinical skills acquired. The supervisor may have and assessment before authorization.
Relevant references	Baily and Love's Short Practice of Surgery *Hamilton Bailey's* Demonstrations of *Physical Signs* in Clinical Surgery *Norman L. Browse's* Introduction to the Symptoms & Signs of *Surgical* Disease

Ophthalmological conditions

- Lids: Blepharitis, External stye/ internal stye, Ptosis, Entropion/ Ectropion
- Conjunctiva: Conjunctivitis
- Cornea: Ulcers, Opacification of the cornea
- Iris: Iritis
- Lens: Cataract
- Traumatic Lesions: Lid laceration, Black eye, Foreign bodies on cornea & conjunctiva Subconjunctival haemorrhage, Penetrating foreign bodies, Hyphaema
- Squints: Paralytic/ Non paralytic
- Sight threatening diseases: Glaucoma, Uveitis, White pupillary reflex

This 2-week appointment is for a student to develop clinical skills to care for patients with eye diseases. The undergraduate is expected to achieve the following.

1. Ability to test distance vision, near vision and colour vision
2. Acquire skills to use ophthalmoscope and be familiar with normal appearance and get some experience to identify abnormal appearances in ophthalmoscopy and interpret them.
3. Recognize common eye diseases existing in Sri Lanka and treat them
4. Recognize sight threatening eye diseases and to refer them to a Secondary or tertiary Eye Care Center
5. Suspect refractive errors in patients and refer them to an optician
6. Have a reasonably accurate knowledge of the causes, prevalence and incidence of blindness in Sri Lanka
7. Able to administer necessary first aid, instill drops or ointments and bandage a traumatized eye
8. Acquire skills to diagnose and manage preceding ophthalmological conditions or refer them to an appropriate ophthalmologist

C) Otorhinolaryngology (ENT Surgery)

Objective of the appointment	To learn about common ENT problems and how to manage them. Know when to refer an ENT patient for specialized treatment
Supervisor	Consultant ENT Surgeon of the unit
Place of the appointment	TH Anuradhapura (can be off site from TH-Anuradhapura)
Duration	2 weeks
Number of the students	1/8 of the batch
Pre-requisites	Knowledge on Anatomy and Physiology of the head and neck region. Should have completed at least one surgical and one medical appointment
Time to attend the clinical work	8am – 12 noon Monday to Saturday, All casualty days and other days as agreed by the supervisor
Additional requirements	Students should be punctual with accepted professional dress code. They should be ready with clinical information of their allocated patients for the ward round by 8am. Allocate patients for clerking
Places where students are expected to attend clinical work	ENT Surgery wards, clinics, Operation theatres, Primary care units of the hospital, ICUs and HDUs, Clinical skills laboratories, Other relevant places where investigations/procedures are performed.
Level of knowledge to develop	Knowledge on common and emergency ENT problems & airway management. Surgical conditions in parotid, submandibular glands, thyroid gland. Tracheostomy
Skills to develop	Develop basic skills to examine ear, nose and throat. Acquire skills to use common ENT instruments e.g. Otoscope, tongue depressor. Acquire some skills to identify and deal with common ENT emergencies e.g. epistaxis, airway obstruction
Other relevant	Importance of sterility, scrubbing technique, assist surgical

requirements	procedures in the theatre
Assessment method	Final MBBS examination
Authorization of completion of the appointment (Signing the record book)	By supervisor if he is satisfied with attendance and knowledge and clinical skills acquired. The supervisor may have and assessment before authorization.
Relevant references	Baily and Love's Short Practice of Surgery; *Hamilton Bailey's* Demonstrations of *Physical Signs* in Clinical Surgery *Norman L. Browse's* Introduction to the Symptoms & Signs of *Surgical* Disease

At the end of this two-week appointment a student should be able to deal with the common ENT diseases.

Ear

1. Wax in the ear
2. Foreign bodies in the ear and injuries to the ear
3. Painful ear conditions
4. Ear infections – otits externa, AOM, CSOM, OME
5. Conduction and sensoryneural deafness
6. Vertigo and problems with balance
7. Trauma

Nose

1. Nasal obstruction (nasal polyp, growths, foreign bodies)
2. Rhinitis
3. Sinusitis
4. Enlarged adenoids
5. Epistaxis

Throat

1. Hoarseness of voice
2. Tonsillitis and quinsy
3. Foreign bodies in the food passage and airway obstruction
4. Indication for tracheotomy
5. Laryngeal carcinoma

A. Should be able to use the: Head mirror, Tongue depressor, Nasal speculum, Aural speculum, Otoscope
B. Know why indirect laryngoscopy is done
C. Know why post nasal examination is done
D. Observe the tracheostomy is performed and management of the patient with tracheostomy in the ward

Should be able to

1. Do an indirect laryngoscopy and know indications
2. Do a post nasal examination
3. Do an ear syringe
4. Observe the tracheostomy is performed and manage the patient with tracheostomy in the ward
5. Identify normal external auditory meatus, tympanic membrane, oral cavity, pharynx and nasal passage
6. Acquire skills to treat patients with epistaxis, acute nasal obstruction, acute tonsillitis, quinsy, post tonsillectomy bleeding and airway obstruction

D) Urology/ Urological Surgery

Objective of the appointment	Learn about basic and common urological problems. Learn how to treat them and when to refer them for specialized care
Supervisor	Consultant Urologist of the unit
Place of the appointment	TH Anuradhapura (can be off site from TH-Anuradhapura)
Duration	2 weeks
Number of the students	1/8 of the batch
Pre-requisites	Should have completed at least one surgical and one medical appointment
Time to attend the clinical work	8am – 12 noon Monday to Saturday, as agreed by the supervisor on other days
Additional requirements	Students should be punctual with accepted professional dress code. They should be ready with clinical information of their allocated patients for the ward round by 8am. Allocate patients for clerking
Places where students are expected to attend clinical work	Urology wards, clinics, Operation theatres, Primary care units of the hospital, ICUs and HDUs, Clinical skills laboratories, Other relevant places where investigations/procedures are performed.
Level of knowledge and skills to develop, Other relevant requirements	Acquire knowledge to manage common urological conditions, BPH, Ca prostate, RCC, urinary calculi, renal/urethral/ testicular trauma
Assessment method	MCQ, SEQ, Clinical examination in Final MBBS examination
Authorization of completion of the appointment (Signing the	By supervisor if he is satisfied with attendance and knowledge and clinical skills acquired. The supervisor may have and assessment before authorization.

record book)	
Relevant references	Baily and Love's Short Practice of Surgery *Hamilton Bailey's* Demonstrations of *Physical Signs* in Clinical Surgery *Norman L. Browse's* Introduction to the Symptoms & Signs of *Surgical* Disease

At the end of the two weeks of urological exposure of undergraduate surgical program, the student should be able to understand and initiate basic care on common genitourinary conditions.

1. UTI
2. Haematuria
3. Urolithiasis

Kidney

1. Pyelonephritis
2. Congenital disorders of the kidneys
3. Renal stones
4. Renal TB
5. Renal tumours (benign and malignant)
6. Surgical management of the CRF
7. Trauma to the kidney

Ureter

1. Ureteric stones/colic
2. Congenital disorders of the ureter
3. Vesico-ureteric reflux
4. Pelviureteric junction obstruction

Urinary bladder

1. Bladder stones
2. Bladder tumours

3. Infection of the bladder
4. Bladder diverticuli
5. Neuropathic bladder
6. Urine retention
7. Urine incontinence
8. Fistulas involving the bladder

Penis and penile urethra

1. Congenital disorders(posterior urethral valve/hypospediasis/epispediasis/strictures)
2. Phimosis/paraphimosis/circumcision
3. Balanitis/balanitis xerotica obliterans
4. Meatal stenosis
5. Urethral strictures/periurethral abscess's
6. Traumatic injuries
7. Penile CA

Testicle and scrotum

1. Congenital abnormalities(undescended testis, maldescended testis)
2. Torsion of the testis
3. Epididymoorchitis (acute and chronic)
4. Trauma to testis
5. Enlarged scrotum (hydrocele, varicocele, spermatocele, epdidymal cyst)
6. Painful scrotal conditions
7. Testicular tumours

Prostate gland

1. Benign enlargement of the prostate
2. Prostatic carcinoma
3. Acute and chronic Prostatitis

Sexually transmitted diseases

1. Herpes
2. Lympho granuloma venerum
3. Genital warts

In addition to above the student should understand

1. Principles of urethral catheterization

2. How to manage acute and chronic urinary retention
3. Principles of management of patients with obstructive uropathy with deteriorating renal functions
4. About acute life threatening urosepsis
5. Drainage of obstructed infected kidney by means of stents and PC
6. Principles of DRE and PSA

E) Neurosurgery

Objective of the appointment	Identify a patient with increased ICH and how to monitor a patient with altered level of consciousness
Supervisor	Consultant Neurosurgeon of the unit
Place of the appointment	TH Anuradhapura (can be off site from TH-Anuradhapura)
Duration	2 weeks
Number of the students	1/8 of the batch
Pre-requisites	Should have completed at least one surgical and one medical appointment
Time to attend the clinical work	8am – 12 noon Monday to Saturday, as agreed by the supervisor on other days
Additional requirements	Students should be punctual with accepted professional dress code. They should be ready with clinical information of their allocated patients for the ward round by 8am. Allocate patients for clerking
Places where students are expected to attend clinical work	Neurosurgical wards, clinics, Operation theatres, Primary care units of the hospital, ICUs and HDUs, Clinical skills laboratories, Other relevant places where investigations/procedures are performed.
Level of knowledge and skills to develop, Other relevant requirements	Intra-cranial haemorrhages, tumours and increased ICP. How to monitor a patient with head and spinal injury. Basic interpretation head CT scan. Common nerve problems such as CTR, brachial plexus injury.
Assessment method	MCQ, SEQ, Clinical examination in Final MBBS examination
Authorization of	By supervisor if he is satisfied with attendance and knowledge and

completion of the appointment (Signing the record book)	clinical skills acquired. The supervisor may have and assessment before authorization.
Relevant references	Baily and Love's Short Practice of Surgery *Hamilton Bailey's* Demonstrations of *Physical Signs* in Clinical Surgery *Norman L. Browse's* Introduction to the Symptoms & Signs of *Surgical* Disease

At the end of 3rd 4th final year surgical and two week's neurosurgical program students should be able to identify the presentation of neurosurgical conditions, arrive at a diagnosis through the relevant history, examine and investigate. They should know the principles of management

1. Congenital disorders
2. Head injuries including skull fractures, intracranial hemorrhages(presentation, diagnosis, relevant investigations, monitoring, immediate management, follow up management)
3. Cerebral abscess
4. Fundamentals of Intracranial tumours
5. Spinal cord and root compression & rehabilitation
6. Peripheral nerve entrapment neuropathies
7. Peripheral nerve injuries
8. Surgical management of pain

F) Anaesthesiology

Objective of the appointment	Learn pre-operative assessment and optimization of patients. Learn how vital functions are managed during anesthesia, with physiological basis. Gain experience on intensive post-operative care including close monitoring. Emergency care of critically ill. CPR. Learn more on fluid, acid-base and electrolyte management
Supervisor	Consultant Anaesthetist
Place of the appointment	TH Anuradhapura
Duration	2 weeks
Number of the students	1/8 of the batch
Pre-requisites	Knowledge on Physiology of the CVS, respiratory system and CNS. Should have completed at least one surgical and one medical appointment
Time to attend the clinical work	8am – 12 noon Monday to Saturday
Additional requirements	Students should be punctual with accepted professional dress code.
Places where students are expected to attend clinical work	Operation theatres, ICUs, Pain clinics
Level of knowledge to develop	Importance of pre-op assessment and optimization. Pre-medication. Airway protection and assessment. Monitoring CNS, CVS, RS, fluid, acid-base and electrolytes. Methods of pain relief. CPR and other resuscitations. Pharmacological agents used in anaesthesia
Skills to develop	Know how to use ECG monitors and pulse -oximeters, ambu bags,

	oxygen masks, nasal prongs. Have awareness in defibrillators and ventilators. Develop skills to maintain airway – triple maneuver, endotracheal intubation
Other relevant requirements	Importance of sterility, scrubbing technique, assist surgical procedures in the theatre
Assessment method	Final MBBS examination
Authorization of completion of the appointment (Signing the record book)	By supervisor if he is satisfied with attendance and knowledge and clinical skills acquired. The supervisor may have and assessment before authorization.

At the end of this two-week appointment, a student should achieve the following

1. Skills to insert an IV cannula confidently
2. With regard to the unconscious patient
    a. Skills to maintain the airway with triple maneuver or using an oral / nasal airway
    b. Understand the principles of
        - Protection of the eye
        - Prevention of bed sores
        - Bladder and bowel care
3. Ability to perform pre- anaesthetic assessment and optimize the patient prior to invasive interventions.
4. Understand the basic techniques of anaesthetic induction, maintenance and recovery.
5. Understand the prevention and management of post-anaesthetic/operative complications such as
    a. Airway obstruction
    b. Hypoventilation
    c. Hypotension
    d. Headache after spinal anaesthesia
6. Skills to insert a laryngeal mask airway (LMA).
7. Skills to insert an endotracheal tube under supervision if possible in OT / ICU.
8. Ability to carry out a lumbar puncture under supervision (in a dummy).
9. Recognize equipment for monitoring an unconscious patient and describe their uses.
10. Explain the principles and describe the protocol with regard to cardiopulmonary resuscitation, including the following
    a. Maintenance of the airway
    b. Cardiac massage in the adult, child and neonate
    c. Defibrillation
11. Observe the method of giving local anesthesia e.g. ring block, ankle block, penile block
12. Observe and identify the toxic features of local anesthetics and know how to manage them.
13. Recognize the early features of blood loss and dehydration and know the principles of their management.
14. Interpret a blood gas report

15. Know different methods of pain relief and their advantages and disadvantages.
16. Understand the principles of organ support in intensive care with respect to
    a. Cardiovascular system
    b. Respiratory system
    c. Renal failure (dialysis)
    d. Hepatic failure
17. Asses nutritional status of the patient and know how to optimize nutritional status & modes of administration of nutrients.
18. Understand the methods available for obstetric analgesia and their advantages and disadvantages.
19. Understand Oxygen therapy

Course contents in Surgery

Surgery lectures

Lectures are conducted to teach the theoretical aspect of surgical practice. It is to guide students in their clinical courses to understand clinical conditions better and help to assimilate it in their clinical practice. The surgical lecture schedule is designed to cover most important and common problems encountered in the practice of the surgery. It provides basic guidelines but students are expected to read and gather relevant information.

Vascular system	
Occlusive arterial diseases (acute and chronic)	Limbs, carotid, Cardiovascular system, mesenteric Thrombosis/embolism
Aneurysms	Mainly Abdominal aortic aneurysm, pseudoaneurysms, peripheral aneurysms in various places
Varicose veins	As a common venous problem
Deep vein thrombosis	Identify risk factors, Diagnosis, Importance of prophylaxis, treatment
Lymphatic disorders	Lymphadenopathy, surgical excisions, lymphoedema, lymphangitis
Vascular trauma	Importance of ischaemia , limb salvage
Gastro-enterology	
Symptomatology and investigations of the Gastrointestinal tract	
Overview of salivary glands	Benign and malignant diseases, salivary calculi, infections, inflammation
Carcinoma of the oesophagus and stomach	As a model of dysphagia, as a disease of Loss of weight with retained appetite

Peptic ulcer disease and Gastro oesophageal reflux disease	Dyspepsia, oesophagitis, Differential Diagnoses epigastric pain, acute/chronic gastritis, gastric/duodenal ulcers, Medical/ surgical treatment modalities, Helicobacter pylorias a cause
Upper Gastro intestinal bleeding	Peptic ulcer disease, varices, carcinomas, duodenal bleeds, vascular malformations, importance of endoscopy in management, acute treatment and management
Lower Gastro intestinal bleeding	Malignancies, Inflammatory bowel disease, bowel ischaemia, diverticulosis, vascular malformation, endoscopy, angiogram, short and long term treatment and management
Pancreatitis – acute/chronic	Causes, diagnosis, management
Gall stone disease	Cholecystitis, obstructive jaundice, cholangitis, pancreatitis
Carcinoma of pancreas and biliary system	Biliary obstruction, as an Gastrointestinal cancer
Peritonitis	Appendicitis, Cholecystitis, gynaecological causes, bowel perforations, trauma
Colorectal carcinoma as a model for carcinogenesis screening and surveillance	
Intestinal obstruction	Include gastric outlet obstruction, small bowel
Large bowel emergencies	Bleeding, perforations, closed loop obstructions, volvulus, megacolon, colitis
Colorectal tumours	
Ano-rectal nonmalignant diseases	Anal tissue, fistula, Haemorrhoid, pilonoidal sinus, perianal abscess
Hernias	Internal and external, existing defects and incisional
Urology	
Urinary tract infection	Simple/complicated Urinary tract infection, recurrence, fistulae, , Foreign body associated infections cystitis, pyelonephritis, pyonephrosis, importance of drainage, prostatitis and epididymal infections
Bladder dysfunctions	Incontinence and retention
Urolithiasis and nephrolithasis	Types of stones, stones + Urinary tract infections, obstructions and consequences, long term effects, treatment options
Urological tumours	Renal, urothelial, overview of management, associated complications
Prostate disease –benign/malignant	Benign prostatic hyperplasia and Prostate

	carcinoma, importance of Prostate-specific antigen/Digital rectal examination. Cancer screening, Transurethral resection of the prostateandTransurethral resection of the prostate syndrome
Testicular problems	Maldescent/non-descended testis/torsion /infection/tumours
Orthopaedics	
Introduction to orthopaedics	
Fractures dislocations and their management	
Spinal injuries	Cervical spine/ thoracic/ lumbar
Bone and joint infections	
Bone tumours	
Back pain	
Paediatric orthopaedic problems	
Osteoarthritis and osteoporosis	
Breast	
Benign breast disease	Benign breast conditions, Aberrations in the Normal Development and Involution of the breast, fibroadenoma, adenosis, periductal mastitis, duct ectasia, Cysts, Breast infection
Breast carcinoma	Lobular/ductal, overview Ductal carcinoma in situ, Sentinel Lymph Node Biopsy, Breast-conserving surgery, Screening, other modalities of treatment, Reconstruction
Thyroid and endocrine	
Benign thyroid diseases	Multinodular Goiter,Solitary Thyroid Nodule,Iry and IIry toxicosis, myxoedema, aerodigestive ways compression, complication
Thyroid cancers	Papillary, follicular, medullary , anaplastic Ca lymphoma, Investigations management options
Other endocrine diseases	Adrenal, parathyroid, endocrine pancreas
Paediatric surgery	
Overview of common paediatric surgical problems	Pyloric stenosis, Malrotation, Tracheo-oesophageal fistula, Hirschpurng disease, imperforated anus

Basic surgical principles	
Wound healing and management	
Physiological response to trauma	Endocrine, neurological, metabolic
Surgical infections/sepsis	
Shock and management	
Fluid and electrolyte balance/acid base balance	
Nutrition in surgery	
Overview of pre-op preparation	
Post-op care and pain relief	
Terminal care and palliation	
Surgical ethics and consent/Breaking bad news	
Trauma	
ABC of trauma	
Initial assessment and resuscitation	
Head, chest , abdominal and pelvis injuries	
Faciomaxillary injuries	
Burns	
Anaesthesia	
Principles of anaesthesia	General, Local, regional complications
Different types- General,local,regional	
ENT and Eye	
Common ear problems	Wax, Otitis media with effusion, Acute Otitis Media, Chronic Suppurative Otitis Media, Vertigo, Benign Paroxysmal Positional Vertigo, Hearing impairment, Foreign bodies etc.;
Nasal allergy and sinusitis	
Nasal trauma and epistaxis	
Tonsils and adenoids	
Laryngopharyngeal disorders	
Common eye problems	
Neurosurgery	
Intra-cranial tumours	
Increase Intra cranial pressure	
Head injuries	
Cardio-thoracic surgery	
Outline Ischemic Heart Disease and congenital heart disease	Ischemic heart disease/ Congenital heart disease, Coronary artery bypass grafting, valve replacements Trauma – tamponade

Surgery related pulmonary problems	Trauma – flail chest, haemo pneumothorax, contusions, hydrothorax/empyema, lung abscess, overview lung Continuous Assessment, drainage of pleural cavity

Principles of Surgery

At the end of the surgical program, a student should have the knowledge of the following topics related to principles of surgery.

1. Initial management of critically ill patient (ABC of trauma)
2. Surgical response to trauma
3. Diagnosis and the management of shock
4. Blood and blood product transfusions and its complications
5. Burns (assessment and management)
6. Asepsis / antisepsis / sterilization
7. Surgical site infections
8. Antibiotics / use and abuse / drug resistance
9. Analgesic therapy
10. Intravenous fluids Fluid, electrolyte and acid-base balance
11. Surgical Nutrition
12. Local anesthetic agents and their usage
13. Suture material and needles
14. Commonly used instruments in the theatre
15. Endoscopic procedures (types, scopes, indications, preparation, procedure and complications)
16. Cancer, premalignant lesions / early diagnosis / principles of treatment
17. Surgical audit
18. Principle of transplantation

Surgery tutorials

Surgical tutorials will be conducted in the Department from time to time. This is a small group teaching method. It will be mainly of on problem based learning by students. Students need to be

prepared for interactive discussion with each other and the tutor, on a given topic. The students are expected to discuss logically, argumentatively and analytically to make tutorials meaningful and educational. This will help to cover the gaps in the teaching- learning system of the program. It will also help to address the areas not covered by other components of teaching learning. This process will help to revise what is already learnt and thus help to consolidate the knowledge

Practical procedures in Surgery

Ward procedures		**1**	**2**	**3**
	Dressing of wounds	✓		
	Bandaging	✓		
	Removal of sutures	✓		
	Performing a cut down		✓	
	Insertion of an IV cannula	✓		
	Catheterization	✓		
	Care of pressure points	✓		
	Insertion of IC tubes			✓
	Removal of IC tubes			✓
	Routine pre-operative assessment of patients	✓		
	Pre-operative control of chronic diseases (e.g. Diabetes, hypertension, asthma, IHD)	✓		
Post-operative care				
	Relief of pain	✓		
	Fluid and electrolyte balance	✓		
	Management of bladder, bowel and skin	✓		
	Management of NG tubes, catheters and T-tubes	✓		
	Management of colostomy	✓		
	Physiotherapy			✓
	Advice on convalescence (after common surgical procedures e.g. hernia, laparotomy)	✓		
Post-operative follow-up				

	Rehabilitation	✓		

Categorized level of skills	Level
Can perform independently (Does)	**1**
Can perform under supervision (Shows how)	**2**
Has seen the procedure (Knows)	**3**

Assessment in Surgery

End of the Professorial appointment evaluation

- OSCE
- Viva

Final MBBS examination

- MCQ (common MCQ) - 20%
- SEQ - 20%
- Long case - 20%
- Short cases - 20%
- Continuous assessment - 20%

Recommended reading/ references(most recent editions)

- Williams N, Bulstrode C, O'Connell PR. Bailey and Love's Short Practice of Surgery. Boca Raton,FL: CRC Press Publishing .
- Michael Swash, Michael Glynn. Hutchison's clinical methods.Edinburgh: Saunders Elsevier publishing.
- Lumley JSP, D'Cruz AK, Hoballah JJ, Scott-Connor CEH. Hamilton Bailey's Physical Signs: Demonstrations of Physical Signs in Clinical Surgery. Boca Raton, FL: CRC Press Publishing.
- Scott PR, Williamson RCN, Waxman BP. Scott: An Aid to Clinical Surgery. Edinburgh: New York: Churchill Livingstone Publishing.
- Norman L Browse's Introduction to The Symptoms and Signs of Surgical Disease

5.6.3 Obstetrics and Gynaecology

Intended learning outcomes

The purpose of undergraduate training in obstetrics and gynaecology is to prepare medical students for internship, subsequently to practice medicine as a skilled doctor and encourage students to pursue a career in Obstetrics and Gynaecology as specialists and researchers.

On completion of clinical training in Obstetrics and Gynaecology students should be able to,

1. obtain a relevant history, elicit physical signs and interpret those findings and come to a reasonable diagnosis / differential diagnoses and management plan of common or important conditions specific to women's health or affecting pregnant women
2. manage obstetric and gynaecological emergencies.
3. work in primary health care delivery system in Sri Lanka in improving women's and maternal health of the community with relatively limited resources
4. perform both pre-operative and post-operative assessment of surgical patients and management
5. demonstrate adequate knowledge on operative theatre practices, universal precautions, sterilization and disinfection procedures, assist in surgery and handle basic instruments.
6. demonstrate the ability to perform basic obstetric and gynaecological procedures under supervision
7. function as a team member and a leader in an inter professional team to provide safe and effective patient care
8. recognize the need for multidisciplinary involvement when necessary
9. demonstrate the qualities required to sustain lifelong learning in order to improve patient care based on scientific evidence

10. demonstrate the ability to communicate and counsel patients and colleagues about sensitive topics such as menstrual problems, sexual problems, teenage pregnancies, sexual abuse and breaking bad news.
11. identify the role of audit and research to improve the quality of women's health

Outline of the clinical training in Obstetrics and Gynaecology

	Appointment	Hospital	Duration
1.	Introductory Clinical Appointment	TH-Anuradhapura	1 week
2.	Obstetrics and Gynaecology 1	TH-Anuradhapura/ DGH-Polonnaruwa, DGH-Matale	4 weeks
3.	Obstetrics and Gynaecology 2	TH-Anuradhapura	4 weeks
4.	Professorial Appointments	TH-Anuradhapura	8 weeks
		Total duration -	17 weeks

First clinical appointment in Obstetrics and Gynaecology (OG-1)

Four-week appointment with Ministry of Health consultant, where basic clinical skills (BCS) are practiced and experience obtained in critical clinical skills (CCS)

Course aim

To acquire basic knowledge, skills and attitudes in the management of obstetrics and gynaecological patients in clinical setting

Course objectives

1. To demonstrate basic skills in history taking and examination of obstetrics and gynaecology patients
2. To observe and assist procedures in obstetrics and gynaecology including labour care
3. To develop basic skills in recordkeeping
4. To demonstrate communication skills with patients and health care team

Course contents

- Basic clinical skills (BCS)
    - Take a clear, concise and chronological history of pregnant women and gynaecology patients
    - Abdominal palpation of pregnant women
    - Speculum and bimanual vaginal examination of gynaecology patients
    - Present a brief summary of a pregnant women and a gynaecology patient
    - Maintain a partogram
- Critical clinical skills (CCS)
    - Take a clear, concise and chronological history of pregnant women and gynaecology patients
    - Abdominal palpation of pregnant women
    - Speculum and bimanal vaginal examination of gynaecology patients
    - Present a detailed history of a pregnant women and a gynaecology patient
    - Present a brief summary of a pregnant women and a gynaecology patient
    - Diagnose labour
    - Maintain a partogram and manage normal labour
    - Identify normal and abnormal CTG
    - Diagnose and differentiate between different types of miscarriage
    - Routine antenatal care
    - Suture an episiotomy
    - Carry out cervical (PAP) smear
    - Maintain a log book

Teaching and learning methods

- Clinic-based teaching and learning
- Small group discussions- based on clinical scenario
- Bedside teaching during routine ward rounds- Case presentations/ clinical case-based discussion
- Operation theatre sessions- skills development through observation and assisting
- Maintenance of a log book

- Peer teaching
- Observed history taking
- Reflective writing

Assessment

- Clinical training assessment at the end of OG-1 appointment: Log book assessment (Formative)
- End appointment OSCE
- Final MBBS examination

Second clinical appointment in Obstetrics and Gynaecology (OG-2)

Four-week appointment with Ministry of Health consultant as before, and acquire core knowledge and skills (CKS).

Course aim

To acquire further skills in comprehensive assessment of obstetrics and gynaecological patients in clinical setting

Course objectives

At the end of the appointment students should be able to

1. demonstrate basic skills in evaluation of obstetrics and gynaecology patients in clinical setting
2. formulate management plans in common obstetrics and gynaecological health issues
3. develop skills in accurate record keeping
4. demonstrate basic counseling and communication skills

Course contents

- Basic clinical skills (BCS)
    - Take a clear, concise and chronological history of pregnant women and gynaecology patients
    - Abdominal palpation of pregnant women
    - Speculum and bimanal vaginal examination of gynaecology patients
    - Present a brief summary of a pregnant women and a gynaecology patient

    - Maintain a partogram
- Core knowledge and skills (CKS)
    - Write a case summary
    - Write a diagnosis card
    - Write operation notes
    - Assist,
        - LSCS
        - TAH/BSO
        - VH&R
        - D&C
        - LFD

Teaching and learning methods

- Clinic-based teaching and learning
- Small group discussions- based on clinical scenario
- Bedside teaching during routine ward rounds- Case presentations/ clinical case-based discussion
- Ward classes- clinical oriented case presentations and discussions
- Operation theatre sessions- skills development through observation and assisting
- Maintenance of a log book
- Peer teaching
- Observed history taking
- Reflective writing

Assessment

- Clinical training assessment at the end of OG-1 appointment: Log book assessment (Formative)
- End appointment OSCE
- Final MBBS examination

Outcomes of Professorial Obstetrics and Gynaecology appointment

At the end of the 8-weeks Professorial clinical appointment in Obstetrics and Gynaecology, students should be competent in management of common obstetrics and gynaecology problems at basic level

to become a competent and confident house officer with correct attitudes. (refer the intended learning outcomes of the Obstetrics and Gynaecology course)

Course contents

Obstetrics

1. Physiological changes in pregnancy
2. Routine antenatal care
3. Antenatal screening
    a. Biochemical screening
    b. Ultrasound screening
    c. Invasive prenatal diagnosis
4. Normal labour and delivery
    a. Normal labour
    b. Induction of labour
    c. Analgesia and anaesthesia in labour
    d. Fetal monitoring
5. Abnormal labour
    a. Abnormal labour patterns
    b. Malpresentations and malpositions in labour
    c. Instrumental delivery
6. Vaginal birth after caesarean section
7. Breech presentation
8. Multiple pregnancy
9. Rhesus isoimmunisation
10. Medical disorders in pregnancy
    a. Cardiac disease

b. Respiratory diseases
c. Diabetes mellitus
d. Haematological conditions
e. Autoimmune conditions
f. Renal diseases
g. Hypertensive disorders in pregnancy
h. Urinary tract infection

11. Late pregnancy complications
    a. Preterm labour
    b. Pre-labour rupture of membranes
    c. Antepartum haemorrhage
    d. Intra uterine fetal death
    e. Prolonged pregnancy

12. Fetal growth restriction
13. Postpartum
    a. Perineal trauma
    b. Mental health in the puerperium
    c. Neonatal assessment and resuscitation
    d. Post-partum pyrexia
14. Obstetrics emergencies
    a. Maternal collapse - obstetric and non-obstetric causes
    b. Postpartum haemorrhage
    c. Uterine inversion
    d. Eclampsia
    e. Shoulder dystocia
    f. Cord prolapse
    g. Amniotic fluid embolism

Gynaecology

1. Menstrual cycle [Reproductive transitions]
    a. Puberty and Menarche
    b. Delayed and precocious puberty
    c. Menstrual dysfunction in adolescence
    d. Menopause, hormone replacement therapy
    e. Postmenopausal bleeding
2. Menstrual disorders
    a. Heavy menstrual bleeding

    b. Fibroids and endometrial polyps
    c. Polycystic Ovarian syndrome, hirsutism and virilism
    d. Premenstrual syndrome
    e. Clinical evaluation and management of amenorrhoea
3. Endometriosis and adenomyosis
4. Fertility and conception
    a. Normal conception
    b. Female infertility
    c. Male infertility
    d. Assisted reproduction
    e. Reproductive ageing and ovarian reserve
5. Sexual problems in gynaecology
6. Urinary incontinence
7. Urogenital prolapse
8. Benign ovarian tumoursandovarian malignancy
9. Cervical screening and Cancer
10. Endometrial hyperplasia and Cancer
11. Palliative care
12. Problems in early pregnancy
    a. Hyperemesis gravidarum
    b. Miscarriage
    c. Pregnancy of unknown location
    d. Gestational trophoblastic disease
13. Pelvic inflammatory disease

Teaching-learning methods in Obstetrics and Gynaecology

- Lectures 60 hours
- Student ward round
- Skills laboratory training
- Students presentations
- Student log book
- Shadow house officer
- Clinic-based teaching and learning
- Bedside teaching during routine ward rounds- Case presentations/ clinical case-based discussion
- Ward classes- clinical oriented case presentations and discussions
- Operation theatre sessions

- Video library
- Journal club

Assessment

Final MBBS examination

- MCQ (common MCQ) - 20%
- SEQ - 20%
- Obstetrics case - 20%
- Gynaecology case - 20%
- Continuous assessment - 20%
  (end-appointment OSCE and viva- 10%, Log book assessment 10%)

Recommended reading/ references

- Training in Obstetrics and Gynaecology, the essential curriculum
- Oxford Handbook of Obstetrics and Gynaecology the essential guide for the practice of Obstetrics and Gynaecology
- Royal College of Obstetrician and Gynaecologists' Guidelines
- Sri Lankan College of Obstetrician and Gynaecologists' Guidelines
- Family Health Bureau Guidelines
- NICE Guidelines- United Kingdom

5.6.4 Paediatrics

The aim of undergraduate paediatric training is to nurture and train medical undergraduates to become competent and confident medical graduates who will be able to deliver comprehensive paediatric patient care to satisfy the international accredited standards.

Intended learning outcomes

On completion of the clinical programme in paediatrics, students should be able to

1. obtain a comprehensive history, elicit physical signs and interpret findings and come to a reasonable diagnosis/ differential diagnoses and management plan for paediatric problems.
2. manage paediatric emergencies
3. function as a team member and leader in an inter professional team to provide safe and effective patient care
4. engage in lifelong learning in order to improve patient care based on scientific evidence
5. demonstrate a commitment to carrying out professional responsibilities with adherence to ethical principles and an understanding of the legal implications of practice

Outline of the clinical training in Paediatrics

	Appointment	Hospital	Duration
1.	Introductory Clinical Appointment	TH-Anuradhapura	1 week

2.	Paediatrics 1	TH-Anuradhapura/ DGH-Polonnaruwa, DGH-Matale	4 weeks
3.	Paediatrics 2	TH-Anuradhapura	4 weeks
4.	Professorial Appointments	TH-Anuradhapura	8 weeks
		Total duration -	17 weeks

First clinical appointment in Paediatrics

Objective of the appointment	To have basic understanding of how to approach patients in view of history taking, basic examinations, basic knowledge regarding the management of common paediatric problems
Supervisor	Consultant Paediatrician of the Ministry Paediatrics unit
Place of the appointment	TH Anuradhapura (can be off site from TH-Anuradhapura)
Duration	4weeks
Number of the students	1/8 of the batch
Pre-requisites	Completed introductory appointment in Paediatrics
Time to attend the clinical work	8am – 12 noon Monday to Saturday, as agreed by the supervisor on casualty days
Additional requirements	Students should be punctual with accepted professional dress code. They should possess a stethoscope, pen torch, measuring tape and a knee hammer. They should be ready with clinical information of their allocated patients for the ward round by 8am. Group leader should allocate patients for clerking
Places where students are expected to attend clinical work	Paediatric wards, clinics, PICU, Clinical skills laboratories, Other relevant places where investigations/procedures are performed.

Level of knowledge and skills to develop, Other relevant requirements	Basic knowledge and skills regarding common paediatric conditions
Skills to develop	Basic ward procedure
Assessment method	Portfolio and OSCE (5 stations)
Authorization of completion of the appointment (Signing the record book)	By supervisor if he is satisfied with attendance and knowledge, clinical skills and attitudes acquired. The supervisor may conduct an evaluation before authorization.
Relevant references	Illustrated Textbook of Paediatrics Nelson Textbook of Paediatrics Forfar and Arneil Textbook of Paediatrics

Specific learning outcomes

At the end of the appointment, student should be able to

1. obtain a complete paediatric history from the care-taker and the child
2. examine all systems of infants, children and adolescents with correct technique
3. recognize the purpose of history taking and examination
4. describe the concept of diagnosis and the three cornerstones in diagnosis: History, examination and investigations
5. produce summaries of history and examination findings
6. identify the problems from a parent's perspective and compose problem lists
7. work comfortably in the capacity of a medical student in the paediatric ward health care team, developing professional relationships with all categories of healthcare workers including doctors, nurses, medical laboratory technicians, attendants, laborers, etc.
8. list indications, contraindications, and complications of common procedures done in the paediatric ward and to be able to perform the procedures listed in the guidelines
9. identify the major developmental milestones of a normal child
10. scientifically measure and plot growth parameters of a child using growth charts
11. identify abnormal growth patterns
12. recognize and apply the principles behind the management of common paediatric emergencies
13. interpret clinical findings and investigation results using knowledge in basic sciences

Procedures and ward skills for the First Paediatrics appointment

Skills level 1: Can perform independently (Does)

Skills level 2: Can perform under supervision (Shows how)

Skills level 3: Has seen the procedure (Knows)

Procedure	Skills level
Measurement of blood pressure	1
Use of a tongue depressor	1
Perform hand washing according to the correct technique	1
Perform ear examination	1
Fundoscopic examination	1
Urine ward test for proteins	1
Urine ward test for reducing substances	1
Measurement of weight using a bathroom scale	1
Measurement of occipito-frontal diameter	1
Measurement of height using a stadiometer	1
Completing laboratory request form	1
Measurement of mid-arm circumference	1
Completing x-ray request form	1
Measurement of peak flow rate	1
Measurement of length using an infantometer	2
Maintain paediatrics GCS (optional, to be done if there is a patient)	1
Nebulization	2
Venipuncture and blood culture	3
Giving an intravenous injection	3
Estimation of capillary blood sugar doing finger prick	3
Giving an intramuscular injection	3
Inserting an intravenous cannula	3
Performing urinary catheterization	3
BCG administration	3
Collection, storage and transport of a CSF sample	3
Use of adrenalin during anaphylaxis (optional, if there is a patient)	3

Second clinical appointment in Paediatrics

Objective of the appointment	To further develop skills in history taking, examinations, interpretation and planning of basic management of paediatric problems
Supervisor	Consultant Paediatrician of the Ministry Paediatrics unit
Place of the appointment	TH Anuradhapura
Duration	4 weeks
Number of the students	1/8 of the batch
Pre-requisites	Completed first Paediatrics appointment
Time to attend the clinical work	8am – 12 noon Monday to Saturday, as agreed by the supervisor on casualty days
Additional requirements	Students should be punctual with accepted professional dress code. They should possess a stethoscope, pen torch, measuring tape and a knee hammer. They should be ready with clinical information of their allocated patients for the ward round by 8am. Group leader should allocate patients for clerking
Places where students are expected to attend clinical work	Paediatric wards, clinics, PICU, Clinical skills laboratories, Other relevant places where investigations/procedures are performed.

Level of knowledge and skills to develop, Other relevant requirements	Basic management of common paediatric conditions
Skills to develop	Basic ward procedure
Assessment method	Portfolio and OSCE (10 stations)
Authorization of completion of the appointment (Signing the record book)	By supervisor if he is satisfied with attendance and knowledge, clinical skills and attitudes acquired. The supervisor may conduct an evaluation before authorization.
Relevant references	Illustrated Textbook of Paediatrics Nelson Textbook of Paediatrics Forfar and Arneil Textbook of Paediatrics

Specific learning outcomes

At the end of the appointment, student should be able to

1. obtain a comprehensive and focused history of health and disease of neonates, infants, children and adolescents from the care-taker and the child
2. perform a comprehensive and focused clinical examination of a child with correct technique
3. formulate summaries of clinical findings in history and examination
4. formulate differential diagnoses after analyzing clinical findings
5. formulate problem lists specific to patient by analyzing the collected data about the child in the context of child's socio-economic and family environment
6. document and present histories, examination findings, summaries, differential diagnoses and problem list
7. rationally decide on investigations needed to be performed on a child
8. lay down simple management plans for common paediatric illnesses
9. manage common paediatric emergencies with an understanding on the rationale behind the management
10. work comfortably in the capacity of a medical student in the paediatric ward health care team, developing professional relationships with all categories of healthcare workers including doctors, nurses, medical laboratory technicians, attendants, laborers, etc.

Procedures and ward skills for the Second Paediatrics appointment

Skills level 1: Can perform independently (Does)

Skills level 2: Can perform under supervision (Shows how)

Skills level 3: Has seen the procedure (Knows)

Procedure	Skills level
Nebulization	1
Maintain paediatrics GCS (optional, to be done if there is a patient)	1
Maintain fluid balance chart	1
Perform whole blood clotting time in ward	2
Setting up a blood transfusion	2
Giving an intravenous injection	2
Setting up an intravenous infusion using a normal drip set	2
Setting up an intravenous infusion using a burette set	2
Venipuncture and blood culture	2
Neonatal examination	2
Inserting a nasogastric tube	2
Inserting an intravenous cannula	2
Neonatal resuscitation	3
Administration of antivenom sera (AVS)	3
Collection, storage and transport of a CSF sample	3
Use of adrenalin during anaphylaxis (optional, if there is a patient)	3

ProfessorialPaediatrics appointment

Objective of the appointment	To further develop skills in history taking, examinations, interpretation and planning of basic management of paediatric problems, to become a competent and confidant house officer with correct attitudes
Supervisor	Consultant Paediatrician of the Professorial Paediatrics unit
Place of the appointment	TH Anuradhapura
Duration	8 weeks
Number of the students	1/5 of the batch
Pre-requisites	Satisfactorily completed first and second Paediatrics appointment
Time to attend the clinical work	Full time
Additional requirements	Students should be punctual with accepted professional dress code. They should possess a stethoscope, pen torch, measuring tape and a knee hammer. They should be ready with clinical information of their allocated patients for the ward round by 8am. Group leader should allocate patients for clerking
Places where students are expected to attend clinical work	Paediatric wards, clinics, PICU, Neonatology unit, Thalassaemia unit, Rheumatic fever clinic, Neurology clinic, Clinical skills laboratories, Other relevant places where

	investigations/procedures are performed.
Level of knowledge and skills to develop, Other relevant requirements	Thorough knowledge regarding the management of common paediatric conditions
Skills to develop	Basic ward procedure
Assessment method	Portfolio and OSCE (20 stations)
Authorization of completion of the appointment (Signing the record book)	By supervisor if he is satisfied with attendance and knowledge, clinical skills and attitudes acquired. The supervisor may conduct an evaluation before authorization.
Relevant references	Illustrated Textbook of Paediatrics Nelson Textbook of Paediatrics Forfar and Arneil Textbook of Paediatrics

Specific learning outcomes

At the end of the appointment, student should be able to

1. obtain a comprehensive and focused history of health and disease of neonates, infants, children and adolescents from the care-taker and the child
2. conduct a three-way interview with ease when assessing children and young people
3. examine all systems of infants, children and adolescentswith correct technique
4. formulate summaries of clinical findings to be presented to the seniors at the level expected from a paediatric house officer
5. formulate an appropriate differential diagnoses and a problem list at the level expected from a paediatric house officer
6. decide on the investigations performed on children and young people at the level expected from a paediatric house officer
7. formulate management plans of common paediatric problems at the level expected from a paediatric house officer
8. manage common paediatric emergencies according to APLS and NLS guidelines understanding limitations in a low resource setting
9. perform common procedures performed by house officers in a paediatrics and neonatal unit
10. write prescriptions safely
11. communicate effectively with children, youngpeople, caretakers, doctors and other healthcare workers in common scenarios that occur in paediatrics and neonatal units

Procedures and ward skills for the Professorial Paediatrics appointment

Skills level 1: Can perform independently (Does)

Skills level 2: Can perform under supervision (Shows how)

Skills level 3: Has seen the procedure (Knows)

Procedure	Skills level
Measurement of temperature and maintaining a temperature chart	1
Estimation of capillary blood sugar doing heel/finger prick	1
Writing diagnosis card with management plan	1
Connecting an ECG monitor and doing 12-lead ECG	1
Advising and demonstration of usage of inhaler devices	1
Blood drawing including blood cultures	2
Estimation of PCV	2
Urinary catheterization	2
Setting up a blood transfusion	2
BCG vaccination	3
Administration of an IM vaccine	3
Monteux test- performance and interpretation	3
Collection, storage and transport of a CSF sample	3
Insertion of an umbilical catheter	3
Exchange transfusion (optional, if there is a patient)	3
Neonatal resuscitation session (compulsory)	2
Paediatrics resuscitation session (compulsory)	2

Learning outcomes of the subspecialties during Professorial Paediatrics appointment

A) Neonatology

At the end of the neonatology sub-appointment students should be able to

1. do a complete neonatal examination
2. list the danger signs in the neonatal period and identify a neonate who needs immediate attention
3. measure weight, length and occipitofrontal diameter using proper techniques

4. administer BCG vaccination according to the proper technique
5. advice a mother on breast feeding
6. describe common problems associated with breast feeding and know how to manage those
7. calculate the fluid requirements of a neonate and describe how to provide that via oral and intravenous routes
8. identify benign dermatological conditions of the neonatal period including milia, stork bites, Mongolion blue spots and erythema toxicum
9. identify the dermatological conditions of the neonatal period that need treatment and know the treatment options
10. recall steps of neonatal resuscitation including intubation
11. recall the physiological basis of neonatal resuscitation
12. recall the steps of umbilical vein catheterization and the indications and complications of this procedure
13. recall the procedure of exchange transfusion and indications and complications of this procedure
14. describe the mechanisms underlying physiological jaundice
15. describe the causes of jaundice in the neonatal period
16. properly administer phototherapy to a neonate with jaundice, know the basis for phototherapy, its complications and the measures to be taken to minimize these complications
17. list the causes and complications of prematurity
18. describe the steps that can be taken to prevent developing complications associated with prematurity
19. list the cases and complications of small for gestational age babies
20. describe the steps that can be taken to prevent developing complications associated with small for gestational age babies
21. describe the aetiology, pathophysiology, clinical features, complications, prognosis, management and follow up of neonatal meningitis
22. describe the causes and complications of birth asphyxia
23. identify the cardiac murmurs occurring during the neonatal period and decide when to do appropriate referrals
24. identify and recall complications of cephalohematoma
25. identify ambiguous genitalia and describe its immediate management
26. describe the aetiology, pathophysiology, clinical features, complications, prognosis, management of inguinal hernias and hydrocephalus during the neonatal period

B) Rheumatic fever (Benzathine) clinic

At the end of the session students should be able to

1. administer an intramuscular injection according to the proper technique

2. perform penicillin sensitivity test using the proper technique
3. interpret penicillin sensitivity test
4. mention the duration and frequency of benzathine penicillin given to a child as prophylaxis for rheumatic fever

C) Thalassaemia unit

At the end of the session students should be able to

1. describe the screening protocol of the national thalassaemia prevention programme
2. calculate the volume of blood transfused to a child with thalassaemia major during routine admission
3. recall proper instructions to be written on the bed head ticket during blood transfusion
4. describe the complications of thalassaemia major
5. describe the regular screening procedure for the complications of thalassaemia major
6. describe the iron chelating methods used in a child with thalassaemia major
7. recognize the economic and psychological burden on a family with a child with thalassaemia major

D) Paediatric Cardiology short appointment

General objective: gain overall idea about paediatric cardiology services in the country to function as a competent house officer and improve the knowledge and skills in paediatric cardiology

Specific objectives

1. Theory knowledge
    - Categorization and knowledge of cardiac lesions seen in children- acquired and congenital
    - Understand the principles of cardiac physiology
    - Pathophysiology and management of cardiac emergencies as a house officer- SVT, hypercyanotic spells, cardiac arrest, etc.
    - Understand the management principles of acyanotic and cyanotic heart lesions
    - Interpretation of chest x-ray, ECG
    - Management principles of
        - Heart failure
        - Pulmonary hypertension
        - Infective endocarditis
        - Rheumatic fever/ carditis
        - Thromboembolic phenomena in cyanotic heart lesions
        - Kawasaki disease
    - Basic understanding of palliative shunts in cyanotic heart lesions

2. Clinical knowledge and skills
    - Perform a thorough cardiovascular examination
    - Interpretation of clinical signs
    - Identify the natural history of common cardiac lesions
    - Management options available in different cardiac lesions
3. Observation
    - Basic echocardiography
    - Cardiac catheterization- devices, catheters, procedure observation
4. Targeting the final MBBS: Thorough in performing CVS short case and conducting the discussion, Tips on long case discussion, Encourage discussion of MCQs and theory questions from students
5. Ethics
    - Punctuality
    - Accountability
    - Honesty
    - Efficient communication

Course contents

Perinatal Medicine:

- Examination of the newborn
- Neonatal resuscitation
- Respiratory distress in the newborn
- Prematurity and low birth weight
- Birth asphyxia, Neonatal convulsions and Hypoglycaemia
- Neonatal Infections and Sepsis
- Neonatal Jaundice

Cardiology:

- Evaluation of a heart murmur
- Congenital cyanotic heart diseases
- Congenital acyanotic heart diseases
- Rheumatic Heart Disease
- Kawasaki Disease
- Infective endocarditis
- Heart Failure

Respiratory Diseases:

- Upper respiratory tract infections
- Lower respiratory tract infections

- Bronchial asthma
- Tuberculosis
- bronchiolitis

Gastro-intestinal tract Disorders:

- Acute gastroenteritis
- Blood and mucous diarrhoea
- Chronic diarrhea
- Constipation and Encopresis
- Malabsorption
- Biliary atresia
- Neonatal Hepatitis
- Cirrhosis of liver

Nephrology:

- Congenital abnormalities
- Urinary tract infections
- Evaluation of a Child with proteinuria
- Evaluation of a Child with haematuria
- Acute kidney injury
- Chronic renal failure

Neurology:

- Seizure disorders
- Evaluation child with development delay
- Floppy baby
- Central Nervous System infections
- Headache
- Evaluation child with abnormal occipital frontal circumference (macrocephaly, microcephaly)

Haematological Disorders:

- Evaluation of a child with anaemia
- Haemolyticanaemias
- Nutritional anaemia
- Evaluation of a child with a bleeding disorder
- Haemoglobinopathies

Endocrinology:

- Hypothyroidism, Hyperthyroidism and Parathyroid disorders
- Diabetes mellitus
- Adrenal disorders

- Puberty (Precocious puberty/Delayed puberty)
- Pituitary disorders
- Evaluation child with short stature

Musculoskeletal Disorders:

- Congenital abnormalities of bones and joints
- Myopathies and Motor Neuron Diseases
- Evaluation of child with arthritis

Infections:

- Vaccines and immunizations
- Tuberculosis
- Hepatitis A and B
- Dengue fever

Oncology:

- leukaemia
- Neuroblastoma
- Nephroblastoma
- Brain tumours
- Lymphomas
- Soft tissue sarcomas
- Bone tumours
- retinoblatomas

Emerging trends and broad health challenges

- Non-communicable diseases
- Child accidents
- Child abuse
- Public health responsibilities
- Current health policy and quality issues

Nutrition

- Failure to thrive
- Nutrition and nutritional disorders
- Rickets
- Neonatal feeding
- Preterm feeding

Other Special Topics:

- Genetics
- Childhood Obesity
- Common Paediatric Skin Conditions

- Growth and development

Teaching learning methods in Paediatrics

- Lectures 82 hours
- Teaching ward rounds
- Ward classes
- Problem-based learning sessions
- MCQ discussion/ quizzes via LMS
- Skills laboratory sessions on neonatal resuscitation and paediatric life support

Assessments in Paediatrics

Continuous assessments

- Paediatrics appointment 1: Portfolio, OSCE (5)
- Paediatrics appointment 2: Portfolio, OSCE (10)
- Professorial Paediatrics appointment: Portfolio, OSCE (20)

Final MBBS examination

- MCQ - 20%
- SEQ - 20%
- Long case - 20%
- Short cases - 20%
- Continuous assessment - 20% (OSCE-15%, Portfolio assessment 5%)

5.6.5 Psychiatry

Intended learning outcomes

The main purpose of undergraduate psychiatry training is to prepare the medical students to handle common psychiatric problems and emergencies as skillful, competent and confident doctors.

On completion of clinical programme in psychiatry, students should be able to

1. obtain a comprehensive history, do a mental state examination, elicit physical signs, request appropriate investigations, interpret those findings and come to a reasonable diagnosis/ differential diagnoses, aetiological formulation and management plan
2. manage common psychiatric illnesses
3. manage psychiatric emergencies
4. demonstrate good communication skills that will facilitate psychiatric assessment, explaining the diagnosis, procedures, management options and possible outcomes to the patients and their families, as well as counseling of the patients and their families
5. deliver holistic care to the patients and their families
6. function as a team member and a leader in a multidisciplinary professional team to provide safe and effective patient care
7. recognize the need for inter disciplinary involvement and referrals

8. demonstrate the qualities required to sustain lifelong learning in order to improve patient care based on scientific evidence
9. demonstrate a commitment to carrying out professional responsibilities with adherence to ethical principles and an understanding of the legal implications of practice
10. demonstrate familiarity with the resources available and pathways to treat mentally ill patients including involuntary admission and treatment under Mental Health Act
11. identify the role of audit and research to improve the quality of patient care

Outline of the clinical training in Psychiatry

	Appointment	Hospital	Duration
1.	Psychiatry 1 (Year4)	TH-Anuradhapura	4 weeks
4.	Professorial Appointments	TH-Anuradhapura	8 weeks
		Total duration -	12 weeks

First Psychiatry appointment

Outcomes

to demonstrate a basic ability in history taking, mental state examination, physical examinations and requesting appropriate investigations, interpretation of these finding and planning of the basic management of common psychiatric problems.

Professorial Psychiatry appointment

Outcomes

To be competent in assessing a psychiatric patient, coming to an aetiological formulation, management of psychiatric problems and to become a competent and confident house officer with correct knowledge, skills, attitudes and a mindset.

Venue	Professorial Psychiatry Unit, TH-Anuradhapura Psychiatry clinics (adult clinic and Child psychiatry clinic)
Duration	8 weeks
Appointment time	8am – 12 noon Monday to Saturday On-call days, students are expected to attend in the afternoons when lectures are not scheduled
Number of students	1/5 of the batch
Requirements	Students should be punctual with accepted professional dress code. They should possess a stethoscope, pen torch and a knee hammer. They should be ready with clinical information of their allocated patients for the ward round by 8am. Group leader should allocate patients for clerking
Teaching methods	Lectures 35-40 hours Ward classes, tutorials, problem-based learning sessions, clinics, community visits will be as directed by the supervisors
Learning in groups	Students are expected to learn in small groups of 3 while observing safe distance, as formed on the first day and use the group to facilitate learning
Curriculum	UGC Core curriculum (psychiatry) document 2018
Assessment method	Described in a separate section below
Completion of psychiatry appointments	Signing the student record books to confirm the student has completed the appointment will be done by the supervisor if he/she is satisfied with attendance and knowledge and clinical skills acquired

Course content

1. Concepts of mental illness
2. Signs and symptoms of psychiatric disorders
3. Classification of Mental and Behavioural Disorders
4. Psychiatric assessment
5. Ethics, civil law and mental Health law
6. Psychopharmacology
7. Delirium and other organic brain disorders
8. Dementia
9. Mental and behavioural disorders due to use of alcohol

10. Treatment of alcohol disorders
11. Other substance use disorders
12. Schizophrenia
13. Treatment of psychosis
14. Bipolar disorder
15. Unipolar depression
16. Treatment of mood disorders
17. Suicide and deliberate self-harm, risk assessment
18. Anxiety disorders and treatment strategies
19. Obsessive compulsive disorder
20. Reaction to Stress and bereavement
21. Somatoform and conversion disorders
22. Medically unexplained symptoms
23. Eating Disorders
24. Sleep and its disorders
25. Perinatal psychiatry
26. Disorders of adult personality and behavior
27. Sexual dysfunction
28. Gender identity disorders and disorders of sexual preference
29. Learning disability (Mental retardation)
30. Child psychiatry –disorders of psychological development
31. Child psychiatry- behavioural and emotional disorders
32. Adolescent mental health problems
33. Forensic psychiatry
34. Managing psychiatric emergencies, managing aggression
35. Neuropsychiatry/ Liason psychiatry

Competency levels expected in the Professorial Psychiatry appointment

Skills level 1: Can perform independently (Does)

Skills level 2: Can perform under supervision (Shows how)

Skills level 3: Has seen the procedure (Understands principles)

Skills level 0: Not exposed

Procedure	Skills level
History taking	1

Mental state examination	1
Physical examination	1
Assessment of cognitive functions	1
Risk assessment (including suicide risk assessment)	1
Psychoeducation/ Health education	1
Counseling/ supportive psychotherapy	1
Teaching relaxation techniques	1
Behavioural therapy for phobia/ obsessive compulsive disorders	2
Cognitive behavioural therapy	3
Electro-convulsive therapy (ECT)	3
De-escalation	3
Controlled restraint and rapid tranquilization	3

Assessments in Psychiatry

Continuous assessment

- Casebook viva
- End of Professorial Psychiatry appointment OSCE: 5 OSCE's on assessment, diagnosis, treatment and communicating skills in the management of psychiatry patients (Marks allocation according to the table below)

Written Papers Assessment (Marks allocation according to the table below)
Scheduled after completion of final year clinical course.

- Structured Essay Questions – 6 questions in 3 hours
- Common MCQ paper -30 T/F and 20 SBA in 2 hours by the UGC.

Clinical Assessment (Marks allocation according to the table below)

- A long case – the student will be given a patient with clinical problems that could be discussed as a long case.The student will be allowed to be with the patient for 30 minutes to acquire a thorough history, mental state examination, relevant physical examination and

record his/her findings on paper. Then he/she will be given 15 minutes to present, interpret, and discuss the management plan, in front of a two examiner panel.

- Mini observed clinical examination (MOCE) –two live stations with simulated (actors) or real patients. Duration of each station – 8 minutes. A task focused and objectively structures assessment. (Held either at the end of the appointment or as a component of the final examination)

Marks allocation

- MCQ - 25%
- SEQ - 25%
- Long case - 25%
- MOCE - 15%
- Continuous assessment - 10%

Recommended reading

- Shorter oxford Textbook of Psychiatry, 7th edition by Paul Harrison, Philip Cowen, Tom Burns and Mina Fazel
- The ICD 11, Classification of Mental and Behavioural Disorders (available online ICD 11/WHO)
- Handbook of clinical psychiatry: A practical guide (2012) by Varuni de Silva and RaveenHanwella

5.6.6 Skills Expected from a Medically Qualified Graduate

A list of skills expected from a graduate when he/she completes the degree programme.	
Categorized levels of skills	Level
Skill level 1- Can perform independently (does)	**1**
Skill level 2 - Can perform under supervision (shows how)	**2**
Skill level 3 - Has seen the procedure (knows)	**3**
Not exposed	**0**

A	**General Skills**	**1**	**2**	**3**	**0**
1.	Ability to elicit a complete history	√			
2.	Ability to carry out complete general examination	√			
3.	Examination of systems	√			
4.	Ability to interpret history with respect to examination	√			

5.	Neonatal examination	√			
6.	Performing a developmental assessment	√			
7.	Assessment of Bishops score		√		
8.	Mental state examination	√			
9.	Assessment of cognitive functions	√			
10.	Risk assessment (including Suicide risk assessment)	√			
11.	Use of a stethoscope	√			
12.	Measurement of blood pressure	√			
13.	Setting up blood transfusion	√			
14.	Venesection of blood donor	√			
15.	Preparation of a blood film	√			
16.	Estimation of Packed Cell Volume		√		
17.	Estimation ofErythrocyte Sedimentation Rate		√		
18.	Hemoglobin estimation		√		
19.	Grouping of blood and Direct Testing	√			
20.	Collection and transport of specimens for microbiological (e.g. blood and urine culture)		√		
21.	Collection, storage and transport of a stool sample for virology (Optional. Should be done if there is a patient.)	√			
22.	Urine ward test for protein	√			
23.	Urine ward test for reducing substances	√			
24.	Universal precautions	√			
25.	Giving intravenous injections	√			
	Giving intramuscular injections	√			
	Giving subcutaneous injections	√			
26.	BCG administration, storage and transport (A session will be arranged at the vaccination clinic.)	√			
27.	Inserting an intravenous cannula	√			
28.	Setting up an intravenous infusion	√			
29.	Cardio - pulmonary resuscitation	√			
30.	Bag and mask ventilation	√			
31.	External chest compression	√			
32.	Tracheal chest compression	√			
33.	Neonatal resuscitation			√	
34.	Maintaining a paediatric Glasgow Coma Scale (Optional. Should be done if there is a patient.)	√			

35.	Cardio version and Defibrillation			√	
36.	Measurement of height and weight in children	√			
37.	Use of an infantometer and stadiometer	√			
38.	Measurement of occipito-frontal and mid-arm circumference	√			
39.	Inserting naso-gastric tube	√			
40.	Urinary catheterization	√			
41.	Performing auroscopy and funduscopy	√			
42.	Nebulization	√			
43.	Use of a tongue depressor,	√			
44.	Nasal speculum and laryngeal mirror		√		
45.	Examination of the neck including and assessment of thyroid status	√			
46.	Types of insulin and injection devices	√			
47.	Administration of Desferrioxamine			√	
48.	Estimate capillary blood sugar	√			
49.	Corneal reflex, light reflex, testing visual acuity, colour vision and visual fields (confrontation)	√			
50.	Ophthalmoscopy, auroscopy assessment of hearing (Weber's and Rinne's test)	√			

51.	Request appropriate radiological investigations and interpretation	√			
52.	Basic Physiotherapy (i.e.: postural drainage and quadriceps exercise)			√	
53.	Writing of patient management plan	√			
54.	Using adrenaline in anaphylaxis	√			
55.	Contents of the emergency cart	√			
56.	Hemlich's maneuver	√			
57.	Maintaining a Glasgow Coma Scale	√			
58.	Maintaining a fluid balance chart	√			
59.	Arterial Blood Gas analysis (specimen collection and transport)		√		
60.	Measuring and charting the temperature	√			
61.	Use of antibiotics	√			
62.	Filling of diagnosis card	√			
63.	Writing of medical certificates	√			
64.	Writing of death certificates	√			

65.	Medico legal Requirements	√			
66.	Rehabilitation in general	√			
67.	Confirmation of death and Declaration of death forms according to International Classification of Diseases (lCD)	√			
68.	Ability to do physical examination	√			
69.	Ability to gather data and present relevant information	√			
70.	Clear and legible and methodical documentation	√			
71.	Ability to be flexible regarding the working hours	√			
72.	Transportation of a sick child	√			
73.	Setting up and maintaining an oxytocin infusion		√		
74.	Maintaining partograms		√		
75.	Routine pre-operative assessment of patients	√			
76.	Pre-operative control of chronic diseases e.g.: diabetes ,hypertension ,ischemic heart disease, asthma	√			
77.	Relief of pain	√			
78.	Management of bladder ,bowel ,skin	√			
79.	Management of colostomy			√	
80.	Rehabilitation			√	

B	**Procedures**	**1**	**2**	**3**	**0**
1.	Measuring the Peak Flow Rate (PFR)	√			
2.	Connecting an ECG monitor and Doing a 12 lead ECG	√			
3.	Collection of midstream sample of urine	√			
4.	Endotracheal intubation		√		
5.	Arterial puncture			√	
6.	Lumbar puncture		√		
7.	Pleural aspiration		√		
8.	Peritoneal tap		√		
9.	High bowel washout			√	
10.	Peritoneal dialysis			√	
11.	Gastric lavage			√	
12.	Pituitary and adrenal function tests				√
13.	Aspiration of joint and intra-articular injection			√	
14.	Insertion of a central venous line			√	

15.	Performing supra-pubic aspiration	√			
16.	Insertion of an umbilical catheter			√	
17.	Haemodialysis			√	
18.	Skin biopsy			√	
19.	Liver biopsy			√	
20.	Renal biopsy			√	
21.	Pleural biopsy			√	
22.	Bone marrow biopsy			√	
23.	Artificial ventilation			√	
24.	Aerosol inhalation	√			
25.	Endoscopy (Gastrointestinal and bronchoscopy)			√	
26.	20WBCT	√			
27.	Ultrasound, CT and MRI scanning			√	
28.	Contrast studies of the Gastrointestinal and Genitourinary tracts			√	
29.	EEG, EMG and Nerve Conduction Studies			√	
30.	Echocardiogram, Exercise ECG, Coronary Angiogram, Holter Monitoring			√	
31.	Spirometry			√	
32.	Exchange transfusion			√	
33.	Membrane sweep		√		
34.	Conducting normal vaginal deliveries		√		
35.	Performing and repairing an episiotomy		√		
36.	Preparing patients for ceasarean section		√		
37.	Assisting for ceasarean section		√		
38.	Forceps Delivery			√	
39.	Ventouse Delivery			√	
40.	Twin Delivery			√	
41.	Breech Delivery			√	
42.	Manual Removal of Placenta			√	
43.	Repair of Perineal tear			√	
44.	Speculum examination		√		
45.	Performing a Pap smear test		√		
46.	Insertion of a vaginal ring pessary		√		
47.	Dressing of wounds	√			
48.	Bandaging	√			

49.	Removal of sutures	√			
50.	Performing a cut down			√	
51.	Insertion of intercostal tubes			√	
52.	Care of pressure points	√			
53.	Removal of intercostal tubes			√	
54.	Electro-convulsive therapy (ECT)			√	
55.	De-escalation		√		
56.	Controlled restraint and Rapid tranquilization			√	

C	**Communication skills**	1	2	3	0
1.	Breaking bad news	√			
2.	Updating relatives	√			
3.	Writing referral letters	√			
4.	Writing case summary	√			
5.	Oral presentation of cases	√			
6.	Letter to general practitioner about patient	√			
7.	Post-natal advice		√		
8.	Advising clients on contraception		√		
9.	Advice on convalescence(after common basic surgical procedures-e.g.: hernia, laparotomy)	√			
10.	Psycho education/health education	√			
11.	Provide counselling	√			
12.	Teaching of Relaxation techniques	√			
13.	Giving cognitive behaviour therapy			√	

Communication with special groups					
14.	Mentally ill patients	√			
15.	Children	√			
16.	Terminally ill patients	√			
17.	Human immunodeficiency virus Patients	√			
18.	Non-English speaking patients	√			
19.	Drug addicts	√			
20.	Alcoholics	√			
21.	Aggressive patients	√			
22.	Victims of sexual abuse	√			
23.	Victims of child abuse	√			
24.	Victims of domestic violence	√			
25.	Deliberate self-harm	√			

CHAPTER 6

Public Health Elective Programme for medical undergraduates

Goal: The goal of the Public Health Elective, is to provide opportunities to undergraduate medical students to widen their knowledge on applied public health work, public health research and expose students to new career opportunities.

Programme: This four-week elective combines both didactics and field work in public health settings throughout the Anuradhapura district. It is offered once per year. Students will be engaged in outbreak investigation, public health planning and all field activities with the department members. They will be engaged in guided public health work during this period and will be given an assignment to complete within a four weeks' period. This assignment will have a research component and essential scientific literature search. The didactive sessions will be directly related to the assignments. In addition, they will provide guidance to present undergraduate trainees and will be involved in public health training process.

Entry requirements: Final year medical students awaiting the professorial appointments with at least a second lower class in 3rd MBBS part II examination will be eligible. Those who are with a distinction in Community Medicine will be preferred.

Selection process: Number of positions available will be around 4-6. A selection interview will be conducted by the course coordinator.

Upon completion of the elective programme, a certificate of completion will be awarded to successful trainees.