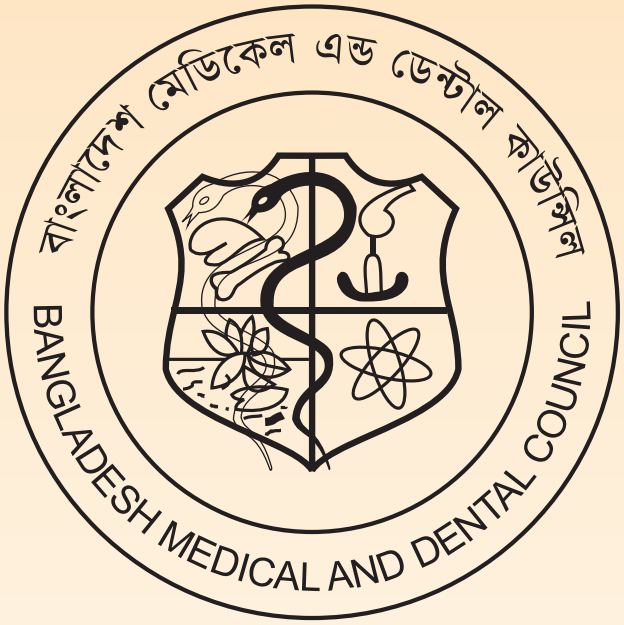
Curriculum for Under-graduate Medical Education in Bangladesh- Updated 2012



Approved by

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September-2012

Preface

Medical science is constantly advancing with the advancement of science and technology. Global changes are happening in medical education in accordance and conformity of these advancements and changes. With the application of these knowledge and skills of medical science, future doctors should satisfy their patients with the changing needs of the community. Much changes are happening in teaching methods and teaching sites or learning environment. It is now an established fact that best learning is achieved through utilizing the learning environment in factual situation. A doctor can better learn from his own patients. Slogan of today is now the unity of education and practice. The undergraduate curriculum for future doctor is expected to be so designed that it should focus more on real life situation and of learning i.e. more community oriented as well as more community based. To serve this purpose community campus partnership is very much appropriate and essential.

The undergraduate medical curriculum followed in the medical colleges was developed in 1988 through UNDP and WHO support by the Centre for Medical Education with an aim to produce community oriented doctors who will be able to provide essential primary health care to the community. That was the first documented curriculum ever developed in the country. But evaluation by UNDP (1990) and Godfrey et al (1996) revealed that it is neither community oriented nor competency based and there is room for much improvement. The need to develop a community- oriented and competency-based curriculum was felt by all concerned. For that series of workshops with specialists and experts from every discipline took place to develop a curriculum, which would reflect institutional, departmental objectives as well as subject wise learning objectives. The curriculum should have contents relevant to the health problems of the country and assessment method should be scientific, reliable and valid and also questions should be objectively set and designed. The teaching methods should also be scientific and more biased for effective small group teaching. As a whole the other components of the curriculum such as, course contents, strategy for teaching, materials or media used and the assessment system within the available timeframe were to be identified scientifically to provide the medical graduates with proper knowledge, skills and attitude. Thus the Undergraduate Medical Curriculum 2002 was developed and implemented.

Now after a decade, with the combined efforts of the Directorate General of Health Services (DGHS), Centre for Medical Education (CME) and Bangladesh Medical & Dental Council (BM&DC), MOH&FW and different Dean offices reviewed and updated the Undergraduate Medical Curriculum 2002 with the inclusion of national goal, objectives, learning outcomes, competencies. The updated MBBS Curriculum 2012 is ready to be implemented from session 2012-2013. This enormous task has been efficiently completed with the most sincere and heartiest effort of the teachers of both public and private medical colleges and also delegates of concerned authorities and faculty members of CME. The activities in regards to technical support, compilation and editing were done by Centre for Medical Education (CME) as per it's terms of reference.

Prof. Abu Shafi Ahmed Amin
President
Bangladesh Medical & Dental Council (BM&DC)

Preamble

The quality of health care is under scrutiny all over the world because of increasing public expectation of their health care services. Therefore a positive change is needed in the role of doctors. The role of teachers and students in teaching learning with positive changes in medical education, its strategy and process also needs to be reviewed and developed.

This reviewed MBBS curriculum 2012 has been developed and scientifically designed, which is responsive to the needs of the learners and of the community. The present curriculum, its assessment method is expected to effectively judge competencies acquired that are required to meet the health need of our people. It is gratifying to note that all concerned in the promotion of medical education in the country have involved themselves in the planning and formulation of this need-based and competency based curriculum which has been initiated under the auspices of the Centre for Medical Education (CME).

Though curriculum is not the sole determinant of the outcome, yet, it is very important as it guides the faculty in preparing their instruction and tells the students what knowledge, skills and attitude they are to develop through the teaching learning process. The ultimate indicators of assessing curriculum in medical education is the quality of health services provided by its graduates with required competencies.

In conclusion, I would like to mention that the curriculum planning process is continuous, dynamic and never-ending. If it is to serve best, the needs of the individual students, educational institutions and the community to whom we are ultimately accountable, must be assessed.

I congratulate all who were involved in reviewing, redesigning, updating and developing the MBBS curriculum, particularly the Centre for Medical Education. They contributed to complete this activity a commendable job and deserve special appreciation.

Prof. Dr. Khondhaker Md. Shefyetullah
Director General, DGHS
Govt. of the Peoples Republic of Bangladesh

Background and Rationale

Curriculum planning, scheming and updating is not a stationary process, rather a nonstop course of action done on a regular basis through a scheme. More than one decade have over and done since the Centre for Medical Education (CME), planned and developed the "Curriculum for Under-graduate Medical Education in Bangladesh 2002"

After a decade the "Curriculum for Under-graduate Medical Education in Bangladesh 2002" has been reviewed and updated for that reason. Centre for Medical Education (CME) in association with BM&DC, Deans Offices, DGHS, MOH&FW under took the whole process. Review workshops were held through active participation of different professional groups, faculty members. Accordingly, first, second, third and final professional group meetings were held with support from Action Aid Bangladesh, PSTC, PSE, DGHS, WHO. Later on, in order to give a final shape with recommendation it was sent to BM&DC for further action. A **taskforce** group examined the revised undergraduate medical curriculum.

The revised undergraduate medical curriculum is expected to be implemented with the newly admitted students of 2012 – 2013 session. Performance of these; students as graduates will articulate about the achievement of this "Curriculum for Under-graduate Medical Education in Bangladesh – Updated 2012" as need-based, community oriented & competency based.

I hope this curriculum will continue to serve as guiding principle for the students and faculty members. It is readily understood that in order to further improve, update this Curriculum for Under-graduate Medical Education in Bangladesh – Updated 2012 needs constant review, revision and updating.

Last but not least, I would like to extend my deep gratefulness to all faculty members of Centre For Medical Education and others who shared their expertise and insights and worked hard to generate this precious document.

Professor Dr Shah Abdul Latif
Director
Medical Education & Health Manpower Development
DGHS, Mohakhali, Dhaka 1212

Acknowledgement

Factors contributing to an effective medical education system are quality of students, quality of teaching staff, and their effective delivery of need based scientific curriculum. Although the best students are admitted in the medical colleges every year yet the medical graduates are not always of the desired quality for providing health services to the community. The answer then should be sought in other factors of which the most important is the curriculum. A curriculum is generally regarded as a programme of instruction for an educational institution and its plan takes the form of a descriptive outline of courses, their arrangement and sequence, the time assigned to them, the contents to be covered in them, the instructional methods to be employed and finally evaluation.

The enormous task of reviewing and updating of the MBBS curriculum 2002 was assigned to Centre for Medical Education (CME). The curriculum was reviewed and updated with a scientific approach of Delphi Technique in national workshops. The participants of these workshops were almost all the Professors of the concerned departments/subjects, principals of all the medical colleges, medical educationists, faculty members of CME and a good number of resource personnels including the President & members of the Bangladesh Medical & Dental Council and Deans of the Faculty of Medicine of Dhaka/Chittagong/Rajshahi/Shah Jalal Universities and concerned persons from DGHS and MOH&FW. The other supplementary approach was to make it evidence based through need assessments. The overwhelming response of all categories of teachers for reviewing & updating of this curriculum is indeed praiseworthy. They have worked hard to identify and discard the superfluous elements from the course contents and added new elements to make teaching-learning process more relevant, meaningful and up-to date. Congratulations to them, they have done a commendable job. Efforts given by the principals, members of academic council, teachers, students and intern doctor providing their valuable opinions during the need assessment at the beginning of reviewing and updating of this MBBS curriculum are duly acknowledged. As director, CME I express my gratitude to all the members of National Core Committee(NCC) for their all cordial co-operation, guidance all the ways since beginning up to the completion of reviewing and updating of MBBS curriculum. I acknowledge the technical and financial support from Action Aid Bangladesh, PSTC, PSE, DGHS, WHO.

The composition of the planners of this curriculum is unique. The authorities responsible for approving, implementing and functioning of this curriculum have worked together and involved themselves in its reviewing & updating. It is only natural that they left no stone unturned to get a need based and competency based applicable curriculum.

I am grateful to all, who actively participated in this great job, specially the faculty and staffs of Centre for Medical Education who worked very hard and efficiently to develop this MBBS Curriculum 2012 which is mainly discipline based community oriented with the reflection of competency based, integrated, & community based nature.

Prof. Dr. Fatima Parveen Chowdhury
Director
Centre for Medical Education
Mohakhali, Dhaka – 1212
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National Goal and Objectives of MBBS Course, Learning Outcomes/Competences of Fresh Graduates

National Goal:

To produce competent, compassionate, reflective and dedicated health care professionals who:

- consider the care and safety of their patients their first concern
- establish and maintain good relationship with patients, their attendants and colleagues
- are honest, trustworthy and act with integrity
- are capable of dealing with common diseases and health problems of the country and are willing to serve the community particularly the rural community;
- but at the same time acquire firm basis for future training, service and research at both national and international level.
- are committed to keep their knowledge and skill up-to-date through 'Continuous Professional Development' all through their professional life.

Objectives of MBBS Course:

At the end of the MBBS Course students shall:

1. Acquire knowledge and understanding of
   a) the sciences upon which Medicine depends and the scientific and experimental methods;
   b) the structure, function and normal growth and development of the human body and the workings of the mind and their interaction, the factors which may disturb these, and the disorders of structure and function which may result;
   c) the etiology, natural history and prognosis of the common mental and physical ailments. Students must have experience of emergencies and a good knowledge of the common diseases of the community and of ageing processes;
   d) normal pregnancy and childbirth, the common obstetric emergencies, the principles of ante-natal and post natal care, and medical aspects of family planning and psycho-sexual counseling;
   e) the principles of prevention and of therapy, including health education, the amelioration of suffering and disability, rehabilitation, the maintenance of health in old age, and the care of the dying;
   f) human relationships, both personal and social and the interaction between man and his physical, biological and social environment;
   g) the organization and provision of health care in the community and in hospital, the identification of the need for it, and the economic, ethical and practical constraints within which it operates; and
   h) the ethical standards and legal responsibilities of the medical profession.

2. Develop the professional skills necessary to

a) elicit, record and interpret the relevant medical history, symptoms and physical signs, and to identify the problems and how these may be managed;
b) carry out simple practical clinical procedures;
c) deal with common medical emergencies;
d) communicate effectively and sensitively with patients and their relatives;
e) communicate clinical information accurately and concisely, both by word of mouth and in writing, to medical colleagues and to other professionals involved in the care of the patient; and
f) use laboratory and other diagnostic and therapeutic services effectively and economically, and in the best interests of his patients.

3. Develop appropriate attitudes to the practice of medicine, which include

a) recognition that a blend of scientific and humanitarian approaches is needed in medicine;
b) a capacity for self education, so that he may continue to develop and extend his knowledge and skills throughout his professional life, and recognize his obligation to contribute if he can to the progress of medicine and to new knowledge;
c) the ability to assess the reliability of evidence and the relevance of scientific knowledge, to reach conclusions by logical deduction or by experiment, and to evaluate critically methods and standards of medical practice;
d) a continuing concern for the interests and dignity of his patients;
e) an ability to appreciate the limitations of his own knowledge, combined with a willingness, when necessary, to seek further help; and
f) the achievement of good working relationships with members of the other health care professions.

Learning Outcomes of MBBS course :

To achieve the National goal and course objectives, a set of "Essential learning outcomes / competences" which students of the medical colleges / institutes on completion of MBBS course and at the point of graduation must be able to demonstrate has been defined.
These "essential learning outcomes / competences" are grouped under three board headings:

I The graduate with knowledge of scientific basis of Medical Practice

II The graduate as a practitioner

III The graduate as a professional

I. The graduate with knowledge of scientific basis of Medical Practice:

The graduate will understand and be able to apply basic bio-medical (anatomy, cell biology, genetics, physiology, biochemistry, nutrition, pathology, molecular biology, immunology, microbiology, pharmacology and community medicine) principles, methods and knowledge to

1.1 understand the normal processes governing homeostasis, and the mechanisms underlying the common diseases and health problems of the country.

1.2 understand the psychological and sociological concepts of health, illness and disease and explain psychological and sociological factors that contribute to illness, course of disease and success of treatment.

1.3 select appropriate investigations necessary for diagnosis of common clinical cases and explain the fundamental principles underlying such investigative procedures.

1.4 select appropriate treatment (including rational prescribing of drugs), management and referral (if in the patient's best interest) plan for common clinical cases, acute medical emergencies and minor surgical procedures.

1.5 understand biochemical, pharmacological, surgical, psychological, social and other interventions in acute and chronic illness, in rehabilitation, and end-of-life care.

1.6 understand disease surveillance and prevention, health promotion including wider determinants of health, health inequalities, health risks.

1.7 understand communicable disease control in health care facility and community settings.

1.8 understand international health status, including global trends in morbidity and mortality of chronic diseases of social significance, the impact of trade and migration on health and the role of international health organizations.

1.9 undertake critical appraisal of diagnostic, therapeutic and prognostic trials and other quantitative and qualitative studies as reported in medical and scientific literature.

1.10 understand simple research questions in biomedical and population science and the design of relevant studies.

II. The Doctor as a practitioner

2.1. The graduate will have the ability to carry out a consultation with a patient *(Appendix-III):*

2.1.1. Obtain and record an accurate medical history, including such related issues as age, gender, and socioeconomic status.

2.1.2. Perform a both comprehensive and organ system specific examinations, including a mental status examination.

2.1.3. Elicit patients' questions, understanding of their condition and treatment options, and their views, values and preferences.

2.1.4. Provide explanation, advice, reassurance and support.

2.2. The graduate will have the ability to diagnose and manage clinical cases or will refer when necessary. *(Appendix I & II):*

2.2.1. Interpret findings from the history, physical examination and mental-state examination and make an initial assessment of a patient's problems and a differential diagnosis appreciating the processes by which such diagnosis is tested scientifically.

2.2.2. Construct a plan of investigation in partnership with the patient, obtaining informed consent as an essential part of this process appreciating patient's right to refuse or limit the investigation.

2.2.3. Interpret the results of investigations, including growth charts, x-rays and the results of diagnostic procedures in *Appendix III.*

2.2.4. Synthesize a full assessment of the patient's problems and define the likely diagnosis or diagnoses.

2.2.5. Formulate a plan for management and discharge including referrals to the right professional, according to the established principles and best evidence, in partnership with the patient, their careers and other health professional as appropriate.

2.2.6. Respond to patients' concerns and preferences, obtain informed consent, recognize and respect patients' right to reach decisions about their treatment and care and to refuse or limit treatment.

2.3. **The graduate will have the ability to provide immediate care in medical emergencies in *Appendix IV:***

2.3.1. Assess and recognize the severity of a clinical presentation and need for immediate emergency care.

2.3.2. Provide basic first-aid and immediate life support.

2.3.3. Provide cardio-pulmonary resuscitation or direct other team members to carry out resuscitation.

2.4. **The graduate will have the ability to prescribe drugs safely, effectively and economically. *Appendix III:***

2.4.1. Obtain an accurate drug history, covering both prescription and non-prescription OTC drugs including complementary and alternative medications and demonstrate awareness of the existence and range of these therapies and how this might affect other types of treatment that patient are receiving.

2.4.2. Formulate appropriate drug therapy and record the outcome accurately.

2.4.3. Recognize and respect patients' right to information about their medicines.
2.4.4. Detect, mange and report adverse drug reactions.

2.5. **The graduate will have the ability to carry out practical procedures safely and effectively. *Appendix III*:**
2.5.1. Perform, measure and record the findings of diagnostic procedures.
2.5.2. Perform therapeutic procedures.
2.5.3. Demonstrate correct practice in general aspects of practical procedures.

2.6. **The graduate will have the ability to apply principles, method and knowledge of health informatics to medical practice:**
2.6.1. Keep accurate, legible and complete medical records.
2.6.2. Use effectively computers and other information systems, including storing and retrieving information.
2.6.3. Stick to the requirements of confidentiality and data protection legislation in all dealings with information.
2.6.4. Access and use effectively information sources in relation to patient care, health promotion, research and education.

2.7. **The graduate will have the ability to communicate effectively in a medical context. *(Appendix III):***
2.7.1. Communicate clearly and sensitively with patients, their relatives or other careers, and colleagues from medical and other professions by listening, sharing and responding.
2.7.2. Communicate by spoken, written and electronic methods and recognize and respect significance of non-verbal communication in medical consultation.
2.7.3. Communicate appropriately in difficult circumstances, such as in times of disclosing bad news and discussing sensitive issues, i.e. alcohol consumption, smoking or obesity.
2.7.4. Communicate appropriately with difficult, violent patients and with mentally ill people.
2.7.5. Communicate effectively in various roles, i.e. as patient advocate, teacher, manager or improvement leader.

III. The Doctor as a professional

3.1. **The graduate will apply to medical practice ethical, moral and legal principles and will be able to :**
3.1.1. Recognize and respect BM&DC's ethical guidance and standards and supplementary ethical guidance that describe what is expected of all doctors registered with BM&DC.
3.1.2. Demonstrate awareness of professional values which include excellence, altruism, responsibility, compassion, empathy, accountability, honesty and integrity, and a commitment to scientific methods.
3.1.3. Make the care of the patient the first concern and maintain confidentiality, respect patients' dignity and privacy and act with appropriate consent.
3.1.4. Respect all patients, colleagues and others regardless of their age, color, culture, disability, ethnic or national origin, gender, lifestyle, marital or parental status, race, religion or beliefs, sexual orientation or social or economic status.

3.1.5. Recognize patients' right to hold religious or other beliefs, and respect these when relevant to treatment options.

3.1.6. Know about laws and systems of professional regulation through BM & DC and others, relevant to medical practice and complete relevant certificates and legal documents and liaise with the coroner and others as appropriate

3.1.7. Use moral reasoning and decision-making to conflicts within and between ethical, legal and professional issues including those raised by economic constrains, commercialization of health care, and scientific advances.

3.2. **The graduate will be able to reflect, learn and teach:**

3.2.1. Establish the foundations for lifelong learning and continuing professional development, including a professional development portfolio containing reflections, achievements and learning needs.

3.2.2. Acquire, assess, apply and integrate new knowledge, learn to adapt to changing circumstances and ensure highest level of professional care to the patients.

3.2.3. Recognize own personal and professional limits and seek help from colleagues and supervisors as necessary.

3.2.4. Work with colleagues in ways that best serve the interests of patients, pass on information and hand over care, demonstrate flexibility, adaptability and a problem-solving approach.

3.2.5. Function effectively as a mentor and teacher, contribute to the appraisal, assessment and review of colleagues and give effective feedback.

3.3. **The graduate will be able to learn and work effectively within a multi-professional team:**

3.3.1. Recognize and respect the roles and expertise of health and social care professionals in the context of working and learning as a multi-professional team.

3.3.2. Build team capacity and positive working relationships and undertake leadership and membership roles in a multi-professional team.

3.4. **The graduate will have the ability to protect patient and improve care:**

3.4.1. Place patients' needs and safety at the center of the care process and deal effectively with uncertainty and change.

3.4.2. Know about the framework of medical practice in Bangladesh including the organization, management and regulation of healthcare provision; the structures, functions and priorities of the National Health Policy; and the roles of, and relationships between the agencies and services involved in protecting and promoting individual and population health.

3.4.3. Apply the principles of risk management and quality assurance to medical practice including clinical audit, adverse incident reporting and how to use the results of audit to improve practice.

3.4.4. Understand own personal health needs, consult and follow the advice of a qualified professional and protect patients from any risk posed by own health.

3.4.5. Recognize the duty to take action if a colleague's health, performance or conduct is putting patients at risk.

Basic Information About MBBS Course

1. **Name of the course:** Bachelor of Medicine & Bachelor of Surgery (MBBS)

2. **Basic qualifications & prerequisite for entrance in MBBS Course:**
   (i) HSC or equivalent with Science.(Biology, Physics, Chemistry)
   (ii) Candidate has to secure required grade point in the SSC and HSC examinations.

3. **Students selection procedure for MBBS course:** According to decision by the proper competent authority as per merit.

4. **Medium of Instruction:** English

5. **Duration:** MBBS course comprises of 5 Years, followed by logbook based rotatory internship for one year

75 Course structure and duration

The MBBS course is divided into four phases .

Phase	Duration	Subjects	Examination
1st phase	1½ year	Anatomy Physiology Biochemistry	First Professional MBBS
2nd phase	1 year	Community Medicine Forensic Medicine	Second Professional MBBS
3rd phase	1 year	Pharmacology & Therapeutics Pathology Microbiology	Third Professional MBBS
4th phase	1½ year	Medicine & Allied subjects Surgery & Allied subjects Obstetrics and Gynaecology	Final Professional MBBS

NB: All academic activities including professional examination of each phase must be completed within the specified time of the phase.

7. Phase wise distribution of teaching-learning hours:

1st Phase

Subject	Lecture *(in hours)*	Tutorial	Practical	Others	Integrated teaching	Formative Exam		Summative exam		Total
						Preparatory leave	Exam time	Preparatory leave	Exam time	
Anatomy	115	53	52	Dissection +Card exam 310	30 hrs	35 days	42 days	30 days	30 days	530
Physiology	120	120	100	-						340
Biochemistry	120	100	100	-						320
Total	355	273	252	310						**1190**
Behavioral science, communication skill and medical ethics will be taught through five lecturers (5 hours) within 1st phase under supervision of Community Medicine department										**5**
									Grand Total	**1195**
(Time for integrated teaching, exam. preparatory leave of formative & summative assessment is common for all subjects of the phase)										

2nd Phase

Subject	Lecture *(in hours)*	Tutorial	Practical/Demonstration	Integrated teaching	Formative Exam		Summative exam		Total
					Preparatory leave	Exam time	Preparatory leave	Exam time	
Community Medicine	110	160	COME (community based medical education):30 days (10 days day visit + 10 days RFST+ 10 days study tour)- **30 days** (10+10+10)	05	15 days	15 days	15 days	20 days	275 + 30 days
Forensic Medicine	80	55	55	05					195
Total	190	215	55	10					**470**
(Time for exam. preparatory leave and formative and summative assessment is common for all subjects of the phase)									

3rd Phase

Subject	Lecture *(in hours)*	Tutorial	Practical	Others	Formative Exam		Summative exam		Total
					Preparatory leave	Exam time	Preparatory leave	Exam time	
Parmacology & Therapeutics	100	30	50	Clinical Pharmacology 20	10 days	15 days	10 days	15 days	200
Pathology	100	100	28	-					228
Microbiology	100	45	45	-					190
Total	300	175	123	20					**618**

(Time for exam. preparatory leave and formative and summative assessment is common for all subjects of the phase)

4th Phase
Medicine & Allied Subjects

Subject	**Lecture** *(in hours)*				Tutorial classes	**Integrated teaching**	**Clinical (bedside teaching),** ***in weeks***			**Total weeks**	**Block posting**	**Formative Exam**	**Summative exam**
	2nd phase	3rd phase	4th phase	Total			2nd phase	3rd phase	4th phase				
Internal medicine	26	24	110	160	200	20 hrs.	14	06	12+2(OPD)	34	4 weeks	Preparatory leave-15 days Exam time -15 days	Preparatory leave-15 days Exam time -30 days
Psychiatry	-	-	20	20	-		-	03	-	03			
Dermatology	-	-	20	20	-		-	03	-	03			
Pediatrics	04	20	26	50	25		04	-	06	10			
Physical Medicine	-	-	05	05	-		-	02	-	02			
Emergency	-	-	-	-	-		02			02			
Total	30	44	181	**255**	**225**	**20 hrs.**	20	14	20	54	4 weeks		
Grand Total	**500 hours**						**58 weeks**					**75 days**	

Time for exam, preparatory leave, formative & summative assessment is common for all subjects of the phase

Preventive aspects of all diseases will be given due importance in teaching learning considering public health context of the country and others parts of the world.

Related ethical issues will be discussed in all clinical teaching learning

Surgery & Allied Subjects

Subject	Lecture *(in hours)*				Tutorial/Practical/Demonstration	Integrated teaching	Clinical/Bedside teaching (in week)			Total Weeks	Block posting	Formative Exam	Summative Exam
	2nd Phase	3rd Phase	4th Phase	Total			2nd Phase	3rd Phase	4th Phase				
General Surgery	35	30	60	125	200	20	12+4	-	6	22	4 wks	Preparatory leave -15 days Exam time –15 days	Preparatory leave -15 days Exam time –30 days
Orthopaedics	5	10	30	45			-	4	4	8			
Radiology	-	-	5	5			1	-	-	1			
Radiotherapy	-	-	8	8			-	1	-	1			
Transfusion medicine	-	5	-	5			1	-	-	1			
Anesthesia	-	10	-	10			1	-	-	1			
Neurosurgery	-	2	5	7			-	1	-	1			
Pediatric Surgery	-	5	10	15			-	-	2	2			
Urology	-	5	10	15			-	-	2	2			
Burn Plastic Surgery	3	-	2	5			-	-	1	1			
Emergency & casualty	-	-	-	-			-	-	1	1			
Dentistry	-	-	-	-			1	-	-	1			
Ophthalmology	-	40 hrs		40			-	4	4	8			
Otolaryngology	-	40 hrs		40			-	4	4	8			
Total	300 hrs				200	20	20 wks	14 wks	24 wks	58wks	4wks		
Grand total	**520 hours**						**62 weeks**					**75 days**	

(Time for exam. preparatory leave and formative & summative assessment is common for all subjects of the phase)

Preventive aspects of all diseases will be given due importance in teaching learning considering public health context of the country and others parts of the world.

Related ethical issues will be discussed in all clinical teaching learning

Obstetrics & Gynaecology

Lecture		Tutorial / Demonstration	Integrated Teaching	Total hours	Clinical bed side teaching in 3rd & 4th phase	Block placement	Formative Exam		Summative exam	
3rd Phase	4th Phase						Preparatory leave	Exam time	Preparatory leave	Exam time
30 hrs	70 hrs	85 hrs	15hrs	200 hrs	16 weeks (8+8)	4 weeks	15 day	15 day	15 day	30 day

(Time for exam. preparatory leave and formative & summative assessment is common for all subjects of the phase)

Preventive aspects of all diseases will be given due importance in teaching learning considering public health context of the country and others parts of the world.

Related ethical issues will be discussed in all clinical teaching learning

8. **Teaching & learning methods**

The following teaching and learning methods will be followed:

Large Group Teaching:

- Lecture
- Seminar

Small Group Teaching:

- Tutorial
- Demonstration
- Students interaction
- Problem Based Learning (PBL)

Practical session:

- Use of practical manual
- Performing the task/examination by the student
- Writing the practical note book

Field Placement (Community based medical education):

- In small groups for performing activities by the student themselves

Clinical teaching:

- In ward, OPD, OT, POW, ED, ICU, etc.
- By concerned persons

Integrated teaching

Encourage to learn ICT through computer lab of the college.

9. **Assessment:**

A. There will be in-course (card/item/term) and end-course (professional) assessment for the students in each phase (1st, 2nd, 3rd & 4th phase) of the course i.e. formative and professional examination.

B. Formative assessment will be done through results of items, card and term ending examination & class attendance.

C. For formative assessment, 10 % marks of written examination of each paper of each subject is allocated

D. For MCQ of each paper, 20% marks are allocated. There will be separate answer script for MCQ part of examination. Total number of MCQ will be 20.

E. For SAQ of each paper, 70% marks are allocated

F. Oral part of the examination will be structured

G. OSPE / OSCE will be used for assessing skills/competencies. Traditional long & short cases will be also used for clinical assessment

H. There will be phase final professional examination within the each academic phase.

I. <u>Eligibility for appearing in the professional examination</u>:

- Certificate from the respective head of departments regarding students obtaining at least 75% attendance in all classes (theory, practical, tutorial, residential field practice, clinical placement etc.) during the phase.
- Obtaining at least 60% marks in examinations.
- No student shall be allowed to appear in the professional examinations unless the student passes in all the subjects of the previous professional examinations

J. Pass Marks:

Pass marks is 60%. Student shall have to pass written (MCQ + SAQ + formative), oral, practical and clinical examination separately.

K. Examinations & distribution of marks:

First Professional Examination

Subjects	Written Exam marks	Structured Oral Exam marks	Practical Exam marks		Formative Exam marks	Total Marks
			Soft part	Hard part		
Anatomy	180	150	75	75	20	500
Physiology	180	100	100		20	400
Biochemistry	180	100	100		20	400
Total						1300

Second Professional Examination

Subjects	Written Exam marks	Structured Oral Exam marks	Practical Exam marks	Formative Exam marks	Total Marks
Community Medicine	90	100	100	10	300
Forensic Medicine	90	100	100	10	300
Total					600

Third Professional Examination

Subjects	Written Exam marks	Structured Oral Exam marks	Practical Exam marks	Formative Exam marks	Total Marks
Pharmacology & Therapeutics	90	100	100	10	300
Pathology	90	100	100	10	300
Microbiology	90	100	100	10	300
Total					900

Fourth Professional Examination

Subjects	Written Exam marks	Structured Oral Exam marks	Clinical	Practical	Formative Exam marks	Total Marks
Medicine & Allied Subject	180	100	100	100	20	500
Surgery & Allied Subject	180	100	100	100	20	500
Obstetrics & Gynecology	180	100	100	100	20	500
Total						1500

L. Common Rules for Examinations

a) University professional examination to be started from May and November.

b) University professional examinations will be completed within the specified time of the concerned phase

c) No carry on system before passing 1st professional examination

d) After passing 1st professional examination students can appear for 2nd professional examinations if all other prerequisites for 2nd professional examination are fulfilled. In the mean time students can attend clinical ward placement, teaching learning.

e) To appear 3rd professional examination students have to pass all the subjects of previous 2nd professional examination if all other prerequisites are fulfilled. In the mean time students can attend clinical ward placement, teaching learning. Students can also attend the classes of subjects of 4th phase

f) To appear 4th (Final) professional examination students have to pass all the subjects of previous 3rd professional examination if all other prerequisites are fulfilled. In the mean time students can attend clinical ward placement, teaching learning.

M. Few directives and consensus about the following issues of assessment:

i. Incase of OSPE/OSCE- Instruments/equipments to be taken to oral boards to ask open questions to the students apart form Structured Oral Examination (SOE). There will be scope of instruments related viva, specially in clinical subjects and where applicable. Central OSPE/OSCE from Dean Office after moderation will be encouraged.

ii. Incase of Structured Oral Examination (SOE), instead of preparing specific structured question, topics will be fixed considering wide range of contents coverage. Rating scale will be used for marking the students concurrently. Each student will be asked questions from all topics of the set. Equal or average duration of time will be set for every student.

10. Internship :

After passing final professional MBBS examination students have to enroll for one year log book based rotatory internship programme. Within this one year 11 months and 15 days at medical college hospital and 15 days at UHC. Internship programme will be more structured and supervised.It is compulsory to complete Internship Training Programme designed by BM&DC to get permanent registration for doing independent practice.

Anatomy

Departmental Objectives

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

- mention, identify, show, draw and describe the structural components of the body responsible for carrying out normal body functions;
- use the above knowledge to understand, correlate and appreciate the other pre-clinical, para-clinical and clinical medical subjects;
- apply the knowledge of Anatomy with the knowledge of other medical subjects to provide optimum health services in the country and abroad.

List of Competencies to acquire :

- Adequate knowledge of the structural components of the body & correlate it with normal body functions.
- Using the above knowledge to understand, correlate and appreciate the other subjects to be taught in the para-clinical and clinical medical courses.
- Applying the knowledge of Anatomy with the knowledge of other medical subjects to provide optimum health services in the country and abroad.

Distribution of teaching - learning hours

Lecture	Tutorial	Practical (Histology)	Demonstration +Dissection +Card exam	Total Teaching hours	Integrated teaching in for phase I	Formative Exam		Summative exam	
						Preparatory leave	Exam time	Preparatory leave	Exam time
115 hrs	53hrs	52 hrs	310hrs	530hrs	30 hrs	21+14= 35 days	42 days	30days	30 days
(Time for exam. preparatory leave and formative & summative assessment is common for all subjects of the phase)									

Teaching - learning methods, teaching aids and evaluation

Teaching Methods			Teaching aids	In course evaluation
Large group	Small group	Self learning		
Lecture Integrated teaching	Tutorial Practical Demonstration	Self-study & self-assessment	Computer / laptop & Multimedia OHP, Transparency & Transparency marker White board & different colour white board markers Black board & white and coloured chalks Cadavers, prosected parts, bones, viscera Slide and slide projector Microscope	• Item Examination • Card Final Examination (written/oral + practical) • Term Final Examination (written, oral+ practical)

Related Equipments: Flip Chart, Photograph, Model, X-ray films (CT scan and other imaging films), View box, Diagram, Preserved specimens, Living body for surface marking, Simulation.

1st Professional Examination:

Marks distribution of Assessment of Anatomy

Total marks – 500

- Written=200 (Formative 20+MCQ 40+SAQ140)
- SOE=150
- Practical=150

Learning Objectives and Course Contents in Anatomy

Learning Objectives	Contents	Teaching hours Total : 12 hrs
General Anatomy Student will be able to • define anatomy, explain the subdivisions of anatomy • describe the anatomical terminology, planes & positions • define bone. Describe the composition ,blood supply, functions & ossification of bones. • describe composition characteristics, location and functions of different types of cartilages. • define & classify joints, the characters, stability & movements of joints and correlate with the clinical conditions • classify muscles, their properties and functions and also classify skeletal muscle morphologically & functionally • define & classify blood vessels, • describe the systemic, portal & pulmonary circulation. • describe different types of vascular anastomosis with their functional & clinical implications. • describe components ,functions & the general plan of lymphatic drainage of the whole body. • classify & describe the functions of lymphoid organs	**CORE :** • Definition, subdivisions of Anatomy and its importance in the study of medicine. • Anatomical terminology and anatomical planes & positions. • Skeletal system- Bones – classification, composition, functions, parts of a developing long bone ,blood supply, periosteum & endosteum. Ossification-definition, centres, processes. Factors affecting growth of bone.. • Cartilages- composition, types , characters ,locations and functions • Joint: classification, characteristics of each type & movements, stability of the joints. Clinical conditions associated with joints .General plan of blood supply & nerve supply of joints. • Muscular system, classification, characteristics and functions . Skeletal muscle -classification • Blood vascular system: component parts. General plan. Structure, classification Differences between different types of vessel. Nutrition & innervations of vessels Circulation : types, characteristic features of each type • Lymph vascular system : components, characteristic features of lymph capillaries .Differences with blood capillary .Lymphoid organs: classification & functions	**TERM I** 01 hr 01 hr 03 hrs 01 hr 02 hrs 01 hr 02 hrs 01 hr

Learning Objectives	Contents	Teaching hours
Student will be able to • Describe the basic facts on origin of life, evolution of life and animal kingdom.	**Additional:** • Origin of life on earth. • Evolution of life on earth. • The animal kingdom	
Cell Biology Student should be able to: • define and describe the human cell & its constituents ,structure & functions of cell membrane. • describe the structure & functions of nucleus • describe the structure & functions of organelles & inclusions • describe the features of different types of cells: protein secreting, ion transporting, steroid secreting, mucus secreting, antibody producing cell. ***Human Genetics*** Students will be able to: • define terms related to human genetics • describe the different basic features of chromosomes • explain structure, function, basis of protein synthesis of DNA & RNA • define allele homozygous, Heterozygous karyotyping • explain Mendel's Law of inheritance & Lyon's hypothesis	**CORE:** • Human Cell-Basic organization, types constituents, cell membrane • nucleus • cytoplasm & organelles and inclusions • Functional correlation of different types of cell with their particular-nuclear, cytoplasmic, membrane and surface feature **CORE:** Terms & definitions: Gene, Gene locus, genome, genotype, phenotype, genetic trait etc. • Chromosomes: Structure, types, bio-chemical nature, & chromosomal disorders • DNA and RNA: Structure, function, basis of protein synthesis • Allele , homozygous, Heterozygous Karyotyping **Additional:** • Mendels law of inheritance & Lyon's hypothesis • Outline of recent advances in Genetics • Principles of genetic engineering • Principles of cloning	**Total:06 hrs.** **TERM I** 02 hrs 01 hr 02 hrs 01hr **Total: 04 hrs** **TERM I** 01hr 01 hrs 01 hrs 01 hr

Learning Objectives	Contents	Teaching hours Total :12 hours
General Histology Student should be able to: • define and classify the basic tissues in the body • describe the different types, characters, distribution and the functions of epithelial tissue describe the cell Surface specialization & Junctional complexes. • describe the composition, characters, distribution and the functions of connective tissue. Describe the structure & functions of different types of connective tissue cells • describe the histological structures of smooth muscle, cardiac muscle & skeletal muscle. Describe the mechanism of muscle contraction. • describe the structure & functions of neuron & neuroglia	***General Histology*** **Basic tissues:** Definition, Classification, Components, Characters, Distribution and Functions of • Epithelium -Surface epithelium -glandular epithelium • Connective tissue - Proper - special • Muscular tissue -smooth -cardiac -skeletal • Nervous tissue -neurons -neuroglia	**TERM I** 04hrs 04 hrs **TERM II** 02 hrs **TERM III** 02 hrs

Learning Objectives	Contents	Teaching hours Total 18 hrs
Systemic Histology: Students will be able to describe the histological structures of different parts of body system	***Systemic Histology*** **:** histological structures of • Respiratory system • Vascular system • Lymphoid organs • Digestive system & associated Glands • Exocrine glands (salivary) • Urinary system • Endocrine glands • Male reproductive system • Female reproductive system • Integumentary system • Special sense organs	**TERM I** 01 hr 01 hr **TERM II** 02 hrs 03 hrs 01 hr 02 hr 02 hrs 02 hrs 02 hrs **TERM III** 01 hr 01 hr

Learning Objectives	Contents	Teaching hours Total 18hrs
General Embryology Students will be able to: • define terms related to embryology • explain the significance of study of embryology • explain proliferation, growth, differentiation, inductors, evocators and organiser • describe different types of cell division • describe chromosomal changes during cell division with anomalies • describe oogenesis and spermatogenesis • describe the process of fertilization • describe the events of 1st week of development. • describe the events2nd week of development. • describe the events 3rd week of development. • describe the development & derivatives of ectoderm, mesoderm & endoderm. • explain the development of foetal membranes • explain the development of twins & their types. • describe the causes & types of congenital anomalies • explain the process of human evocation • describe the Molecular regulation & cell signaling pathways	**CORE:** • Introduction: Terms and Definition Significance of study of embryology Basic process of development : proliferation, growth, differentiation, inductors, evocators and organizer • Cell division: Types • Gametogenesis and maturation of Germ cells. • Fertilization: Events, factors influencing the fertilisation Progress in 1st week of development • Progress in 2nd week of development. • Progress in 3rd week of development. • Derivatives of germ layers: ectoderm, mesoderm & endoderm. • Foetal membranes : Placenta, Chorion, Amnion, Umbilical cord, Yolk sac etc. • Twins Teratology **Additional:** • Human Evolution • Concepts of medical biotechnology in relation to embryology • Molecular regulation &cell signaling	**TERM I** 01 hr 01 hr 02 hrs 02 hrs 02 hrs 02 hr 02 hrs 01 hr **TERM II** 03 hrs 02 hrs

Learning Objectives	Contents	Teaching hours Total 24 hrs
Systemic Developmental Anatomy Student will be able to: • describe the process of development of different body system • describe the developmental anomalies of different body system • mention general outline of development of: Thoracic duct, Cysterna chyli, Inferior Vena Cava, Superior Vena Cava, Portal Vein, Brachiocephalic veins, & Renal veins.	**CORE:** Development and their Anomalies of • Skeletal system & vertebral column Muscular system • Upper and lower limb • Digestive system with associated glands • Respiratory system • Cardiovascular System & aortic arches • Coelomic cavity & the diaphragm • Skin & mammary gland • Urinary system • Male and female Reproduction system • Pituitary & suprarenal gland • Face & neck & their associated organs • Nervous System • Eye & Ear **Additional:** Development of • Lymphatic System • Vascular System	**TERM II** 02 hrs 01 hr 03 hrs 01 hr 03 hrs 01 hr 01 hr 02 hrs 03 hrs **TERM III** 01 hr 03 hrs 02 hrs 01 hr

Learning Objectives	Contents	Teaching hours Total 21 hrs
Neuroanatomy Students will be able to: • classify nervous system. Describe composition of grey matter and white matter • explain the structure, process of myelination, degeneration & regeneration of nerve fibres • define & classify synapse, receptors .describe the structure & functions of receptor & synapse • define autonomic nervous system, describe the different parts of autonomic nervous system .nerve plexuses & ganglia Pia, arachnoid and dura mater Extension, folds, spaces, nerve supply & blood supply • explain blood brain & blood CSF barrier • describe the formation, composition, circulation, absorption & functions of CSF • describe the ventricles of brain • describe the different lobes, Gyri, sulci and important functional areas with effects of lesion .Explain the mode of blood supply of cerebrum	**CORE:** • Introduction to Nervous system, • Nerve fibres, : structure classifications & functions, myelination degeneration, regeneration • Receptors : structure classifications location & functions • Synapse : structure classifications & functions • Autonomic nervous system, autonomic nerve plexuses & ganglia • Coverings of brain and spinal cord, Pia, arachnoid and dura mater Extension, folds, spaces, nerve supply & blood supply Barriers of brain • Cerebrospinal fluid (CSF) • Ventricles of brain • **Motor system** Cerebrum: Lobes: gyri, sulci Functional Areas ,Blood supply	**TERM I** 01 hr **TERM III** 01hr 01 hrs **TERM I &** **TERM II** 02 hrs **TERM III** 02 hrs 02 hrs

Learning Objectives	Contents	Teaching hours
Neuroanatomy Students will be able to: • describe Pyramidal & extrapyramidal system & effects of their lesion • describe functional lobes, nuclei, peduncles, blood supply, functions & clinical conditions of cerebellum • describe location,, parts, blood supply, functions & clinical conditions of basal nuclei • classify cranial nerves, explain functional components and cranial nerve nuclei, and describe the course of III, IV,V,VI,VII, IX, X, XI, XII cranial nerves . • explain & define dermatome & axial line • describe the ascending tracts with effects of lesions • describe the thalamus, hypothalamus • explain functional components nuclei, and course of I, II,VIII, cranial nerves . Explain the smell, visual & auditory pathway • describe the length, extension, enlargements sections of spinal cord at different level • describe the parts , blood supply and significance of brain stem. • describe the cross sections of midbrain , pons & medulla oblongata at different level • describe the arrangement & functions reticular formation • describe the parts & functions of limbic system	**CORE:** • Pyramidal & extrapyramidal system • Cerebellum: parts , functions , blood supply, clinical conditions • Basal nuclei : locations, parts , functions artery supply & clinical conditions • Motor & mixed cranial nerves • **Sensory system:** Dermatome & axial line • Ascending tracts of spinal cord • Diencephalon : parts & functions • Sensory cranial nerves & Smell, visual & auditory pathway • Spinal Cord: Length, extension, Enlargement ,Blood supply, Cross-sections at different level Brain stem : blood supply, cross sections at different levels • Reticular formation • Limbic system	**TERM III** 02 hrs 01 hr 01 hr 02 hr 01hr 01 hr 01 hr 02 hrs 01hr

Learning Objectives	Contents	Teaching hours
Living (surface) Anatomy Students will be able to: • locate and count ribs and costal cartilages • draw and demonstrate on the surface of the body important anatomical points and structures of Thorax	**Thorax** **CORE:** • Counting of ribs and costal cartilages • Heart- apex and borders • Lung-borders and apex, • Trachea & Bronchi • Esophagus • Triangle of auscultation • Jugular notch • Sternal angle • Area of Superficial Cardiac dullness Common carotid and subclavian artery Internal thoracic artery	06 hrs.
Students will be able to: • draw and demonstrate on the surface of the body important anatomical points and structures of Superior extremity	**Superior extremity** **CORE** • Nerves: Radial, Ulnar, Median nerve, Axillary nerve • Arteries: Brachial, Radial ,Ulnar artery, Superficial and deep palmar arch • Veins: cephalic, basilic & Median cubital vein • Flexor retinaculum • Anatomical snuff box • Medial humeral epicondyle	04 hrs.

Learning Objectives	Contents	Teaching hours
Living (surface) Anatomy Students will be able to: • locate, demonstrate on the surface of the body the different anatomical planes and land marks • draw, demonstrate on the surface of the body the nine regions of the abdomen • draw and indicate inguinal canal on the surface of the body • draw and demonstrate on the surface of the body Important anatomical points, borders and parts of important organs of abdomen Students will be able to: • locate and demonstrate on surface of the body important points and structures of inferior extremity	**<u>CORE:</u>** ***Abdomen*** • Trans-pyloric plane, Trans tubercular plane, Subcostal plane, mid clavicular line • Regions of abdomen • Superficial & deep inguinal ring. Inguinal canal • Abdominal aorta & inferior vena cava • Stomach, Duodenum, Pancreas, Liver, Gall bladder, Bile duct , spleen, Kidney from back & Mac Burney's point. • Transverse colon, ureter from front and back, celiac trunk , splenic artery, Root of the mesentery. **Inferior extremity** • Common peroneal nerve, Tibial nerve • Popliteal artery • Anterior & posterior tibial artery • Arteria dorsalis pedis • Great Saphenous vein • Small Saphenous vein • Adductor tubercle • Lateral and Medial Malleolus • Greater trochanter of femur • Anterior superior iliac spine **<u>Additional</u>** • Femoral nerve, sural nerve, Medial and lateral plantar artery, plantar arch.	6 hrs. 4 hrs.

Learning Objectives	Contents	Teaching hours
Students will be able to: • draw and demonstrate on the surface of the body important anatomical points and structures of Head and Neck	**Head and neck** • Facial artery , Facial vein • Internal jugular vein, External jugular vein • Common Carotid artery & its bifurcation • Facial Nerve & their branches • vagus nerve in the neck • Parotid gland and its duct • Frontal and maxillary air sinuses • Thyroid gland • Tip of the coracoid process • Inferior angle of scapula • Tip of the 7^{th} cervical spine **Additional:** • Pterion, lambda • Middle meningeal artery	04 hrs.

Learning Objectives	Contents	Teaching hours
Anatomy of Radiology & Images Students will be able to: • describe Radio opaque structures Radio-lucent structures • identification and location of normal structures by: Radiography	**CORE** Radio opaque structures Radio-lucent structures *Plain X-ray of the* -chest PA view -abdomen AP view -pelvis AP view -arm including proximal & distal joints AP & lateral view -forearm including proximal & distal joints AP & lateral view -hand including proximal & distal joints -thigh including proximal & distal joints AP & lateral view -leg including proximal & distal joints AP & lateral view -foot including proximal & distal joints AP & lateral view -head & neck (cervical spine) AP & lateral view -Paranasal sinuses OM view **Additional:** • Common normal Ultrasonographs, Isotope scan, • Magnetic Resonance Images (MRI), CT Scan • Coronary Angiograph	

Learning Objectives	Contents	Teaching hours
Clinical Anatomy Students will be able to: • describe the anatomical basis of clinical disorder of thorax, abdomen.	***Thorax*** • Pleurisy / Pleural effusion • Pneumothorax • Coronary artery disease • Pericarditis/ pericardial effusion • Flail chest • Paralysis of the diaphragm ***Abdomen*** • Portal vein obstruction • Hydrocele • Hernia • Peritonitis, ascitis • Gastric ulcer • Duodenal ulcer • Gall stone/cholecystitis • appendicitis • Benign hyperplasia of prostate, Prostatic cancer • Cystocele • Stress incontinence • Rupture urethra • Salphingitis • Ectopic pregnancy • Prolapse of uterus / vagina • Haemorrhoids • Undescended testis • Psoas abscess • Ischiorectal abscess	

Learning Objectives	Contents	Teaching hours
Clinical Anatomy Students will be able to: • describe the anatomical basis of clinical disorder of Head & Neck, CNS & Extremities	***Head & Neck*** • Fracture of the skull bones • Scalp injury • Piriform fossa and foreign body • Otitis media • Sinusitis • Epistaxis • Tonsilitis • Swelling of thyroid gland • Mumps • Cavernous vein thrombosis • Cervical rib ***CNS & Eyeball*** • Injury to brain /eye ball / spinal cord/cranial nerves • Meningitis • Hydrocephalus • Cerebral ischaemia • intracranial haemorrhage (extradural,subarachnoid, cerebral) papilledema Horner syndrome ***Superior extremity*** • Dislocation of shoulder joint • Brachial plexus & injury to its nerves • Carpal tunnel syndrome • Colle's fracture • Breast abscess & breast cancer ***Inferior extremity*** • Varicose vein • Deep vein thrombosis • Nerve injury • Dislocation of hip joint • Rupture of menisci & cruciate ligament,Bursitis • Deformities of foot	.

Learning Objectives	Contents	Teaching hours
Clinical Anatomy Students will be able to: • describe the anatomical basis for selection of arteries ,veins & Muscles of clinical importance. • demonstrate the different auscultatory areas • describe the anatomical basis for clinical procedure of Thorax, Abdomen, Head & Neck , CNS &Eyeball Extremities	• Arterial pulsation • Intravenous injections • Intramuscular injection • Apex beat, mitral ,tricuspid, aortic & pulmonary areas • Sternal puncture • Pleural effusion • pericardial effusion • Coronary angiogram • Bronchoscopy • Laryngoscopy • Paracentesis /peritoneal dialysis • Liver abscess • Vasectomy • Tubal ligation • Nasogastric intubation • Palpation of Cervical lymph node • Lumbar puncture • Epidural/spinal anaesthesia • Pudendal block • Fundoscopy	

Regional Anatomy : THORAX CARD
(DISSECTION, DEMONSTRATION & TUTORIAL)

Learning Objectives	Contents	Teaching hours
Students will be able to: • demonstrate the boundary & identify the contents of thoracic wall, thoracic cavity mediastinum & inter costal space • identify & demonstrate the gross features of bones & joints of thorax • describe the formation , course ,branches & distribution of Spinal nerve / intercostal nerve • identify & demonstrate the surfaces, borders, parts, chambers- including structures within the chambers of the heart • explain blood supply & nerve supply of heart • identify & demonstrate the layers of pericardium • identify & demonstrate the surfaces, borders, fissures, lobes, hilus & bronchopulmonary units of the lung • identify & demonstrate the layers & parts of pleura. • explain the blood supply, lymphatic drainage & nerve supply of lung & pleura. • identify & demonstrate the trachea bronchus & bronchial tree. • explain blood supply & nerve supply of trachea & bronchial tree. • explain the blood supply, nerve supply & lymphatic drainage of thoracic wall. • identify & demonstrate the surfaces, parts openings, attachments of the diaphragm. • explain the blood supply & nerve supply of the diaphragm. • explain the significance of the orifices of the diaphragm. • explain & demonstrate the extension ,parts ,relations & constrictions of oesophagus • explain the blood supply, lymphatic drainage & nerve supply of the oesophagus. • correlate clinical conditions associated with structures of thorax (Heart with its vessels, lung, trachea, bronchus, bronchial tree & the Diaphragm)	• Thoracic wall formation, thoracic cavity, intercostal space and mediastinum. • Bones and joints of the thorax • Spinal nerve / intercostal nerve • Heart with pericardium. • Lung with pleura, trachea and bronchus. Blood vessels, nerves and lymphatics of the thorax. • The diaphragm. • oesophagus • Clinical Anatomy	49 hrs.

Regional Anatomy: SUPERIOR EXTREMITY CARD (DISSECTION, DEMONSTRATION & TUTORIAL)

Learning Objectives	Contents	Teaching hours
Students will be able to: • identify & demonstrate muscles, vessels, nerves of pectoral region including attachment of muscles • describe the parts of mammary gland & its blood supply, lymphatic drainage & nerve supply • demonstrate the boundary & identify the contents of axilla, Quadrangular & triangular spaces, & cubital fossa • demonstrate the attachments of muscles, and identify vessels, nerves, lymphatics & lymph nodes of different parts of superior extremity • demonstrate the gross features of bones & joints of superior extremity and muscles acting on joints • correlate clinical conditions associated with structures (nerves, vessels, bones, joints) of superior extremity	• Pectoral region with mammary gland • Axilla • Superficial dissection of the upper limb, back and scapular region including quadrangular & triangular space Front of the arm , forearm and palm • Back of the arm, forearm and dorsum of the hand • Blood supply, lymphatic drainage, cutaneous innervation & dermatome of superior extremity • Bones & joints of the upper limb • Removal of the limb • Clinical Anatomy	42 hrs.

Regional Anatomy: ABDOMEN CARD
(DISSECTION, DEMONSTRATION & TUTORIAL)

Learning Objectives	Contents	Teaching hours
Students will be able to: • demonstrate the different layers of anterior abdominal wall & hernial region • explain clinical types of hernia • demonstrate the different parts of GI Tract & its peritonium • explain their mode of blood supply, lymphatic drainage & nerve supply • demonstrate the features of liver, pancreas, supra renal gland & different parts of biliary system • explain blood supply, lymphatic drainage & nerve supply of them. • demonstrate the features of kidney, ureter, urinary bladder, & urethra • explain their blood supply, lymphatic drainage & nerve supply • demonstrate the features of different parts of male & female reproductive system. • explain their blood supply, lymphatic drainage & nerve supply. • demonstrate the muscles and identify the vessels, nerves & lymphatics of posterior abdominal wall • demonstrate the parts and identify the contents of the pelvis • differentiate between male & female pelvis • demonstrate the gross features & joints of lumbar vertebra & bony pelvis and muscles acting on joints • correlate with clinical conditions associated with different organs of the abdomen	• Anterior wall of the abdomen with hernial region. • Stomach, abdominal part of the oesophagus; coeliac artery. • Duodenum, pancreas and spleen. • The mesentery and mesenteric vessels, jejunum and ileum. • Large intestine. rectum &anal canal • Liver with the biliary appartus including gall bladder; portal vein. • Kidney, suprarenal gland and ureter. • Muscles, blood vessels, lymphatics and nerves of the posterior abdominal wall. • Muscles, blood vessels lymphatics, nerves and the pelvis; urinary bladder. • Ovary, uterus, uterine tube, female external organs and perineum. • Vas deferens, seminal vesicle, prostate and male external genital organs. • Lumbar vertebra, bony pelvis &joints • Clinical Anatomy	103 hrs.

Regional Anatomy: INFERIOR EXTREMITY CARD (DISSECTION, DEMONSTRATION & TUTORIAL)

Learning Objectives	Contents	Teaching hours
Students will be able to: • demonstrate muscles attachments and identify vessels & nerves of different parts of inferior extremity • demonstrate the boundary and identify the contents of femoral triangle, adductor canal, popliteal fossa & sole of the foot • demonstrate the features of bones, joints, & muscles acting on joints • explain the Venous drainage, lymphatic drainage, & dermatome of inferior extremity • correlate the clinical conditions associated with structures (nerves, vessels, bones, joints) of inferior extremity	• Front and medial side of the thigh • Gluteal region and back of the thigh • Front of the leg and dorsum of the foot • Lateral side, medial side and back of the leg including the popliteal fossa sole of the foot • Bones & joints of lower limb • Arches of the foot • Removal of lower limb • Blood supply, lymphatic drainage, cutaneous innervation & dermatome of inferior extremity • Clinical Anatomy	41 hrs.

Regional Anatomy: HEAD & NECK CARD
(DISSECTION, DEMONSTRATION & TUTORIAL)

Learning Objectives	Contents	Teaching hours
Students will be able to: • identify and demonstrate the different parts of bones of head & neck , joints, & muscles acting on joints • state the gross features & attachments of skull bones including base of skull & cervical vertebrae. • demonstrate movements of joints of Head & Neck • demonstrate the layers of scalp identify the contents of temporal region • demonstrate the boundary of face and identify muscles and sensory supply of face • identify parotid gland & duct & explain the structures within the parotid gland • demonstrate the boundary and identify contents of anterior triangle, posterior triangle, sub-occipital triangle & sub-mandibular region • demonstrate the boundary and identify contents of mouth cavity • demonstrate the gross features & nerve supply of tongue • explain Auditory pathway (VIII – cranial nerve) • demonstrate the parts of pharynx with their extension & muscles of pharynx the walls of nose and paranasal air sinuses the extension, cartilages & muscles of larynx • identify structures present in the internal surface of the larynx • demonstrate the region of vertebral column and attachments of muscles of the back • demonstrate the different parts of external, middle & internal Ear • correlate important clinical conditions associated with structures in Head & Neck (Thyroid gland, parathyroid gland, air sinuses, Larynx, scalp, ear, face etc.)	• Bones & joints of head and neck • Scalp and temporal region • Face and orbit • Anterior triangle and submandibular region including thyroid gland • Posterior triangle • Mouth and tongue • Pharynx • Nose and paranasal sinuses • Larynx • Vertebral column and deep dissection of the • Organs of hearing and equilibrium. • Clinical Anatomy	88 hrs.

Regional Anatomy: CENTRAL NERVOUS SYSTEM & EYEBALL CARD (DISSECTION, DEMONSTRATION & TUTORIAL)

Learning Objectives	Contents	Teaching hours
Students will be able to: • demonstrate ❑ the boundary & contents of cranial cavity & orbit ❑ the different parts of brain & cranial nerves attached to brain ❑ the layers of meninges- Pia, arachnoid, and durameter • explain the processes of dura & its contents • explain the blood supply & nerve supply of the meninges • demonstrate the boundary of different lobes of cerebrum, sulci, gyri & important functional areas • explain the blood supply of cerebrum including the formation of Circle Willis • demonstrate the parts & describe the functions & connections of ❑ diencephalon, pituitary gland, basal nuclei, ❑ internal capsule, extra pyramidal system & ❑ limbic system, brain stem • locate &describe • the nuclei, course, functional components & distribution of cranial nerves • the boundary & parts of ventricles circulation of CSF through ventricles • gross features of spinal cord and its meninges and spinal nerves attached to it • the coats of eyeball & the course of optic nerve • explain Refractive Media explain the effects of lesion and loss of blood supply to different parts of nervous system.	• Introduction to the nervous system, cranial cavity and orbit. • General examination of the brain • Superficial attachments of cranial nerves • meninges of the brain Cerebrum.:lobes of cerebrum, sulci gyri & important functional areas blood supply formation of Circle Willis. Diencephalon:Thalamus, hypothalamus, metathalamus, epithalmus and pituitary gland • Basal nuclei, internal capsule, extra pyramidal system and limbic system • Brain stem and reticular formation • Cranial nerves • Ventricles and cerebrospinal fluid Spinal cord & spinal nerves • Visual apparatus including the eyeball • Clinical Anatomy.	40 hrs

Cell Biology & Histology Tutorial & Practical (Card I)

Learning Objectives	Contents	Teaching hours
Students will be able to: • demonstrate different parts of microscope & how to handle it • state the principles of tissue preparation • explain cell division • identify different types of tissue on slide under microscope	• Microscope: Parts & how to handle Principles of different types of microscopy • Principles of tissue preparation and staining: Fixation, embedding, sectioning & routine staining • Cell and cell division • Epithelium: Simple squamous, cuboidal, columnar Pseudo stratified Stratified squamous, cuboidal Stratified columnar Transitional • Connective tissue:: General, special ,bone, cartilage • Muscular tissue: Smooth, skeletal & cardiac muscle • Nervous tissue in general	17 hrs.

Cell Biology & Histology Tutorial & Practical (Card II)

Learning Objectives	Contents	Teaching hours
• Students will be able to identify different structures of the following systems on slides under microscope: Respiratory system. Cardiovascular system Digestive system and & associated Glands. Urinary system Male reproductive system and associated glands female reproductive system and associated glands	• Respiratory system Larynx, trachea, bronchial tree and Lung • Large artery, medium sized artery, large vein • Digestive system & associated glands Tongue, pharynx, oesophagus, stomach, small intestine & large intestine (including vermiform appendix) Liver and gall bladder, Pancreas • Urinary system Kidney, ureter, urinary bladder, urethrae • Male reproductive system and associated glands Testis, epididymis, vas deferens, seminal vesicle, prostate • Female reproductive system and associated glands Ovary, fallopian tube, uterus, vagina • Mammary gland , placenta	17hrs.

Cell Biology & Histology Tutorial & Practical (Card III)

Learning Objectives	Contents	Teaching hours
• Students will be able to identify following structures on slides under microscope: Lymphatic system Salivary glands Nervous system Endocrine system Special sense organs Skin	• Lymphatic system Lymph node, tonsil, spleen & thymus • Exocrine glands (salivary glands} • Nervous system spinal cord, cerebrum, cerebellum, peripheral nerve (including the optic nerve) • Endocrine gland (Pituitary, Thyroid, Parathyroid, Adrenal and Islet's of Langerhans • Special sense organs: Eyeball (cornea, retina), internal ear • Thick skin & thin skin	18 hrs.

Integrated Teaching in Anatomy

- Integrated teaching program on a particular topic/organ /organ system should be organized in each term. The topics which are related should be prepared after discussion with the teachers of Anatomy/Physiology/Biochemistry. The horizontal process of Integrated teaching program will help the students to have a simultaneous views of different aspects of Anatomical/Physiological/Biochemical details of a particular topic/organ /organ system.

TOPICS	LEARNING OBJECTIVES	TERM	DEPARTMENT
1. Cell	Students will be able to • describe the structure & functions of different constituents of cell • explain membrane transport, membrane potentials & action potentials • state the composition of ECF & ICF compartments	I	Anatomy Physiology Biochemistry
2.Heart	Students will be able to • describe the gross anatomy & clinical anatomy of heart • describe the types & regulation of blood pressure • describe the physiologic basis of shock management • describe & interpret the cardiac markers	I	Anatomy Physiology Biochemistry
3.Lung	Students will be able to • describe the gross anatomy & clinical anatomy of lung • describe the spirometry & its clinical application • describe the regulation of respiration	I	Anatomy Physiology Biochemistry
4. Hepatobiliary system	Students will be able to • describe the gross anatomy & clinical anatomy of hepatobiliary system • interprete the liver function test & explain its clinical importance • explain the role of liver in metabolism	II	Anatomy Physiology Biochemistry

TOPICS	LEARNING OBJECTIVES	TERM	DEPARTMENT
5.Kidney	Students will be able to • describe the gross anatomy & clinical anatomy of kidney • explain the mechanism of urine formation • interpret e kidney function test • explain the renal chemistry in relation to water, electrolytes & acid base balance	II	Anatomy Physiology Biochemistry
6.Pancreas	Students will be able to • describe the gross anatomy & clinical anatomy of pancreas • describe hormones of islets of Langerhan' s • describe functions ,mechanism of action & regulations of secretion of insulin • describe causes & consequences of hyper & hypoglycaemia • describe laboratory diagnosis of diabetes mellitus	II	Anatomy Physiology Biochemistry
7.Adrenal gland	Students will be able to • describe the gross anatomy & clinical anatomy of adrenal gland • describe the functions ,mechanism of action & regulation of secretion of adrenal hormones • describe hypo & hyperadrenalism	III	Anatomy Physiology Biochemistry
8. Thyroid & Parathyroid gland	Students will be able to • describe the gross anatomy & clinical anatomy of thyroid & parathyroid gland • describe the hormones of thyroid & parathyroid gland : biosynthesis , transport functions ,mechanism of action & regulation of secretion • describe hypo & hyperthyroidism • describe tetany • describe thyroid function tests & their interpretation	III	Anatomy Physiology Biochemistry
9. Pituitary gland	Students will be able to • describe the gross anatomy & clinical anatomy of pituitary gland • describe Hormones of pituitary gland : functions ,mechanism of action & regulation of secretion • describe Hypo & hyperpituitarism	III	Anatomy Physiology Biochemistry

TOPICS	LEARNING OBJECTIVES	TERM	DEPARTMENT
10. Sensory system & Motor system	Students will be able to • describe receptors ,synapse & sensory pathways • describe the pyramidal and extrapyramidal system • describe cerebellum, basal nuclei & their disorder • describe the different types of neurotransmitter & their functions	III	Anatomy Physiology Biochemistry

Teaching - Learning & Assessment Methods

Teaching / Learning Method	*Teaching Aid*	*In Course Assessment*	*Summative Assessment*
Lecture	Computer & multimedia Slide projector, overhead projector (OHP), black board white and different colour chalk, white board and different colour white board markers.	• Item Examination: Oral, Practical • Card Completion Examination • Term Examinations: Written, Oral, Practical • Preparation of exercise book	• Written • Oral • Practical
Regional Anatomy: Demonstration & Tutorial	Cadavers, prosected parts, bones, viscera and other specimens of body parts, models, charts, black board white and different colour chalk, white board and different colour white board markers, Illustration sheets/posters, OHP, video, slide projector, computer with CD ROM, radiographs & other images.		
Regional Anatomy: Dissection	Cadavers, prosected parts, specimens and bones, black board white and different colour chalk, white board and different colour white board markers, Computer & multimedia.		
Cell Biology & Histology Tutorial & Practical	Microscope, slide projector, black board white and different colour chalk, white board and different colour white board markers, OHP, Illustration sheets (including photomicrographs & drawings)/posters, video projector, computer with CD ROM drive		

Assessment in Anatomy

Component	Marks	Total Marks
Formative assessment	**10+10**	**20**
WRITTEN EXAMINATION		
paper-I- MCQ	**20**	
SAQ	**70**	
paper-II- MCQ	**20**	**180**
SAQ	**70**	
ORAL EXAMINATION (Structured)		
Hard part	**75**	**150**
Soft part	**75**	
PRACTICAL EXAMINATION		
Soft part		
Objective structured practical Exam (OSPE)	**30**	
Dissection	**30**	
Anatomy of Radiology and imaging	**15**	**75**
Hard part		
OSPE	**30**	
Lucky slides	**20**	**75**
Living Anatomy	**20**	
Practical Khata	**05**	
	Grand Total	500

- There will be separate Answer Scripts for SAQ
- Pass marks 60 % in each of theoretical, oral and practical examination

Time allocation in Anatomy

Lecture & Review - 115 hours

Term	General Anatomy Hours	Cell Biology Hours	General Histology Hours	Systemic Histology Hours	General Embryology Hours	Systemic Embryology Hours	Neuro anatomy Hours.	Human Genetics Hours.	Total Hours
First Term	12	06	08	02	13	-	01	04	**46**
Second Term	-	-	02	14	05	17	02	-	**40**
Third Term	-	-	02	02	-	07	18	-	**29**
Grand Total Hours (Class +Exam)	**12**	**06**	**12**	**18**	**18**	**24**	**21**	**04**	**115**

Cell Biology & Histology - Tutorial & Practical – 52 hours

Term	Class Hours (Including Item Exam hrs)	Card Completion Exam Hours	Total Hours
First Term (Card I)	15	2	17
Second Term (Card II)	15	2	17
Third Term (Card III)	16	2	18
Grand Total Hours	**46**	**6**	**52**

Term	Cards	Dissection & Demonstration	Tutorial Review			Part Completion Examination Hours	Total Hours
			Living (surface) Anatomy	Anatomy of radiology & Images	Clinical Anatomy		
First Term	**Thorax**	32	6	2	3	06	**49**
	Superior Extremity	33	3	2	3	01	**42**
Second Term	**Abdomen**	83	6	2	6	06	**103**
	Inferior Extremity	33	3	2	2	01	**41**
Third Term	**Head, Neck**	74	4	2	3	05	**88**
	Central Nervous system and Eye ball	35	00	1	3	01	**40**
Grand Total Hours		**290**	**22**	**11**	**20**	**20**	**363**

ACADEMIC CALENDAR for ANATOMY

Class/Exam	*Hours(including Class exams hrs)*	*First Term (14 working weeks)*	Evaluation & leave 04 weeks	*Second Term (15 working weeks)*	Evaluation & leave 04 weeks	*Third Term (14 working weeks)*	2.Evaluation & preparatory leave for first prof–08 weeks 1.Evaluation & preparatory leave for third term;03 weeks
Lecture and Review	**115**	• General Anatomy-12 hrs • Cell Biology -06 hrs • Human Genetics - 04 hrs • General Histology-08 hr • Systemic Histology – 02 hrs • General Embryology - 13 hrs • Neuroanatomy – 01 hrs		• General Histology-02 hr • Systemic Histology - 14 hrs • General Embryology - 05 hrs • Systemic Embryology- 17 hrs • Neuroanatomy – 02 hrs		a) General histology - 02 hr b) Systemic Histology -02 hrs c) Systemic Embryology - 07 hrs d) Neuroanatomy - 18hrs	
Tutorial/ Review	**53**	Thorax Card – 11 hrs Sup. Ext. Card – 08 hrs		Abdomen Card – 14 hrs Inf. Ext. Card – 7 hrs		Head & Neck Card –9 hrs C.N.S & Eyeball – 04 hrs	
Dissection	**290**	Thorax Card - 32 hrs Sup Ext Card- 33 hrs		Abdomen Card – 83hrs Inf. Ext. Card – 33 hrs		Head & Neck Card – 74 hrs C.N.S & Eyeball Card - 35 hrs	
Card Completion Exam	**20**	Thorax Card- 06hrs Sup Ext. Card- 01hrs		Abdomen Card– 06 hrs Inf. Ext. Card – 01 hrs		Head & Neck Card –05 hrs C.N.S & Eyeball Card - 01 hrs	
Cell Biology & Histology-Tutorial/ Practical	**52**	Card I – 17 hrs		Card II - 17 hrs		Card III – 18 hrs	
Grand Total	**530**						

N.B. – Card completion examinations will be arranged on discussion with other departments (Physiology, Biochemistry)

Prerequisite for 1st professional examination

1. A Student must pass all term exam before appearing 1st professional exam.
2. Class attendance must be 75 %

DEPARTMENT OF ANATOMY

……..MEDICAL COLLEGE

THORAX CARD

(ITEM EXAM FOLLOWING DISSECTION, DEMONSTRATION & TUTORIAL)

Year	
Session	
Roll No.	
Batch	

Card no.	
Cadaver no.	
Total marks	
Pass marks	

Name of the student				
Period of placement	**From :**		**To :**	

Part for dissection (item)	**Date of beginning**	**Date of examination**	**Marks obtained**	**Remarks and Signature of the Lecturer**
1.Thoracic wall, Intercostal space, thoracic cavity and mediastinum.				
2.Bones and joints of the thorax				
3.Heart with pericardium.				
4.Lung, Pleura , trachea and bronchus.				
5.The Diaphragm & oesophagus				
6.Blood vessels, nerves and lymphatics of the thorax.				
7. Clinical & Functional anatomy				
8. Living Anatomy.				
9.Anatomy of Radiology & Images				

No. of attendance in the practical classes of the card		**Out of**	
Mark obtained			
Remarks			
Signature of the Lecturer			
Signature of Head of the Department			

DEPARTMENT OF ANATOMY
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SUPERIOR EXTREMITY CARD
(ITEM EXAM FOLLOWING DISSECTION, DEMONSTRATION & TUTORIAL)

Year		**Card no.**	
Session		**Cadaver no.**	
Roll No.		**Total marks**	
Batch		**Pass marks**	
Name of the student			
Period of placement	**From :**	**To :**	

Part for dissection (item)	Date of beginning	Date of examination	Marks obtained	Remarks and Signature of the Lecturer
1. Bones and introduction to the joints of the superior extremity				
2. Pectoral region with mammary gland.				
3. Axilla.				
4. Superficial dissection of the upper limb, back and scapular region.				
5. Front of the arm , forearm & palm				
6 .Back of the arm, forearm & dorsum of the hand.				
7. Blood vessels, nerves and lymphatics of the superior extremity				
8. Removal of the limb; shoulder joint, acromioclavicular joint, elbow joint,wrist joint				
9. Clinical & Functional Anatomy.				
10. Living Anatomy				
11. Anatomy of Radiology & Images				

No. of attendance in the practical classes of the card		**Out of**	
Mark obtained			
Remarks			
Signature of the Lecturer			
Signature of Head of the Department			

DEPARTMENT OF ANATOMY

……..MEDICAL COLLEGE

ABDOMEN CARD

(ITME EXAM FOLLOWING DISSECTION, DEMONSTRATION & TUTORIAL)

Year		**Card no.**	
Session		**Cadaver no.**	
Roll No.		**Total marks**	
Batch		**Pass marks**	

Name of the student				
Period of placement	**From :**		**To :**	

Part for dissection (item)	Date of beginning	Date of examination	Mark obtained	Remarks and Signature of the Lecturer
1.Bones and joints of abdomen & pelvis				
2.Anterior wall of the abdomen with hernial region.				
3.Stomach, abdominal part of the oesophagus; coeliac trunk				
4.Duodenum, pancreas and spleen.				
5.The mesentery and mesenteric vessels, jejunum and ileum.				
6.Large intestine.				
7. Rectum and anal canal				
8..Liver with the biliary apparatus including gall bladder; portal vein.				
9.Kidneys, suprarenal gland, ureters. urinary bladder ,Urethrae				
10.Muscles, blood vessels, lymphatics and nerves of the posterior abdominal wall.				
11.Muscles, blood vessels, lymphatics, nerves of the pelvis				
12.Ovaries, uterus, uterine tubes,vagina,female external genital organs and perineum.				
13.Perineum pelvic diaphragm.urogenital diaphragm,perineal pouches,ischiorectal fossa				
14.Vas deferens, seminal vesicles, prostate,testes and male external genital organs.				
15.Clinical & Functional anatomy				
16.Living Anatomy.				
17Anatomy of Radiology & Images				

No. of attendance in the practical classes of the card		**Out of**	
Mark obtained			
Remarks			
Signature of the Lecturer			
Signature of Head of the Department			

DEPARTMENT OF ANATOMY
……..MEDICAL COLLEGE

INFERIOR EXTREMITY CARD
(ITEM EXAM FOLLOWING DISSECTION, DEMONSTRATION & TUTORIAL)

Year	
Session	
Roll No.	
Batch	

Card no.	
Cadaver no.	
Total marks	
Pass marks	

Name of the student				
Period of placement	**From :**		**To :**	

Part for dissection (item)	Date of beginning	Date of examination	Marks obtained	Remarks and Signature of the Lecturer
1. Bones and introduction to the joints of the inferior extremity				
2. Front and medial side of the thigh.				
3. Gluteal region and back of the thigh.				
4. Hip joint and removal of the lower limb.				
5. Front of the leg and dorsum of the foot.				
6. Lateral side, medial side and back of the leg including the popliteal fossa.,Sole of the foot				
7. Blood vessels, nerves and lymphatics of the inferior extremity				
8. Knee, tibiofibular joints and ankle joint				
9. Joints and arches of the foot.				
10. Clinical & Functional Anatomy.				
11. Living Anatomy				
12. Anatomy of Radiology & Images				

No. of attendance in the practical classes of the card		**Out of**	
Mark obtained			
Remarks			
Signature of the Lecturer			
Signature of Head of the Department			

DEPARTMENT OF ANATOMY

……..MEDICAL COLLEGE

HEAD AND NECK CARD

(ITEM EXAM FOLLOWING DISSECTION, DEMONSTRATION & TUTORIAL)

Year	
Session	
Roll No.	
Batch	

Card no.	
Cadaver no.	
Total marks	
Pass marks	

Name of the student				
Period of placement	**From :**		**To :**	

Part for dissection (item)	Date of beginning	Date of examination	Mark obtained	Remarks and Signature of the Lecturer
1. Bones of head and neck.				
2. Joints of head and neck.				
3. Scalp and temporal region.				
4. Face and orbit.				
5. Anterior triangle and submandibular region.				
6. Posterior triangle.				
7. Mouth and tongue.				
8. Pharynx.				
9. Nose and Paranasal sinuses.				
10. Larynx.				
11. Vertebral column and deep dissection of the back.				
12. Blood vessels, nerves and lymphatics of the Head & Neck				
13. Exocrine & Endocrine Glands of Head & neck				
14. Organs of hearing and equilibrium.				
15. Clinical & Functional Anatomy.				
16. Living Anatomy.				
17. Anatomy of Radiology & Images.				

No. of attendance in the practical classes of the card		**Out of**	
Mark obtained			
Remarks			
Signature of the Lecturer			
Signature of Head of the Department			

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CENTRAL NERVOUS SYSTEM AND EYEBALL CARD

(ITEM EXAM FOLLOWING DISSECTION, DEMONSTRATION & TUTORIAL)

Year		**Card no.**	
Session		**Cadaver no.**	
Roll No.		**Total marks**	
Batch		**Pass marks**	

Name of the student				
Period of placement	**From :**		**To :**	

Part for dissection (item)	Date of beginning	Date of examination	Mark obtained	Remarks and Signature of the Lecturer
1. General introduction to the nervous system, cranial cavity and orbit.				
2. General examination of the brain with its nerve attachments and meninges.				
3. Cranial nerve – nuclei, course. functional components, supply & lesions				
4. Cerebrum.				
5. Diencephalon				
6. Basal ganglia, internal capsule, extra pyramidal system and limbic system.				
7. Brain stem, reticular formation & Cerebellum				
8. Ventricles and cerebrospinal fluid.				
9. Spinal cord & Spinal nerve				
10. Visual apparatus including the eyeball.				
11. Clinical & Functional Anatomy				
12. Living Anatomy.				
13. Anatomy of Radiology & Images				

No. of attendance in the practical classes of the card		**Out of**	
Mark obtained			
Remarks			
Signature of the Lecturer			
Signature of Head of the Department			

DEPARTMENT OF ANATOMY
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HISTOLOGY CARD NO. I

Year	
Session	
Roll No.	
Batch	

Total marks	
Pass marks	

Name of the student				
Period of placement	**From :**		**To :**	

Item	Date of beginning	Date of examination	Marks obtained	Remarks and Signature
1. Study of microscope.				
2. Principles of tissue preparation and staining (routine)				
3. Cell and cell division				
4. Epithelium				
5. Connective tissue-General				
6. Connective tissue-Special				
7. Muscular tissue				
8. Nervous tissue in general				

Total No. of attendance		**Out of**	
Marks obtained			
Remarks			
Signature of the Lecturer			
Signature of the Prof. of Anatomy			

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HISTOLOGY CARD NO. II

Year	
Session	
Roll No.	
Batch	

Total marks	
Pass marks	

Name of the student				
Period of placement	**From :**		**To :**	

Item	Date of beginning	Date of examination	Marks obtained	Remarks and Signature
1. Cardiovascular system				
2. Respiratory system				
3. Digestive system & associated glands				
4. Urinary system				
5. Male reproductive system				
6. Female reproductive system				

Total No. of attendance		**Out of**	
Marks obtained			
Remarks			
Signature of the Lecturer			
Signature of the Prof. of Anatomy			

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HISTOLOGY CARD NO. III

Year	
Session	
Roll No.	
Batch	

Total marks	
Pass marks	

Name of the student				
Period of placement	**From :**		**To :**	

Item	Date of beginning	Date of examination	Marks obtained	Remarks and Signature
1. Lymphatic System				
2. Exocrine Glands in general				
3. Endocrine Glands				
4. Nervous system				
5. Special sense organs				
6. Skin –Thick & Thin skin				

Total No. of attendance		**Out of**	
Marks obtained			
Remarks			
Signature of the Lecturer			
Signature of the Prof. of Anatomy			

Preface

Medical science is constantly advancing with the advancement of science and technology. Global changes are happening in medical education in accordance and conformity of these advancements and changes. With the application of these knowledge and skills of medical science, future doctors should satisfy their patients with the changing needs of the community. Much changes are happening in teaching methods and teaching sites or learning environment. It is now an established fact that best learning is achieved through utilizing the learning environment in factual situation. A doctor can better learn from his own patients. Slogan of today is now the unity of education and practice. The undergraduate curriculum for future doctor is expected to be so designed that it should focus more on real life situation and of learning i.e. more community oriented as well as more community based. To serve this purpose community campus partnership is very much appropriate and essential.

The undergraduate medical curriculum followed in the medical colleges was developed in 1988 through UNDP and WHO support by the Centre for Medical Education with an aim to produce community oriented doctors who will be able to provide essential primary health care to the community. That was the first documented curriculum ever developed in the country. But evaluation by UNDP (1990) and Godfrey et al (1996) revealed that it is neither community oriented nor competency based and there is room for much improvement. The need to develop a community- oriented and competency-based curriculum was felt by all concerned. For that series of workshops with specialists and experts from every discipline took place to develop a curriculum, which would reflect institutional, departmental objectives as well as subject wise learning objectives. The curriculum should have contents relevant to the health problems of the country and assessment method should be scientific, reliable and valid and also questions should be objectively set and designed. The teaching methods should also be scientific and more biased for effective small group teaching. As a whole the other components of the curriculum such as, course contents, strategy for teaching, materials or media used and the assessment system within the available timeframe were to be identified scientifically to provide the medical graduates with proper knowledge, skills and attitude. Thus the Undergraduate Medical Curriculum 2002 was developed and implemented.

Now after a decade, with the combined efforts of the Directorate General of Health Services (DGHS), Centre for Medical Education (CME) and Bangladesh Medical & Dental Council (BM&DC), MOH&FW and different Dean offices reviewed and updated the Undergraduate Medical Curriculum 2002 with the inclusion of national goal, objectives, learning outcomes, competencies. The updated MBBS Curriculum 2012 is ready to be implemented from session 2012-2013. This enormous task has been efficiently completed with the most sincere and heartiest effort of the teachers of both public and private medical colleges and also delegates of concerned authorities and faculty members of CME. The activities in regards to technical support, compilation and editing were done by Centre for Medical Education (CME) as per it's terms of reference.

Prof. Abu Shafi Ahmed Amin
President
Bangladesh Medical & Dental Council (BM&DC)

Preamble

The quality of health care is under scrutiny all over the world because of increasing public expectation of their health care services. Therefore a positive change is needed in the role of doctors. The role of teachers and students in teaching learning with positive changes in medical education, its strategy and process also needs to be reviewed and developed.

This reviewed MBBS curriculum 2012 has been developed and scientifically designed, which is responsive to the needs of the learners and of the community. The present curriculum, its assessment method is expected to effectively judge competencies acquired that are required to meet the health need of our people. It is gratifying to note that all concerned in the promotion of medical education in the country have involved themselves in the planning and formulation of this need-based and competency based curriculum which has been initiated under the auspices of the Centre for Medical Education (CME).

Though curriculum is not the sole determinant of the outcome, yet, it is very important as it guides the faculty in preparing their instruction and tells the students what knowledge, skills and attitude they are to develop through the teaching learning process. The ultimate indicators of assessing curriculum in medical education is the quality of health services provided by its graduates with required competencies.

In conclusion, I would like to mention that the curriculum planning process is continuous, dynamic and never-ending. If it is to serve best, the needs of the individual students, educational institutions and the community to whom we are ultimately accountable, must be assessed.

I congratulate all who were involved in reviewing, redesigning, updating and developing the MBBS curriculum, particularly the Centre for Medical Education. They contributed to complete this activity a commendable job and deserve special appreciation.

Prof. Dr. Khondhaker Md. Shefyetullah
Director General, DGHS
Govt. of the Peoples Republic of Bangladesh

Background and Rationale

Curriculum planning, scheming and updating is not a stationary process, rather a nonstop course of action done on a regular basis through a scheme. More than one decade have over and done since the Centre for Medical Education (CME), planned and developed the "Curriculum for Under-graduate Medical Education in Bangladesh 2002"

After a decade the "Curriculum for Under-graduate Medical Education in Bangladesh 2002" has been reviewed and updated for that reason. Centre for Medical Education (CME) in association with BM&DC, Deans Offices, DGHS, MOH&FW under took the whole process. Review workshops were held through active participation of different professional groups, faculty members. Accordingly, first, second, third and final professional group meetings were held with support from Action Aid Bangladesh, PSTC, PSE, DGHS, WHO. Later on, in order to give a final shape with recommendation it was sent to BM&DC for further action. A **taskforce** group examined the revised undergraduate medical curriculum.

The revised undergraduate medical curriculum is expected to be implemented with the newly admitted students of 2012 – 2013 session. Performance of these; students as graduates will articulate about the achievement of this "Curriculum for Under-graduate Medical Education in Bangladesh – Updated 2012" as need-based, community oriented & competency based.

I hope this curriculum will continue to serve as guiding principle for the students and faculty members. It is readily understood that in order to further improve, update this Curriculum for Under-graduate Medical Education in Bangladesh – Updated 2012 needs constant review, revision and updating.

Last but not least, I would like to extend my deep gratefulness to all faculty members of Centre For Medical Education and others who shared their expertise and insights and worked hard to generate this precious document.

Professor Dr Shah Abdul Latif
Director
Medical Education & Health Manpower Development
DGHS, Mohakhali, Dhaka 1212

Acknowledgement

Factors contributing to an effective medical education system are quality of students, quality of teaching staff, and their effective delivery of need based scientific curriculum. Although the best students are admitted in the medical colleges every year yet the medical graduates are not always of the desired quality for providing health services to the community. The answer then should be sought in other factors of which the most important is the curriculum. A curriculum is generally regarded as a programme of instruction for an educational institution and its plan takes the form of a descriptive outline of courses, their arrangement and sequence, the time assigned to them, the contents to be covered in them, the instructional methods to be employed and finally evaluation.

The enormous task of reviewing and updating of the MBBS curriculum 2002 was assigned to Centre for Medical Education (CME). The curriculum was reviewed and updated with a scientific approach of Delphi Technique in national workshops. The participants of these workshops were almost all the Professors of the concerned departments/subjects, principals of all the medical colleges, medical educationists, faculty members of CME and a good number of resource personnels including the President & members of the Bangladesh Medical & Dental Council and Deans of the Faculty of Medicine of Dhaka/Chittagong/Rajshahi/Shah Jalal Universities and concerned persons from DGHS and MOH&FW. The other supplementary approach was to make it evidence based through need assessments. The overwhelming response of all categories of teachers for reviewing & updating of this curriculum is indeed praiseworthy. They have worked hard to identify and discard the superfluous elements from the course contents and added new elements to make teaching-learning process more relevant, meaningful and up-to date. Congratulations to them, they have done a commendable job. Efforts given by the principals, members of academic council, teachers, students and intern doctor providing their valuable opinions during the need assessment at the beginning of reviewing and updating of this MBBS curriculum are duly acknowledged. As director, CME I express my gratitude to all the members of National Core Committee(NCC) for their all cordial co-operation, guidance all the ways since beginning up to the completion of reviewing and updating of MBBS curriculum. I acknowledge the technical and financial support from Action Aid Bangladesh, PSTC, PSE, DGHS, WHO.

The composition of the planners of this curriculum is unique. The authorities responsible for approving, implementing and functioning of this curriculum have worked together and involved themselves in its reviewing & updating. It is only natural that they left no stone unturned to get a need based and competency based applicable curriculum.

I am grateful to all, who actively participated in this great job, specially the faculty and staffs of Centre for Medical Education who worked very hard and efficiently to develop this MBBS Curriculum 2012 which is mainly discipline based community oriented with the reflection of competency based, integrated, & community based nature.

Prof. Dr. Fatima Parveen Chowdhury
Director
Centre for Medical Education
Mohakhali, Dhaka – 1212
Bangladesh

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National Goal and Objectives of MBBS Course, Learning Outcomes/Competences of Fresh Graduates

National Goal:

To produce competent, compassionate, reflective and dedicated health care professionals who:

- consider the care and safety of their patients their first concern
- establish and maintain good relationship with patients, their attendants and colleagues
- are honest, trustworthy and act with integrity
- are capable of dealing with common diseases and health problems of the country and are willing to serve the community particularly the rural community;
- but at the same time acquire firm basis for future training, service and research at both national and international level.
- are committed to keep their knowledge and skill up-to-date through 'Continuous Professional Development' all through their professional life.

Objectives of MBBS Course:

At the end of the MBBS Course students shall:

1. Acquire knowledge and understanding of
   a) the sciences upon which Medicine depends and the scientific and experimental methods;
   b) the structure, function and normal growth and development of the human body and the workings of the mind and their interaction, the factors which may disturb these, and the disorders of structure and function which may result;
   c) the etiology, natural history and prognosis of the common mental and physical ailments. Students must have experience of emergencies and a good knowledge of the common diseases of the community and of ageing processes;
   d) normal pregnancy and childbirth, the common obstetric emergencies, the principles of ante-natal and post natal care, and medical aspects of family planning and psycho-sexual counseling;
   e) the principles of prevention and of therapy, including health education, the amelioration of suffering and disability, rehabilitation, the maintenance of health in old age, and the care of the dying;
   f) human relationships, both personal and social and the interaction between man and his physical, biological and social environment;
   g) the organization and provision of health care in the community and in hospital, the identification of the need for it, and the economic, ethical and practical constraints within which it operates; and
   h) the ethical standards and legal responsibilities of the medical profession.

2. Develop the professional skills necessary to

a) elicit, record and interpret the relevant medical history, symptoms and physical signs, and to identify the problems and how these may be managed;
b) carry out simple practical clinical procedures;
c) deal with common medical emergencies;
d) communicate effectively and sensitively with patients and their relatives;
e) communicate clinical information accurately and concisely, both by word of mouth and in writing, to medical colleagues and to other professionals involved in the care of the patient; and
f) use laboratory and other diagnostic and therapeutic services effectively and economically, and in the best interests of his patients.

3. Develop appropriate attitudes to the practice of medicine, which include

a) recognition that a blend of scientific and humanitarian approaches is needed in medicine;
b) a capacity for self education, so that he may continue to develop and extend his knowledge and skills throughout his professional life, and recognize his obligation to contribute if he can to the progress of medicine and to new knowledge;
c) the ability to assess the reliability of evidence and the relevance of scientific knowledge, to reach conclusions by logical deduction or by experiment, and to evaluate critically methods and standards of medical practice;
d) a continuing concern for the interests and dignity of his patients;
e) an ability to appreciate the limitations of his own knowledge, combined with a willingness, when necessary, to seek further help; and
f) the achievement of good working relationships with members of the other health care professions.

Learning Outcomes of MBBS course :

To achieve the National goal and course objectives, a set of "Essential learning outcomes / competences" which students of the medical colleges / institutes on completion of MBBS course and at the point of graduation must be able to demonstrate has been defined.
These "essential learning outcomes / competences" are grouped under three board headings:

I The graduate with knowledge of scientific basis of Medical Practice

II The graduate as a practitioner

III The graduate as a professional

I. The graduate with knowledge of scientific basis of Medical Practice:

The graduate will understand and be able to apply basic bio-medical (anatomy, cell biology, genetics, physiology, biochemistry, nutrition, pathology, molecular biology, immunology, microbiology, pharmacology and community medicine) principles, methods and knowledge to

1.1 understand the normal processes governing homeostasis, and the mechanisms underlying the common diseases and health problems of the country.

1.2 understand the psychological and sociological concepts of health, illness and disease and explain psychological and sociological factors that contribute to illness, course of disease and success of treatment.

1.3 select appropriate investigations necessary for diagnosis of common clinical cases and explain the fundamental principles underlying such investigative procedures.

1.4 select appropriate treatment (including rational prescribing of drugs), management and referral (if in the patient's best interest) plan for common clinical cases, acute medical emergencies and minor surgical procedures.

1.5 understand biochemical, pharmacological, surgical, psychological, social and other interventions in acute and chronic illness, in rehabilitation, and end-of-life care.

1.6 understand disease surveillance and prevention, health promotion including wider determinants of health, health inequalities, health risks.

1.7 understand communicable disease control in health care facility and community settings.

1.8 understand international health status, including global trends in morbidity and mortality of chronic diseases of social significance, the impact of trade and migration on health and the role of international health organizations.

1.9 undertake critical appraisal of diagnostic, therapeutic and prognostic trials and other quantitative and qualitative studies as reported in medical and scientific literature.

1.10 understand simple research questions in biomedical and population science and the design of relevant studies.

II. The Doctor as a practitioner

2.1. The graduate will have the ability to carry out a consultation with a patient *(Appendix-III):*

2.1.1. Obtain and record an accurate medical history, including such related issues as age, gender, and socioeconomic status.

2.1.2. Perform a both comprehensive and organ system specific examinations, including a mental status examination.

2.1.3. Elicit patients' questions, understanding of their condition and treatment options, and their views, values and preferences.

2.1.4. Provide explanation, advice, reassurance and support.

2.2. The graduate will have the ability to diagnose and manage clinical cases or will refer when necessary. *(Appendix I & II):*

2.2.1. Interpret findings from the history, physical examination and mental-state examination and make an initial assessment of a patient's problems and a differential diagnosis appreciating the processes by which such diagnosis is tested scientifically.

2.2.2. Construct a plan of investigation in partnership with the patient, obtaining informed consent as an essential part of this process appreciating patient's right to refuse or limit the investigation.

2.2.3. Interpret the results of investigations, including growth charts, x-rays and the results of diagnostic procedures in *Appendix III.*

2.2.4. Synthesize a full assessment of the patient's problems and define the likely diagnosis or diagnoses.

2.2.5. Formulate a plan for management and discharge including referrals to the right professional, according to the established principles and best evidence, in partnership with the patient, their careers and other health professional as appropriate.

2.2.6. Respond to patients' concerns and preferences, obtain informed consent, recognize and respect patients' right to reach decisions about their treatment and care and to refuse or limit treatment.

2.3. **The graduate will have the ability to provide immediate care in medical emergencies in *Appendix IV:***

2.3.1. Assess and recognize the severity of a clinical presentation and need for immediate emergency care.

2.3.2. Provide basic first-aid and immediate life support.

2.3.3. Provide cardio-pulmonary resuscitation or direct other team members to carry out resuscitation.

2.4. **The graduate will have the ability to prescribe drugs safely, effectively and economically. *Appendix III:***

2.4.1. Obtain an accurate drug history, covering both prescription and non-prescription OTC drugs including complementary and alternative medications and demonstrate awareness of the existence and range of these therapies and how this might affect other types of treatment that patient are receiving.

2.4.2. Formulate appropriate drug therapy and record the outcome accurately.

2.4.3. Recognize and respect patients' right to information about their medicines.
2.4.4. Detect, mange and report adverse drug reactions.

2.5. **The graduate will have the ability to carry out practical procedures safely and effectively. *Appendix III*:**
2.5.1. Perform, measure and record the findings of diagnostic procedures.
2.5.2. Perform therapeutic procedures.
2.5.3. Demonstrate correct practice in general aspects of practical procedures.

2.6. **The graduate will have the ability to apply principles, method and knowledge of health informatics to medical practice:**
2.6.1. Keep accurate, legible and complete medical records.
2.6.2. Use effectively computers and other information systems, including storing and retrieving information.
2.6.3. Stick to the requirements of confidentiality and data protection legislation in all dealings with information.
2.6.4. Access and use effectively information sources in relation to patient care, health promotion, research and education.

2.7. **The graduate will have the ability to communicate effectively in a medical context. *(Appendix III):***
2.7.1. Communicate clearly and sensitively with patients, their relatives or other careers, and colleagues from medical and other professions by listening, sharing and responding.
2.7.2. Communicate by spoken, written and electronic methods and recognize and respect significance of non-verbal communication in medical consultation.
2.7.3. Communicate appropriately in difficult circumstances, such as in times of disclosing bad news and discussing sensitive issues, i.e. alcohol consumption, smoking or obesity.
2.7.4. Communicate appropriately with difficult, violent patients and with mentally ill people.
2.7.5. Communicate effectively in various roles, i.e. as patient advocate, teacher, manager or improvement leader.

III. The Doctor as a professional

3.1. **The graduate will apply to medical practice ethical, moral and legal principles and will be able to :**
3.1.1. Recognize and respect BM&DC's ethical guidance and standards and supplementary ethical guidance that describe what is expected of all doctors registered with BM&DC.
3.1.2. Demonstrate awareness of professional values which include excellence, altruism, responsibility, compassion, empathy, accountability, honesty and integrity, and a commitment to scientific methods.
3.1.3. Make the care of the patient the first concern and maintain confidentiality, respect patients' dignity and privacy and act with appropriate consent.
3.1.4. Respect all patients, colleagues and others regardless of their age, color, culture, disability, ethnic or national origin, gender, lifestyle, marital or parental status, race, religion or beliefs, sexual orientation or social or economic status.

3.1.5. Recognize patients' right to hold religious or other beliefs, and respect these when relevant to treatment options.

3.1.6. Know about laws and systems of professional regulation through BM & DC and others, relevant to medical practice and complete relevant certificates and legal documents and liaise with the coroner and others as appropriate

3.1.7. Use moral reasoning and decision-making to conflicts within and between ethical, legal and professional issues including those raised by economic constrains, commercialization of health care, and scientific advances.

3.2. **The graduate will be able to reflect, learn and teach:**

3.2.1. Establish the foundations for lifelong learning and continuing professional development, including a professional development portfolio containing reflections, achievements and learning needs.

3.2.2. Acquire, assess, apply and integrate new knowledge, learn to adapt to changing circumstances and ensure highest level of professional care to the patients.

3.2.3. Recognize own personal and professional limits and seek help from colleagues and supervisors as necessary.

3.2.4. Work with colleagues in ways that best serve the interests of patients, pass on information and hand over care, demonstrate flexibility, adaptability and a problem-solving approach.

3.2.5. Function effectively as a mentor and teacher, contribute to the appraisal, assessment and review of colleagues and give effective feedback.

3.3. **The graduate will be able to learn and work effectively within a multi-professional team:**

3.3.1. Recognize and respect the roles and expertise of health and social care professionals in the context of working and learning as a multi-professional team.

3.3.2. Build team capacity and positive working relationships and undertake leadership and membership roles in a multi-professional team.

3.4. **The graduate will have the ability to protect patient and improve care:**

3.4.1. Place patients' needs and safety at the center of the care process and deal effectively with uncertainty and change.

3.4.2. Know about the framework of medical practice in Bangladesh including the organization, management and regulation of healthcare provision; the structures, functions and priorities of the National Health Policy; and the roles of, and relationships between the agencies and services involved in protecting and promoting individual and population health.

3.4.3. Apply the principles of risk management and quality assurance to medical practice including clinical audit, adverse incident reporting and how to use the results of audit to improve practice.

3.4.4. Understand own personal health needs, consult and follow the advice of a qualified professional and protect patients from any risk posed by own health.

3.4.5. Recognize the duty to take action if a colleague's health, performance or conduct is putting patients at risk.

Basic Information About MBBS Course

1. **Name of the course:** Bachelor of Medicine & Bachelor of Surgery (MBBS)

2. **Basic qualifications & prerequisite for entrance in MBBS Course:**
   (i) HSC or equivalent with Science.(Biology, Physics, Chemistry)
   (ii) Candidate has to secure required grade point in the SSC and HSC examinations.

3. **Students selection procedure for MBBS course:** According to decision by the proper competent authority as per merit.

4. **Medium of Instruction:** English

5. **Duration:** MBBS course comprises of 5 Years, followed by logbook based rotatory internship for one year

75 Course structure and duration

The MBBS course is divided into four phases .

Phase	Duration	Subjects	Examination
1st phase	1½ year	Anatomy Physiology Biochemistry	First Professional MBBS
2nd phase	1 year	Community Medicine Forensic Medicine	Second Professional MBBS
3rd phase	1 year	Pharmacology & Therapeutics Pathology Microbiology	Third Professional MBBS
4th phase	1½ year	Medicine & Allied subjects Surgery & Allied subjects Obstetrics and Gynaecology	Final Professional MBBS

NB: All academic activities including professional examination of each phase must be completed within the specified time of the phase.

7. Phase wise distribution of teaching-learning hours:

1st Phase

Subject	Lecture *(in hours)*	Tutorial	Practical	Others	Integrated teaching	Formative Exam		Summative exam		Total
						Preparatory leave	Exam time	Preparatory leave	Exam time	
Anatomy	115	53	52	Dissection +Card exam 310	30 hrs	35 days	42 days	30 days	30 days	530
Physiology	120	120	100	-						340
Biochemistry	120	100	100	-						320
Total	355	273	252	310						**1190**
Behavioral science, communication skill and medical ethics will be taught through five lecturers (5 hours) within 1st phase under supervision of Community Medicine department										**5**
									Grand Total	**1195**
(Time for integrated teaching, exam. preparatory leave of formative & summative assessment is common for all subjects of the phase)										

2nd Phase

Subject	Lecture *(in hours)*	Tutorial	Practical/Demonstration	Integrated teaching	Formative Exam		Summative exam		Total
					Preparatory leave	Exam time	Preparatory leave	Exam time	
Community Medicine	110	160	COME (community based medical education):30 days (10 days day visit + 10 days RFST+ 10 days study tour)- **30 days** (10+10+10)	05	15 days	15 days	15 days	20 days	275 + 30 days
Forensic Medicine	80	55	55	05					195
Total	190	215	55	10					**470**
(Time for exam. preparatory leave and formative and summative assessment is common for all subjects of the phase)									

3rd Phase

Subject	Lecture *(in hours)*	Tutorial	Practical	Others	Formative Exam		Summative exam		Total
					Preparatory leave	Exam time	Preparatory leave	Exam time	
Parmacology & Therapeutics	100	30	50	Clinical Pharmacology 20	10 days	15 days	10 days	15 days	200
Pathology	100	100	28	-					228
Microbiology	100	45	45	-					190
Total	300	175	123	20					**618**

(Time for exam. preparatory leave and formative and summative assessment is common for all subjects of the phase)

4th Phase
Medicine & Allied Subjects

Subject	**Lecture** *(in hours)*				Tutorial classes	**Integrated teaching**	**Clinical (bedside teaching),** ***in weeks***			**Total weeks**	**Block posting**	**Formative Exam**	**Summative exam**
	2nd phase	3rd phase	4th phase	Total			2nd phase	3rd phase	4th phase				
Internal medicine	26	24	110	160	200	20 hrs.	14	06	12+2(OPD)	34	4 weeks	Preparatory leave-15 days Exam time -15 days	Preparatory leave-15 days Exam time -30 days
Psychiatry	-	-	20	20	-		-	03	-	03			
Dermatology	-	-	20	20	-		-	03	-	03			
Pediatrics	04	20	26	50	25		04	-	06	10			
Physical Medicine	-	-	05	05	-		-	02	-	02			
Emergency	-	-	-	-	-		02			02			
Total	30	44	181	**255**	**225**	**20 hrs.**	20	14	20	54	4 weeks		
Grand Total	**500 hours**						**58 weeks**					**75 days**	

Time for exam, preparatory leave, formative & summative assessment is common for all subjects of the phase

Preventive aspects of all diseases will be given due importance in teaching learning considering public health context of the country and others parts of the world.

Related ethical issues will be discussed in all clinical teaching learning

Surgery & Allied Subjects

Subject	Lecture *(in hours)*				Tutorial/Practical/Demonstration	Integrated teaching	Clinical/Bedside teaching (in week)			Total Weeks	Block posting	Formative Exam	Summative Exam
	2nd Phase	3rd Phase	4th Phase	Total			2nd Phase	3rd Phase	4th Phase				
General Surgery	35	30	60	125	200	20	12+4	-	6	22	4 wks	Preparatory leave -15 days Exam time –15 days	Preparatory leave -15 days Exam time –30 days
Orthopaedics	5	10	30	45			-	4	4	8			
Radiology	-	-	5	5			1	-	-	1			
Radiotherapy	-	-	8	8			-	1	-	1			
Transfusion medicine	-	5	-	5			1	-	-	1			
Anesthesia	-	10	-	10			1	-	-	1			
Neurosurgery	-	2	5	7			-	1	-	1			
Pediatric Surgery	-	5	10	15			-	-	2	2			
Urology	-	5	10	15			-	-	2	2			
Burn Plastic Surgery	3	-	2	5			-	-	1	1			
Emergency & casualty	-	-	-	-			-	-	1	1			
Dentistry	-	-	-	-			1	-	-	1			
Ophthalmology	-	40 hrs		40			-	4	4	8			
Otolaryngology	-	40 hrs		40			-	4	4	8			
Total	300 hrs				200	20	20 wks	14 wks	24 wks	58wks	4wks		
Grand total	**520 hours**						**62 weeks**					**75 days**	

(Time for exam. preparatory leave and formative & summative assessment is common for all subjects of the phase)

Preventive aspects of all diseases will be given due importance in teaching learning considering public health context of the country and others parts of the world.

Related ethical issues will be discussed in all clinical teaching learning

Obstetrics & Gynaecology

Lecture		Tutorial / Demonstration	Integrated Teaching	Total hours	Clinical bed side teaching in 3rd & 4th phase	Block placement	Formative Exam		Summative exam	
3rd Phase	4th Phase						Preparatory leave	Exam time	Preparatory leave	Exam time
30 hrs	70 hrs	85 hrs	15hrs	200 hrs	16 weeks (8+8)	4 weeks	15 day	15 day	15 day	30 day

(Time for exam. preparatory leave and formative & summative assessment is common for all subjects of the phase)

Preventive aspects of all diseases will be given due importance in teaching learning considering public health context of the country and others parts of the world.

Related ethical issues will be discussed in all clinical teaching learning

8. **Teaching & learning methods**

The following teaching and learning methods will be followed:

Large Group Teaching:

- Lecture
- Seminar

Small Group Teaching:

- Tutorial
- Demonstration
- Students interaction
- Problem Based Learning (PBL)

Practical session:

- Use of practical manual
- Performing the task/examination by the student
- Writing the practical note book

Field Placement (Community based medical education):

- In small groups for performing activities by the student themselves

Clinical teaching:

- In ward, OPD, OT, POW, ED, ICU, etc.
- By concerned persons

Integrated teaching

Encourage to learn ICT through computer lab of the college.

9. **Assessment:**

A. There will be in-course (card/item/term) and end-course (professional) assessment for the students in each phase (1st, 2nd, 3rd & 4th phase) of the course i.e. formative and professional examination.

B. Formative assessment will be done through results of items, card and term ending examination & class attendance.

C. For formative assessment, 10 % marks of written examination of each paper of each subject is allocated

D. For MCQ of each paper, 20% marks are allocated. There will be separate answer script for MCQ part of examination. Total number of MCQ will be 20.

E. For SAQ of each paper, 70% marks are allocated

F. Oral part of the examination will be structured

G. OSPE / OSCE will be used for assessing skills/competencies. Traditional long & short cases will be also used for clinical assessment

H. There will be phase final professional examination within the each academic phase.

I. <u>Eligibility for appearing in the professional examination</u>:

- Certificate from the respective head of departments regarding students obtaining at least 75% attendance in all classes (theory, practical, tutorial, residential field practice, clinical placement etc.) during the phase.
- Obtaining at least 60% marks in examinations.
- No student shall be allowed to appear in the professional examinations unless the student passes in all the subjects of the previous professional examinations

J. Pass Marks:

Pass marks is 60%. Student shall have to pass written (MCQ + SAQ + formative), oral, practical and clinical examination separately.

K. Examinations & distribution of marks:

First Professional Examination

Subjects	Written Exam marks	Structured Oral Exam marks	Practical Exam marks		Formative Exam marks	Total Marks
			Soft part	Hard part		
Anatomy	180	150	75	75	20	500
Physiology	180	100	100		20	400
Biochemistry	180	100	100		20	400
Total						1300

Second Professional Examination

Subjects	Written Exam marks	Structured Oral Exam marks	Practical Exam marks	Formative Exam marks	Total Marks
Community Medicine	90	100	100	10	300
Forensic Medicine	90	100	100	10	300
Total					600

Third Professional Examination

Subjects	Written Exam marks	Structured Oral Exam marks	Practical Exam marks	Formative Exam marks	Total Marks
Pharmacology & Therapeutics	90	100	100	10	300
Pathology	90	100	100	10	300
Microbiology	90	100	100	10	300
Total					900

Fourth Professional Examination

Subjects	Written Exam marks	Structured Oral Exam marks	Clinical	Practical	Formative Exam marks	Total Marks
Medicine & Allied Subject	180	100	100	100	20	500
Surgery & Allied Subject	180	100	100	100	20	500
Obstetrics & Gynecology	180	100	100	100	20	500
Total						1500

L. Common Rules for Examinations

a) University professional examination to be started from May and November.

b) University professional examinations will be completed within the specified time of the concerned phase

c) No carry on system before passing 1st professional examination

d) After passing 1st professional examination students can appear for 2nd professional examinations if all other prerequisites for 2nd professional examination are fulfilled. In the mean time students can attend clinical ward placement, teaching learning.

e) To appear 3rd professional examination students have to pass all the subjects of previous 2nd professional examination if all other prerequisites are fulfilled. In the mean time students can attend clinical ward placement, teaching learning. Students can also attend the classes of subjects of 4th phase

f) To appear 4th (Final) professional examination students have to pass all the subjects of previous 3rd professional examination if all other prerequisites are fulfilled. In the mean time students can attend clinical ward placement, teaching learning.

M. Few directives and consensus about the following issues of assessment:

i. Incase of OSPE/OSCE- Instruments/equipments to be taken to oral boards to ask open questions to the students apart form Structured Oral Examination (SOE). There will be scope of instruments related viva, specially in clinical subjects and where applicable. Central OSPE/OSCE from Dean Office after moderation will be encouraged.

ii. Incase of Structured Oral Examination (SOE), instead of preparing specific structured question, topics will be fixed considering wide range of contents coverage. Rating scale will be used for marking the students concurrently. Each student will be asked questions from all topics of the set. Equal or average duration of time will be set for every student.

10. Internship :

After passing final professional MBBS examination students have to enroll for one year log book based rotatory internship programme. Within this one year 11 months and 15 days at medical college hospital and 15 days at UHC. Internship programme will be more structured and supervised.It is compulsory to complete Internship Training Programme designed by BM&DC to get permanent registration for doing independent practice.

Anatomy

Departmental Objectives

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

- mention, identify, show, draw and describe the structural components of the body responsible for carrying out normal body functions;
- use the above knowledge to understand, correlate and appreciate the other pre-clinical, para-clinical and clinical medical subjects;
- apply the knowledge of Anatomy with the knowledge of other medical subjects to provide optimum health services in the country and abroad.

List of Competencies to acquire :

- Adequate knowledge of the structural components of the body & correlate it with normal body functions.
- Using the above knowledge to understand, correlate and appreciate the other subjects to be taught in the para-clinical and clinical medical courses.
- Applying the knowledge of Anatomy with the knowledge of other medical subjects to provide optimum health services in the country and abroad.

Distribution of teaching - learning hours

Lecture	Tutorial	Practical (Histology)	Demonstration +Dissection +Card exam	Total Teaching hours	Integrated teaching in for phase I	Formative Exam		Summative exam	
						Preparatory leave	Exam time	Preparatory leave	Exam time
115 hrs	53hrs	52 hrs	310hrs	530hrs	30 hrs	21+14= 35 days	42 days	30days	30 days
(Time for exam. preparatory leave and formative & summative assessment is common for all subjects of the phase)									

Teaching - learning methods, teaching aids and evaluation

Teaching Methods			Teaching aids	In course evaluation
Large group	Small group	Self learning		
Lecture Integrated teaching	Tutorial Practical Demonstration	Self-study & self-assessment	Computer / laptop & Multimedia OHP, Transparency & Transparency marker White board & different colour white board markers Black board & white and coloured chalks Cadavers, prosected parts, bones, viscera Slide and slide projector Microscope	• Item Examination • Card Final Examination (written/oral + practical) • Term Final Examination (written, oral+ practical)

Related Equipments: Flip Chart, Photograph, Model, X-ray films (CT scan and other imaging films), View box, Diagram, Preserved specimens, Living body for surface marking, Simulation.

1st Professional Examination:

Marks distribution of Assessment of Anatomy

Total marks – 500

- Written=200 (Formative 20+MCQ 40+SAQ140)
- SOE=150
- Practical=150

Learning Objectives and Course Contents in Anatomy

Learning Objectives	Contents	Teaching hours Total : 12 hrs
General Anatomy Student will be able to • define anatomy, explain the subdivisions of anatomy • describe the anatomical terminology, planes & positions • define bone. Describe the composition ,blood supply, functions & ossification of bones. • describe composition characteristics, location and functions of different types of cartilages. • define & classify joints, the characters, stability & movements of joints and correlate with the clinical conditions • classify muscles, their properties and functions and also classify skeletal muscle morphologically & functionally • define & classify blood vessels, • describe the systemic, portal & pulmonary circulation. • describe different types of vascular anastomosis with their functional & clinical implications. • describe components ,functions & the general plan of lymphatic drainage of the whole body. • classify & describe the functions of lymphoid organs	**CORE :** • Definition, subdivisions of Anatomy and its importance in the study of medicine. • Anatomical terminology and anatomical planes & positions. • Skeletal system- Bones – classification, composition, functions, parts of a developing long bone ,blood supply, periosteum & endosteum. Ossification-definition, centres, processes. Factors affecting growth of bone.. • Cartilages- composition, types , characters ,locations and functions • Joint: classification, characteristics of each type & movements, stability of the joints. Clinical conditions associated with joints .General plan of blood supply & nerve supply of joints. • Muscular system, classification, characteristics and functions . Skeletal muscle -classification • Blood vascular system: component parts. General plan. Structure, classification Differences between different types of vessel. Nutrition & innervations of vessels Circulation : types, characteristic features of each type • Lymph vascular system : components, characteristic features of lymph capillaries .Differences with blood capillary .Lymphoid organs: classification & functions	**TERM I** 01 hr 01 hr 03 hrs 01 hr 02 hrs 01 hr 02 hrs 01 hr

Learning Objectives	Contents	Teaching hours
Student will be able to • Describe the basic facts on origin of life, evolution of life and animal kingdom.	**Additional:** • Origin of life on earth. • Evolution of life on earth. • The animal kingdom	
Cell Biology Student should be able to: • define and describe the human cell & its constituents ,structure & functions of cell membrane. • describe the structure & functions of nucleus • describe the structure & functions of organelles & inclusions • describe the features of different types of cells: protein secreting, ion transporting, steroid secreting, mucus secreting, antibody producing cell. ***Human Genetics*** Students will be able to: • define terms related to human genetics • describe the different basic features of chromosomes • explain structure, function, basis of protein synthesis of DNA & RNA • define allele homozygous, Heterozygous karyotyping • explain Mendel's Law of inheritance & Lyon's hypothesis	**CORE:** • Human Cell-Basic organization, types constituents, cell membrane • nucleus • cytoplasm & organelles and inclusions • Functional correlation of different types of cell with their particular-nuclear, cytoplasmic, membrane and surface feature **CORE:** Terms & definitions: Gene, Gene locus, genome, genotype, phenotype, genetic trait etc. • Chromosomes: Structure, types, bio-chemical nature, & chromosomal disorders • DNA and RNA: Structure, function, basis of protein synthesis • Allele , homozygous, Heterozygous Karyotyping **Additional:** • Mendels law of inheritance & Lyon's hypothesis • Outline of recent advances in Genetics • Principles of genetic engineering • Principles of cloning	**Total:06 hrs.** **TERM I** 02 hrs 01 hr 02 hrs 01hr **Total: 04 hrs** **TERM I** 01hr 01 hrs 01 hrs 01 hr

Learning Objectives	Contents	Teaching hours Total :12 hours
General Histology Student should be able to: • define and classify the basic tissues in the body • describe the different types, characters, distribution and the functions of epithelial tissue describe the cell Surface specialization & Junctional complexes. • describe the composition, characters, distribution and the functions of connective tissue. Describe the structure & functions of different types of connective tissue cells • describe the histological structures of smooth muscle, cardiac muscle & skeletal muscle. Describe the mechanism of muscle contraction. • describe the structure & functions of neuron & neuroglia	***General Histology*** **Basic tissues:** Definition, Classification, Components, Characters, Distribution and Functions of • Epithelium -Surface epithelium -glandular epithelium • Connective tissue - Proper - special • Muscular tissue -smooth -cardiac -skeletal • Nervous tissue -neurons -neuroglia	**TERM I** 04hrs 04 hrs **TERM II** 02 hrs **TERM III** 02 hrs

Learning Objectives	Contents	Teaching hours Total 18 hrs
Systemic Histology: Students will be able to describe the histological structures of different parts of body system	***Systemic Histology*** **:** histological structures of • Respiratory system • Vascular system • Lymphoid organs • Digestive system & associated Glands • Exocrine glands (salivary) • Urinary system • Endocrine glands • Male reproductive system • Female reproductive system • Integumentary system • Special sense organs	**TERM I** 01 hr 01 hr **TERM II** 02 hrs 03 hrs 01 hr 02 hr 02 hrs 02 hrs 02 hrs **TERM III** 01 hr 01 hr

Learning Objectives	Contents	Teaching hours Total 18hrs
General Embryology Students will be able to: • define terms related to embryology • explain the significance of study of embryology • explain proliferation, growth, differentiation, inductors, evocators and organiser • describe different types of cell division • describe chromosomal changes during cell division with anomalies • describe oogenesis and spermatogenesis • describe the process of fertilization • describe the events of 1st week of development. • describe the events2nd week of development. • describe the events 3rd week of development. • describe the development & derivatives of ectoderm, mesoderm & endoderm. • explain the development of foetal membranes • explain the development of twins & their types. • describe the causes & types of congenital anomalies • explain the process of human evocation • describe the Molecular regulation & cell signaling pathways	**CORE:** • Introduction: Terms and Definition Significance of study of embryology Basic process of development : proliferation, growth, differentiation, inductors, evocators and organizer • Cell division: Types • Gametogenesis and maturation of Germ cells. • Fertilization: Events, factors influencing the fertilisation Progress in 1st week of development • Progress in 2nd week of development. • Progress in 3rd week of development. • Derivatives of germ layers: ectoderm, mesoderm & endoderm. • Foetal membranes : Placenta, Chorion, Amnion, Umbilical cord, Yolk sac etc. • Twins Teratology **Additional:** • Human Evolution • Concepts of medical biotechnology in relation to embryology • Molecular regulation &cell signaling	**TERM I** 01 hr 01 hr 02 hrs 02 hrs 02 hrs 02 hr 02 hrs 01 hr **TERM II** 03 hrs 02 hrs

Learning Objectives	Contents	Teaching hours Total 24 hrs
Systemic Developmental Anatomy Student will be able to: • describe the process of development of different body system • describe the developmental anomalies of different body system • mention general outline of development of: Thoracic duct, Cysterna chyli, Inferior Vena Cava, Superior Vena Cava, Portal Vein, Brachiocephalic veins, & Renal veins.	**CORE:** Development and their Anomalies of • Skeletal system & vertebral column Muscular system • Upper and lower limb • Digestive system with associated glands • Respiratory system • Cardiovascular System & aortic arches • Coelomic cavity & the diaphragm • Skin & mammary gland • Urinary system • Male and female Reproduction system • Pituitary & suprarenal gland • Face & neck & their associated organs • Nervous System • Eye & Ear **Additional:** Development of • Lymphatic System • Vascular System	**TERM II** 02 hrs 01 hr 03 hrs 01 hr 03 hrs 01 hr 01 hr 02 hrs 03 hrs **TERM III** 01 hr 03 hrs 02 hrs 01 hr

Learning Objectives	Contents	Teaching hours Total 21 hrs
Neuroanatomy Students will be able to: • classify nervous system. Describe composition of grey matter and white matter • explain the structure, process of myelination, degeneration & regeneration of nerve fibres • define & classify synapse, receptors .describe the structure & functions of receptor & synapse • define autonomic nervous system, describe the different parts of autonomic nervous system .nerve plexuses & ganglia Pia, arachnoid and dura mater Extension, folds, spaces, nerve supply & blood supply • explain blood brain & blood CSF barrier • describe the formation, composition, circulation, absorption & functions of CSF • describe the ventricles of brain • describe the different lobes, Gyri, sulci and important functional areas with effects of lesion .Explain the mode of blood supply of cerebrum	**CORE:** • Introduction to Nervous system, • Nerve fibres, : structure classifications & functions, myelination degeneration, regeneration • Receptors : structure classifications location & functions • Synapse : structure classifications & functions • Autonomic nervous system, autonomic nerve plexuses & ganglia • Coverings of brain and spinal cord, Pia, arachnoid and dura mater Extension, folds, spaces, nerve supply & blood supply Barriers of brain • Cerebrospinal fluid (CSF) • Ventricles of brain • **Motor system** Cerebrum: Lobes: gyri, sulci Functional Areas ,Blood supply	**TERM I** 01 hr **TERM III** 01hr 01 hrs **TERM I &** **TERM II** 02 hrs **TERM III** 02 hrs 02 hrs

Learning Objectives	Contents	Teaching hours
Neuroanatomy Students will be able to: • describe Pyramidal & extrapyramidal system & effects of their lesion • describe functional lobes, nuclei, peduncles, blood supply, functions & clinical conditions of cerebellum • describe location,, parts, blood supply, functions & clinical conditions of basal nuclei • classify cranial nerves, explain functional components and cranial nerve nuclei, and describe the course of III, IV,V,VI,VII, IX, X, XI, XII cranial nerves . • explain & define dermatome & axial line • describe the ascending tracts with effects of lesions • describe the thalamus, hypothalamus • explain functional components nuclei, and course of I, II,VIII, cranial nerves . Explain the smell, visual & auditory pathway • describe the length, extension, enlargements sections of spinal cord at different level • describe the parts , blood supply and significance of brain stem. • describe the cross sections of midbrain , pons & medulla oblongata at different level • describe the arrangement & functions reticular formation • describe the parts & functions of limbic system	**CORE:** • Pyramidal & extrapyramidal system • Cerebellum: parts , functions , blood supply, clinical conditions • Basal nuclei : locations, parts , functions artery supply & clinical conditions • Motor & mixed cranial nerves • **Sensory system:** Dermatome & axial line • Ascending tracts of spinal cord • Diencephalon : parts & functions • Sensory cranial nerves & Smell, visual & auditory pathway • Spinal Cord: Length, extension, Enlargement ,Blood supply, Cross-sections at different level Brain stem : blood supply, cross sections at different levels • Reticular formation • Limbic system	**TERM III** 02 hrs 01 hr 01 hr 02 hr 01hr 01 hr 01 hr 02 hrs 01hr

Learning Objectives	Contents	Teaching hours
Living (surface) Anatomy Students will be able to: • locate and count ribs and costal cartilages • draw and demonstrate on the surface of the body important anatomical points and structures of Thorax	**Thorax** **CORE:** • Counting of ribs and costal cartilages • Heart- apex and borders • Lung-borders and apex, • Trachea & Bronchi • Esophagus • Triangle of auscultation • Jugular notch • Sternal angle • Area of Superficial Cardiac dullness Common carotid and subclavian artery Internal thoracic artery	06 hrs.
Students will be able to: • draw and demonstrate on the surface of the body important anatomical points and structures of Superior extremity	**Superior extremity** **CORE** • Nerves: Radial, Ulnar, Median nerve, Axillary nerve • Arteries: Brachial, Radial ,Ulnar artery, Superficial and deep palmar arch • Veins: cephalic, basilic & Median cubital vein • Flexor retinaculum • Anatomical snuff box • Medial humeral epicondyle	04 hrs.

Learning Objectives	Contents	Teaching hours
Living (surface) Anatomy Students will be able to: • locate, demonstrate on the surface of the body the different anatomical planes and land marks • draw, demonstrate on the surface of the body the nine regions of the abdomen • draw and indicate inguinal canal on the surface of the body • draw and demonstrate on the surface of the body Important anatomical points, borders and parts of important organs of abdomen Students will be able to: • locate and demonstrate on surface of the body important points and structures of inferior extremity	**<u>CORE:</u>** ***Abdomen*** • Trans-pyloric plane, Trans tubercular plane, Subcostal plane, mid clavicular line • Regions of abdomen • Superficial & deep inguinal ring. Inguinal canal • Abdominal aorta & inferior vena cava • Stomach, Duodenum, Pancreas, Liver, Gall bladder, Bile duct , spleen, Kidney from back & Mac Burney's point. • Transverse colon, ureter from front and back, celiac trunk , splenic artery, Root of the mesentery. **Inferior extremity** • Common peroneal nerve, Tibial nerve • Popliteal artery • Anterior & posterior tibial artery • Arteria dorsalis pedis • Great Saphenous vein • Small Saphenous vein • Adductor tubercle • Lateral and Medial Malleolus • Greater trochanter of femur • Anterior superior iliac spine **<u>Additional</u>** • Femoral nerve, sural nerve, Medial and lateral plantar artery, plantar arch.	6 hrs. 4 hrs.

Learning Objectives	Contents	Teaching hours
Students will be able to: • draw and demonstrate on the surface of the body important anatomical points and structures of Head and Neck	**Head and neck** • Facial artery , Facial vein • Internal jugular vein, External jugular vein • Common Carotid artery & its bifurcation • Facial Nerve & their branches • vagus nerve in the neck • Parotid gland and its duct • Frontal and maxillary air sinuses • Thyroid gland • Tip of the coracoid process • Inferior angle of scapula • Tip of the 7^{th} cervical spine **Additional:** • Pterion, lambda • Middle meningeal artery	04 hrs.

Learning Objectives	Contents	Teaching hours
Anatomy of Radiology & Images Students will be able to: • describe Radio opaque structures Radio-lucent structures • identification and location of normal structures by: Radiography	**CORE** Radio opaque structures Radio-lucent structures *Plain X-ray of the* -chest PA view -abdomen AP view -pelvis AP view -arm including proximal & distal joints AP & lateral view -forearm including proximal & distal joints AP & lateral view -hand including proximal & distal joints -thigh including proximal & distal joints AP & lateral view -leg including proximal & distal joints AP & lateral view -foot including proximal & distal joints AP & lateral view -head & neck (cervical spine) AP & lateral view -Paranasal sinuses OM view **Additional:** • Common normal Ultrasonographs, Isotope scan, • Magnetic Resonance Images (MRI), CT Scan • Coronary Angiograph	

Learning Objectives	Contents	Teaching hours
Clinical Anatomy Students will be able to: • describe the anatomical basis of clinical disorder of thorax, abdomen.	***Thorax*** • Pleurisy / Pleural effusion • Pneumothorax • Coronary artery disease • Pericarditis/ pericardial effusion • Flail chest • Paralysis of the diaphragm ***Abdomen*** • Portal vein obstruction • Hydrocele • Hernia • Peritonitis, ascitis • Gastric ulcer • Duodenal ulcer • Gall stone/cholecystitis • appendicitis • Benign hyperplasia of prostate, Prostatic cancer • Cystocele • Stress incontinence • Rupture urethra • Salphingitis • Ectopic pregnancy • Prolapse of uterus / vagina • Haemorrhoids • Undescended testis • Psoas abscess • Ischiorectal abscess	

Learning Objectives	Contents	Teaching hours
Clinical Anatomy Students will be able to: • describe the anatomical basis of clinical disorder of Head & Neck, CNS & Extremities	***Head & Neck*** • Fracture of the skull bones • Scalp injury • Piriform fossa and foreign body • Otitis media • Sinusitis • Epistaxis • Tonsilitis • Swelling of thyroid gland • Mumps • Cavernous vein thrombosis • Cervical rib ***CNS & Eyeball*** • Injury to brain /eye ball / spinal cord/cranial nerves • Meningitis • Hydrocephalus • Cerebral ischaemia • intracranial haemorrhage (extradural,subarachnoid, cerebral) papilledema Horner syndrome ***Superior extremity*** • Dislocation of shoulder joint • Brachial plexus & injury to its nerves • Carpal tunnel syndrome • Colle's fracture • Breast abscess & breast cancer ***Inferior extremity*** • Varicose vein • Deep vein thrombosis • Nerve injury • Dislocation of hip joint • Rupture of menisci & cruciate ligament,Bursitis • Deformities of foot	.

Learning Objectives	Contents	Teaching hours
Clinical Anatomy Students will be able to: • describe the anatomical basis for selection of arteries ,veins & Muscles of clinical importance. • demonstrate the different auscultatory areas • describe the anatomical basis for clinical procedure of Thorax, Abdomen, Head & Neck , CNS &Eyeball Extremities	• Arterial pulsation • Intravenous injections • Intramuscular injection • Apex beat, mitral ,tricuspid, aortic & pulmonary areas • Sternal puncture • Pleural effusion • pericardial effusion • Coronary angiogram • Bronchoscopy • Laryngoscopy • Paracentesis /peritoneal dialysis • Liver abscess • Vasectomy • Tubal ligation • Nasogastric intubation • Palpation of Cervical lymph node • Lumbar puncture • Epidural/spinal anaesthesia • Pudendal block • Fundoscopy	

Regional Anatomy : THORAX CARD
(DISSECTION, DEMONSTRATION & TUTORIAL)

Learning Objectives	Contents	Teaching hours
Students will be able to: • demonstrate the boundary & identify the contents of thoracic wall, thoracic cavity mediastinum & inter costal space • identify & demonstrate the gross features of bones & joints of thorax • describe the formation , course ,branches & distribution of Spinal nerve / intercostal nerve • identify & demonstrate the surfaces, borders, parts, chambers- including structures within the chambers of the heart • explain blood supply & nerve supply of heart • identify & demonstrate the layers of pericardium • identify & demonstrate the surfaces, borders, fissures, lobes, hilus & bronchopulmonary units of the lung • identify & demonstrate the layers & parts of pleura. • explain the blood supply, lymphatic drainage & nerve supply of lung & pleura. • identify & demonstrate the trachea bronchus & bronchial tree. • explain blood supply & nerve supply of trachea & bronchial tree. • explain the blood supply, nerve supply & lymphatic drainage of thoracic wall. • identify & demonstrate the surfaces, parts openings, attachments of the diaphragm. • explain the blood supply & nerve supply of the diaphragm. • explain the significance of the orifices of the diaphragm. • explain & demonstrate the extension ,parts ,relations & constrictions of oesophagus • explain the blood supply, lymphatic drainage & nerve supply of the oesophagus. • correlate clinical conditions associated with structures of thorax (Heart with its vessels, lung, trachea, bronchus, bronchial tree & the Diaphragm)	• Thoracic wall formation, thoracic cavity, intercostal space and mediastinum. • Bones and joints of the thorax • Spinal nerve / intercostal nerve • Heart with pericardium. • Lung with pleura, trachea and bronchus. Blood vessels, nerves and lymphatics of the thorax. • The diaphragm. • oesophagus • Clinical Anatomy	49 hrs.

Regional Anatomy: SUPERIOR EXTREMITY CARD (DISSECTION, DEMONSTRATION & TUTORIAL)

Learning Objectives	Contents	Teaching hours
Students will be able to: • identify & demonstrate muscles, vessels, nerves of pectoral region including attachment of muscles • describe the parts of mammary gland & its blood supply, lymphatic drainage & nerve supply • demonstrate the boundary & identify the contents of axilla, Quadrangular & triangular spaces, & cubital fossa • demonstrate the attachments of muscles, and identify vessels, nerves, lymphatics & lymph nodes of different parts of superior extremity • demonstrate the gross features of bones & joints of superior extremity and muscles acting on joints • correlate clinical conditions associated with structures (nerves, vessels, bones, joints) of superior extremity	• Pectoral region with mammary gland • Axilla • Superficial dissection of the upper limb, back and scapular region including quadrangular & triangular space Front of the arm , forearm and palm • Back of the arm, forearm and dorsum of the hand • Blood supply, lymphatic drainage, cutaneous innervation & dermatome of superior extremity • Bones & joints of the upper limb • Removal of the limb • Clinical Anatomy	42 hrs.

Regional Anatomy: ABDOMEN CARD
(DISSECTION, DEMONSTRATION & TUTORIAL)

Learning Objectives	Contents	Teaching hours
Students will be able to: • demonstrate the different layers of anterior abdominal wall & hernial region • explain clinical types of hernia • demonstrate the different parts of GI Tract & its peritonium • explain their mode of blood supply, lymphatic drainage & nerve supply • demonstrate the features of liver, pancreas, supra renal gland & different parts of biliary system • explain blood supply, lymphatic drainage & nerve supply of them. • demonstrate the features of kidney, ureter, urinary bladder, & urethra • explain their blood supply, lymphatic drainage & nerve supply • demonstrate the features of different parts of male & female reproductive system. • explain their blood supply, lymphatic drainage & nerve supply. • demonstrate the muscles and identify the vessels, nerves & lymphatics of posterior abdominal wall • demonstrate the parts and identify the contents of the pelvis • differentiate between male & female pelvis • demonstrate the gross features & joints of lumbar vertebra & bony pelvis and muscles acting on joints • correlate with clinical conditions associated with different organs of the abdomen	• Anterior wall of the abdomen with hernial region. • Stomach, abdominal part of the oesophagus; coeliac artery. • Duodenum, pancreas and spleen. • The mesentery and mesenteric vessels, jejunum and ileum. • Large intestine. rectum &anal canal • Liver with the biliary appartus including gall bladder; portal vein. • Kidney, suprarenal gland and ureter. • Muscles, blood vessels, lymphatics and nerves of the posterior abdominal wall. • Muscles, blood vessels lymphatics, nerves and the pelvis; urinary bladder. • Ovary, uterus, uterine tube, female external organs and perineum. • Vas deferens, seminal vesicle, prostate and male external genital organs. • Lumbar vertebra, bony pelvis &joints • Clinical Anatomy	103 hrs.

Regional Anatomy: INFERIOR EXTREMITY CARD (DISSECTION, DEMONSTRATION & TUTORIAL)

Learning Objectives	Contents	Teaching hours
Students will be able to: • demonstrate muscles attachments and identify vessels & nerves of different parts of inferior extremity • demonstrate the boundary and identify the contents of femoral triangle, adductor canal, popliteal fossa & sole of the foot • demonstrate the features of bones, joints, & muscles acting on joints • explain the Venous drainage, lymphatic drainage, & dermatome of inferior extremity • correlate the clinical conditions associated with structures (nerves, vessels, bones, joints) of inferior extremity	• Front and medial side of the thigh • Gluteal region and back of the thigh • Front of the leg and dorsum of the foot • Lateral side, medial side and back of the leg including the popliteal fossa sole of the foot • Bones & joints of lower limb • Arches of the foot • Removal of lower limb • Blood supply, lymphatic drainage, cutaneous innervation & dermatome of inferior extremity • Clinical Anatomy	41 hrs.

Regional Anatomy: HEAD & NECK CARD
(DISSECTION, DEMONSTRATION & TUTORIAL)

Learning Objectives	Contents	Teaching hours
Students will be able to: • identify and demonstrate the different parts of bones of head & neck , joints, & muscles acting on joints • state the gross features & attachments of skull bones including base of skull & cervical vertebrae. • demonstrate movements of joints of Head & Neck • demonstrate the layers of scalp identify the contents of temporal region • demonstrate the boundary of face and identify muscles and sensory supply of face • identify parotid gland & duct & explain the structures within the parotid gland • demonstrate the boundary and identify contents of anterior triangle, posterior triangle, sub-occipital triangle & sub-mandibular region • demonstrate the boundary and identify contents of mouth cavity • demonstrate the gross features & nerve supply of tongue • explain Auditory pathway (VIII – cranial nerve) • demonstrate the parts of pharynx with their extension & muscles of pharynx the walls of nose and paranasal air sinuses the extension, cartilages & muscles of larynx • identify structures present in the internal surface of the larynx • demonstrate the region of vertebral column and attachments of muscles of the back • demonstrate the different parts of external, middle & internal Ear • correlate important clinical conditions associated with structures in Head & Neck (Thyroid gland, parathyroid gland, air sinuses, Larynx, scalp, ear, face etc.)	• Bones & joints of head and neck • Scalp and temporal region • Face and orbit • Anterior triangle and submandibular region including thyroid gland • Posterior triangle • Mouth and tongue • Pharynx • Nose and paranasal sinuses • Larynx • Vertebral column and deep dissection of the • Organs of hearing and equilibrium. • Clinical Anatomy	88 hrs.

Regional Anatomy: CENTRAL NERVOUS SYSTEM & EYEBALL CARD (DISSECTION, DEMONSTRATION & TUTORIAL)

Learning Objectives	Contents	Teaching hours
Students will be able to: • demonstrate ❑ the boundary & contents of cranial cavity & orbit ❑ the different parts of brain & cranial nerves attached to brain ❑ the layers of meninges- Pia, arachnoid, and durameter • explain the processes of dura & its contents • explain the blood supply & nerve supply of the meninges • demonstrate the boundary of different lobes of cerebrum, sulci, gyri & important functional areas • explain the blood supply of cerebrum including the formation of Circle Willis • demonstrate the parts & describe the functions & connections of ❑ diencephalon, pituitary gland, basal nuclei, ❑ internal capsule, extra pyramidal system & ❑ limbic system, brain stem • locate &describe • the nuclei, course, functional components & distribution of cranial nerves • the boundary & parts of ventricles circulation of CSF through ventricles • gross features of spinal cord and its meninges and spinal nerves attached to it • the coats of eyeball & the course of optic nerve • explain Refractive Media explain the effects of lesion and loss of blood supply to different parts of nervous system.	• Introduction to the nervous system, cranial cavity and orbit. • General examination of the brain • Superficial attachments of cranial nerves • meninges of the brain Cerebrum.:lobes of cerebrum, sulci gyri & important functional areas blood supply formation of Circle Willis. Diencephalon:Thalamus, hypothalamus, metathalamus, epithalmus and pituitary gland • Basal nuclei, internal capsule, extra pyramidal system and limbic system • Brain stem and reticular formation • Cranial nerves • Ventricles and cerebrospinal fluid Spinal cord & spinal nerves • Visual apparatus including the eyeball • Clinical Anatomy.	40 hrs

Cell Biology & Histology Tutorial & Practical (Card I)

Learning Objectives	Contents	Teaching hours
Students will be able to: • demonstrate different parts of microscope & how to handle it • state the principles of tissue preparation • explain cell division • identify different types of tissue on slide under microscope	• Microscope: Parts & how to handle Principles of different types of microscopy • Principles of tissue preparation and staining: Fixation, embedding, sectioning & routine staining • Cell and cell division • Epithelium: Simple squamous, cuboidal, columnar Pseudo stratified Stratified squamous, cuboidal Stratified columnar Transitional • Connective tissue:: General, special ,bone, cartilage • Muscular tissue: Smooth, skeletal & cardiac muscle • Nervous tissue in general	17 hrs.

Cell Biology & Histology Tutorial & Practical (Card II)

Learning Objectives	Contents	Teaching hours
• Students will be able to identify different structures of the following systems on slides under microscope: Respiratory system. Cardiovascular system Digestive system and & associated Glands. Urinary system Male reproductive system and associated glands female reproductive system and associated glands	• Respiratory system Larynx, trachea, bronchial tree and Lung • Large artery, medium sized artery, large vein • Digestive system & associated glands Tongue, pharynx, oesophagus, stomach, small intestine & large intestine (including vermiform appendix) Liver and gall bladder, Pancreas • Urinary system Kidney, ureter, urinary bladder, urethrae • Male reproductive system and associated glands Testis, epididymis, vas deferens, seminal vesicle, prostate • Female reproductive system and associated glands Ovary, fallopian tube, uterus, vagina • Mammary gland , placenta	17hrs.

Cell Biology & Histology Tutorial & Practical (Card III)

Learning Objectives	Contents	Teaching hours
• Students will be able to identify following structures on slides under microscope: Lymphatic system Salivary glands Nervous system Endocrine system Special sense organs Skin	• Lymphatic system Lymph node, tonsil, spleen & thymus • Exocrine glands (salivary glands} • Nervous system spinal cord, cerebrum, cerebellum, peripheral nerve (including the optic nerve) • Endocrine gland (Pituitary, Thyroid, Parathyroid, Adrenal and Islet's of Langerhans • Special sense organs: Eyeball (cornea, retina), internal ear • Thick skin & thin skin	18 hrs.

Integrated Teaching in Anatomy

- Integrated teaching program on a particular topic/organ /organ system should be organized in each term. The topics which are related should be prepared after discussion with the teachers of Anatomy/Physiology/Biochemistry. The horizontal process of Integrated teaching program will help the students to have a simultaneous views of different aspects of Anatomical/Physiological/Biochemical details of a particular topic/organ /organ system.

TOPICS	LEARNING OBJECTIVES	TERM	DEPARTMENT
1. Cell	Students will be able to • describe the structure & functions of different constituents of cell • explain membrane transport, membrane potentials & action potentials • state the composition of ECF & ICF compartments	I	Anatomy Physiology Biochemistry
2.Heart	Students will be able to • describe the gross anatomy & clinical anatomy of heart • describe the types & regulation of blood pressure • describe the physiologic basis of shock management • describe & interpret the cardiac markers	I	Anatomy Physiology Biochemistry
3.Lung	Students will be able to • describe the gross anatomy & clinical anatomy of lung • describe the spirometry & its clinical application • describe the regulation of respiration	I	Anatomy Physiology Biochemistry
4. Hepatobiliary system	Students will be able to • describe the gross anatomy & clinical anatomy of hepatobiliary system • interprete the liver function test & explain its clinical importance • explain the role of liver in metabolism	II	Anatomy Physiology Biochemistry

TOPICS	LEARNING OBJECTIVES	TERM	DEPARTMENT
5.Kidney	Students will be able to • describe the gross anatomy & clinical anatomy of kidney • explain the mechanism of urine formation • interpret e kidney function test • explain the renal chemistry in relation to water, electrolytes & acid base balance	II	Anatomy Physiology Biochemistry
6.Pancreas	Students will be able to • describe the gross anatomy & clinical anatomy of pancreas • describe hormones of islets of Langerhan' s • describe functions ,mechanism of action & regulations of secretion of insulin • describe causes & consequences of hyper & hypoglycaemia • describe laboratory diagnosis of diabetes mellitus	II	Anatomy Physiology Biochemistry
7.Adrenal gland	Students will be able to • describe the gross anatomy & clinical anatomy of adrenal gland • describe the functions ,mechanism of action & regulation of secretion of adrenal hormones • describe hypo & hyperadrenalism	III	Anatomy Physiology Biochemistry
8. Thyroid & Parathyroid gland	Students will be able to • describe the gross anatomy & clinical anatomy of thyroid & parathyroid gland • describe the hormones of thyroid & parathyroid gland : biosynthesis , transport functions ,mechanism of action & regulation of secretion • describe hypo & hyperthyroidism • describe tetany • describe thyroid function tests & their interpretation	III	Anatomy Physiology Biochemistry
9. Pituitary gland	Students will be able to • describe the gross anatomy & clinical anatomy of pituitary gland • describe Hormones of pituitary gland : functions ,mechanism of action & regulation of secretion • describe Hypo & hyperpituitarism	III	Anatomy Physiology Biochemistry

TOPICS	LEARNING OBJECTIVES	TERM	DEPARTMENT
10. Sensory system & Motor system	Students will be able to • describe receptors ,synapse & sensory pathways • describe the pyramidal and extrapyramidal system • describe cerebellum, basal nuclei & their disorder • describe the different types of neurotransmitter & their functions	III	Anatomy Physiology Biochemistry

Teaching - Learning & Assessment Methods

Teaching / Learning Method	*Teaching Aid*	*In Course Assessment*	*Summative Assessment*
Lecture	Computer & multimedia Slide projector, overhead projector (OHP), black board white and different colour chalk, white board and different colour white board markers.	• Item Examination: Oral, Practical • Card Completion Examination • Term Examinations: Written, Oral, Practical • Preparation of exercise book	• Written • Oral • Practical
Regional Anatomy: Demonstration & Tutorial	Cadavers, prosected parts, bones, viscera and other specimens of body parts, models, charts, black board white and different colour chalk, white board and different colour white board markers, Illustration sheets/posters, OHP, video, slide projector, computer with CD ROM, radiographs & other images.		
Regional Anatomy: Dissection	Cadavers, prosected parts, specimens and bones, black board white and different colour chalk, white board and different colour white board markers, Computer & multimedia.		
Cell Biology & Histology Tutorial & Practical	Microscope, slide projector, black board white and different colour chalk, white board and different colour white board markers, OHP, Illustration sheets (including photomicrographs & drawings)/posters, video projector, computer with CD ROM drive		

Assessment in Anatomy

Component	Marks	Total Marks
Formative assessment	**10+10**	**20**
WRITTEN EXAMINATION		
paper-I- MCQ	**20**	
SAQ	**70**	
paper-II- MCQ	**20**	**180**
SAQ	**70**	
ORAL EXAMINATION (Structured)		
Hard part	**75**	**150**
Soft part	**75**	
PRACTICAL EXAMINATION		
Soft part		
Objective structured practical Exam (OSPE)	**30**	
Dissection	**30**	
Anatomy of Radiology and imaging	**15**	**75**
Hard part		
OSPE	**30**	
Lucky slides	**20**	**75**
Living Anatomy	**20**	
Practical Khata	**05**	
	Grand Total	500

- There will be separate Answer Scripts for SAQ
- Pass marks 60 % in each of theoretical, oral and practical examination

Time allocation in Anatomy

Lecture & Review - 115 hours

Term	General Anatomy Hours	Cell Biology Hours	General Histology Hours	Systemic Histology Hours	General Embryology Hours	Systemic Embryology Hours	Neuro anatomy Hours.	Human Genetics Hours.	Total Hours
First Term	12	06	08	02	13	-	01	04	**46**
Second Term	-	-	02	14	05	17	02	-	**40**
Third Term	-	-	02	02	-	07	18	-	**29**
Grand Total Hours (Class +Exam)	**12**	**06**	**12**	**18**	**18**	**24**	**21**	**04**	**115**

Cell Biology & Histology - Tutorial & Practical – 52 hours

Term	Class Hours (Including Item Exam hrs)	Card Completion Exam Hours	Total Hours
First Term (Card I)	15	2	17
Second Term (Card II)	15	2	17
Third Term (Card III)	16	2	18
Grand Total Hours	**46**	**6**	**52**

Term	Cards	Dissection & Demonstration	Tutorial Review			Part Completion Examination Hours	Total Hours
			Living (surface) Anatomy	Anatomy of radiology & Images	Clinical Anatomy		
First Term	**Thorax**	32	6	2	3	06	**49**
	Superior Extremity	33	3	2	3	01	**42**
Second Term	**Abdomen**	83	6	2	6	06	**103**
	Inferior Extremity	33	3	2	2	01	**41**
Third Term	**Head, Neck**	74	4	2	3	05	**88**
	Central Nervous system and Eye ball	35	00	1	3	01	**40**
Grand Total Hours		**290**	**22**	**11**	**20**	**20**	**363**

ACADEMIC CALENDAR for ANATOMY

Class/Exam	*Hours(including Class exams hrs)*	*First Term (14 working weeks)*	Evaluation & leave 04 weeks	*Second Term (15 working weeks)*	Evaluation & leave 04 weeks	*Third Term (14 working weeks)*	2.Evaluation & preparatory leave for first prof–08 weeks 1.Evaluation & preparatory leave for third term;03 weeks
Lecture and Review	**115**	• General Anatomy-12 hrs • Cell Biology -06 hrs • Human Genetics - 04 hrs • General Histology-08 hr • Systemic Histology – 02 hrs • General Embryology - 13 hrs • Neuroanatomy – 01 hrs		• General Histology-02 hr • Systemic Histology - 14 hrs • General Embryology - 05 hrs • Systemic Embryology- 17 hrs • Neuroanatomy – 02 hrs		a) General histology - 02 hr b) Systemic Histology -02 hrs c) Systemic Embryology - 07 hrs d) Neuroanatomy - 18hrs	
Tutorial/ Review	**53**	Thorax Card – 11 hrs Sup. Ext. Card – 08 hrs		Abdomen Card – 14 hrs Inf. Ext. Card – 7 hrs		Head & Neck Card –9 hrs C.N.S & Eyeball – 04 hrs	
Dissection	**290**	Thorax Card - 32 hrs Sup Ext Card- 33 hrs		Abdomen Card – 83hrs Inf. Ext. Card – 33 hrs		Head & Neck Card – 74 hrs C.N.S & Eyeball Card - 35 hrs	
Card Completion Exam	**20**	Thorax Card- 06hrs Sup Ext. Card- 01hrs		Abdomen Card– 06 hrs Inf. Ext. Card – 01 hrs		Head & Neck Card –05 hrs C.N.S & Eyeball Card - 01 hrs	
Cell Biology & Histology-Tutorial/ Practical	**52**	Card I – 17 hrs		Card II - 17 hrs		Card III – 18 hrs	
Grand Total	**530**						

N.B. – Card completion examinations will be arranged on discussion with other departments (Physiology, Biochemistry)

Prerequisite for 1st professional examination

1. A Student must pass all term exam before appearing 1st professional exam.
2. Class attendance must be 75 %

DEPARTMENT OF ANATOMY

……..MEDICAL COLLEGE

THORAX CARD

(ITEM EXAM FOLLOWING DISSECTION, DEMONSTRATION & TUTORIAL)

Year	
Session	
Roll No.	
Batch	

Card no.	
Cadaver no.	
Total marks	
Pass marks	

Name of the student				
Period of placement	**From :**		**To :**	

Part for dissection (item)	**Date of beginning**	**Date of examination**	**Marks obtained**	**Remarks and Signature of the Lecturer**
1.Thoracic wall, Intercostal space, thoracic cavity and mediastinum.				
2.Bones and joints of the thorax				
3.Heart with pericardium.				
4.Lung, Pleura , trachea and bronchus.				
5.The Diaphragm & oesophagus				
6.Blood vessels, nerves and lymphatics of the thorax.				
7. Clinical & Functional anatomy				
8. Living Anatomy.				
9.Anatomy of Radiology & Images				

No. of attendance in the practical classes of the card		**Out of**	
Mark obtained			
Remarks			
Signature of the Lecturer			
Signature of Head of the Department			

DEPARTMENT OF ANATOMY
……..MEDICAL COLLEGE

SUPERIOR EXTREMITY CARD
(ITEM EXAM FOLLOWING DISSECTION, DEMONSTRATION & TUTORIAL)

Year		**Card no.**	
Session		**Cadaver no.**	
Roll No.		**Total marks**	
Batch		**Pass marks**	
Name of the student			
Period of placement	**From :**	**To :**	

Part for dissection (item)	Date of beginning	Date of examination	Marks obtained	Remarks and Signature of the Lecturer
1. Bones and introduction to the joints of the superior extremity				
2. Pectoral region with mammary gland.				
3. Axilla.				
4. Superficial dissection of the upper limb, back and scapular region.				
5. Front of the arm , forearm & palm				
6 .Back of the arm, forearm & dorsum of the hand.				
7. Blood vessels, nerves and lymphatics of the superior extremity				
8. Removal of the limb; shoulder joint, acromioclavicular joint, elbow joint,wrist joint				
9. Clinical & Functional Anatomy.				
10. Living Anatomy				
11. Anatomy of Radiology & Images				

No. of attendance in the practical classes of the card		**Out of**	
Mark obtained			
Remarks			
Signature of the Lecturer			
Signature of Head of the Department			

DEPARTMENT OF ANATOMY

……..MEDICAL COLLEGE

ABDOMEN CARD

(ITME EXAM FOLLOWING DISSECTION, DEMONSTRATION & TUTORIAL)

Year		**Card no.**	
Session		**Cadaver no.**	
Roll No.		**Total marks**	
Batch		**Pass marks**	

Name of the student				
Period of placement	**From :**		**To :**	

Part for dissection (item)	Date of beginning	Date of examination	Mark obtained	Remarks and Signature of the Lecturer
1.Bones and joints of abdomen & pelvis				
2.Anterior wall of the abdomen with hernial region.				
3.Stomach, abdominal part of the oesophagus; coeliac trunk				
4.Duodenum, pancreas and spleen.				
5.The mesentery and mesenteric vessels, jejunum and ileum.				
6.Large intestine.				
7. Rectum and anal canal				
8..Liver with the biliary apparatus including gall bladder; portal vein.				
9.Kidneys, suprarenal gland, ureters. urinary bladder ,Urethrae				
10.Muscles, blood vessels, lymphatics and nerves of the posterior abdominal wall.				
11.Muscles, blood vessels, lymphatics, nerves of the pelvis				
12.Ovaries, uterus, uterine tubes,vagina,female external genital organs and perineum.				
13.Perineum pelvic diaphragm.urogenital diaphragm,perineal pouches,ischiorectal fossa				
14.Vas deferens, seminal vesicles, prostate,testes and male external genital organs.				
15.Clinical & Functional anatomy				
16.Living Anatomy.				
17Anatomy of Radiology & Images				

No. of attendance in the practical classes of the card		**Out of**	
Mark obtained			
Remarks			
Signature of the Lecturer			
Signature of Head of the Department			

DEPARTMENT OF ANATOMY
……..MEDICAL COLLEGE

INFERIOR EXTREMITY CARD
(ITEM EXAM FOLLOWING DISSECTION, DEMONSTRATION & TUTORIAL)

Year	
Session	
Roll No.	
Batch	

Card no.	
Cadaver no.	
Total marks	
Pass marks	

Name of the student				
Period of placement	**From :**		**To :**	

Part for dissection (item)	Date of beginning	Date of examination	Marks obtained	Remarks and Signature of the Lecturer
1. Bones and introduction to the joints of the inferior extremity				
2. Front and medial side of the thigh.				
3. Gluteal region and back of the thigh.				
4. Hip joint and removal of the lower limb.				
5. Front of the leg and dorsum of the foot.				
6. Lateral side, medial side and back of the leg including the popliteal fossa.,Sole of the foot				
7. Blood vessels, nerves and lymphatics of the inferior extremity				
8. Knee, tibiofibular joints and ankle joint				
9. Joints and arches of the foot.				
10. Clinical & Functional Anatomy.				
11. Living Anatomy				
12. Anatomy of Radiology & Images				

No. of attendance in the practical classes of the card		**Out of**	
Mark obtained			
Remarks			
Signature of the Lecturer			
Signature of Head of the Department			

DEPARTMENT OF ANATOMY

……..MEDICAL COLLEGE

HEAD AND NECK CARD

(ITEM EXAM FOLLOWING DISSECTION, DEMONSTRATION & TUTORIAL)

Year	
Session	
Roll No.	
Batch	

Card no.	
Cadaver no.	
Total marks	
Pass marks	

Name of the student				
Period of placement	**From :**		**To :**	

Part for dissection (item)	Date of beginning	Date of examination	Mark obtained	Remarks and Signature of the Lecturer
1. Bones of head and neck.				
2. Joints of head and neck.				
3. Scalp and temporal region.				
4. Face and orbit.				
5. Anterior triangle and submandibular region.				
6. Posterior triangle.				
7. Mouth and tongue.				
8. Pharynx.				
9. Nose and Paranasal sinuses.				
10. Larynx.				
11. Vertebral column and deep dissection of the back.				
12. Blood vessels, nerves and lymphatics of the Head & Neck				
13. Exocrine & Endocrine Glands of Head & neck				
14. Organs of hearing and equilibrium.				
15. Clinical & Functional Anatomy.				
16. Living Anatomy.				
17. Anatomy of Radiology & Images.				

No. of attendance in the practical classes of the card		**Out of**	
Mark obtained			
Remarks			
Signature of the Lecturer			
Signature of Head of the Department			

DEPARTMENT OF ANATOMY

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CENTRAL NERVOUS SYSTEM AND EYEBALL CARD

(ITEM EXAM FOLLOWING DISSECTION, DEMONSTRATION & TUTORIAL)

Year		**Card no.**	
Session		**Cadaver no.**	
Roll No.		**Total marks**	
Batch		**Pass marks**	

Name of the student				
Period of placement	**From :**		**To :**	

Part for dissection (item)	Date of beginning	Date of examination	Mark obtained	Remarks and Signature of the Lecturer
1. General introduction to the nervous system, cranial cavity and orbit.				
2. General examination of the brain with its nerve attachments and meninges.				
3. Cranial nerve – nuclei, course. functional components, supply & lesions				
4. Cerebrum.				
5. Diencephalon				
6. Basal ganglia, internal capsule, extra pyramidal system and limbic system.				
7. Brain stem, reticular formation & Cerebellum				
8. Ventricles and cerebrospinal fluid.				
9. Spinal cord & Spinal nerve				
10. Visual apparatus including the eyeball.				
11. Clinical & Functional Anatomy				
12. Living Anatomy.				
13. Anatomy of Radiology & Images				

No. of attendance in the practical classes of the card		**Out of**	
Mark obtained			
Remarks			
Signature of the Lecturer			
Signature of Head of the Department			

DEPARTMENT OF ANATOMY
……MEDICAL COLLEGE

HISTOLOGY CARD NO. I

Year	
Session	
Roll No.	
Batch	

Total marks	
Pass marks	

Name of the student				
Period of placement	**From :**		**To :**	

Item	Date of beginning	Date of examination	Marks obtained	Remarks and Signature
1. Study of microscope.				
2. Principles of tissue preparation and staining (routine)				
3. Cell and cell division				
4. Epithelium				
5. Connective tissue-General				
6. Connective tissue-Special				
7. Muscular tissue				
8. Nervous tissue in general				

Total No. of attendance		**Out of**	
Marks obtained			
Remarks			
Signature of the Lecturer			
Signature of the Prof. of Anatomy			

DEPARTMENT OF ANATOMY
……..MEDICAL COLLEGE

HISTOLOGY CARD NO. II

Year	
Session	
Roll No.	
Batch	

Total marks	
Pass marks	

Name of the student				
Period of placement	**From :**		**To :**	

Item	Date of beginning	Date of examination	Marks obtained	Remarks and Signature
1. Cardiovascular system				
2. Respiratory system				
3. Digestive system & associated glands				
4. Urinary system				
5. Male reproductive system				
6. Female reproductive system				

Total No. of attendance		**Out of**	
Marks obtained			
Remarks			
Signature of the Lecturer			
Signature of the Prof. of Anatomy			

DEPARTMENT OF ANATOMY

……..MEDICAL COLLEGE

HISTOLOGY CARD NO. III

Year	
Session	
Roll No.	
Batch	

Total marks	
Pass marks	

Name of the student				
Period of placement	**From :**		**To :**	

Item	Date of beginning	Date of examination	Marks obtained	Remarks and Signature
1. Lymphatic System				
2. Exocrine Glands in general				
3. Endocrine Glands				
4. Nervous system				
5. Special sense organs				
6. Skin –Thick & Thin skin				

Total No. of attendance		**Out of**	
Marks obtained			
Remarks			
Signature of the Lecturer			
Signature of the Prof. of Anatomy			

Physiology

Departmental Objectives

At the end of the course in physiology the **MBBS** students will be able to:

- Demonstrate basic knowledge on the normal functions of human body and apply it as a background for clinical subjects.
- Explain normal reactions to environment and homeostatic mechanism.
- Interpret normal function with a view to differentiate from abnormal function.
- Demonstrate knowledge & skill for performing and interpreting physiological experiments.
- Develop knowledge and skill to proceed to higher studies and research in physiology in relation to need and disease profile of the country.
- Develop sound attitude for continuing self-education to improve efficiency & skill [including information technology (IT) skill] in physiology.

Competencies in Physiology:

Medical courses in physiology teach the essentials of the processes of life.

The physiology courses are very clinically relevant because the knowledge of the processes underlying the normal physiological functions of all the major organ systems is crucial for understanding pathology, pharmacology, and for competent clinical practice. In fact, all of medicine is based on understanding physiological functions.

In the process of completing these courses, students acquire the following competencies:

- Describe transport across the plasma membrane, the basis of resting membrane potential, the genesis and propagation of action potentials. Explain muscle excitation and contraction.
- Describe the heart and circulation starting from a molecular level and ending with how the circulatory system functions as a dual pump and dual circulatory system.
- Explain respiratory processes with the knowledge of structures, ventilation, diffusion, blood flow, gas transport, mechanics of breathing, and control of ventilation.
- Identify how the kidney plays an important role in the maintenance of homeostasis by regulating both the composition and volume of ECF compartment.
- Explain how the brain works at the neuronal systems level. The role of electrical & chemical signals in information transmission & processing. Brain circulation, metabolism, neurotransmitter release & receptors,
- Describe the physiological mechanism underlying sensory perception, motor control & maintenance of homeostasis as well as higher cortical functions. Understanding autonomic nervous system.
- Describe endocrine physiology: describe the synthesis, secretion, functions & mechanism of action of the endocrine hormones.
- Explain human reproduction, functional changes in the reproductive tract, the formation of sperm & ovum, fertilization & hormonal regulation of fertility, role of hormones in pregnancy, parturition & lactation.
- The students will be able to equip themselves with adequate knowledge and develop skill for performing physiology laboratory tests and interpreting these normal functions with a view to differentiate from abnormal conditions. such as
- Measurement of blood pressure
- Examination of radial pulse.
- Recording & analysis of normal ECG (electrocardiogram)(12 Lead).
- Auscultation of heart sounds, breath sounds & bowel sound.
- Estimation of Hb concentration.
- Estimation of total count of red blood cell (RBC).
- Estimation of total and differential count of white blood cell **(**WBC).
- Determination of bleeding time & clotting time.
- Determination of blood grouping & cross matching.

- Determination of erythrocyte sedimentation rate (ESR).
- Determination of packed cell volume.
- Measurement of pulmonary volumes & capacities.
- Examination of urine for volume, specific gravity/osmolarity and water diuresis.
- Elicitation of reflexes (e.g., knee jerk, ankle jerk, planter response, biceps jerk, triceps jerk).
- Recording of body temperature.
- Elicitation of light reflex.
- Interpretation of Snellen's chart and colour vision chart.
- Conduction and interpretation of Rinne test.
- Conduction and interpretation of Weber test.
- Develop competencies in IT, related to applied physiology,

Organization of the Course:
The course is offered in 3 terms (1st, 2nd & 3rd) total 1&1/2 years for phase –1 MBBS Course.

Distribution of teaching - learning hours

Lecture	Tutorial	Practical	Total Teaching hours	Integrated teaching for Phase I	Formative Exam		Summative exam	
					Preparatory leave	Exam time	Preparatory leave	Exam time
120 hrs	120 hrs	100 hrs	340 hrs	30hrs	35 days	42 days	30days	30 days
(Time for exam. preparatory leave and formative & summative assessment is common for all subjects of the phase)								

Teaching/learning methods, teaching aids and evaluation

Teaching Methods			Teaching aids	In course evaluation
Large group	Small group	Self learning		
Lecture Integrated teaching	Tutorial Practical Demonstration	Assignment, self assessment & self study.	Computer & Multimedia & other IT materials Chalk & board White board & markers OHP Slide projector Flip Chart Models Specimens projector Study guide & manuals.	Item examination(oral) Practical item examination(Oral & practical) Class examination Card completion Examination (Written **& oral)** Term final Examination(Written, oral & practical)

1st Professional Examination:
Marks distribution of Assessment of Physiology
Total marks – 400 (Summative)

- Written= 200 (SAQ140 + MCQ 40+Formative 20)
- SOE =100
- Practical= 100 (OSPE40 + Traditional 50 +Note Book 10)

Related Equipments:
Microscope, test tube, glass slide, centrifuge machine, micro pipette, thermostatic water bath, chemicals & reagents, Sphygmomanometer, Stethoscope, Kymograph, ECG machine, Spirometer, Pneumograph, Peak flow meter, Urinometer clinical hammer, cotton, pin, clinical thermometer, spirit, pencil, torch, Ishihara charts, Snellen's chart, tuning fork, perimeter, models, specimens, Haemocytometer, Shahlis haemometer, haematocrit tube, westergren ESR tube & ESR stand etc.

Learning Objectives and Course Contents in Physiology

Cellular Physiology

Learning Objectives	Contents	Hours / days
At the end of the course the students will be able to explain about : • goal of physiology. • principles of homeostasis • functional organization of the human body & cell physiology. • cell membrane transport. • membrane potential, resting membrane potential and action potential. • muscle physiology • neuromuscular junction.	**CORE:** • Physiology: definition, goal & importance of physiology. • Homeostasis: definition, major functional systems, control systems and regulation of the body function. • The cell: functions of cell membrane and cell organelles. • The cell membrane transport: active & passive transport, exocytosis & endocytosis, intercellular communication, • Membrane potential: definition, basic physics of membrane potential. Resting membrane potential. • Action potential: definition & propagation of action potential. • Mechanism of skeletal muscle contraction & relaxation. • Neuromuscular junction: transmission of impulse from nerve ending to muscle fibre.	L=5 T=6 P=2 IT=1

Physiology of Blood

Learning Objectives	Contents	Hours / days
At the end of the course the students will be able to: • describe the composition & functions of blood. • demonstrate knowledge about plasma proteins. • demonstrate knowledge about the formation , morphology, types & functions of RBC,WBC & platelets. • describe synthesis & breakdown of haemoglobin. • demonstrate knowledge about the blood grouping & blood transfusion. • describe about hemostasis & coagulation. • describe about the bleeding disorders.	**CORE:** • Blood: composition & functions. • Plasma proteins: origin, normal values, properties, functions & effect of hypoproteinaemia • Development and normal values of formed elements. • RBC: erythropoiesis. • Hemoglobin: synthesis, types, functions & fate of hemoglobin. • Red blood cell indices, • Anaemia, Polycythemia & Jaundice: definition & classification. • WBC: Classification, morphology, properties & functions, leucocytosis, leucopenia. • Platelet: morphology & functions. • Hemostasis: definition & events. • Coagulation: definition, mechanism, • Clotting factors & fibrinolysis • Blood grouping: ABO & Rh system • Hazards of blood transfusion & Rh incompatibility. **Additional/Applied Physiology** • Bleeding disorder: thrombocytopenic purpura & hemophilia, tests for bleeding disorder .	L=15 T=16 P=48 IT=01

Cardiovascular Physiology

Learning Objectives	Contents	Hours / days
At the end of the course the students will be able to : • describe the physiology of cardiac muscle • describe the rhythmical excitation of the heart. • demonstrate knowledge about events of cardiac cycle. • explain about the heart sounds. • explain about a normal ECG. • describe about hemodynamics. • describe local & humoral control of blood flow by the tissues. • describe the microcirculation, capillary fluid & interstitial fluid • describe about cardiodynamics: cardiac output, venous return & peripheral resistance. • explain about the heart rate & radial pulse. • describe the regulation of blood pressure. • demonstrate knowledge about the coronary circulation. • demonstrate knowledge about shock • describe the circulatory changes during exercise.	**CORE :** • Cardiac muscle: physiological anatomy, properties. • Junctional tissues of the heart: generation of cardiac impulse & its conduction. • Cardiac cycle: events, pressure & volume changes during different phases • Heart sounds: types & characteristics • ECG: principles, characteristics & interpretations • Functional classification of blood vessels & microcirculation • Interrelationship among pressure, flow & resistance. • Local & humoral control of blood flow by the tissue. • Exchange of fluid through the capillary membrane. • SV, EDV, ESV: definition & factors affecting them. • Cardiac output: definition, measurement, regulation and factors affecting cardiac output. • Venous return: definition & factors affecting. • Peripheral resistance: definition & factors affecting. • Heart rate: definition, normal values, factors affecting & regulation. • Radial pulse: definition & characteristics. • Blood pressure: definition, types, measurement &. regulation of arterial blood pressure. **Additional /Applied Physiology** Circulatory adjustment during exercise. Coronary circulation Cardiac arrhythmias: tachycardia, bradycardia & heart block Shock: definition, classification. Physiological basis of compensatory mechanism of circulatory shock.	L=18 T=18 P=18 IT=02

Respiratory Physiology

Learning Objectives	Contents	Hours / days
At the end of the course the students will be able to : • define pulmonary & alveolar ventilation. • explain the mechanism of respiration • describe pulmonary volumes and capacities, • describe pulmonary circulation • summaries the diffusion of gases through the respiratory membrane. • describe the oxygen & carbon dioxide transport. • describe the respiratory centers & regulation of respiration. • define & classify hypoxia and cyanosis.	**CORE** • Physiological anatomy of respiratory system • Respiration: definition, mechanism. • Pulmonary & Alveolar ventilation. • Pulmonary volumes and capacities (spirometry) • Dead space: definition & types • Pulmonary circulation- pressure in pulmonary system effect of hydrostatic pressure in lungs, pulmonary capillary dynamics. • Composition of atmospheric, alveolar, inspired and expired air. • Respiratory unit and respiratory membrane. • Diffusion of Gases through the respiratory membrane. • Transport of Oxygen & Carbon dioxide in blood & body fluid. Oxy-hemoglobin dissociation curve. Bohr effect, Haldane effect & chloride shift mechanism. • Respiratory centers: name, location & functions. • Nervous & chemical regulation of respiration. • Lung function tests: name, significance • Hypoxia: definition, types • Cyanosis: definition & types. • Definition of Dyspnea, Hypercapnea & Periodic breathing. **Additional/Applied Physiology** • Oxygen therapy in hypoxia • Ventilation -perfusion ratio. • Regulation of respiration during exercise.	L=12 T=14 P=8 IT=01

Renal Physiology

Learning Objectives	Contents	Hours / days
At the end of the course the students will be able to: • describe the structure & function of nephron. • describe the mechanism of urine formation. GFR, tubular reabsorption, tubular secretion. • describe the mechanism of water balance and osmotic diuresis. • explain physiological mechanism of micturition.	**CORE:** • Kidney: functions • Nephron: types, parts, structure & functions • Renal circulation: peculiarities & functional importance • Urine formation: basic mechanism • GFR: definition, determinants, control of GFR & regulation of renal blood flow • Reabsorption and secretion by the renal tubules • Definition of T_m, Renal threshold, tubular load & plasma load and diuresis. • Mechanism of formation of concentrated urine & diluted urine. • Micturition reflex **Additional /Applied Physiology** Abnormalities of micturition	**L= 12** **T= 10** **P= 02** **IT= 01**

Gastrointestinal Physiology

Learning Objectives	Contents	Hours / days
Gastrointestinal Physiology At the end of the course the students will be able to: • describe the general principles of gastrointestinal function. • describe the movements of GIT	**CORE:** • Phygiological anatomy of gastrointestinal (GI) tract. • Enteric nervous system. • Local hormones of GIT: name, function & regulation of secretion • Hormonal control of GI function. • Movements of the GIT. • GI reflexes. Additional / Applied Physiology • Peptic ulcer diseases • Diarrhoea • Vomiting	L=10 **T=8** P=02 IT=01

Endocrine Physiology and Physiology of Reproduction

Learning Objectives	Contents	Hours / days
At the end of the course the students will be able to: • describe types, hormonal receptors & general mechanism of action of hormone. • describe functions, mechanism of action & regulation of secretion of individual hormone. • describe disorders in relation to: • pituitary gland • thyroid and parathyroid gland • adrenal gland • endocrine pancreas	**CORE :** • Endocrine glands : name & name of their hormones. • Hormone: definition, classification, mechanism of action, assessment of hormone level. • Hypothalamic hormones, releasing & inhibitory hormones: name and functions. • Pituitaty Gland: physiological anatomy. • Pituitary hormones (anterior & posterior): name, functions, mechanism of action and their control by the hypothalamus and disorders (dwarfism, gigantism, acromegaly & hypopituitarism and diabetes insipidus). • Thyroid Gland: physiological anatomy. • Thyroid hormones: biosynthesis, transport, functions, mechanism of action, regulation of secretion, disorders (hypo and hyperthyroidism, cretinism, myxoedema and goitre).. • Parathyroid Gland: physiological anatomy. • Parathyroid hormone: functions, mechanism of action & regulation of secretion. • Adrenal Gland: physiological anatomy. Adrenocortical hormones: name, functions , mechanism of action , regulation of secretion & disorders (Addison's disease, Cushing's Syndrome, Conn's disease). • Islets of Langerhan's of pancreas - hormones: functions, mechanism of action & regulation of secretion & disorders	L=20 T=20 P=02 IT=01

Learning Objectives	Contents	Hours / days
Physiology of Reproduction **At the end of the course the students will be able to :** • describe male & female reproductive organs & their hormones • describe spermatogenesis • explain about functions of testosterone, oestrogen and progesterone • describe ovulation, ovarian & menstrual cycle • demonstrate knowledge about puberty • demonstrate knowledge about contraception • describe physiology of pregnancy • explain about lactation	• Introduction to reproductive physiology, sex determination & sex differentiation. Puberty • Functional anatomy of male reproductive system • Secondary sex characteristics of male • Testes: functional structure and functions • Testosterone: function. • Spermatogenesis: steps & hormonal control. • Functional anatomy of female reproductive system • Secondary sex characteristics of female • Ovaries : functional structure and functions. Functional structure of uterus. • Menstrual cycle: definition, phages and hormonal control. • Ovarian cycle: phages and hormonal regulation. • Ovulation: definition, mechanism & hormonal control. Indicators of ovulation. • Definition of menstruation, menarche & menopause. • Ovarian hormones • Functions of oestrogen and progesterone. • Placental hormones: name & functions. • Mammogenesis: development and lactation. **Additional/Applied Physiology** Physiology of pregnancy Contraception	

Neurophysiology

Learning Objectives	Contents	Hours / days
At the end of the course the **Students will be able to:** • explain organization of the nervous system • explain the basic mechanism of synaptic transmission. • describe the sensory system of the body. • describe the organization and functions of the spinal cord. • explain the cord reflexes. • describe the motor control system- pyramidal and extra pyramidal systems. • describe the functions of cerebellum. • describe functions of basal ganglia, thalamus, reticular formation & limbic system • describe functions of CSF and Blood brain barrier. • describe functions of hypothalamus • describe organization & function of autonomic nervous system	**CORE:** • Functional organization of nervous system and functions of major levels of central nervous system(CNS). • **Neuron:** definition, parts, types • **Nerve fiber:** classification, properties, effects of injury/section to the nerve fiber • **Synapse:** physiological anatomy, properties, types, synaptic transmission • **Neurotransmitters:** definition, types, functions • **Sensory receptor:** definition, classification, properties, receptor potential. • **General/somatic senses:** definition, classification • **Ascending tracts/sensory pathways:** name & function. • Spinothalamic tract, tract of Gall, tract of Burdach, spinocerebellar tract : origin, course, termination & function. • **Cerebral cortex:** name & functions of the Brodmann's areas • **Reflex:** definition, classification, properties, • **Reflex arc:** definition, components • Stretch reflex, withdrawal reflex, crossed extensor reflex, reciprocal innervation & planter response. • **Muscle spindle**: definition, physiological anatomy, functions. • **Muscle tone**: definition, function, maintenance • **Descending tracts / motor pathways:** name & function. • Pyramidal tract: origin, course, termination, function & effect of lesion. • Extrapyramidal tract: name, functions. • Upper motor neuron and Lower motor neuron: definition, example, effect of lesion. • Spinal cord: hemisection.	L=18 T=18 P=08 IT=01

Learning Objectives	Contents	Hours / days
	• **Cerebellum:** functional division, functions, error control mechanism of motor activity & cerebellar disorder. • **Basal ganglia:** functional components, functions & effects of lesion • **Thalamus, Reticular formation, limbic system:** components & functions. • **CSF:** Circulation, functions • **Blood brain barrier:** function • **Hypothalamus:** name of the nucleus and functions • **Autonomic Nervous system:** components and functions **Additional/Applied Physiology** Pain: types, dual pathway for transmission of pain, referred Pain Spinal cord transection. Posture, equilibrium: definition, name of the areas controlling them. Sleep, memory: definition, name of the areas controlling them. Alarm or stress response	

Physiology of Body Temperature

Learning Objectives	Contents	Hours / days
At the end of the course the students will be able to: • describe the physiology & regulation of body temperature.	**CORE :** • Normal body temperature, site of measurement, sources of heat gain, channels of heat loss, regulation of body temperature in hot and cold environment. **Additional/Applied Physiology** Heat stroke, hypothermia, frost bite, fever.	L=02 T=02 **P=02**
Physiology of Special Senses		
At the end of the course the students will be able to: • describe the neurophysiology of vision and visual pathway • explain errors of refraction, accommodation reaction, light reflexes, dark and light adaptation. • explain mechanism of hearing and describe auditory pathway • describe the physiology of smell and taste	**CORE:** • **Vision :** physiological anatomy of eye, image formation in the eyes, visual receptors, visual pathway, common refractive errors, photochemistry of vision, accommodation reaction, light reflex , dark & light adaptation, Field of vision, color vision, color blindness, visual acuity. • **Hearing:** auditory apparatus, receptor, mechanism of sound wave transmission, auditory pathway. • **Smell:** smell receptors, olfactory pathway. • **Taste:** taste receptors, modalities of taste sensation, taste pathway. **Additional/Applied Physiology** Effects of lesion in visual pathway Visual acuity	L=08 T=08 **P=08** IT=01

Physiology Practical

Learning Objectives	Contents	Hours / days
Cellular Physiology & Physiology of Blood **Students will be able to** • demonstrate knowledge on common laboratory equipments used for practical hematology. • perform common hematological tests. • interpret results for practical purpose.	**CORE:** • Developing skill in using of microscope & common laboratory equipments. • Collection & preparation of blood sample. • Observation of osmotic behavior of RBC • Determination of total count of RBC, • Determination of total count of WBC • Determination of differential count of WBC. • Estimation of haemoglobin. • Observation of osmotic fragility of RBC. • Determination of ESR • Determination of PCV. • Determination of Blood grouping (ABO & Rh system) & cross matching. • Determination of bleeding time & clotting time. • Interpretation of Red Cell Indices	02 48
Cardiovascular Physiology **Students will be able to :** • examine the radial pulse & its application. • measure the blood pressure and effect of exercise on it. • auscultate 1st & 2nd heart sounds. • record & analysis of normal ECG. • interpret the effect of drug and temperature on frog's heart.	**CORE :** • Measurement of Blood Pressure & effect of exercise on it. • Auscultation of 1st & 2nd heart sounds. • Examination of radial pulse. • Recording & analysis of normal ECG (12 leads). **Additional/Applied Physiology** Interpretation of effect of worm and cold application on frog's heart (tracing provided). Interpretation of effect of drugs on frogs heart (tracing provided).	**18**

Learning Objectives	Contents	Hours / days
Respiratory Physiology **Students will be able to :** • examine the Respiratory system • perform lung function tests & interpret tests on clinical conditions. • demonstrate the knowledge about breath sounds.	**CORE:** • Examination of respiratory system (physiological aspect) • Counting of respiratory rate. • Auscultation of breath sounds. • Determination of lung function tests including Spirometry. • Determination of kymographic recording of respiratory movements & effect of breath holding, hyperventilation, speech, deglutition (tracing provided.)	08
Gastrointestinal Physiology Students will be able to: • auscultate the intestinal sound	**CORE** • Auscultation of intestinal sound	02
Renal Physiology Students will be able to: • Determine the specific gravity of urine	**CORE** • Determination of specific gravity of urine	02
Neurophysiology Students will be able to : • examine the sensory & motor functions of human body. • elicit the reflexes & interpret its clinical importance.	**CORE :** • Examination of motor & sensory functions. • Elicitation of the reflexes & interpretation of its clinical importance. (knee jerk, biceps jerk, triceps jerks & planter response).	10
Physiology of Body Temperature Students will be able to • record the body temperature	**CORE:** • Recording of the body temperature. • Observation of the effect of exercise on body temperature.	**02**
Physiology of Special senses Students will be able to : • perform the light reflex & accommodation reaction • perform visual acuity & color vision. • conduct tests for hearing & interpret the result	**CORE:** • Observation of Light reflex, • Interpretation of visual acuity, color vision & Perimetry. • Conduction and interpretation of Rinne test & Weber test.	08

Distribution of Teaching Hours

Systems	Lecture hours	Tutorial hours	Practical hours	Integrated teaching hours
1. Cellular Physiology	5	6	2	1
2. Physiology of blood	15	16	48	1
3. Cardiovascular Physiology	18	18	18	2
4. Respiratory Physiology	12	14	8	1
5. Gastrointestinal Physiology	10	8	2	1
6. Renal physiology	12	10	2	1
7. Endocrine Physiology & Physiology of Reproduction	20	20	2	1
8. Neurophysiology & Physiology of body temperature	20	20	10	1
9. Physiology of Special Senses	08	8	8	1
Total	120 (includes 2 hours IT)	120 (includes 2 hours IT)	100 (includes 2 hours IT)	10 (includes 2 hours IT)

Time allocation in Physiology in different term

Term	Lecture hours	Tutorial hours	Practical hours	Integrated teaching hours	Total hours
1st Term	38	40	38	03	116
2nd Term	34	32	32	04	98
3rd Term	48	48	30	03	126
Grand Total	120	120	100	10	340

Summative Assessment of Physiology
(First Professional Examination)

Assessment systems and mark distribution

Components	Marks	Total Marks	Contents
WRITTEN EXAMINATION Paper – I- Formative Assessment + MCQ +SAQ Paper – II- Formative Assessment + MCQ +SAQ	10+20+70 = 100 10+20+70 =100	200	**Paper – I** 1. Cellular physiology 2. Physiology of blood 3. Cardiovascular physiology 4. Respiratory physiology 5. Gastrointestinal physiology **Paper – II** 1. Renal physiology 2. Endocrine physiology & physiology of Reproduction 3. Neurophysiology & temperature regulation 4. Physiology of Special senses
PRACTICAL EXAMINATION OSPE Traditional practical methods and experiments Practical Note Book	 40 50 10	100	
ORAL EXAMINATION (Structured) 2 boards	Board – I = 50 Board – II = 50	100	
Grand Total		400	

Pass marks 60% in each of written, oral and practical.

Department of Physiology

Students In course Evaluation Card. (Card for card completion & Term final examination on Physiology for individual student)

Students name---------- **Roll no.----------**

Session ---------- **Year----------** **Batch----------**

Date of starting ---------- **Date of ending ----------**

Components	**Written**		**Oral**		**Practical**		**Remarks (Signature & Date)**
	Full Marks	**Marks Obtained**	**Full Marks**	**Marks Obtained**	**Full Marks**	**Marks Obtained**	
Cellular physiology & Physiology of Blood	100		100				
Cardiovascular physiology	100		100				
Respiratory physiology	100		100				
Gastrointestinal Physiology & Renal physiology	100		100				
Endocrine physiology	100		100				
Physiology of Reproduction	100		100				
Neurophysiology Physiology of Special Senses	100		100				
1st Term	**100**		**100**		**100**		
2nd Term	**100**		**100**		**100**		
3rd Term	**100**		**100**		**100**		

Department of Physiology

Attendance Record

Components	**Total Class held**	**Total Class attended**	**Percentage (attended/ Held)**	**Remarks (Signature & Date)**
Lecture (120 hours)				
Tutorial (120 hours)				
Practical (100 hours)				
Integrated teaching (10 hours)				

Academic Calendar for Physiology

		1st Term		2nd Term		3rd Term	
Teaching /Learning Method	**Teaching hours including Examination**	20 Working weeks	**E V A**	20 Working weeks	**E V A**	18 Working weeks	**E V A**
Lecture	120 Hours	GP- 05 hours Blood—15 hours CVS—18 hours	**L U A**	Resp. Physiology—12 hours GIT—10 hours Renal- 12 hours.	**L U A**	Endocrine & Reproduction—20 hours Nervous system & Body temp.—20 hours. Special Senses-08 hours.	**L U A T**
Tutorial	120 hours	GP—06 hours. Blood –16 hours. CVS—18 hours.	**T I O N**	Respiration—14 hours. GIT—08 hours. Renal —10hours.	**T I O N**	Endocrine & reproduction—20 hours. Nervous system & Body temp. –20 hours Special Senses—08 hours.	**I O N**
Practical	100 hours.	GP—02 hours. Blood—36 hours.	**4 W E E K S**	Blood-- 12 hours CVS---18 hours. GIT—02 hours	**4 W E E K S**	Respiration- 08 hours Renal – 02 hours Endocrine—02 hours Neuro physiology -08 hours Body temp—**02** hours Special Senses--08 hours	**7 W E E K S**

Continuous Assessment Card

Department of Physiology---------- **Medical college**----------
Students name---------- **Roll no.**----------
Session ---------- **Year** ---------- **Batch** ----------
Date of starting ---------- **Date of ending** ----------

Card 1: (Cellular Physiology & Blood)

Sl. No.	Name of item	Full Marks	Marks Obtained	Remarks (signature & Date)
1.	Definition, goal & importance of physiology. Homeostasis: definition, major functional systems, control systems of the body	10		
2.	The cell: functions of cell membrane & cell organelles.	10		
3.	The cell membrane transport: active & passive transport, exocytosis & endocytosis. Intercellular communications	10		
4.	Membrane potential: definition and basic physics of membrane potential. Resting membrane potential Nerve Action potential & propagation of action potential.	10		
5.	Neuromuscular junction, muscle contraction & transmission of impulse from nerve ending to the muscle fibre.	10		
6.	Composition & functions of blood, Plasma proteins: Origin, normal values, properties & functions.	10		
7.	RBC: normal count, morphology, functions, erythropoiesis, fate of RBC. Hemoglobin: synthesis, types, functions. Red blood cell indices. Anaemia: definition & classification Polycythemia: definition & type. Jaundice: definition & classification	10		
8.	WBC: classification with normal count, morphology, development, properties & functions. leucocytosis, leucopenia .	10		
9.	Platelets: normal count, morphology, functions & development. Hemostasis: definition & events Coagulation: definition, blood clotting factors . Mechanism of coagulation & fibrinolysis. Anticoagulant: name, mode of action. Bleeding disorder: thrombocytopenic purpura & hemophilia. Tests for bleeding disorder: bleeding time, coagulation time and prothrombin time.	10		
10.	Blood grouping: ABO & Rh system, hazards of blood transfusion & Rh incompatibility.	10		

Signature of batch teacher : Signature of head of department :

Continuous Assessment Card

Department of Physiology---------- **Medical college----------**

Students name---------- **Roll no.----------**

Session ---------- **Year ---------- Batch ----------**

Date of starting ---------- **Date of ending ----------**

Card 2: (Cardiovascular Physiology)

Sl. No.	Name of item	Full Marks	Marks Obtained	Remarks (signature & Date)
1.	Properties of cardiac muscle. Junctional tissues of the heart. Generation of cardiac impulse & its conduction in the heart.	10		
2.	Cardiac cycle: definition, events, pressure & volume changes during different phases of cardiac cycle. Heart sounds : type, characteristics and their significances ECG : definition, principles and interpretations	10		
3.	Functional classification of blood vessels, interrelationship among pressure, flow & resistance. Local & humoral control of blood flow in the tissues. Exchange of fluid through the capillary membrane.	10		
4.	SV, EDV, ESV: definition & factors affecting them. Cardiac output : definition, measurement, regulation and factors affecting cardiac output. Venous return: definition & factors affecting. Heart rate: factors affecting & regulation. Pulse: definition, characteristics	10		
5.	Peripheral resistance: definition & factors affecting. Blood pressure: definition, types, measurement & regulation of arterial blood pressure.	10		
6.	Circulatory adjustment during muscular exercise Cardiac arrhythmias : tachycardia, bradycardia. Heart block: definition and types Shock: definition, classification. Physiological basis of compensatory mechanism of circulatory shock.	10		

Signature of batch teacher :

Signature of head of department :

Continuous Assessment Card

Department of Physiology---------- **Medical college**----------

Students name---------- **Roll no.**----------

Session ---------- **Year** ---------- **Batch** ----------

Date of starting ---------- **Date of ending** ----------

Card 3: (Respiratory Physiology)

Sl. No.	Name of item	Full Marks	Marks Obtained	Remarks (signature & Date)
1.	Respiration: definition, mechanism. Pulmonary & Alveolar ventilation. Pulmonary volumes and capacities(spirometry) Dead space: physiological & anatomical Lung function tests : name & significance	10		
2.	Composition of atmospheric, alveolar, inspired and expired air. Respiratory unit and respiratory membrane. Diffusion of Gases through the respiratory membrane. Peculiarities of pulmonary circulation Ventilation -perfusion ratio.	10		
3.	Transport of Oxygen & Carbon dioxide in blood. Oxy-hemoglobin dissociation curve. Bohr effect, Haldane effect & Chloride shift.	10		
4.	Respiratory centers: name, location & functions. Nervous & chemical regulation of respiration. Regulation of respiration during exercise.	10		
6.	Hypoxia: definition, types Cyanosis: definition & types. Definition of dyspnea, hypercapnea & periodic breathing.	10		

Signature of batch teacher :

Signature of head of department :

Continuous Assessment Card

Department of Physiology---------- Medical college----------

Students name---------- Roll no.----------

Session ---------- Year ---------- Batch ----------

Date of starting ---------- Date of ending ----------

Card 4 : (Gastrointestinal Physiology & Renal physiology)

Sl. No.	Name of item	Full Marks	Marks Obtained	Remarks (Signature & Date)
1.	Physiological anatomy of gastrointestinal (GI) tract. Enteric nervous system. Local hormones of GIT: name, functions & regulation of secretion Neural and hormonal control of GI function.	10		
2.	Movements of the GIT. GI reflexes.	10		
3.	Kidney: functions of kidneys. Renal circulation: peculiarities with functional importance.	10		
4.	Urine formation Glomerular filtration, determinants of GFR, Autoregulation of renal blood flow and GFR.	10		
5.	Reabsorption and secretion by the renal tubules Definition of $T_{m,}$ Renal threshold, tubular load & plasma load and diuresis	10		
6.	Mechanism of formation of concentrated & dilute urine.	10		
7.	Micturition reflex Abnormalities of micturition	10		

Signature of batch teacher : Signature of head of department :

Continuous Assessment Card

Department of Physiology,---------- Medical college----------

Students name---------- Roll no.----------

Session ---------- Year ---------- Batch ----------

Date of starting ---------- Date of ending ----------

Card 5 : (Endocrine Physiology)

Sl. No.	Name of item	Full Marks	Marks Obtained	Remarks
1.	Endocrine glands: name Hormones: definition, classification, mechanism of action, regulation of secretion	10		
2.	Hypothalamic hormones. Pituitary hormones (anterior & posterior): name, functions and their control by the hypothalamus and disorders (Dwarfism, gigantism, acromegaly & hypopituitarism and diabetes insipidus)	10		
3.	Thyroid hormones: biosynthesis, transport, functions, regulation of secretion, disorders (Hypothyroidism hyperthyroidism, Cretinism, Myxoedema and goitre). .	10		
4.	Parathyroid hormone: functions, mechanism of action & regulation of secretion.	10		
5.	Adrenocortical hormones: name, functions , mechanism of action , regulation of secretion & disorders (Addison's disease, Cushing's Syndrome, Conn's disease).	10		
6.	Hormones of Islets of Langerhan's of pancreas: functions , mechanism of action, regulation of secretion & disorders	10		

Signature of batch teacher :

Signature of head of the department:

Continuous Assessment Card

Department of Physiology,---------- **Medical college----------**

Students name---------- **Roll no.----------**

Session ---------- **Year ---------- Batch ----------**

Date of starting ---------- **Date of ending ----------**

Card 6: (Physiology of Reproduction)

Sl. No.	Name of item	Full Marks	Marks Obtained	Remarks
1.	Introduction to reproductive physiology, sex determination & sex differentiation. Puberty Functional anatomy of male reproductive system. Secondary sex characteristics of male Gonad : functional structure and functions of testes. Testosterone: functions, Spermatogenesis: steps & hormonal control.	10		
2.	Functional anatomy of female reproductive system. Secondary sex characteristics of female Gonad : functional structure and functions of ovaries. Functional structure of uterus Menstrual cycle: definition, hormonal control Ovarian and endometrial cycle with their hormonal regulation. Ovulation: definition, mechanism & hormonal control. Indicators of ovulation Definition of menstruation, menarche & menopause. Ovarian hormones Oestrogen and progesterone: functions	10		
3.	**Physiology of pregnancy & Lactation:** Pregnancy: physiological changes during pregnancy. Placental hormones: name & functions. Mammogenesis: hormonal influence for mammogenesis & lactation Physiology of contraception	10		

Signature of batch teacher :

Signature of head of the department :

Continuous Assessment Card

Department of Physiology---------- Medical college----------
Students name---------- Roll no.----------
Session ---------- Year ---------- Batch ----------
Date of starting ---------- Date of ending ----------

Card 7: (Neurophysiology & special senses)

Sl. No	Name of item	Full Marks	Marks Obtained	Remarks & signature
1.	Functional organization and functions of major levels of central nervous system(CNS). **Neuron:** definition, parts, types **Nerve fiber**: classification, properties, effects of injury to the nerve fiber **Synapse**: physiological anatomy, type, properties & synaptic transmission **Neurotransmitters**: definition, types & functions	10		
2.	**Sensory systems of the body:** **Sensory receptor**: definition, classification, properties, receptor/generator potential. **Cerebral cortex :** Name and functions of the Brodmann's areas. **General/somatic senses:** definition and classification. **Ascendingtracts/sensory pathways** – name.(Tract of Gall & Burdach, spinothelamic tract, spinocerebellar tract): origin, course, termination, functions, and effect of lesions.	10		
3.	**Reflex:** définition, classification, properties. Reflex arc: définition, component stretch reflex, knee jerk, planter response and Withdrawal reflex- with reciprocal innervations & crossed extensor-pathway . **Muscle spindle, Golgi tendon organ:** definition, physiological anatomy and functions**. Muscle tone** : definition , function and maintenance.	10		
4.	**Descending tracts/ motor pathways-** name Pyramidal tract: origin, course, termination, function, effect of lesion. Extrapyramidal tract: name, functions. Upper motor neuron and lower motor neuron : definition, effect of lesion. **Spinal cord** : effect of hemisection.	10		
5.	**Cerebellum:** functional division, neuronal circuit, functions, error control mechanism of motor activity & cerebellar disorder,	10		
6.	**Basal ganglia:** functional components, functions & effects of lesions. **Thalamus, Reticular formation, Limbic system:** functional components and functions. **CSF:** circulation & functions. **Blood brain barrier:** function.	10		
8.	**Hypothalamus:** name of the nucleus, functions **Body Temperature** Normal body temperature, site of measurement, sources of heat gain, channels of heat loss, regulation of body temperature in hot and cold environment.	10		
9.	**Autonomic Nervous system:** physiological anatomy of sympathetic and parasympathetic system, functions. Alarm or stress response	10		
10.	**Vision: p**hysiological anatomy of eye, image formation in the eyes, visual receptors, visual pathway, common refractive errors, accommodation reaction, light reflex, dark and light adaptation. Field of vision, color vision, visual acuity	10		
11.	**Hearing:** auditory apparatus, receptor, Mechanism of hearing, mechanism of sound transmission and auditory pathway.	10		
12.	**Smell:** receptor and pathway**.** **Taste:** receptors, modalities of taste sensation and pathway.	10		

Signature of batch teacher : Signature of head of the department :

Continuous Assessment Card

Department of Physiology---------- Medical college----------
Students name---------- Roll no.----------
Session ---------- Year ---------- Batch ----------
Date of starting ---------- Date of ending ----------

Card 8: Physiology Practical

(I hear and I forget, I see and I remember, I do and I understand)

SL NO	**Name of experiment**	**Full Marks**	**Marks obtained**
1	laboratory equipment. laboratory animals, blood sample, collection (venous & capillary) of blood.	10	
2	Preparation & staining of blood film & differential count of WBC with interpretation and analysis of result	10	
3	Determination of total count of WBC with interpretation and analysis of result	10	
4	Determination of total count of RBC with interpretation and analysis of result	10	
5	Estimation of haemoglobin with interpretation and analysis of result	10	
6	Determination of packed cell volume (PCV), Calculation of MCV, MCH & MCHC with interpretation and analysis of result	10	
7	Estimation of ESR by Westergren method with interpretation and analysis of result	10	
8	Determination of bleeding time, clotting time with interpretation and analysis of result	10	
9	Study of morphology and osmotic behavior of RBC with interpretation and analysis of result	10	
10	Determination of ABO & Rh blood groups with interpretation and analysis of result	10	
11	Auscultation of 1^{st} & 2^{nd} heart sounds	10	
12	Clinical examination of radial pulse.	10	
13	Measurement of normal blood pressure & effects of exercise on blood pressure.	10	
14	Recording & analysis of 12 leads normal ECG	10	
15	Auscultation of breath sounds	10	
16	Spirometric measurement of lung function test. Determination of FVC, FEV_1,FEV_1/FVC %, PEFR, MVV with analysis of result.	10	
17	Study on the tracing of respiratory movements & effects of breath holding, hyperventilation, speech, deglutition (physiological apnoea) .	10	
18	Auscultation of intestinal sound.	10	

19	Elicitation of knee jerk, planter response	10	
20	Recording of oral & axillary temperature & effects of exercise on it	10	
21	Mapping of visual field by perimeter	10	
22	Observation of light reflexes and analysis of result	10	
23	Determination of color vision	10	
24	Determination of visual acuity by Snellen's chart.	10	
25	Determination of hearing tests: Rinne and Weber test with interpretation and analysis of result	10	
26.	Determination of specific gravity of urine	10	
27.	Demonstration of uses of computer and other IT materials (One observer station should remain in 1st professional MBBS examination in the physiology discipline)	10	

Signature of batch teacher:

Signature of head of the department:

Integrated Teaching in Physiology

Integrated teaching program on a particular topic/organ /organ system should be organized in each term. The topics which are related should be prepared after discussion with the teachers of Anatomy/Physiology/Biochemistry. The horizontal process of Integrated teaching program will help the students to have a simultaneous views of different aspects of Anatomical/Physiological/Biochemical details of a particular topic/organ /organ system.

TOPICS	LEARNING OBJECTIVES	TERM	DEPARTMENT
1. Cell	Students will be able to • describe the structure & functions of different constituents of cell • explain membrane transport, membrane potentials & action potentials • state the composition of ECF & ICF compartments	I	Anatomy Physiology Biochemistry
2.Heart	Students will be able to • describe the gross anatomy & clinical anatomy of heart • describe the types & regulation of blood pressure • describe the physiologic basis of shock management • describe & interpret the cardiac markers	I	Anatomy Physiology Biochemistry
3.Lung	Students will be able to describe • the gross anatomy & clinical anatomy of **lungs** • the spirometry & its clinical application • the regulation of respiration	I	Anatomy Physiology Biochemistry
4. Hepatobiliary system	Students will be able to • describe the gross anatomy & clinical anatomy of hepato-biliary system • interpret the liver function test & explain its clinical importance • explain the role of liver in metabolism	II	Anatomy Physiology Biochemistry
5.Kidney	Students will be able to • describe the gross anatomy & clinical anatomy of kidney • explain the mechanism of urine formation • interpret kidney function test • explain the renal chemistry in relation to water, electrolytes & acid base balance	II	Anatomy Physiology Biochemistry
6.Pancreas	Students will be able to • describe the gross anatomy & clinical anatomy of pancreas • hormones of islets of Langerhan's of pancreas • functions ,mechanism of action & regulations of secretion of insulin • causes & consequences of hyper & hypoglycaemia • laboratory diagnosis of diabetes mellitus	II	Anatomy Physiology Biochemistry

TOPICS	LEARNING OBJECTIVES	TERM	DEPARTMENT
7.Adrenal gland	Students will be able to describe • the gross anatomy & clinical anatomy of adrenal gland • the functions ,mechanism of action & regulation of secretion of adrenal hormones • hypo & hyperadrenalism	III	Anatomy Physiology Biochemistry
8. Thyroid & Parathyroid gland	Students will be able to describe • the gross anatomy & clinical anatomy of thyroid & parathyroid gland • the hormones of thyroid & parathyroid gland : biosynthesis , transport functions ,mechanism of action & regulation of secretion • hypo & hyperthyroidism • tetany • Thyroid function tests & their interpretation	III	Anatomy Physiology Biochemistry
9. Pituitary gland	Students will be able to describe • the gross anatomy & clinical anatomy of pituitary gland • hormones of pituitary gland : functions ,mechanism of action & regulation of secretion • hypo & hyperpituitarism	III	Anatomy Physiology Biochemistry
10. Sensory system & Motor system	Students will be able to describe • receptors, synapse & sensory pathways • the pyramidal system, extrapyramidal • system cerebellum, basal nuclei & their disorder • the different types of neurotransmitter & their functions	III	Anatomy Physiology Biochemistry
11. Information Technology (IT)	Students will be able to describe, demonstrate and usees of - • IT materials • World wise web (www) • Email and Email address • MS word, MS excel, MS power point etc	III	11 Departments Anatomy Physiology Biochemistry Community Medicine Pathology Microbiology Forensic Medicine Pharmacology Medicine Surgery Gynecology & Obstetrics

Biochemistry

Departmental Objective

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

- demonstrate basic knowledge on major biomolecules, enzymes, hormones and nutrients and of fundamental chemical principles involved in body mechanism upon which life process depends
- demonstrate skills in performing and interpreting Bio-chemistry laboratory tests and procedures with emphasis on those used in Bangladesh
- demonstrate skills in using the modern biochemical appliances
- equip themselves with requisite knowledge for higher studies and research
- develop sound attitude towards the need for continuing self education

List of Competencies to acquire:

After completing the course of biochemistry in MBBS course the students will-

1) apply the impact of biochemistry in medicine.
2) acquinted the biomolecules forming the structure of the human body, their functions and their role in health and diseases.
3) explain the role of enzymes in the diagnosis and treatment of diseases.
4) identify the source of energy in human body and the process by which this energy is derived from food.
5) explain metabolism of the body in fed and fasting state and consequences of prolonged starvation.
6) explain the role of liver in metabolism and derangement of metabolism in impaired liver function. Explain dyslipidemia and their clinical consequence
7) describe the water and electrolyte content of human body and their functions. Know the types, causes and consequences of dehydration and over hydration. Explain the causes the consequences of electrolyte imbalance.
8) describe the sources of acids and bases in our body and the mechanism of their normal balance. Explain the causes and consequences of acidosis and alkalosis and the parameters to diagnose them.
9) demonestrate about nutrients, balanced diet. Describe the common nutritional disorders of our country and their causes and consequences.
10) describe the components of balanced diet and explain the basic principles of making a diet chart. Attain the skill to assess nutritional disorders anthropometrically.
11) explain the basis of genetics and molecular biology and the common genetic disorders and explain the modern technology in molecular biology in the diagnosis and treatment of diseases.
12) diagnose diabetes mellitus, impairment of renal, liver and thyroid functions.

Attain the skill to perform and interpret the common biochemical tests in the diagnosis of diseases. Attain the skill to perform common bedside biochemical tests.

Distribution of teaching - learning hours

Lecture	Tutorial	Practical	Total teaching hours	Integrated teaching for Phase I	Formative Exam		Summative exam	
					Preparatory leave	Exam time	Preparatory leave	Exam time
120 hours	100 hours	100 hours	320 hrs	30 hrs	35 days	42 days	30 days	30 days
(Time for exam. preparatory leave and formative & summative assessment is common for all subjects of the phase)								

Teaching - learning methods, teaching aids and evaluation

Teaching Methods			Teaching aids	In course evaluation
Large group	Small group	Self learning		
Lecture Integrated teaching	Tutorial Practical Demonstration Problem solving	Assignment, self assessment and self study.	OHP Video tapes, Audio player Slide Projector Charts, Flip charts, Models, Specimens White board and marker Chalk board and chalk Computer and multimedia Study guide and manuals	• Item Examination (oral & or written) • Card final (written) • Practical examination (OSPE & traditional practical) • Term Examination • Term final (written, oral+ practical [OSPE & traditional])

Related Equipments:

Glass wares, micropipette, distilled water plant, p^H meter.

Laboratory equipments:

Photoelectric colorimeter, Centrifuge machine, Incubator, Water bath, Hot air oven, Height and weight measuring instrument.

1st Professional Examination:

Marks distribution of Assessment of Biochemistry:

Total marks – 400

- Written=200 (Formative- 20+MCQ- 40+SAQ-140)
- SOE=100
- Practical= 100 (OSPE-50+ Traditional-40 +Note Book-10)

Learning Objectives and Course Contents in Biochemistry
Biophysics & Biomolecules

Learning Objectives	Contents	Teaching Hours
At the end of the course, students will be able to: • define biochemistry and explain its importance in medicine. • define solution, standard solution and types of standard solution. • describe colloid and crystalloid with example, define dialysis and mention its biomedical importance. • define p^H, p^K and p^H scale and mention their importance. • define acid, base, strong acid and weak acid. • define buffer. State the body fluid buffers with their basic mechanism of action. • state Handerson Hasselbach equation and its importance. • define and classify isotope. State its biomedical importance. • define and classify carbohydrates, Mention the sources and importance of biologically important monosaccharides, disaccharides and polysaccharides. • describe the reducing property of carbohydrate. • define amino acid, peptide, polypeptide and protein. • state their sources and functions. • describe the structure of protein and denaturation of protein. • define and classify lipids, state their sources, functions and biomedical importance. • define and classify fatty acids, state their sources, function and biomedical importance, mention eicosanoids & their synthesis. • state the sources and importance of essential fatty acids, omega-3 fatty acid, and omega-6 fatty acid. • define steroids and sterols. • describe the sources, and biomedical importance of cholesterol. • define and classify enzymes, describe the factors affecting enzyme activity. • define isoenzyme with example and mention their clinical application. • state the biomedical importance of enzyme. • co-factors and mention their functions.	**CORE:** • Introduction to Biochemistry • Concept of solutions • Colloids and crystalloids. • Concept of pH and buffer. • Concept of isotope. • Concept of Biomolecules: Carbohydrates. • Amino acids and proteins. • Lipids and fatty acids. • Enzymes	Lecture: 20 hours Tutorial: 25 hours Practical: 20 hours Total teaching hours : 65 hours

Food, Nutrition, Vitamins and Minerals

Learning Objectives	Contents	Teaching Hours
At the end of the course, students will be able to: • define and explain nutrients, essential nutrients, macro and micro nutrients, food, proximate principles of food, diet, balanced diet. • state the full meaning of the abbreviations- MR, BMR, BMI, SDA, DRI, RDA, and also define and explain them. • state the basis of calculating the calorie requirement of a person. • describe the sources, requirement and function of carbohydrate as nutrient and describe the importance of fibers in diet. • state glycaemic index(GI). • describe sources, requirement and function of protein as nutrients; mention the name and significance of essential amino acid; state the biological value of protein. • describe the sources, requirement and function of lipids as nutrients. • mention the sources and nutritional role of polyunsaturated fatty acids. • define and classify vitamins. • describe the sources, function, RDA, deficiency disorders of water soluble vitamins. • describe the sources, functions, RDA, deficiency disorders and toxicity of fat soluble vitamins. • state the role of minerals as nutrients, define trace elements. • state the importance of minerals: sodium, potassium, calcium, iron, iodine, fluoride, selenium, manganese, copper, zinc etc. • describe iron metabolism. • state and describe the phenomenon of the common nutritional disorders e.g. PEM, night blindness, goiter, obesity.	**CORE:** • Basic concepts of food, nutrition and dietary principles. • Energy balance and calculation of energy equivalent of food. • Nutritional aspect of carbohydrates, fats and proteins, Fibers. • Vitamins and minerals. • Common Nutritional disorders.	Lecture: 18 hours Tutorial : 15 hours Practical: 10 hours Total teaching hours: 43 hours

Digestion, Absorption, Bioenergetics and Metabolism

Learning Objectives	Contents	Teaching Hours
At the end of the course, students will be able to: • define digestion, absorption, metabolism, anabolism, and catabolism. • describe the phases of metabolism, enumerate digestive juices, their composition and functions, enumerate local hormones of GIT, their source and functions. • describe biological oxidation, respiratory chain and oxidative phosphorylation. • enumerate high and low energy compounds, describe ATP. **Carbohydrate Metabolism:** • state the names and sources of digestive enzymes, their location and process of digestion and absorption of carbohydrate. • define glycolysis and describe the pathway, state the conversion of pyruvate to lactate, acetyl CoA and oxaloacetate. • calculate the amount of energy liberated in glycolysis and oxidative decarboxylation of pyruvate. • describe citric acid cycle and explain why it is called an amphibolic and final common metabolic pathway. • calculate the amount of energy liberated in TCA cycle and total energy liberated from complete oxidation of a mole of glucose in aerobic and in anaerobic conditions. • define glycogenesis and glycogenolysis and state their role in storage and supply of glucose to meet body's demand. • state the importance of HMP pathway. • define gluconeogenesis and describe its process and importance. • describe glucose homeostasis and mention its importance, • state the glucostatic functions of liver with other biochemical functions.	**CORE:** • Introduction to metabolism • Biological oxidation, respiratory chain and oxidative phosphorylation. • High and low energy compounds. ATP • Phases of metabolism (digestion, absorption and intermediary metabolism) • Glycolysis • Citric acid cycle • Glycogenesis and glycogenolysis • Hexose monophosphate shunt • Gluconeogenesis • Blood glucose homeostasis • Cori cycle	Lecture: 30 hours Tutorial: 18 hours Practical: 25 hours Total teaching hours: 73hours

Learning Objectives	Contents	Teaching Hours
Lipid Metabolism • state the name and sources of digestive enzymes, their location and process of digestion and absorption of lipids (triacylglycerol, phospholipids, cholesterol esters) • enumerate the blood lipids with their sources and mention the anabolic and catabolic pathways of lipid metabolism. • describe the process of degradation of triacylglycerol. • state the processes of fatty acid oxidation and describe beta-oxidation of even and odd chain fatty acids. • state the sources and fate of acetyl-CoA. • name the ketone bodies. • describe ketogenesis and fate of ketone bodies, state the biomedical importance of ketone bodies. • define ketosis and mention the causes of ketosis and describe its pathogenesis. • enumerate the lipoproteins, state its general structure and functions, describe the metabolism of chylomicron, VLDL, LDL and HDL cholesterol, explain the clinical importance of LDL & HDL cholesterol. • state the role of HMG-CoA reductase in regulation of blood cholesterol level. • define eicosanoids, mention the basic steps of their synthesis.	**CORE:** • Digestion and absorption of lipid. • Blood lipids and pathways of lipid metabolism. • Triglyceride metabolism. • Beta-oxidation • Ketogenesis and ketosis. • Lipid transport and lipoprotein metabolism. • Ecosanoids.	

Learning Objectives	Contents	Teaching Hours
Protein Metabolism • state the name and sources of digestive enzymes, their location and process of digestion and absorption of protein. • state the concept of protein turnover, amino acid pool • define nitrogen balance, mention its types and state the routes of nitrogen loss. • state the pathways of amino acid catabolism. • define and describe transamination and deamination. • describe sources and way of disposal of ammonia, explain ammonia intoxication • describe the urea cycle including sites, reactions and importance of the cycle.	• **<u>CORE:</u>** • Digestion and absorption of protein • Protein turnover, common amino acid pool,nitrogen balance • Pathways of protein metabolism • Deamination and transamination. • Fate of amino acid in the body • Source and disposal of ammonia **<u>ADDITIONAL:</u>** • Role of liver in over all metabolisms. • **Integrated metabolism** Metabolic adjustment of fed, fasting and starvation state.	

Renal biochemistry, body fluid, electrolytes and acid-base balance

Learning Objectives	Contents	Teaching Hours
At the end of the course, students will be able to : • define GFR, plasma load, tubular load, transport maximum, renal threshold, plasma clearance, osmolar clearance and free water clearance, describe mechanism of acidification of urine. • state the body fluid compartments and state the composition of ECF and ICF • state water turn over, water intake and output, describe volume homeostasis (water balance), enumerate volume disorders with example, define water intoxication. • explain the importance of major electrolytes (Na^+, K^+, Ca^{++}, Mg^{++} and PO_4^{--}) and mechanism of their homeostasis. • describe acid base homeostasis & state the simple acid base disorder with causes of acidosis and alkalosis and mechanism of their compensation and correction. • state acid base parameters, anion gap and base excess, • state the role of kidneys in water, electrolyte and acid-base balance. • state abnormal constituents in urine with normal urine volume and obligatory urine volume, explain limiting p^H of urinr. • define and classify diuresis with example.	**CORE:** **Renal biochemistry in relation to water, electrolytes and acid base homeostasis** • Total body water and body fluid compartments. Composition of body fluids. • Regulation of normal water balance. • Major electrolytes and their homeostasis. • Volume disorders. • Acid base homeostasis & disorders.	Lecture: 20 hours Tutorial: 12 hours Practical: 20 hours Total teaching hours: 52 hours

Clinical Biochemistry and clinical endocrinology

Learning Objectives	Contents	Teaching Hours
At the end of the course, students will be able to: • state the basic concepts of clinical biochemistry. • mention measurements of unit, SI unit • state the laboratory hazards with its types. • state the normal level of serum bilirubin and mechanism of causation of jaundice. • describe the common liver function tests with interpretation. • explain the basis of application of clinical enzymology in disease. • state the lipid profiles of blood & their clinical importance. • state the causes and consequence of hyperglycaemia and hypoglycaemia. • state the laboratory diagnosis of diabetes mellitus, OGTT and its interpretation, define IFG, IGT and HBA_{1c}. • state renal function tests, define proteinuria and microalbuminuria • state thyroid function tests with interpretation.	**CORE:** • Introduction to clinical biochemistry. • Normal biochemical values in conventional and Sl. Units. • Clinical enzymology related to liver and myocardial diseases. • Lipid profiles and dyslipoproteinemias. • Organ function tests (liver, kidney & thyroid) • Diagnosis of diabetes mellitus • Bilirubin metabolism and Jaundice. • Proteinuria and microalbuminuria	Lecture: 14 hours Tutorial : 15hours Practical : 20 hours Total teaching hours : 49 hours

Fundamentals of Molecular Biology and genetics

Learning Objectives	Contents	Teaching Hours
At the end of the course, students will be able to: • explain chemistry, & functions of nucleic acid, nucleosides, and nucleotides. • describe the structure and functions of DNA. • describe the structure, types and functions of RNA. • describe DNA organization, cell cycle and genetic code. • describe the the central dogma & processes of replication of DNA, • define gene, allele, genome, genotype, phenotype, trait, and codon. • describe transcription and post transcriptional modification. • describe translation and post translational modification. • explain the concepts & application of medical Biotechnology • explain the concepts & application of recombinant DNA technology. • explain the concept of DNA cloning, PCR, Polymorphism. • define and classify mutations, mutagens.	**CORE:** • Basic concepts of molecular biology. • Nnucleic acid, nucleosides, and nucleotides. • Replication, transcription and translation. • Gene, genome, allele, trait, genetic code, mutation, mutagens. • PCR, DNA cloning, recombinant DNA technology • Biomedical aspects of medical biotechnology: understanding & application.	Lecture: 18 hours Tutorial : 15 hours Practical : 05 hours Total teaching hours : 38 hours

Biochemistry practical

Learning Objectives	Contents	Teaching Aids	Teaching Hours
Students will be able to: • list the laboratory hazards and the precautions to prevent them. • identify the different laboratory glass wares and equipments. Mention their uses. • prepare different type of standard solution from supplied solute, solvent and standard solution. • identify different parts of photoelectric colorimeter. Demonstrate its technique and the basic principle of calculation. • perform different biochemical tests according to given method and manual. • know the clinical indication of performing biochemical tests. • interpret biochemical values to apply in clinical situations.	**CORE** • Identification of laboratory glass wares and equipment. • Preparation of solutions. • Photometry. • Estimation, demonstration of technique, calculation and interpretation of result: • Blood glucose estimation. • Serum cholesterol estimation. • Serum urea • Serum creatinine • Serum total protein • Serum bilirubin • Abnormal constituents of urine and their clinical significance.	• OHP • Video tapes, Audio player. • Charts , Flip charts, Models, Specimens • White board and marker • Chalk board and chalks • Computer and multimedia • Study guide and manuals • Glass ware, micropipette • Distil water plant • pH meter • Laboratory equipments: • photoelectric colorimeter • Centrifuge machine • Incubator • Water bath • Hot air woven • Height and weight measuring instrument	**100 hours**

Evaluation of Biochemistry
Summative Assessment (1st Professional Examination)

Components	Marks	Total Marks
Formative assessment	10+10	20
WRITTEN EXAMINATION Paper – I- MCQ SAQ Paper - II- MCQ SAQ	 20 70 20 70	180
PRACTICAL EXAMINATION OSPE Traditional methods Practical Note Book	 50 40 10	100
ORAL EXAMINATION (Structured)		100
Grand Total		**400**

- OMR sheet will be provided for MCQ.
- Pass marks 60 % in each of theoretical, oral and practical.

Continuous Assessment Card

Card No- 1. Biophysics and Biomolecules

No.	Items	Marks(10 in each item)	Initials and date
1.	Introduction of biochemistry, acid, base, p^H, p^K, buffer, Henderson-Hasselbalch equation.		
2.	Solutions, crystalloid, colloid, dialysis and isotopes.		
4.	Carbohydrates.		
5.	Lipids		
6.	Amino Acids and Protein.		
7.	Enzymes, coenzymes, cofactors, isoenzsymes		

Card No- 2. Food, nutrition and vitamins

No	Items	Marks(10 in each item)	Initial and date
1.	Basic concepts of Nutrient,food, diet, balanced diet, essential dietary components, , total calorie calculation,DRI, RDA, MR, BMR, BMI, SDA.		
2.	Dietary fibers, nutritional importance of carbohydrate, lipid & protein, glycaemic index (GI) of food.		
3.	Minerals- (macro & micro), trace elements, common nutritional disorders, PEM, BMI. obesity, iron metabolism and its deficiency, iodine deficiency		
4.	Water soluble vitamins		
5.	Fat soluble vitamins		

Card No- 3. Digestion, absorption, bioenergetics and metabolism

No	Items	Marks(10 in each item)	Initial and date
1.	**Digestive juices**, local hormone of GIT, digestion & absorption of carbohydrate, lipid, protein.		
2.	**Bioenergetics-** biological oxidation, high energy phosphates, oxidative phosphorylation, respiratory chain. metabolism-definition, phases; anabolism, catabolism		
3.	**Carbohydrate metabolism-** glycolysis, fate of pyruvate, TCA cycle, HMP pathway, gluconeogenesis, glycogenesis, glycogenolysis, blood glucose regulation.		
4.	**Lipid metabolism:** lipolysis, Beta-oxidation of fatty acid, fate of Actyl-CoA, ketone bodies, ketosis & its pathoghenesis. Lipoproteins & their metabolism, Cholesterol metabolism.		
5.	**Protein metabolism:** Amino acid pool, Transamination, Deamination. Source & fate of ammonia, ammonia intoxication, Urea cycle.		

Card No- 4. Renal biochemistry, body fluid, electrolytes and acid base balance

No	Items	Marks(10 in each item)	Initial and date
1.	**Renal biochemistry-** GFR, tubular load, TM, renal threshold, plasma clearance, osmolar clearance, free water clearance, acidification of urine.		
2.	**Body fluid-** Body fluid compartments, daily water intake & output, water turnover, body fluid volume regulation, volume disorders and diuresis.		
3.	**Acid-Base Balance-** origin of acids & bases, maintenance of static blood p^H. Acid base disorders, their compensation & coprrection, anion gap and base excess.		
4.	**Serum Electrolytes-** Serum electrolytes & their reference ranges. Functions, regulations, hypo & hyper states **o**f serum $[Na^+]$, $[K^+]$ $[Ca^{++}]$ & $[PO_4^{--}]$		

Card No- 5. Clinical biochemistry and clinical endocrinology

No	Items	Marks(10 in each item)	Initial and date
1.	Clinical biochemistry- S I unit, Laboratory hazards, Sample collection, Photometry. Clinical enzymology, lipid profiles of blood.		
2.	Clinical enzymology and lipid profiles of blood.		
3.	Diagnosis of diabetes mellitus.OGTT, IGT, IFG and $HbA_{1C.}$		
4.	Thyroid function tests and interpretation.		
5.	Commonly done LFT. Jaundice.		
6.	Renal function tests and interpretation.		

Card No- 6. Fundamental of molecular biology and genetics

No	Items	Marks(10 in each item)	Initial and date
1.	Nucleic acids, nucleotides, DNA, RNA, DNA organization, Cell cycle.		
2.	The central dogma, Genome, Gene, Genetic code, Codon, Mutation, mutagens, Genotype, Phenotype, trait, allele.		
3.	Replication, Transcription and post transcriptional modification,		
4.	Translation and post translational modification.		
5.	Recombinent DNA technology, PCR, Cloning.		

Total Teaching Hours for Biochemistry

System	Lecture	Tutorial	Practical	Integrated teaching
1. Biophysics and biomolecules'	20	25	20	
2. Food, nutrition, vitamins and minerals	18	15	10	
3. Digestion, absorption, bionergetics and metabolism	30	18	25	
4. Body fluids, electrolytes and acid base balance	20	12	20	
5. Clinical biochemistry and clinical endocrinology	14	15	20	
6. Molecular Biology and genetics (Fundamentals)	18	15	05	
Total Teaching Hours: (350)	**120**	**100**	**100**	**30**

Academic Calendar for Biochemistry

First Term				
System(Two)	**Lectures**	**Tutorials**	**Practical**	**Seminar**
Card-1.Biophysics and biomolecules and	20 hrs.	25 hrs.	20 hrs.	2 hrs.
Card-2. Food and Nutrition	18 hrs.	15 hrs.	10 hrs.	1 hrs.
	38 hrs.	40 hrs.	30 hrs.	3 hrs.

Second Term				
System(Two)	**Lectures**	**Tutorials**	**Practical**	**Seminar**
Card-3.Digestion,absorption, bioenergetics and metabolism	30 hrs.	18 hrs.	25 hrs.	2 hrs.
Card-4.Bodyfluids, electrolytes,renal chemistry and acid base balance	20 hrs.	12 hrs.	20 hrs.	1 hrs.
	50 hrs.	30 hrs.	45 hrs.	3 hrs.

Third Term				
System (Three)	**Lectures**	**Tutorials**	**Practical**	**Seminar**
Card-5.Clinical biochemistry and clinical Endocrinology	14 hrs.	15 hrs.	20 hrs.	02 hrs.
Card-6.Molecular Biology	18 hrs.			
	32 hrs.	15 hrs.	05 hrs.	02 hrs.
		30 hrs.	25 hrs.	04 hrs.

Integrated Teaching in Biochemistry

Integrated teaching program on a particular topic/organ /organ system should be organized in each term. The topics which are related should be prepared after discussion with the teachers of Anatomy/Physiology/Biochemistry. The horizontal process of integrated teaching program will help the students to have asimultaneous views of different aspects of Anatomical/Physiological/Biochemical details of a particular topic/organ /organ system.

TOPICS	LEARNING OBJECTIVES	TERM	DEPARTMENT
1. Cell	Students will be able to • describe the structure & functions of different constituents of cell • explain membrane transport, membrane potentials & action potentials • state the composition of ECF & ICF compartments	I	Anatomy Physiology Biochemistry
2.Heart	Students will be able to • describe the gross anatomy & clinical anatomy of heart • describe the types & regulation of blood pressure • describe the physiologic basis of shock management • describe & interpret the cardiac markers	I	Anatomy Physiology Biochemistry
3.Lung	Students will be able to • describe the gross anatomy & clinical anatomy of lung • describe the spirometry & its clinical application • describe the regulation of respiration	I	Anatomy Physiology Biochemistry
4. Hepatobiliary system	Students will be able to • describe the gross anatomy & clinical anatomy of hepatobiliary system • interprete the liver function test & explain its clinical importance • explain the role of liver in metabolism	II	Anatomy Physiology Biochemistry
5.Kidney	Students will be able to • describe the gross anatomy & clinical anatomy of kidney • explain the mechanism of urine formation • interpret e kidney function test • explain the renal chemistry in relation to water, electrolytes & acid base balance	II	Anatomy Physiology Biochemistry

TOPICS	LEARNING OBJECTIVES	TERM	DEPARTMENT
6.Pancreas	Students will be able to • describe the gross anatomy & clinical anatomy of pancreas • describe hormones of islets of Langerhan' s • describe functions ,mechanism of action & regulations of secretion of insulin • describe causes & consequences of hyper & hypoglycaemia • describe laboratory diagnosis of diabetes mellitus	II	Anatomy Physiology Biochemistry
7.Adrenal gland	Students will be able to • describe the gross anatomy & clinical anatomy of adrenal gland • describe the functions ,mechanism of action & regulation of secretion of adrenal hormones • describe hypo & hyperadrenalism	III	Anatomy Physiology Biochemistry
8. Thyroid & Parathyroid gland	Students will be able to • describe the gross anatomy & clinical anatomy of thyroid & parathyroid gland • describe the hormones of thyroid & parathyroid gland : biosynthesis , transport functions ,mechanism of action & regulation of secretion • describe hypo & hyperthyroidism • describe tetany • describe thyroid function tests & their interpretation	III	Anatomy Physiology Biochemistry
9. Pituitary gland	Students will be able to • describe the gross anatomy & clinical anatomy of pituitary gland • describe Hormones of pituitary gland : functions ,mechanism of action & regulation of secretion • describe Hypo & hyperpituitarism	III	Anatomy Physiology Biochemistry
10. Sensory system & Motor system	Students will be able to • describe receptors ,synapse & sensory pathways • describe the pyramidal and extrapyramidal system • describe cerebellum, basal nuclei & their disorder • describe the different types of neurotransmitter & their functions	III	Anatomy Physiology Biochemistry

Community Medicine

Departmental Objectives

General objective:

To produce medical graduates to meet community health needs and demands of the country.

Specific objectives:

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

- provide comprehensive health care to the people
- deliver primary health care and essential services package
- conduct epidemiological studies on common health problems
- organise health education sessions in the community / OPD
- provide health care with appropriate attitudes
- work as a member of health team
- co-ordinate with national and international health organizations and national health programmes

List of Competencies to acquire :

1. Identify health needs and problems of the community and prioritise them.
2. Take measures to meet health needs and problems
3. Provide comprehensive health care to the community
4. Organize health education sessons at the level of community
5. Collect and compile sociodemographic data from the community
6. To manage mass casuality incident
7. Conduct community based research work and write report

Distribution of teaching - learning hours

Lecture	Tutorial	Practical	Integrated Teaching	Total	Formative Exam		Summative exam	
					Preparatory leave	Exam time	Preparatory leave	Exam time
110 hrs	160 hours	COME (community based medical education):30 days (10 days day visit + 10 days RFST+ 10 days study tour)	5 hrs	275 hrs + 30 days	15 days	15 days	15 days	20 days
(Time for exam. preparatory leave and formative and summative assessment is common for all subjects of the phase)								

Teaching-learning methods, teaching aids and evaluation

Teaching Methods				Teaching aids	In course evaluation
Large group	Small group	Self learning	Others		
Lecture Video show	Demonstration Tutorial: Classroom exercise Question answering session Brain-storming and discussion Role play Problem solving exercise	Assignment, Self study	RFST, Day visit, Study tour	Multimedia, OHP, Slide projector Chalk board, Flip chart, Handout / Charts, Reading materials, Paper cutting /Film strip, Textbook Questionnaire, Video film or slide tape.	• Item Examination • Card final • Term Examination • Term final (written, oral+ practical)

2nd Professional Examination :

Marks distribution of Assessment of Community Medicine:

Total marks – 300

- Written =100 (MCQ-20, SAQ-70+ formative assessment marks 10)
- Structured oral examination= 100
- Practical (Conventional Practical / OSPE, RFST including Survey Report, Study Tour Report and Report on Day Visit)=100

Related Equipments:

Weighing machine, Sakip's tape/Measuring tape, Growth chart, Specimen and model, Posters and diagram, Laboratory equipment (to be procured)

Learning Objectives and Course Contents in Community Medicine

Concept of Public Health, Community Medicine, Health and Disease

Learning Objectives	Contents	Teaching hours
Students will be able to: 1. define: Community, Community medicine, Public Health, Comprehensive health care, Hygiene, Health, Disease, Preventive medicine, Social medicine, Family medicine 2. explain epidemiological triad in causation of disease 3. classify agents for causation of diseases 4. list the host factors responsible for diseases 5. describe the environmental factors of disease causation 6. illustrate the natural history of disease. 7. describe the multifactorial aetiology of disease 8. describe social factors related to health 9. mention the health indicators and their interpretations 10. describe common health and social problems of Bangladesh	**CORE** • Concept of Public Health and Community Medicine • Concept of Health and Disease • Common Health and Social problems • Health Team Concept • Changing concepts of Public Health and Health • Natural history of disease • Indicators and Determinants of Health • Prevention and Intervention of Diseases • Characteristics of Ideal Health Care	L =10 T =10

Behavioural Science

Learning Objectives	Contents	Teaching hours
Students will be able to: 1. define: Behaviour Behavioural science Anthropology Psychology Sociology Society, Family, Culture Motive and Motivation Personality and IQ 2. describe the elements of medical psychology 3. explain the concepts of perception, cognition, learning, motivation, emotion, attitude 4. state the effects of culture and custom factors on health 5. describe the impact of urbanization on health and disease 6. value the importantce of doctor-patient relationship for effective health care services 7. describe different types leadership and mention the characteristics of an ideal leader 8. describe the role of family in health and illness	**CORE** • Concept of Behavioural Science • Components of Behavioural Science. • Perception, Learning, Motivation, Attitude, Emotion • Social, Cultural and Psychological Factors In Health and Illness • Doctor-Patient Relationship • Family and Society • Social Change In Health and Disease • Behavioural Change Communication (BCC) • Intelligence • Personality • Leadership	L = 6 T = 10

Health Communication & Health Education

Learning Objectives	Contents	Teaching hours
<u>Health Communication</u> **Students will be able to:** 1. define and classify communication 2. state functions of communication 3. state the elements of communication 4. classify methods and media for communication 5. mention communication skills 6. describe barriers of communication **<u>Health Education</u>** **Students will be able to:** 1. define health education 2. state the objectives, principles, contents, approaches of health education 3. state the stages of adoption of new ideas and practices	**CORE** **Health Communications:** • Functions • Elements • Barriers • Media and methods **Health Education:** • Objectives • Contents • Principles • Approaches • Stages of adoption of a new idea	L = 4 T = 10
Medical Entomology		
Students will be able to: 1. define and classify arthropods of medical importance 2. describe the morphology and lifecycle of important arthropods 3. enumerate the vector borne diseases 4. describe the principles of vector control measures 5. use specific insecticides	• Classification of Arthropods of medical importance • Metamorphosis of Arthropods • Arthropod-borne diseases. • Principles of Vector/Arthropod control measures • Insecticides	L = 4 T = 6

Biostatistics

Learning Objectives	Contents	Teaching hours
Students will be able to: 1. define Bio-statistics and Vital statistics 2. define and classify data 3. define and classify variable 4. define: study population, sample, sample size; 5. describe sampling techniques 6. calculate central tendency: mean, median, mode 7. calculate measure dispersion: variance, standard deviation (SD); 8. analyse and present data accordingly such as: table and graphs etc. 9. describe normal distribution curve	• Introduction to Bio-statistics • Uses of Bio-statistics • Vital statistics • Data and Variable • Sample and Sampling techniques • Methods and Tools of data collection • Interpretation of data • Analysis and Presentation of data • Measures of central tendency • Measures of dispersion • Normal distribution curve.	L = 4 T = 8

Environment & Health

Learning Objectives	Contents	Teaching hours
Students will be able to: 1. define environment and describe its components **Water** 2. mention the criteria of safe and wholesome water 3. state the sources, uses and requirement of water 4. mention types of water impurities 5. explain the principles and methods of purification of water 6. state the water quality standards for drinking water 7. state the water borne diseases **Air and ventilation** 8. state the composition of air and indicators of air pollution 9. state the air pollutants and their sources 10. describe the effects of air pollution on health 11. describe the methods of prevention and control of air pollution 12. define and classify ventilation 13. describe effects of ill ventilation on health 14. describe the impact of climate change and global green house effect **Light** 15. state criteria of good lighting 16. mention measurements of light 17. describe effect of improper lighting on health **Noise** 18. describe the sources and properties of noise 19. mention the acceptable noise levels 20. state effects of noise exposure 21. describe the control measures of noise **Radiation** 22. state the sources and types of radiation 23. state effects of radiation on health 24. describe measures of radiation protection	• Environment and its components **Water** • Safe and wholesome water • Sources, uses and requirement of water • Water impurities • Principles and methods of purification of water • Water quality standards for drinking water • Water borne diseases **Air and ventilation** • Composition of air • Air pollutants and their sources • Indicators of air pollution • Effects of air pollution on health • Methods of prevention and control of air pollution • Ventilation • Climate change and green house effect **Light** • Criteria of good lighting • Measurements of light • Effect of improper lighting on health **Noise** • Sources and properties of noise • Acceptable noise levels • Effects of noise exposure • Control measures of noise **Radiation** • Sources and types of radiation • Effects of radiation on health • Measures of radiation protection	L = 10 T = 12

Learning Objectives	Contents	Teaching hours
Housing 25. state the criteria of healthful housing and housing standards 26. describe the effects of poor housing **Disposal of solid waste** 27. define solid waste and mention its sources 28. mention health hazards of solid wastes 29. state the methods of solid wastes disposal and medical biotechnology **Excreta disposal** 30. state the methods of excreta disposal 31. explain sanitation barrier 32. mention the diseases borne by human excreta	**Housing** • Criteria of healthful housing • Housing standards • Effects of poor housing **Disposal of solid waste** • Solid waste and its sources • Methods of disposal and medical biotechnology • Health hazards of solid wastes **Excreta disposal** • Methods of excreta disposal • Sanitation barrier • Diseases borne by human excreta	

Immunity, Immunization

Learning Objectives	Contents	Teaching hours
Student will be able to 1. define and classify immunity 2. classify immunizing agents 3. state immunization schedule 4. list adverse effects ollowing immunization 5. explain herd immunity 6. describe EPI and NID 7. define cold chain and mention its equipments 8. explain the importance of maintaining cold chain at different levels 9. describe left out and drop out in EPI 10. describe Disinfection and sterilization	**CORE** **Immunity and Immunization** • Immunization • Immunizing agents • Immunization schedule • Adverse Events following Immunization • Herd immunity • EPI and NID • Cold chain • Left out and drop out	L = 4 T = 8

Public Health Nutrition

Learning Objectives	Contents	Teaching hours
Students will be able to: 1. classify food and its sources 2. assess nutritional status: • collect, record and interpret the data on Road to Health Card (growth chart) • estimate BMI 3. state normal values and range of indices used for growth monitoring, nutritional status and grading of PEM 4. identify different types Vitamin deficiency diseases 5. state minerals and trace elements essential for health 6. assess the prevalence and types of malnutrition in the community by different methods: a. dietary survey b. anthropometry c. clinical examination 7. enumerate the food borne, milk borne diseases and food intoxication 8. state methods of milk purification, specially process of pasteurization 9. state the process of humanization of cow's milk ,explain balanced diet	• Types of foods and its sources • Balanced diet • Protein Energy Malnutrition (PEM) • Vitamins and their deficiency diseases. • Minerals and trace elements • Assessment of nutritional status • Calorie requirements of different groups • Food borne, milk borne diseases and food toxins • Pasteurization • Food adulteration, additives and fortification • Humanization of cow's milk	L = 8 T = 8

Principles of Epidemiology

Learning Objectives	Contents	Teaching hours
Students will be able to: 1. define epidemiology 2. state the aims and use of epidemiology 3. explain the components of epidemiology 4. define terms related to epidemiology: Communicable disease, Non-communicable disease, Infection, Infestation, Contamination, Infectious disease, Contagious disease, Period of communicability, Incubation period. Sporadic disease, Endemic disease, Epidemic disease, Pandemic disease, Zoonotic disease, Disease prevention, Disease control, Elimination, Eradication, Isolation, Quarantine	• Epidemiology: Concept Components Aims and uses Approaches Measurements and tools • Epidemiological triad • Definition of Epidemiological terms and conditions • Methods of epidemiological studies • Epidemic and its investigation • Research methodology • Community diagnosis and treatment • Investigation of an epidemic • Screening tests • Dynamics of transmission of communicable diseases • Principles of prevention and control of communicable diseases • Monitoring • Surveillance	L = 10 T = 16

Learning Objectives	Contents	Teaching hours
5. describe Epidemiological triad 6. state the approaches, measurments and tools of epidemiology 7. classify epidemiological studies 8. describe descriptive and analytical studies 9. state the characteristics of experimental studies 10. distinguish between cross-sectional and longitudinal; cohort and case-control studies 11. describe the steps of investigations of an epidemic Outbreak 12. define and classify screening 13. define specificity, sensitivity, validity, reliability and predictive value of a screening test 14. define and classify source and reservoir 15. explain modes of transmission of diseases 16. describe the interruption of modes of disease transmission 17. describe the criteria of a susceptible host 18. describe the host defence mechanism 19. explain the steps for controlling the reservoir of infectious diseases 20. define and explain community diagnosis and community treatment 21. explain basic concepts and state contents of a scientific research. 22. develop a research protocol 23. state monitoring and servillance		

Epidemiology of Communicable & Non-Communicable Disease (NCDs)

Learning Objectives	Contents	Teaching hours
The students will be able to: 1. state the epidemiological determinants (agent, host and environmental factors) of common diseases 2. explain risk factors of NCDs 3. describe the measures of prevention of common health problems in the community, specially EPI diseases, Helminthiasis and Diarrhoeal diseases, STDs and selected vector borne diseases 4. describe the preventive measures of common health problems in the community 5. define , classify Disaster, Mass Casualty Management, triage and Accidents 6. describe Geriatric health problems 7. describe factors of substance abuse	**CORE** **Epidemiology and Prevention of:** • EPI diseases • Diarrhoeal diseases and Enteric fever • Malaria, Kala-azar, Filaria, Helminthiasis • Leprosy • Viral hepatitis, Dengue, ARI, SARS, Bird flu • Rabies, Chicken pox, Mumps, Rubella, Yellow fever • STDs • Emerging and Re-emerging Diseases **Epidemiology and Prevention of common non-communicable diseases:** • Hypertension, IHD and Stroke • Tobacco as risk factor for NCD • Rheumatic fever and RHD • Cancer • Diabetes • Obesity • Arsenicosis • Disaster • Accidents (RTA, domestic, industrial) • Mass Casualty Management (MCM) • Triage • Geriatric problems • Substance abuse	L = 25 T = 36

MCH-FP & Demography

Learning Objectives	Contents	Teaching hours

MCH
Students will be able to
1. define MMR, IMR
2. state the components of MCH care package
3. State factors influencing maternal and infant mortality and morbidity
4. State the measures for reducing maternal and infant mortality and morbidity
5. mention the organisations involved for MCH care
6. define low birth weight baby and mention its risk factors
7. describe EMONC
8. plan for interventions of low birth weight
9. describe ANC, intranatal and postnatal care
10. state Concept of IYCF
11. mention the recommended feeding practices in IYCF
12. identify the barriers of recommended IYCF practices
13. state the composition and preparation of complementary foods
14. explain advantages of breast feeding and disadvantages of formula feeding
15. advise for domiciliary and Institutional delivery
16. identify high risk mother and at risk child
	MCH
	• Objectives of antenatal, intranatal and postnatal care, advices and investigations
	• High risk mothers and at risk child
	• IMR, MMR
	• Care of under-5 children
	• IYCF (Infant and Young Child Feeding):
	  • What is IYCF
	  • Present situation of IYCF- Global and National
	  • Recommended feeding practices in IYCF
	  • Advantage of BF
	  • Disadvantages of formula feeding
	  • Composition of colostrum and mature human milk
	  • Barriers of recommended IYCF practices
	• BFHI 10 steps- special emphasis on mother support group
	  • What is Complementary Feeding (CF)?
	  • Why CF is necessary
	  • Guideline for CF
	Video on BF
	Video on IYCF
	  ▪ -Composition of food
	  ▪ -Frequency
	  ▪ -Amount
	  ▪ -Density
	  ▪ -Who provide help
	  ▪ -Responsive feeding
	  ▪ -Refusal of food
	  ▪ -CF and ongoing BF
	• -Case study
	• Domiciliary and institutional delivery
	• EMONC: Emergency Obstetric and Neonatal Care
		L= 09
		T= 16

Family planning **Students will be able to** 18. state the aims and objectives of family planning 19. list the contraceptive methods with their advantages and disadvantages 20. identify the candidates appropriate for different contraceptives 21. calculate safe period 22. define MR and abortion and state their indications 23. define eligible and target couples, CPR 24. discuss MCH based family planning **Demography** **Students will be able to** 25. define demography 26. state demographic processes 27. discuss demographic stages 28. define fertility and mention its influencing factors 29. define growth rate and population explosion 30. enumerate the factors responsible for high growth rate in Bangladesh 31. calculate GR, GFR, TFR,and NRR 32. describe population pyramid 33. define and classify census	**Family planning** • Concept of family planning • Aims and objectives of family planning • Contraceptive methods • MR and abortion • Eligible and target couples, CPR • MCH based family planning **Demography** • Definition of demography • Demographic processes • Demographic transition and indices • Population pyramid • Census • Fertility and its influencing factors	

School Health Services

Learning Objectives	Contents	Teaching hours
Students will be able to: 1. state the objectives of school health programme 2. describe the aspects/components of school health service 3. mention the task of school health medical officer 4. state health problems of school children 5. state the school health emergencies 6. mention the activities of school health clinic	**CORE** • Objectives of school health service • Aspects/components of school health service • Task of school health medical officer • Health problems of school children • School health emergencies • School health clinic	L = 4 T = 4
Occupational Health		
Students will be able to: 1. define occupational health and its objectives 2. explain various occupational environments 3. list the common occupational health hazards 4. list the locally prevailing common occupational diseases with preventive strategies of : a. Pneumoconiosis b. Occupational cancer c. Anthrax d. Occupational dermatoses 5. describe the general measures of health protection in different occupations 6. describe the health care facilities and safety measures for industries 7. state employees' benefits	• Occupational health and its objectives • Occupational environment • Occupational health hazards • Principles of prevention of occupational diseases • Employees' benefits	L = 4 T = 6

Health For All (HFA), Primary Health Care (PHC) & MDG

Learning Objectives	Contents	Teaching hours
Students will be able to: 1. define PHC and HFA 2. explain principles of PHC 3. list the components of PHC 4. list the components of ESP 5. involve community in identifying priority health problems 6. describe the organisational structure in delivery of PHC in Bangladesh 7. mention the goal of Health For All (HFA) in the context of Bangladesh 8. state the national health programmes 9. recognise important international health organizations and list their programmes 10. describe activities of UHandFWC/Community Clinics those rendering PHC 11. describe activities of GP/ Traditional healer in context of PHC 12. describe different levels of health care services 13. state health related MDGs, ESP 14. state the vision,mission and Components of existing National Health Programmes 15. state the global indicators of HFA 16. state the activities of different National Health Programmes 17. state the purpose and scope,evolution and diseases under International Health Regulations[IHR]-2005 18. discuss the national and international health organizations	• Definition: HFA and PHC • Principles and components of PHC • Health related MDG • Components of ESP • Vision, mission and components of existing national health programmes • Organisational structure for the delivery of PHC • Goal and indicators of HFA by the year of 2000 AD • Levels of health care service delivery • National Health Programmes • Concept, purpose and scope, evolution and diseases under IHR-2005 • National organizations. • International health organizations: WHO, UNICEF, RED CRESCENT, ICCDRB, CARE etc.	L = 5 T = 6

Public Health Administration & Management

Learning Objectives	Contents	Teaching hours
Students will be able to: 1. define Management and Administration 2. state the Functions and Principles of Management and Administration 3. define Planning 4. state the indication of Planning 5. describe Planning Process and Planning Cycle 6. define Policy, Resource, Needs and Demands, Objective, Target and Goal 7. describe the health care delivery system of Bangladesh 8. illustrate the organizational structures of health care delivery at different levels 9. state the health care referral system in Bangladesh 10. state the charter of duties of different health personnel	• Definition, Functions, Principles of Management and Administration • Definition, Indication and Process of Planning and Planning Cycle • Definition: Policy, Resource, Needs and Demands, Objective, Target and Goal • Health Care Delivery System of Bangladesh • Organizational Structure of Health Care Delivery in Bangladesh • Health Care Referral System in Bangladesh • Charter of duties of different health personnel	L = 3 T = 4

Summative assessment of Community Medicine
2nd Professional Exam
Assessment systems and mark distribution

Components	Marks	Total Marks
WRITTEN EXAMINATION **MCQ (10-20 QUESTIONS TO BE ANSWERED)** **SAQ (12 QUESTIONS TO BE ANSWERED)** **FORMATIVE**	20 70 **10**	100
PRACTICAL EXAMINATION **CONVENTIONAL PRACTICAL / OSPE** **(3 PROCEDURAL AND 7 QUESTION STATIONS)** **RFST, SURVEY REPORT ANDSTUDY TOUR REPORT** **REPORT ON DAY VISIT**	**50** **30** **20**	100
ORAL EXAMINATION (Structured) **2 Boards of 2 examiners**		100
Grand Total		**300**

- There will be separate Answer Script for MCQ
- Pass marks 60 % in each of theoretical, oral and practical

TIME SCHEDULE

Students' Time			
	TOPIC	**LECTURE**	**TUTORIAL**
1.	**Concept of Public Health, Community Medicine, Health and Disease**	**10 hours**	**10 hours**
2.	**Behavioural Science**	**06 hours**	**10 hours**
3.	**Health Communication and H Ed**	**04 hours**	**10 hours**
	1ST PART SUB-TOTAL	**20 hours**	**30 hours**
4	**Medical Entomology**	**04 hours**	**06 hours**
5	**Biostatistics**	**04 hours**	**08 hours**
6	**Environment and Health**	**10 hours**	**12 hours**
7	**Immunity, Immunization and Disinfection**	**04 hours**	**08 hours**
8	**Public Health Nutrition**	**08 hours**	**08 hours**
9	**Principles of Epidemiology**	**10 hours**	**16 hours**
10	**Epidemiology of CD and NCD**	**25 hours**	**36 hours**
11	**MCH-FP and Demography**	**09 hours**	**16 hours**
12	**School Health Service**	**04 hours**	**04 hours**
13	**Occupational Health**	**04 hours**	**06 hours**
14	**HFA, Primary Health Care and existing National Health Programmes, MDGs**	**05 hours**	**06 hours**
15	**Public Health Adminstration and Management**	**03 hours**	**04 hours**
	2ND PART SUB-TOTAL	**90 hours**	**130 hours**
	GRAND TOTAL	**110 hours**	**160 hours**

Subject: Community Medicine

1st part	:	Lecture	: 20 hours
		Tutorial	: 30 hours
2nd Part	:	Lecture	: 90 hours
		Tutorial	: 130 hours

COME (community oriented medical education):30 days
(1O Days day visit + 10 Days RFST+ 10 Days study tour)

Total (1st Part + 2nd Part):	Lecture	: 110 hours
	Tutorial	: 160 hours
Integrated teaching		: 5 hours
	COME	: 30 days

Residential Field Site Training Program

- RFST Course for Fourth Year Students is an integral part of the curriculum of Community Medicine.
- Head of the Department of Community Medicine will implement the program as a co-ordinator.
- Teachers of Community Medicine assisted by UNHFPO will perform the responsibility for successful implementation of the program.
- Health Educator of Community Medicine will organize field level activities of the students.
- All categories of personnel involved in this program will be given remuneration as per WHO rules regulation approved by MOHandFW

Objectives of RFST

After completion of the Residential Field Site Training Program as future health care providers students will be able to:

- become accustomed with the environment and lifestyle of peoples of rural community.
- identify health needs and problems of the community people and prioretise them
- conduct survey based on health needs and problems of the community
- be acquainted with health care delivery system at PHC level in Bangladesh.
- develop intersectoral coordination.

Schedule Programme

Daily activities schedule will be designed by the Department of Community Medicine.

Thana Health Complex

The use of the teaching facilities, access to patient areas and employment of THC staff are all under the control of the Thana Health and Family Planning Officer (TH and FPO), and teachers from medical college must respect his/her authority in these matters.

Apart from the outdoor, ward and laboratory area two rooms are available for teaching sessions. These are the classroom and the Resident Medical Officer's room.

Transport

Two microbus having capacity of 25 seats would be engaged for taking students and teachers from the college campus to the Thana Health Complex during RFST Programme and preparatory period.

The driver of the micro-bus has a fixed schedule to follow. This is under the control of the Head of Department of Community Medicine.

Accommodation

There are two dormitories both with twenty beds for the students. In each dormitory there are two single seated rooms with sanitary facilities for teachers.

08 (eight) supporting staff (two drivers, two guards, two cook and two table boy) will be appointed for the conduction of the RFST Programme at Thana Health Complex.

The THFPO will support the programme by engaze in the working doctors and staffs.

Games

Arrangement for badminton, caromboards and volleyballs could be made available at the dormitories.
Students may take their own music player or Walkman. But no loud music will be allowed in the dormitories. No music is allowed after 10:00 p.m.

Student supervision

Supervision of the students is the responsibility of the Principal, teachers of Community Medicine and TH & FPO.

Community Medicine Teaching Programme

Residential Field Site Training Course

RFST Implementation Schedule

Day 1	Introduction to UHC and briefing on primary level health care activities and Upazila Health Profile Indoor patients care
Day 2 and Day 3	Community health survey
Day 4	MCH and FP Services • Health Education in MCH • Family Planning and • Immunisation
Day 5	Attending the OPDs and Investigation facilities at upazilla level Attending the emergency department
Day 6	Visit to health related sector working at upazilla level
Day 7	Visit to a local NGO
Day 8	Visit to Community Clinic and USC
Day 9	Visit to FWC and Sattelite clinic
Day 10	Evaluation of the programme and presentation Comments by students, teachers and local health authorities

Draft Structured Questionnaire
For
Field Site Epidemiological Survey

This questionnaire should be completed by students after interviewing the head of household or an adult. For some questions, may need to interview an adult female member of the family.

SECTION A: GENERAL DETAILS

1. Name of village : _____
2. Name of Union : _____
3. Name of Thana : _____
4. Name of Head of family : _____
5. Name of person interviewed : _____
6. Name of student (s) : _____

Batch / Group: _____ Roll : _____ Year : _____

SECTION B : HOUSEHOLD DETAILS

8. Please state number of people in the family (oldest member of family first)

	Name	**Relationship to head of family**	**Sex**	**Age**	**Occupation**	**Education Level achieved**
I						
II						
III						
IV						
V						
VI						
VII						
VIII						
IX						
X						

9. Type of housing? Pucca (building) / tin roof / thatched : _____

10. Family income per month : _____

If landowner, approx. amount of land owned : _____

11. Disposal of excreta? Sanitary latrine / Insanitary latrine / Open air latrine :

_____

12. Source of drinking water? Tubewell/ River / Pond / Others

Of others, please specify: _____

SECTION B: MATERNAL HEALTH AND FAMILY PLANNING

13. Any pregnancy in the household ending within the last 12 months (excluding current pregnancy) Yes / No: _____

If yes, outcomeof baby : normal alive/ abnormal alive / dead

Outcome of mother : alive / dead

Was there any complications?

a) During the pregnancy (before delivery)
e.g. anaemia, pre-eclampsia : Yes/ No

If yes, specify : _____

b) At the time of delivery: Yes / No

If yes, specify : _____

c) After delivery e.g. fever, painful
perineum, urinary incontinence : Yes / No

If yes, specify : _____

14. Who attended the pregnant woman at the time of delivery?

TBA / FWV / others

If others, please specify : _____

If other why did the family not contact a health worker?

a) Not aware of any health worker (HW) in the village
b) Aware but did not wish to see the HW
c) Aware but HW too far to visit and she did not come to the village
d) Other reasons, specify: _____

15. Where was the place of delivery? : Home / Hospital

16. Is there any body currently pregnant in the family? : Yes / No
If yes, duration : _____ months

17. Any tetanus vaccine (TT) given to women during current or previous (within last 12 months) pregnancy? : Yes / No

If yes, numbers of doses : _____

If not given, because of :

a) Not necessary (already received 5 doses)
b) Not aware of the need for TT
c) Aware but did not wish to have it
d) Aware but clinic too far away
e) Other specify: _____

18. Practice of Family Planning
Male : Yes / No
If yes, type: Condom / Vasectomy / Other, specify: _____
If no, reason: _____
Female : Yes / No
If yes, type: Oral pill / Injection / IUCD / Ligation / Other, specify: _____
If no, reason : _____

SECTION D: CHILD HEALTH

19. Immunisation status of under 5 children (check immunisation card if available)

	Child 1	**Child 2**	**Child 3**	**Child 4**	**Child 5**
Penta 1, 2, 3					
OPV 1, 2, 3					
BCG					
Measles					
None given					

If none given, because of:

a) Not aware of the need for vaccine

b) Aware but not wish to have it

c) Aware but clinic too far away

d) Other, specify: _____

20. Breast feeding of under 5

	Age	Duration of suckling	Weaning time
a)			
b)			
c)			
d)			
e)			

21. Anthropometry of under 5:
Mid upper arm circumference (MUAC) and / or height and weight

	Age	Wt in Kg	Ht in Cm	MUAC Cm
a)				
b)				
c)				
d)				
e)				

SECTION E : MORBIDITY

22. Below is a list of diseases. Please indicate if anybody in your household currently suffers from any of these.

Diseases	No. of persons affected	Age
Diarrhoeal disease		
Helminthic infection		
Scabies		
Other skin infection		
Cataract		
Eye infection		
Vit, A deficiency (child night blindness)		
Dental caries		
Chronic suppurative otitis media		
Tuberculosis		
Acute respiratory infection		

23. Any physical disabilities in the family? : Yes/ No
If yes, please specify: _____

24. Who do you normally contact first if any of your family become ill?

Government doctor / Un-qualified doctor / Homeopath / Hakim (Kabiraj) / Others
If other, specify : _____

If not government doctor, give reason : _____

SECTION F: MORTALITY

25. Has there been any death in the household within the last 5 years?
If yes:

	Age at death	**Sex**	**Possible cause of death**
a)			
b)			
c)			
d)			
e)			

SECTION G: KNOWLEDGE, ATTITUDE AND PRACTICE

26. Illness related to smoking

27. ORS and its preparation / use

28. Personal hygiene

29. Transmission of infectious disease e.g. malaria, dysentery etc.

Glossary

AFB	=	Acid Fast Bacilli
AHI	=	Assistant Health Inspector
ARI	=	Acute Respiratory Infections
EPI	=	Expanded Programme on Immunization
HI	=	Health Inspector
IPD	=	In-Patient Department
M.P.	=	Malarial Parasite
MCH	=	Maternal and Child Health
MCQ	=	Multiple Choice Questions
MO, MCH	=	Medical Officer, Maternal and Child Health
OHP	=	Over Head Projector
OPD	=	Out-Patient Department
ORS	=	Oral Dehydration Salt
SI	=	Sanitary Inspector
TH&FPO	=	Thana Health and Family Planning Officer
TFPO	=	Thana Family Planning Officer
RFST	=	Residential Field Site Training

Day Visit

Objectives of day visits:

- The students will be acquainted with the-
- organogram of the Organization
- objectives of the Organization
- goal and target of the Organization
- strategy settings by the Organization to fulfil the objectives
- existing resources available of the Organization
- activities of the Organization to reach the target and goal
- achievement of the Orgainization
- constrains of the Orgainization

Sites of Day Visit

(At least 8 visits)

- DOTS corner attached to Medical College Hospital
- ORT corner
- MCH clinic attached to Medical College Hospital
- Model FP Clinic attached to Medical College Hospital
- Upazilla Health Complex and Community Clinic
- Health related NGOs
- Pharmaceuticals Industries
- Industries
- Civil Surgeon Office
- Superspecialized health care institutions: Cancer Hospital, ICDDRB, IPH, Leprosy Hospital, CRP, etc.

Guideline for Day visit

Sl. No.	Description
01.	Name of the Organization
02.	Type and date of establishment of the Organization
03.	Location of the Organization
04.	Organogram of the Organization (use separate sheet)
05.	Objectives of the Organization
06.	Strategy settings by the Organization
07.	Existing resources available of the Organization
08.	Target and achievement of the Orgainization
09.	Activities of the Organization
10.	Social mobilization
11.	Problems/constraints of the Organization
12.	Personal observation and opinion regarding the visit of the Organization
13.	Conclusion

Study Tour

(For the duration of 10 days)

Objective

To observe different natural and health related organizations of the country for acquiring knowledge and developing skills in assessing health needs and demands of the population.

Sites of study tour

- Cox's bazar / Kuakata
- St. Martin's Island
- Seaport health: Chittagong / Mongla
- Chandraghona paper mill
- Sylhet: Tea Garden / Jaflong
- Health Organizations in Capital City
- Mental Hospital, Pabna

Financial support:

I. Ministry of Health will allocate budget in a revenue sector for individual Government Medical College to conduct RFST, Day Visit and Study Tour.

II. Governing body of private medical colleges will collect money from the students during 1st year admission for the implementation of RFST, Day Visit and Study Tour.

Forensic Medicine

Goal

The goal of teaching Forensic Medicine in the undergraduate medical course is to produce a physician who will be well informed and alerts about his/her medico-legal responsibilities and is capable of being discharging medico-legal duties in medical practice.

Departmental Objectives:

At the end of the course in Forensic Medicine, the undergraduate student will be able to:

- Examine and prepare reports or certificates in Medico-legal cases/situations in accordance with the law of land.
- Perform medico-legal postmortem and interpret autopsy findings and results of other relevant investigations to logically conclude about the cause, manner and time since death.
- Practice & apply medical ethics, etiquette, duties, rights, medical negligence and legal responsibilities of the physician toward patient, profession, society, state and humanity at large.
- Identify & apply relevant legal/ court procedures applicable to the medico-legal/ medical practice.
- Collect preserve and dispatch specimens in medico-legal/ postmortem cases and other concerned materials to the appropriate Government agencies for necessary examination.
- Diagnose, apply principles of therapy & understand medico-legal implications of common poisons.
- Apply general principles of analytical, environmental, occupational and preventive aspects of toxicology.

List of Competencies to acquire

1. Practice Forensic Medicine according to the expectation of the community and maintaining the dignity & honour of the medical profession.
2. Perform ethical practice.
3. Capable to give deposition in the court of law as a medical expert.
4. Collect, preserve & despatch the medico-legally important specimen.
5. Keep the proper records.
6. Proper examination of physical assault victim.
7. Perform medico-legal examination including autopsy and interpret the findings.
8. Prepare certificates and reports according to the law of the land.
9. Write discharge certificate and death certificate properly and authentically as per ICD
10. Supervise and guide the member of a medical team regarding the ethical and legal consequence related to medical issues.
11. Handling dead body ethically & morally
12. Write injury and medical certificate correctly

Finally, on the basis of above context, those who are concern with Forensic Medicine should initiate the thinking to redesign the curriculum where appropriate and give emphasis on those aspects in teaching learning and assessment of the students in under graduate medical education in Forensic Medicine.

Distribution of teaching - learning hours

Lecture	Tutorial	Practical	Other classes (Integrated Teaching / Assignment)	Total teaching hours	Formative Exam		Summative exam	
					Preparatory leave	Exam time	Preparatory leave	Exam time
80 hrs	55 hrs	55 hrs	05 hrs	195 hrs	15 days	15 days	15 days	20 days
(Time for exam. preparatory leave and formative & summative assessment is common for all subjects of the phase)								

Teaching-learning methods, teaching aids and evaluation

Teaching Methods				Teaching aids	In course evaluation
Large group	Small group	Self learning	Others		
Lecture Integrated teaching	Tutorial Practical Demonstration	Assignment, self assessment & self study.	Video & slide presentation. Community Oriented teaching and learning.	Multimedia. Camera (Still & Video) Overhead Projector (OHP). Slide Projector (SP). Black board.	• Item Examination • Card final • Term Examination • Term final (written, oral+ practical)

2nd Professional Examination:
Marks distribution of Assessment of Forensic Medicine:
Total marks – 300

- Written =100 (MCQ-20, SAQ-70+ formative assessment marks 10)
- Structured oral examination= 100
- Practical=50, OSPE=40 & Others (PM report, Injury certificate & Practical khata)=10

Related Equipments, Aids, Specimen / Models:
Post-mortem video tape, TV, Cassette Player **(**available on different events/topics**),** Module on Teaching Health Ethics (WHO, CME and BM&DC)
Sexual Assault examination kit
Autopsy set, dummy and photographs showing all major types of injuries & other cases
Specimen of poisons and related instruments (e.g. Ryles tube, stomach wash tube etc.)

Weapons:
Mechanical weapons
Firearms and ammunitions

Learning Objectives and Course Contents in Forensic Medicine

Learning Objectives	Contents	Teaching hours
Student will be able to: • define Forensic Medicine, Medical Jurisprudence & differentiate between them. • describe different courts in Bangladesh and their powers. • describe various court procedure and deposition in the court. • describe various medico-legal systems. • write various medical documentary evidences (certificate, reports & dying declaration) • define and describe different types of death.	**CORE:** • **Discipline of Forensic Medicine and its subdivisions & Medical Jurisprudence.** • **Courts in Bangladesh and their jurisdiction:** ❑ Supreme Court, High Court, Sessions Court, Additional Sessions Court, Magistrates Court, Metropolitan Magistracy. • **Court procedures:** ❑ Summons, conduct money, oath, affirmation, perjury, types of witness, types of examination, recording evidence, court questions, conduct of doctor in witness box, medical examiner's system. **Additional:** • Coroner, medical examiner & continental Medico-legal systems. **CORE:** • **Medical certification and Medico-legal reports including dying declaration & medical documentary evidence.** • **Death:** ❑ Definition, types: somatic, cellular and brain-death.Sudden death.	1 hr. 2 hrs. 2 hrs. 2 hr. 1 hr. 3 hr.

Learning Objectives	Contents	Teaching hours
• identify and interpret different signs and modes of death. • diagnose deaths due to environmental cause • identify the artefacts on the dead body- both ante-mortem & post-mortem • manage dead body • write death certificate as per ICD **Students will be able to identify & differentiate:** • rigor Mortis, saponification, Putrefaction, mummification & maceration. • determination of time since death. • identify & describe the eye & skin changes after death.	• Natural and unnatural death: ❑ Signs of death. ❑ Modes of death. • Presumption of death and survivorship. • Suspended animation. • Death due to occupational and environmental causes e.g. ❑ Chronic metallic poisoning (Arsenic, lead). ❑ Starvation. ❑ Electrical injuries. ❑ Snake bite. ❑ Food poisoning. ❑ Precaution in handling high risk cases during Autopsy (AIDS, Hepatitis). ❑ Handling and management of dead body ❑ Death certificate as per ICD **Changes after death:** • Cooling of body, lividity, Rigor mortis. • Changes of Eyes & Skin. • Putrefaction, mummification, adepocere. • Principles of estimation of time of death. • Post-mortem artefacts.	2 hrs. 2 hrs. 2 hr. 2 hr. 2 hrs. 2 hr. 2 hr. 2 hr. 2 hr.

Learning Objectives	Contents	Teaching hours
Students will be able to: • establish identity of living & dead persons (Age, sex, race). • determine the cause & nature of death from the trace evidences. • mention medico-legal importance of blood grouping, typing to establish identification, paternity & maternity. **Students will be able to demonstrate about:** • inquest done by police, magistrate and coroner. • autopsy • exhumation & its medicolegal importances. Perception about safe working & proper utilization of a modern morgue & Laboratory facilities.	**CORE:** **Identification:** • Definition, Identity of living persons & dead bodies. • Race, age, sex. • Identification in mass death & examination of human remains. • Trace Evidence. • Forensic – Radiology. • Forensic Dactylography. • Forensic Odontology. • DNA Profiling. • Bioinformatics **Blood groups:** • Medico-legal importance; blood grouping. HLA typing, DNA Profiling. **CORE:** INQUEST Report: **Medico-legal autopsies**: • Medico-legal post-mortem. • Objectives, procedures, formalities of Medico-legal autopsies. Obscure autopsy, Negative autopsy. • Special procedures in suspected poisoning cases. • Examination of mutilated bodies and exhumation. **Additional:** • Criteria of a modern mortuarry.	10 hrs. 2 hrs. 2 hrs. 2 hrs. 1 hr. 2 hrs. 2 hrs. 2 hrs. 2 hrs. 2 hrs.

Learning Objectives	Contents	Teaching hours
Students will be able to • describe different types of wounds, produced by different weapons. • identify the cause of death due to wounds. • identify the nature of the wounds. • differentiation of deaths due to different regional injuries.	**CORE:** **Wounds and its types & M.L Aspects:** • Mechanical injuries. • Fire arm & injuries • Blast injury & injuries caused by explosive. • Cause of death due to wounds & its legal aspects. • Age of wound (Healing of wound) • Battered Wives and battered baby syndrome. • Mass disaster and its management **Additional**: • Differences between accidental, suicidal and homicidal wound. **Regional injuries:** • Head, neck, chest, abdomen, genitalia. • Extremities. **Injuries due to physical agents:** Thermal, chemical, electricity, lightning & radiation injuries. **Wounds certification:** • Medicolegal aspect of wounds (Simple & Grievous)	12 hrs. 2 hrs. 2 hr. 3 hr. 3 hrs. 3 hrs.

Learning Objectives	Contents	Teaching hours
Students will be able to • identify various forms of battery & their medico-legal importances.	• Violence against women. • Domestic violence. **Additional:** • Cot death, SIDS • Death due to neglect	2 hr. 2 hrs.
• diagnose various forms of asphyxial deaths, and their medico-legal aspects.	**CORE:** **Asphyxial deaths:** • Drowning, hanging, throttling and strangulation & suffocation • Traumatic Asphyxia **Additional:** • Sexual Asphyxia.	10 hrs.
• diagnose Pregnancy & delivery with their medico-legal importances.	**CORE:** • Pregnancy signs & pregnancy period in the living and in the dead. Medicolegal importance of pregnancy • Delivery: signs of recent and remote delivery in the living and dead.	5 hrs.

Learning Objectives	Contents	Teaching hours
Students will be able to: • define & diagnose abortion its types & complications & medicolegal importances. • differentiate between criminal and justifiable abortion. • describe medico-legal importances of viable age. • describe collection, preservation, and dispatch of visceras, blood and body fluid for chemical analysis. • differentiate between true & false virginity, impotency & sterility. • describe – Procedure of examination of victim or accused. • identify sign & symptoms of rape & other sexual offences with their medico-legal importances. • describe different sexual deviations, artificial insemination with their medico-legal importance.	**CORE:** **Abortion & its legal bearing.** • Spontaneous, Artificial-justifiable and criminal abortion, delivery **Infanticide:** **Additional:** • Foeticide and viability • Definition and Medico-legal considerations of viability; • Determination age of foetus. Foeticide & IUF death. **CORE:** **Biological fluids and stain: Collection** • Collection, preservation, dispatch of visceras & blood & body fluids for chemical analysis. • Impotency, sterility, virginity and defloration. Artificial insemination and other artificial methods of conception with medico-legal implication. • Surrogated mother & baby. **Sexual offences:** • Natural: Rape, Adultery, Incest. • Unnatural: sodomy, Lesbianism, Bucculcoitus, Bestiality **Additional:** • Sexual perversions. • Paternity and maternity.	2 hrs. 2 hrs. 2 hrs. 2 hr. 2 hr. 2 hrs. 2 hrs. 5 hrs. 2 hrs.
Students will be able to: • describe how to diagnose a case of mental disorder. • describe how to fix-up civil, criminal and social responsibilities of an insane person.	**Forensic Psychiatry** **CORE:** • Types of mental disorder, lucid interval, testamentary capacity. • Criminal responsibility of an insane person. • Diminished responsibility. • True insanity and feigned insanity: • Important terms of Forensic Psychiatry. • Civil & Social responsibilities.	4 hrs.

Learning Objectives	Contents	Teaching hours
Student will be able to: • explain the codes of medical ethics & state legislations. **"HEALTH ETHICS"** • describe the functions and disciplinary control of BM&DC. • describe the rights and privileges of a registered medical practitioner. • describe the patients' rights. • describe the professional negligence and its legal responsibilities. • describe consent and its type. • describe Workmen's compensation act, Medical maloccurance, product liabilities & mercy killing with their medico-legal importances.	**Medical Jurisprudence** **CORE:** • Code and law of medical ethics, its history and Geneva declaration, Tokyo declaration & other declarations. • Bangladesh Medical & Dental Council (BMDC), its constituents, functions and disciplinary control. • Rights and privileges of a registered medical practitioner & rights of patients. • Professional secrecy & privileged communication • Medical Malpractice: civil & criminal, Negligence, Misconduct. • **"PHYSICIAN-PATIENT RELATIONSHIP"** • **Components of the physician-patient relationship** • **Fairness and Equity** • **Specific Health Issues** • **Jargons in the field of medical ethics.** • **CODE OF MEDICAL ETHICS OF BM&DC** • Duties of a medical practitioner towards his patient and the society, Professional infamous conduct/misconduct. • Precuations against professional negligence. • Consent • Duties and responsibilities of a doctor. • Medical Maloccurance & Product Liabilities, vicarious liability. **Additional:** • Euthanasia or Mercy killing. • Organ transplantation Act. • Consumer protection Act. • Workmen's compensation Act.	10 hrs. 6 hrs 4 hrs

Learning Objectives	Contents	Teaching hours
Students will be able to: • define a poison. • describe the factors modifying the action of poisons. • classify poisons. • describe the duties of a doctor in case of poisoning. • outline the principles of management of acute poisoning. • describe post-mortem appearances of respective poisoning cases. • describe post mortem appearances in the dead body of the posoining cases.	**Toxicology** **CORE**: General aspects of poisoning: • Forensic Toxicology& general toxicology. • Poisons. • Factors modifying the action of poison. • Antidote. • Classification of poisons. • Principles of Management of acute & chronic poisoning. • Corrosive poisons: strong acids & alkalis. • Metallic poisons: Lead, Arsenic and Copper. • Delirients: Dhatura, Cannabis. • Somniferous agents: Opium and its derivatives Hypnotics – Barbiturate. • Inebriates: Alcohol, Kerosine. • Gaseous poisons: Carbon monoxide, Chlorine & CO_2, Cooking gass (methane). • Insecticides: Organo-phosphorus & chlorocomponds. • Snake Bite. • Potka fish(Puffer fish)	20 hrs.

Learning Objectives	Contents	Teaching hours
Students will be able to: • performing medico-legal cases individually. • performing medico-legal autopsies under supervision. • attend the court as a witness and dispose there. • prepare/write certificates on injury cases, births, deaths, sickness & fitness, medical, dicharge etc. • write reports on medico-legal autopsies. • prepare dying declaration. • recognize medico-legal cases individually. Students will be able to: • explain the procedures of examination of sexual offences. • explain and describe the procedure of post. mortem examination. • explain the procedures of determination of age. • describe the suspected poisoning cases and can describe the emergency management of an intoxicated patient in the ward.	**Tutorial & Observations** **CORE:** • Observation of ten medicolegal autopsies. • Injuries in the casualty department and weapons in the Forensic Medicine department. • Specimens of poisons. • Age estimation from bones by X-rays. • Observation/examination of intoxicated persons in the ward (Indoor). • Examination of victim and accused of sexual offences in the Forensic Medicine department. **Practical Skill** **CORE**: Preparation of certificates on following: Medico-legal situations: • Injury certificates, medical certificate & discharge certificate • Birth and death, Physical fitness & sickness certificates. • Autopsy report writting of ten cases • Dying declaration. • Insanity. • Age certificate. • Certificates of sexual assault. **CORE**: • Examining cases of sexual offences. • Post mortem examination. • Determination of age. **Management of Poisoning:** • Stomach wash. • Visit to court, police station, DNA lab, OCC, Forensic lab.	10 hours 2 hours 2 hours 3 hours 2 hours 2 hours 3 hours 3 hours 4 hours 2 hrs.

Existing summative assessment of Forensic Medicine

Assessment systems and mark distribution.

Components	Marks	Total Marks
Formative assessment	10	10
WRITTEN EXAMINATION MCQ SAQ	 20 70	 90
Practical Examination		100
ORAL EXAMINATION (**Structured**).		100
Grand Total		**300**

- There will be separate Answer Script for MCQ.
- Pass marks 60 % in each of theoretical, oral and practical.

Example of a "Format" for Integrated Teaching

Teacher of Anaesthesiology	**Teacher of Pharmacology**	**Teacher of Medicine**	*Teacher of Forensic Medicine*
Hazards of anaesthesia and causes of death, injury and disability.	The Pharmacological aspects of opium and opoids.	Clinical aspects of acute opium and opoids poisoning.	❑ When and how far anaesthetists are responsible for such death? ❑ Legal responsibilities of an anaesthetist. ❑ Forensic aspects of acute opium and opoid poisoning. ❑ Determination of causes of death due to above poison. ❑ Methods for determination and confirmation of the poison.

Program for Integrated teaching

Topics	Learning Objective	Teaching & Learning Methods	Assessment	Department
• Sudden natural death – Medicine + F. Medicine. • Clinical toxicology – Pharmacology. + F.Medicine	Students will be able to: • Identify sudden natural death cases. • Identification and legal aspects of deaths due to poisoning.	Lectures & Seminers		**Medicine & Forensic Medicine**
• Identification and blood group & inheritance. • Blood Transfusion hazards and death. • Determination of parenthood. • Legal responsibility of a blood transfusion officer.	Students will be able to: • Ascertain legitimacy and paternity of a child.			**Blood Transfusion & Forensic Medicine**
• Legal responsibilities of a Radiologist. • Determination of 'bone age. • Detection of foreign bodies in victims of crime. • Diagnosis – pregnancy etc. • Ultra-sonographic diagnosis of pregnancy. • Radiological hazards (hazards of radiation).	• Ascertain age of victim (person) from radiological studies. • Diagnose pregnancy.			**Radiology & Forensic Medicine**
Toxicological and forensic aspect • Common poisons. • Atropine. • Morphine and its derivatives- heroin /phensidyl • Tranquillisers. • Barbiturates. • Alcohol. • Cannabis indica in different forms.	• Identify the P.M Findings in case of these poisons.			**Pharmacology & Therapeutics & Forensic Medicine**
Insecticides / pesticides • Organophosphorus compounds. • Chlorocompounds.	-Do-			
• Classification and definition of mental disorders. • Mental disorders and crime. • Mental disorders and Civil and Criminal responsibilities.	• Diagnose a case of mental disorder & fix up his civil, criminal & social responsibilities.			**Psychiatry & Forensic Medicine**

Continued				
• legal aspect and clinical aspect. • Injuries in general. • Head injury and neck injury. • Chest injuries. • Abdominal injuries. • Burns and scalds.	• Identify & interpret these injuries in living and dead bodies.			**Surgery** **&** **Forensic Medicine**
• Anaesthetic hazards and causes of death • Respiratory failure in poisoning.	• Identify death due to anaesthetic hazards.			**Anaesthesiology** **&** **Forensic Medicine**
• Inflammation • Infection • Histopathological studies: 1. Antemortem wounds. 2. Post-mortem wounds. 3. Lungs and other viscera in asphyxial death and correlation with pneumonia and pulmonary oedema. 4. Detection of bloodstain and seminal stain. • Pathological study of hair: 1. Pathological studies of sudden death. 2. Pregnancy tests. 3. H.L.A., blood group and paternity.	• Understand the pathological changes in these conditions.			**Pathology** **&** **Forensic Medicine**
• Pregnancy. • Abortion. • Labour. • Lactation.	• Understand how to diagnose these cases with their medico-legal importance.			**Obstetric & Gynaecology** **&** **Forensic Medicine**

Academic Schedule for Forensic Medicine

2nd Phase

1st TERM				*2nd TERM*									
1	2	3	4	5	6	7	8	9	10	11	12		
❑ Forensic Medicine, Medical Jurisprudence ❑ HEALTH ETHICS ❑ BMDC, Rights & Privileges of Doctors, Code & law of medical ethics, Professional Secrecy. ❑ Inquest, Medical certificate, Medicologal reports including dying declaration, Courts procedures, Medico-legal systems. ❑ Malpraxis, Consent, Duties of medical practitioners. ❑ Death, Changes after death, identification, Medical-legal autopsy ❑ Asphyxial death ❑ Mass disaster ❑ DNA profiling				Lecture-40	Internal assessment Practical 30 hrs. Tutorial 30hrs.	❑ Wounds, Regional injure injuries due to physical agents, Wound certification, Vehicular injuries. ❑ Pregnancy and delivery, Abortion, Infanticide, Biological fluid/ swabs preservation and despatch, Sexual offences, Impotence and sterility, Artificial insemination and disputed paternity and maternity, Forensic psychiatry ❑ General aspect of poisoning and its classification, Medicolegal Autopsy in poisoning, Preservation and despatch of viscera, management of acute poisoning. ❑ Strong acids and alkalis, Metallic poison, Deliriant poison, inebriants. ❑ Gaseous poisons, Insecticides, Animal poison ❑ Assisted reproduction ❑ End life care					Lecture-40	Internal Assessment Practical 25 hrs. Tutorial 25 hrs.		

- ***Hours of Teaching:***
    - **Large group**
        * Lecture - 80 hours.
    - **Small group**
        * Practical - 55 hours.
        * Tutorial - 55 hours.
        * Integrated teaching/ Assignment - 5 hours.

        Total = 195 hours.

Summary of the Forensic Medicine Academic Programme

	1st Term	2nd Term	Total
Lecture/Revision	40 hrs	40 hrs	80 hrs
Practical/ Demonstration	30 hrs	25 hrs	55 hrs
Tutorial	30 hrs	25 hrs	55 hrs
Integrated Teaching/Assignment	3 hrs	2 hrs	5 hrs
Total	---------	---------	195 hrs

Pharmacology & Therapeutics

DEPARTMENTAL OBJECTIVES:

The objective is to provide a need based integrated 'Basic Pharmacology for a safe and effective prescribing' Course so that the students on graduation will be competent to:

- Describe the pharmacological effects, mechanisms of action, pharmacokinetic characteristics and adverse reactions of drugs in order to be able to prescribe safely and effectively.
- describe the basic principles and concepts considered essential for rational (effective, safe, suitable and economic) prescribing and use of medicines in clinical practice.
- understand the principles of rational prescribing and the basis of utilizing the principles of rational evaluation of therapeutic alternatives.
- Recognize, manage and report the adverse drug reactions (ADRs) and drug interactions.
- Obtain informed consent by providing enough information about disease(s), treatment(s) and alternative options available, in order to allow the patient to make informed decision about their treatment.
- identify and assess objectively the drug information sources.
- state the Essential Drug List and principles underlying the 'Concept of Essential Drugs', and apply them in community oriented health care delivery service.
- recognize the implications of poly pharmacy and other means of irrational prescribing, identify influences favouring irrational prescribing and develop means to resist them.
- evaluate the ethical and legal issues involved in drug prescribing, development, manufacture and marketing.
- acquire methods of learning needed for evaluation of existing and new drugs and to follow trends and approaches in pharmacological research.
- develop attitude for continuous self learning and professional development throughout their practicing life.

Competencies related to Pharmacology to be acquired by the graduates-

A) Knowledge and Understanding

- Basic pharmacodynamics (effects, mechanism), and clinical pharmacokinetics required for safe and effective prescribing.
- Adverse Drug Reactions (ADRs): recognizing, management & reporting
- Basic principles & concepts essential for rational (effective, safe, suitable and economic) prescribing and use of drugs in clinical practice.
- Concept of essential drugs and selection of essential drug list for use in community oriented health care services.
- Drug information sources: access to unbiased drug compendia and use of standard treatment guidelines , formularies to support safe and effective prescribing
- Ethics of Prescribing: Informed patient consent about disease, treatment given and alternative options available.
- The ethical and legal issues involved in drug prescribing, development and marketing.

B) Skill –

- Taking drug history.
- Prescription writing: choosing safe & effective drugs and appropriate dosage formulations.
- Selecting appropriate drugs (P Drug) to support rational prescribing considering efficacy, safety, suaitability and cost.
- Recognizing, managing and reporting Adverse Drug Reactions (ADRs) and drug interactions.
- Obtaining accurate objective information to support safe and effective prescribing.
- Prescribing drugs for special groups: elderly, children, pregnancy, breast feeding mothers, renal &/or hepatic impairment or failure.
- Getting informed consent from patients
- Analyzing new evidence:
    - Reading, assessing and critically analyzing clinical trial results
    - Practicing evidence based medicine
    - Assessing the possible benefits and hazards of new therapy

C) Attitude –

- Continuous self learning to keep their knowledge & skill up to date through continuous professional development.
- Communicating with patients regarding disease, the drug treatment and alternative options to obtain informed consent and respecting patients' own views and wishes in relation to drug treatment.

Distribution of teaching - learning hours

Lecture	Tutorial	Practical and Demonstration	Clinical Case Report	Total teaching hours	Formative Exam		Summative exam	
					Preparatory leave	Exam time	Preparatory leave	Exam time
100 hrs	30 hrs	50 hrs	20 hrs	200 hrs	10 days	15 days	10 days	15 days
(Time for exam. preparatory leave and formative & summative assessment is common for all subjects of the phase)								

Teaching-learning methods, teaching aids and evaluation

Teaching Methods				Teaching aids	In course evaluation
Large group	Small group	Self learning	Others		
Lecture	Tutorial Practical & Demonstrations	Assignment	Integrated teaching/Assignment with presentation, clinical case report Block Placement at the end of term II	Laptop multimedia Microphone, Speaker Overhead Projector With Screen, Laser Pointer, Slide Projector, Black Board, White Board, Marker, Duster Tracing paper showing drug effect, reference books	• Item Examination • Card final (written) • Term Examination • Term final (written, oral+ practical)

3rd Professional Examination:
Marks distribution of Assessment of Pharmacology & Therapeutics:

Total marks – 300

- Written = 90 (MCQ-20, SAQ-70) + formative assessment marks -10= 100
- Structured oral examination= 100
- Practical (Traditional + OSPE) =100

Term I

Learning Objectives	Core Contents	Teaching-Learning Strategies	Teaching Hours	* Evaluations
A. <u>GENERAL PRINCIPLES OF PHARMACOLOGY</u> At the end of the course students shall be able to: • describe the role and scope of pharmacology • understand the principles of drug disposition (kinetics)-absorption, distribution, metabolism and excretion • understand the basic principles related to cellular and molecular aspects of drug action (dynamics), selectivity, specificity and quantitative aspects of drug action • recognize adverse drug reactions, interactions and problems of drug misuse and abuse • describe the ethical, legal and economic aspects of prescription writing and compliance	**A. GENERAL PRINCIPLES OF PHARMACOLOGY** **LECTURES:** 01: **Introducing Pharmacology** 02: **Drug Administration** Routes, drug delivery and Formulations for local & systemic effects 03: **Drug Absorption** Transfer of drugs across cell membrane & specialized barriers, Factors influencing absorption 04: **Bio-availability** Studies to compare bio-equivalence & to monitor therapy 05: **Drug Distribution** V_d, Plasma protein & tissue binding, redistribution 06: **Drug Metabolism** Where, why and how of bio-transformation, hepatic microsomal enzymes- induction & inhibition Genetic influence on Drug metabolism (Pharmacogenetics) 07: **Drug Elimination** Routes, Renal Excretion & Factors influencing renal excretion	**Lectures/ Practical/ Tutorials/ Assignments**	15 hrs	Three item Examinations (Item 1,2,3)

Learning Objectives	Core Contents	Teaching-Learning Strategies	Teaching Hours	* Evaluations
	08: **Clinical Pharmacokinetics** V_d, Cl, First & Zero order kinetics of Elimination, $t_{½}$, Steady state concentration, loading dose & maintenance dose 09: **Dynamics: How do drugs act?** Receptor-effectors linkages 10: **Quantitative aspects of drug action** Dose-response relationships & curves Information obtained from D-R curves: Agonists – efficacy, potency, shift of curves Antagonists - 11:**Individual variations in drug responses** 12: **Drug safety and vigilance** Adverse drug reactions: Types, detecting & managing ADR ADR monitoring & reporting			

Learning Objectives	Core Contents	Teaching-Learning Strategies	Teaching Hours	* Evaluations
B. AUTONOMIC PHARMACOLOGY At the end of the course the students will be able to: ▪ understand the organization of autonomic nervous system, physiology of neuro-chemical transmission, co-transmission and their pre and post synaptic modulation ▪ understand the physiology of cholinergic neurotransmission, classify the cholinoceptors and identify the drugs affecting cholinergic transmission and cholinoceptors	**B. AUTONOMIC PHARMACOLOGY** **LECTURES:** 01: **Introduction** Organization of ANS – sympathetic, parasympathetic, and enteric NS Transmitters in ANS (ACh, NA, NANCs) Co-transmission, pre and postsynaptic modulation Cholinergic neurotransmission & drugs modifying the events, Cholinergic receptors 02: **Cholinergic Drugs** Effects of the stimulation of Cholinoceptors Classification of cholinergic drugs – cholinoceptor agonists and anti-cholinesterase 03: **Drugs for Glaucoma** Role of Cholinergic drugs compared to other drugs 04: **OPC insecticide poisoning** Manifestation & management 05: **Anti-cholinergic Anti-muscarinic** Atropine and atropine substitute 06: **Anti-cholinergic anti-nicotinic** Classification – Neuromuscular blockers & their role as skeletal muscle relaxant during anaesthesia Ganglion blocker (names only)	**Lectures/ Practicals/ Tutorials/ Assignments**	**12 hrs**	Two item Examinations (Item 4,5)

Learning Objectives	Core Contents	Teaching-Learning Strategies	Teaching Hours	* Evaluations
	07: **Adrenergic neurotransmission** Drugs modifying the events Adrenergic receptors Effects of stimulation of adrenoceptors 08: **Adrenergic Drugs:** Classification Adrenergic inotropic agents &their role in therapy Role of Adrenaline, Noradrenaline, Isoprenaline, Dopamine, & Dobutamine in therapy Adrenergic vasoconstrictors, nasal decongestants 09: **Selective β_2 agonists as** **Bronchodilators,** compared to other Drugs used in asthma 10: **α–adrenoceptor antagonist** Role of selective α_1 antagonist in therapy 11: **β adrenoceptor antagonist** Role of **β** blockers in therapy			

Learning Objectives	Core-Content	Teaching-Learning Strategies	Teaching Hours	* Evaluations
RENAL & CARDIOVASCULAR PHARMACOLOGY Students will be able to: • Classify or list drugs which affect the Cardiovascular System • Identify their pharmacological effects • Interprete mechanisms of actions, kinetics and toxicity • Correlate these knowledge to form the basis for their rational use in a given clinical situation	**Renal & Cardiovascular Pharmacology**Lectures : 01: **Diuretics** Classification of diuretics: based on sites & mechanism of action and efficacy Pharmacology of Thiazides, Loop, Potassium sparing diuretics: their role in therapy edema and hypertension 02: **Drugs used in hypertension** Epidemiology and pathophysiology of hypertension, Objectives of anti-hypertensive therapy, Classification of anti-hypertensive drugs. Pharmacology of Diuretics, β blockers, Ca channel blockers, ACE inhibitors, Angiotensin receptor antagonists, α blockers, α methyl dopa, Vasodilaotrs Principles of selection of drug in different clinical situations 03: **Drugs used in congestive cardiac failure** Pathophysiology of heart failure Objectives of therapy Drugs used in CCF: Diuretics, ACE inhibitors & ARBs, Selective β-blockers, (Additional) Cardiac glycosides, vasodilators, Phosphodiasterase inhibitors. 04: **Antianginal drugs** Pathophysiology of angina, Objectives of therapy Drugs used in angina: Nitrates, □ blockers, Ca^{2+} channel blockers. Additional: **Antiarrhythmic Drugs** Pathophysiology of arrhythmia Pharmacology of antiarrhythmic drugs	**Lecture/ Tutorial/ Class Assignments**	**8 hrs**	Two item Examinations (Item 6, 7)

Learning Objectives	Core Contents	Teaching-Learning Strategies	Teaching Hours	* Evaluations
HEMATOPOIETIC PHARMACOLOGY Students will be able to: • Classify or list drugs which affect the hematopoietic system • Identify their pharmacological effects • Interprete mechanisms of actions, kinetics and toxicity • Correlate these knowledge to form the basis for their rational use in a given clinical situation	**HEMATOPOIETIC PHARMACOLOGY** **LECTURES:** 01: **Anticoagulants & Thrombolytics** Pathophysiology of thrombo-embolism Pharmacology of Anti-coagulants: Heparin and LMW heparin, warfarin. Pharmacology of thrombolytics: Streptokinase, Alteplase, Reteplase etc. 02: **Antiplatelet drugs** Pharmacology of low dose aspirin, clopidogrel, glycoprotein IIb/IIIa inhibitors and their role in therapy 03: **Lipid regulating drugs** Pharmacology of statins. fibrates, nicotinic acid, resins etc. 04: **Drugs for anaemia** Pathophysiology of anaemia Pharmacology of hemopoeitics iron, folic acid, vit B_{12} Pharmacology of erythropoietin **ADDITIONAL CONTENTS**	**Lecture/ Tutorial/ Class Assignments**	**7 hrs**	One item Examination (Item 8)

Learning Objectives	Core Contents	Teaching-Learning Strategies	Teaching Hours	* Evaluations
ENDOCRINE PHARMACOLOGY At the end of the session the students will be able to: ▪ understand the physiology of endocrine and metabolic systems • list the pancreatic islet hormones and understand their role in the control of blood glucose; define and classify diabetes; understand the diagnostic criteria and monitoring tests and describe the pharmacology of insulin and oral antidiabetic drugs. • list and describe the physiology of adrenocortical hormones. Identify the synthesis inhibitors & their role in therapy; describe the pharmacology of adrenocorticosteroids to assess their role in therapy as anti-inflammatory and immunosuppressive drugs	**Endocrine Pharmacology** **LECTURES:** 01: **Endocrine Pancreas and control of blood glucose** Islet hormones, control of blood glucose Diabetes mellitus – types, diagnostic criteria, monitoring Insulin & preparations Oral Hypoglycemic agents Hypoglycemic reactions & management 02: **Adrenal cortex and drugs used in therapy** Adrenocortical hormones: synthesis & blockers; Control of secretion, mechanism of action Pharmacological actions, uses and preparations Adverse effects 03: **Reproductive system** Hormonal control of female reproductive system Estrogens & anti-estrogens Progesterone & anti-progesterone Hormone replacement therapy Drugs used for contraception 04: **The Uterus** Drugs that stimulate uterine contraction (oxytocics) Drugs that inhibit uterine contraction 05: **The Thyroid** Synthesis, storage & secretion of thyroid hormones Thyroid functions & regulations Abnormalities of thyroid function Drugs used in disease of thyroid	**Lectures/ Practicals/ Tutorials/ Assignments**	**9 hrs**	One item Examination (Item 9)

Learning Objectives	Core Contents	Teaching-Learning Strategies	Teaching Hours	* Evaluations
GASTROINTESTINAL PHARMACOLOGY Students will be able to: • Classify or list the drugs affecting GIT • Identify pharmacological effects of the drugs • Interpret the mechanism of action, kinetics of the drugs and their toxicity • Correlate the gained knowledge to form the basis for rational use of medicines in a given clinical situation	**Gastrointestinal Pharmacology** **LECTURES** 01: **Drugs used in Peptic ulcer** Pathophysiology of peptic ulcer Therapeutic goal and approach Antacids, H_2- blockers, Proton pump inhibitors, gastric cytoprotective agents, Helicobactor pylori eradication regimen Gastroprokinetic drugs and other agents 02: **Drugs to treat diarrhoea** Epideiology, Principles of management Fluid and electrolyte replacement Selection of route and preparations ORS and different IV fluids Role of Antimicrobial drugs Antimotility drugs 03:**Drugs used in helminthiasis** 04: **Laxatives** 05: **Drugs for Inflammatory Bowel Diseases (IBS) & Irritable Bowel Syndrome (IBS)**	**Lecture/ Tutorial/ Class Assignment**	**7 hrs**	One item Examination (Item 10)

Term II

LEARNING OBJECTIVES	Core Contents	Teaching-Learning Strategies	Teaching Hours	* Evaluations
PHARMACOLOGY OF DRUGS ACTING ON CNS Students will be able to: • Classify or list of drugs acting on Central Nervous System • Explain the mechanisms of action, kinetics and toxicity of these drugs • Describe the uses, administration, adverse effects & precautions of drugs used in diseases of CNS	**Central Nervous System** **LECTURES:** 01:**Introduction to CNS Drugs** Neurotransmitters of CNS (distribution, ion channel) general characteristics of CNS drugs 02: **Opioid analgesic** Pathophysiology of pain, Pain pathway, endogenous opioids and opioid receptors Opioids: morphine, codeine, pethedine, tramadol, fentanyl used as analgesics compared. Role of morphine in myocardial infarction and pulmonary edema. Other clinical uses of opioids 03: **Anxiolytics and hypnotics** Pathophysiology of sleep Benzodiazepines and other non-BDZ sedative-hypnotics Centrally acting muscle relaxants 04: **Antidepressant drugs** Neurochemical basis of depression TCAs, SSRIs, MAOIs and other atypical antidepressants, Anti-manic drugs 05: **Antipsychotic drugs** Neurochemical basis of psychosis Pharmacology of anti-psychotic drugs: 06: **Local anaesthetic** Drugs, mechanism of action, techniques of local anaesthesia, uses and hazards	**Lecture/ Tutorial/ Class Assignment**	**14 hrs**	Three item Examinations (Item 11, 12, 13)

LEARNING OBJECTIVES	Core Contents	Teaching-Learning Strategies	Teaching Hours	* Evaluations
	07: **General anaesthetics** Principles of General Anaesthesia Preanaesthetic medication, Balanced Anaesthesia Induction & Maintenance: Intravenous anaesthetics &Inhalation anaesthetics (nitrous oxides, halothane, fluranes) 08: **Skeletal muscle relaxation** Depolarizing and Non depolarizing 09: **Anti-emetics** Pathophysiology of vomiting Pharmacology of anti-emetic drugs 10: **Antiparkinsonian Drugs** Pathophysiology of Parkinson's diseases Pharmacology of antiparkinsonian drugs 11: **Antiepileptics/Anticonvulsants** Pathophysiology of epilepsy Pharmacology of antiepileptic drugs			

Learning Objectives	Core-Content	Teaching-Learning Strategies	Teaching Hours	* Evaluations
Student will be able to • describe:the role of biogenic amines & prostaglandins in health & diseases • explain their mechanism of actions, pharmacological effects, kinetics and toxicity • correlate these knowledge to form the basis for rational use of drugs in a given clinical situation	**Autacoids and drugs used in inflammation** **LECTURES:** 01: **Autacoids** Definition and lists of autacoids **Histamine:** synthesis, storage & release, pharmacological actions & physiological role **Histamine antagonist:** H_1 antagonists: classification, role in allergic conditions & other clinical uses and adverse reactions H_2-receptor antagonists: role in peptic ulcer (covered with GIT Pharmacology) 02: **Ecosanoids** Prostaglandins, Leukotrienes, Platelet Activating Factor (PAF) Synthetic pathways & antagonists Physiological roles, pharmacological actions and possible clinical uses of synthetic analogues and antagonists 03: **NSAIDs/ Non-opioid analgesics** Paracetamol (mechanism of antipyretic and analgesic action, adverse effects) NSAIDs (mechanism of action, adverse effects and precaution) Selective COX II inhibitors **Drugs for Migraine**	**Lecture/ Tutorial/ Class Assignment**	**5 hrs**	One item Examination (Item 14)
students will be able to: • *list drugs which affect the respritory system* • *describe their pharmacological effects* • *explain mechanism of actions,kinetics and toxicity* • *correlate these knowledge to form the basis for rational use of drugs in a given clinical situation*	**Respiratory Pharmacology** **01. Drug treatment of bronchial asthma** Bronchodilators-β_2 agonists, Aminophylline, Ipratropium and others Anti-inflammatory drugs – steroids, Leukotriene antagonist Chromolyn Sodium & related drugs May be covered with ANS Pharmacology ADDITIONAL CONTENTS			

Learning Objectives	Core Contents	Teaching-Learning Strategies	Teaching Hours	* Evaluations
CHEMOTHERAPY Students will be able to: • Classify or list each group/ class of antimicrobial drugs • Understand & explain the mechanism of action, kinetics and toxicity of the antimicrobial drugs • Describe the clinical uses, administration, adverse effects of different antimicrobial drugs used in different clinical situations and the precautions that should be taken before their use • Correlate the gained knowledge to form the basis for rational use of medicines in a given clinical situation	**CHEMOTHERAPY** **LECTURES:** 01: **Introduction** General concept, Mode of action & Classification of antimicrobials Principles of antimicrobial therapy 02: **Drug Resistance** Mechanism of development of drug resistance by microbes 03: **β-lactam Antibiotics** Penicillins Cephalosporins Other β-lactam 04: **Protein Synthesis Inhibitors** Aminoglycosides Macrolides Tetracyclines Chloramphenicol 05: **Sulfonamides & Cotrimoxazole** Sulfonamides combinations, Topical uses Cotrimoxazole 06: **Quinolones & Fluoroquinolones** 07: **Azoles :** Metronidazole and other azoles 08: **Drugs used in Tuberculosis** 09: **Drugs used in Leprosy & Kala-Azar** 10: **Drugs used in Malaria:** Therapy & Prophylaxis 11: **Drugs used in Fungal Infections** 12: **Drugs used in Viral Infections** 13: **Cancer Chemotherapy**	**Lecture/ Tutorial/ Class Assignment**	**17 hrs**	Five item Examination (Item 15, 16, 17,18, 19)

Learning Objectives	Core Contents	Teaching-Learning Strategies	Teaching Hours	* Evaluations
CLINICAL PHARMACOLOGY Students will be able to: • state the principles of rational prescription • identify means of irrational prescribing and consequences • take measures to prevent irrational prescribing • select essential drugs in common diseases from EDL • select P drug – in some clinical situation • correlate these knowledge to form the basis for rational use of drugs in a given clinical situation	**CLINICAL PHARMACOLOGY** **LECTURES:** 01: **Rational Prescribing** General Principles, cuses & consequences of irrational prescribing, Measures to prevent irrational prescribing 02: **Drug Compendia (Information Sources)** Pharmacpoeiea, Formulary, Treatment guidelines, BP, INN, BNF, BDNf, etc. 03: **Essential Drug concept** Definition, Selection criteria, Essential Drug List Rationale for prescribing from this Drug List 04: **'P Drug' concept** Definition, Selection criteria, selection of 'P Drug' for some clinical situations 05: **Drug selection for some special clinical conditions:** Pregnancy, different age groups, renal / hepatic failure	**Lecture/ Tutorial/ Class Assignment**	**06 hrs**	One item Examination (Item 20)

Pharmacology Practicals

Learning Objectives	Core Contents	Teaching Hours
GENERAL PRINCIPLES OF PHARMACOLOGY **PRACTICALS:** Laboratory experiments and demonstrations have been designed to help students to achieve: - the ability to relate the principles and concepts to specific clinical situations At the end of the course, students shall be able to: • identify different dosage formulations and their usage • understand, interpret and analyze experimental data relating to drug disposition • perform experiments using isolated animal tissues to understand drug action	**GENERAL PRINCIPLES OF PHARMACOLOGY** **1. Prescription writing** Format, legal & ethical aspects, drug nomenclature, compliance and Exercise on Prescription Writing **2. Drug Dosage Formultions** Source & Routes of drug administration Drug Formulation & Delivery Techniques Exercise on Drug Dosage Formulations **3. Clinical Pharmacokinetics** Study of Time-Plasma Concentration Curves Determination of $t_{½}$, V_d, Cl, K_e, steady-state concentration, Loading & Maintenance dose **4. Study of Pharmacodynamics** **i. Study of Dose Response Relationship** Construction of Log Dose-Response Curves **ii. Study of Drug Antagonism** Construction of Log Dose-Response Curves in presence of Antagonists **5. Adverse drug Reaction** – Exercise on ADRs reporting & monitoring	04 hrs 04 hrs 04 hrs 06 hrs 02 hrs

Learning Objectives	Core Contents	Teaching Hours
AUTONOMIC PHARMACOLOGY **PRACTICALS:** Laboratory experiments and demonstrations have been designed to help students to achieve: - the ability to relate the principles and concepts to specific clinical situations At the end of the session , students shall be able to: • understand, interpret and analyze experimental data relating to drug disposition • perform experiments using isolated animal tissues to understand drug action	**AUTONOMIC PHARMACOLOGY** **1. Interpretation of Tracings on Blood Pressure** Demonstration of presence of Autonomic receptors **2. Langendorff's Preparation: Isolated Mammalian Heart** Isolated Rabbit Heart Preparation Study of effect of drugs on isolated heart preparation **3. Study of Effect of Drugs on Skeletal Neuromuscular Junction** Demonstration of presence of Nicotinic receptors & effect of competitive reversible & irreversible neuromuscular blockers on them	06 hrs 04 hrs 02 hrs

Learning Objectives	Core Contents	Teaching Hours
CLINICAL PHARMACOLOGY **PRACTICALS:** Exercises have been designed to help students to understand the principles and concepts related to rational prescription. At the end of the session, students shall be able to: • evaluate drug information sources • understand the principles of rational prescription & essential drug concept • select P drug • interprete and analyse the prescription supplied	**CLINICAL PHARMACOLOGY** **1. Drug Information Sources** Acomparative study of the 'Prescribing binformation of Drugs' as probided by the Manufacturers' Product Literatures and the authentic Drug Compendia (British National Formulary/ Bangladesh National Formulary) 2. **Essential Drug Concept** Exercise on selection Essential Drugs 3. **'P Drug' Concept** Exercise on selection 'P Drugs for different clinical situations & preparation of student formulary 4. **Prescription Audit** Exercise on 'Prescription Audit' using INRUD indicators	04 hrs 04 hrs 06 hrs 04 hrs

Pharmacology Tutorials

Learning Objectives		Contents	Teaching Hours
Students will be able to: • list each group/class of dugs • explain the mechanisms of action and Describe the uses, administration, kinetics, adverse effects & precautions of used in different clinical conditions • state the principles of rational prescription • correlate these knowledge to form the basis for rational use of drugs in a given clinical situation	**TERM I**	• **General Pharmacology:** Pharmacokinetics and Pharmacodynamics **Autonmic Pharmacology:** • Review of Cholinergic–Anticholinergic drugs • Revives of Adrenergic–Antiadrenergic drug • Drugs acting on Renal & CVS • Review on Endocrine drug • Drugs for Bronchial asthma, PUD, Anemia	**20 hours**
	Term II	• Drugs ued in Anxiety, sleep disorder • Drugs used in depression, epilepsy and parkinsonism • Autacoids & NSAIDs • Chemotherapy for specific infections: Shigellosis, Enteric fever, ARIs, UTIs, malaria, tuberculosis, fungal infections • RUM: Principles of Rational prescribing & means to resist pressure for irrational prescribing, Essential Drug Concept	**10 hours**
	Clinical case studies & presentation – 5 clinical Cases		**20 hours**

Department of Pharmacology & Therapeutics

Clinical Pharmacology Case Report

Student's Name :

Class Roll # :

Remark of the Batch Teacher :

Professor of Pharmacology & Therapeutics

Patient's Particulars

Personal history

Patient's name: Age:

Education: Occupation:

Socio-economic Status: Ward/Bed:

Date of Admission: Date of discharge:

History of past illness (including Drug History**)**

Description of present illness (History & Clinical Findings**)**

Investigation done with results:

Provisional diagnosis:

Treatment given:

Drug therapy given

(mention the exact brand name written in the treatment sheet and their corresponding generic name):

Result &Outcome of the treatment:

Make a Summary of the Case Report (Stating personal history, complaints, clinical findings, reports of investigations done, diagnosis made, treatment given & outcome of the treatment)

A. Discussion about therapeutic problem & drug therapy given

1. Define the therapeutic problem(s) of the case you have reported.

2. Did the drug(s)/treatment given address all the therapeutic problem?
Yes/No
Relate the treatment/drugs given to specific therapeutic problem.
If no, explain why?

3. For each drug given, was their other alternatives?

4. Considering the drug(s) given & the alternatives, whether the choice was MOST appropriate (consider drug's effectiveness (benefit), Risk & Cost, Route of Administration, Dosage, Frequency & Duration of Therapy and Patient's Factors like age, Pregnancy & Diseases**).**

B. Comments on Prescription

1. Was the route of administration, dosage, frequency & duration of therapy properly mentioned?

2. Was the patient warned about possible adverse effects of each drug & how to avoid them?

C. Report on Averse Effects

Was there any reported adverse effects in this case?

If yes, what are the clinical manifestations & how they have been managed?

D. Final Comments:

E. Drug Discussion

Brief information about the drug(s) used in the therapy (including Generic name/ International Non-proprietary name, Pharmacological effects, Mechanism of action, Metabolism and Elimination, Important drug-drug and drug-food interactions)

Signature of the student

Department of Pharmacology & Therapeutics

Students' In-Course Evaluation Card

Name of Student:

Year: Roll No.: Batch: Session:

Address:

SSC Exam Year: GPA:

HSC Exam Year: GPA:

Admission in Medical College:

First Professional Examination Passed in_____at first/second/third chance

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For Official Use Only

	TERM I		TERM II		FINAL	
	Held	**Attended**	**Held**	**Attended**	**Held**	**Attended**
Lecture						
Practical						
Tutorial						
Seminar						

Head of the Department

Department of Pharmacology & Therapeutics

_____ Medical College

Students' In-Course Evaluation Card

TERM I

SL No	Title and contents	Marks	Initial of teacher
	TERM I		
01.	Introduction to Pharmacology Sources of Drug and Dosage Formulation Routes of Drug Administration		
02.	Pharmakokinetics Absorption, Distribution, Biotransformation and Excretion		
03.	Pharmacodynamics Mechanism of Drug Action, Adverse Drug Events		
04.	Cholinergic agonists and antagonists		
05.	Adrenergic agonists and antagonists		
06.	Diuretics and Drugs used in Hypertension		
07.	Antianginal, anticoagulant, thrombolytic, lipid lowering agents Drugs used in heart failure		
08.	Hemopoietics		
09.	Drugs used in Diabetes Mellitus Hormonal Contraceptives Thyroid hormones and Anti-thyroid Drugs		
10.	Gastrointestinal Pharmacology		
	FIRST TERM EXAMINATION		

Students' In-Course Evaluation Card (contd.)

TERM II

11.	Drugs used in anxiety and sleep disorder Benzodiazepines and Non-Benzodiazepines		
12.	Antipsychotics, Antidepressants and Anticonvulsants		
13.	Analgesics, Anesthetics and Drug dependence		
14.	Autacoids, Anti-inflammatory drugs (NSAIDs) and Steroidal agents		
15.	General aspects of chemotherapy Development of Drug resistant Microbiological profile of common infections		
16.	β lacatms Sulphonamides, Cotrimoxazole, Quinolones and Azoles		
17.	Tetracyclines, Chloramphenicol, Aminoglycosides and Macrolides		
18.	Drugs used in Tuberculosis, Leprosy, Malaria, Kala-azar, Amebiasis, Filariasis and Helminthiasis		
19.	Antifungal, Antiviral, Anti-scabies, Anti-neoplastic		
20.	Clinical Pharmacology & Rational prescribing		
	SECOND TERM EXAMINATION		

Summative Assessment of Pharmacology & Therapeutics
Assessment Systems and Mark Distribution

Components	Marks	Total Marks
Formative assessment		10
WRITTEN EXAMINATION MCQ SAQ	 20 70	90
PRACTICAL EXAMINATION Traditional Practical Examination OSPE	 60 40	100
ORAL EXAMINATION (**Structured**) 2 Boards	50+50	100
	Grand Total	**300**

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- There will be separate Answer Script for MCQ
- Pass marks 60 % in each of theoretical, oral and practical

Summary of the Pharmacology Academic Program

	Term I	**Term II**	**Total Teaching hours**
Lectures/Revision	58 hours	42 hours	100 hours
Practicals & Demonstrations	32 hours	18 hours	50 hours
Tutorials	20 hours	10 hours	30 hours
Clinical case report Assignment with presentation		20 hours	20 hours
Total	100 hours	100 hours	**200 hours**

Time allocation for Examination:

Time for delivering 200 hrs teaching	**Formative Examination** & holidays	**Summative Examination**		**Total Time**
		Preparatory leave	Exam time	12 months
7 months	2 months	1 month	2 months	

PHARMACOLOGY COURSE ORGANIZATION

TERM I		TERM II	
REGULAR		REGULAR	
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21—26		27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47-52	
Total hours for lecture	**= 58 hours**	**Total hours for lecture**	**= 42 hours**
General Principles of Pharmacology	= 15 hours	Central nervous System	= 14 hours
Autonomic Nervous System	= 12 hours	Autacoids and Dugs used in Inflammation	= 05 hours
Renal and Cardiovascular Pharmacology	= 08 hours	Chemotherapy	= 17 hours
Haemopoietic Pharmacology	= 07 hours	Clinical Pharmacology	= 06 hours
Gastrointestinal Pharmacology	= 07 hours		
Endocrine pharmacology	= 09 hours		
Total hours for Practicals	**= 32 hours**	**Total hours for Practicals**	**= 18 hours**
Prescription writing	= 04 hours	Drug information Sources	= 04 hours
Dosage Formulations & Drug delivery techniques	= 04 hours	Prescription Audit	= 04 hours
Pharmacokinetic Study	= 04 hours	Essential Drug List	= 04 hours
Pharmacodynamic Study	= 06 hours	Exercise on selection of "P" drugs	= 06 hours
Study of the cardiovascular effects of drugs	= 02 hours		
Study of autonomic receptor function	= 06 hours		
Study of drugs on Skeletal N-M junction	= 04 hours		
Exercise on ADR reporting form fillup	= 02 hours		

TERM I cont.		TERM II cont.	
Total hours for Tutorials	**= 20 hours**	**Total hours for Tutorials**	**= 10 hours**
General Pharmacology:		• Drugs ued in Anxiety, sleep disorder,	= 01 hours
Pharmacokinetics and	= 02 hours	• Drugs used in depression, epilepsy and parkinsonism	= 01 hours
Pharmacodynamics	= 02 hours	• Autacoid & NSAIDs	= 02 hours
Autonmic Pharmacology:		• Chemotherapy for specific infections: Shigellosis, Enteric fever, ARIs, UTIs, malaria, tuberculosis, fungal infections	= 04 hours
• Review of Cholinergic & Anticholinergic drugs	= 02 hours	• RUM: Principles of Rational prescribing & means to resist pressure for irrational prescribing Essential Drug Concept	= 02 hours
• Revives of Adrenergic& Antiadrenergic drug	= 02 hours = 04 hours		
• Drugs acting on Renal & CVS			
• Review on Endocrine drug	= 04 hours		
• Drugs for Bronchial asthma, PUD, Anemia	= 04 hours		

Pathology

Goal:

The goal of teaching pathology to the undergraduate students is to provide comprehensive knowledge of the cause and mechanism of disease, in order to enable them to achieve complete understanding of the clinical manifestation and natural history of the disease.

Departmental Objectives

After completion of pathology course, undergraduate medical students will be able to:

- Explain basic mechanism of diseases: Etiology, pathogenesis, morphological changes with emphasis on common diseases prevalent in Bangladesh.
- Co-relate between clinical findings and pathological changes.
- Chalk out simple investigation plan for diagnosis and follow up of diseases.
- Interpret laboratory results and understand their implication.
- Demonstrate knowledge about the use of Histopathology, FNAC, Cytological examination, Pap smear, Frozen section and Immuno-histochemistry
- Develop attitude for further learning of the subject.
- Develop skills to perform
    - TC, DC, Eosinophil count, estimation of Hb% and ESR
    - Semen analysis
    - Routine examination of Urine
    - Microscopic examination of body fluids
    - CSF examination
    - Writing a requisition form for histo-pathological and cytological examination

List of Competencies to acquire :

1. Writing a histo-pathological requisition form
2. Preservation of surgical specimens in Upozila health complexes and district hospitals and preparation of fixative for surgical specimens in 10% formalin
3. Sending of surgical specimens from Upozila health complexes and district hospitals to nearby medical college and larger hospitals where histopathology service is available
4. Collection of Paps' smear/ FNAC from superficial mass lesions
5. Preservation of cyto-pathological smears
6. Sending of cytopathology specimens from Upozila health complexes and district hospitals to nearby medical college and larger hospitals where histopathology and cytopathology service is available
7. Preservation of surgical specimens for immunohistochemistry and immunoflorescence
8. Writing a requisition form for immunohistochemistry or immunoflorescence examination
9. Determination of Hb%, ESR, TC & DC of WBC, total count of eosinophil, BT and CT, preparation of stain and comment on PBF.
10. Performing routine urinary examination at health complexes
11. Handling and maintenance of Microscope

12. Performing semen analysis
13. Performing microscopic examination of fluid-CSF
14. Interpretation of pathology reports and data
15. Writing advice for pathological investigations

Distribution of teaching - learning hours and days

Lecture	Tutorial	Practical	Total Teaching hours	Formative Exam		Summative exam	
				Preparatory leave	Exam time	Preparatory leave	Exam time
100 hrs	100 hrs	28 hrs	228 hrs	10 days	15 days	10 days	20 days
(Time for exam. preparatory leave and formative & summative assessment is common for all subjects of the phase)							

Teaching-learning methods, teaching aids and evaluation

Teaching Methods				Teaching aids	In course evaluation
Large group	Small group	Self learning	Others		
Lecture	Tutorial Practical	Assignment, Self study	Integrated Teaching	Computer & Multimedia Chalk & board White board & markers OHP Slide projector Flip Chart Models Specimens Projector Study guide & manuals. etc.	• Item Examination • Card final (written) • Term final (written, oral+ practical)

3rd Professional Examination:
Marks distribution of Assessment of Pathology:
Total marks – 300

- Written=100 (MCQ 20+SAQ 70+formative Assessment Marks 10)
- Structured oral examination= 100
- Practical and OSPE =100

Related Equipments:
Bino-ocular and teaching microscope, Microscope with projection, (magnified) system, Centrifuge machine, Colorimeter, Spectrophotometer, Auto-analyser, Incubator, Balance, Water bath, Cell Counter, Autoclave, Computer, Electrolyte and gas analyzer, Elisa reader, Haemocytometer, haemometer, Westergren ESR tube, ESR stand etc.

Learning Objectives and Course Contents in Pathology

Group I- General Pathology

Learning Objectives	Contents	Teaching hours
Introduction to pathology: Students will be able to • define pathology and its different branches • define aetiology, pathogenesis and morphology	**Introduction to pathology:** **Core**: • Introduction to different branches of pathology • Definition of aetiology, morphology and pathogenesis	L = 1 T = 1 P = 0
Cell injury: Student will be able to: • define reversible and irreversible injury. • identify the causes of cell injury. • describe the mechanisms of reversible and irreversible injury. • define cellular swelling and fatty change. • define necrosis and apoptosis. • describe types of necrosis and cite examples. • describe the morphological changes in necrosis and apoptosis. • describe the mechanism of different types of necrosis including gangrene • describe clinical effects of tissue necrosis.	**Cell injury:** **Core**: • Cause of cell injury • Reversible and irreversible injury: mechanism • Mechanism of hypoxic injury • Name of free radical , target of free radical and scavenging system (name of the anti-oxidant), definition of reperfusion injury • Definition of necrosis and apoptosis, types of necrosis and feature with examples **Additional:** • Mechanism of free radical injury and reperfusion injury, apoptosis • Consequences of mitochondrial dysfunction and loss of calcium homeostasis	L = 2,3,4 T = 2,3 P = 0
Pigments and calcification Students will be able to: • Define Hyaline changes, pathological calcification , Intracellular accumulation.	**Pigments and calcification** **Core**: • Pathological calcification- dystrophic and metastatic: definitions with examples. • Different intracellular pigmentation particularly their name **Additional:** Mechanism of calcification	L = 5 T = 3

Learning Objectives	Contents	Teaching hours
Acute Inflammation Student will be able to : • define inflammations • describe the sequence of vascular changes • define exudates and transudate and their mechanism of formation • describe the acute inflammatory cells and their functions. • name the various types of chemical mediators and their role • describe morphological types of inflammation • describe the local and general clinical features of acute inflammation • explain the local and general body response in acute inflammation • list the hazards and complications of acute inflammation. • explain the various fates of acute inflammation	**Acute Inflammation** **Core:** • Causes and cardinal signs or features of acute inflammation; • Vascular and cellular events Chemical mediators and their function • Morphological patterns of acute inflammation • Out come of acute inflammation • Local and systemic effect of acute inflammation **Additional:** • Recruitment of leukocytes • Role of complement , coagulation and kinin system • Mechanism of neutrophil recruitment • Recognition of microbes and dead tissue • Defects in leukocyte function • How the chemical mediator works	L = 6,7,8,9 T = 4,5 P = 1
Chronic inflammation: Student will be able to: • define chronic Inflammation • describe the characteristic features and types of chronic Inflammation • define granuloma • mention a etiological classification of granuloma with example • describe the morphological features of tubercular granuloma • describe clinical implications of chronic inflammations.	**Chronic inflammation**: **Core**: • Cause • Difference with acute inflammation • Role of macrophage • Examples of granulomatous lesion • Type of granuloma **Additional:**	L = 10 T = 6 P = 1

Learning Objectives	Contents	Teaching hours
Repair and healing: Student will be able to: • Define healing, repair and regeneration • Describe the mechanisms of primary and secondary wound healing • Distinguish the differences between healing by first and secondary intention • List the local and general factors influencing healing • List the complications of wound healing	**Repair and healing:** **Core:** • Definition of healing, repair and regeneration • Steps of cutaneous wound healing, • Factors influencing wound healing • Complications of wound healing, • Fracture healing • Nerve regeneration **Additional:** • Stem cell • Growth cycle • Extracellular matrix	L = 11,12 T = 6
Edema and electrolyte disorder Student will be able to: • define oedema and classify oedema • describe the pathogenesis and mechanism of inflammatory and noninflammatory oedema • describe various types of clinical oedema a) Cardiac b) Hepatic, c) Renal, d) Pulmonary, e) Nutritional • explain the clinical significance of oedema	**Edema and electrolyte disorder** **Core:** • Pathophysiology of oedema • Mechanism of oedema in cirrhosis, renal disease and heart failure • Examination of body fluids such as pleural effusion, ascitic fluid • Electrolyte disorder: causes of metabolic acidosis, metabolic alkalosis, respiratory acidosis & respiratory alkalosis **Additional:**	L = 13, 14 T = 7
Student will be able to: • define hyperaemia, congestion and hemorrhage • describe different types of hemorrhage and effects of acute and chronic haemorrhage • explain the mechanism of hyperaemia and congestion • describe the tissue changes of passive venous congestion of liver and lung. • define shock • list the different types of shock • describe the pathophysiology of shock with its various stages.	**Hyperemia, congestion and haemorrhage and Shock** **Core:** • Definition of hyperaemia, congestion and haemorrhage • Cause of passive Congestion in lung and liver • Shock: type, pathogenesis of septic shock, stages **Additional:** • Morphology of passive congestion in lung and liver • Mechanism of compensation in shock	L = 15,16 T = 8,9

Learning Objectives	Contents	Teaching hours
Thrombosis and embolism: Student will be able to: • define thrombosis and thrombus • describe the pathogenesis of thrombosis • describe morphology of thrombus , difference with post mortem clot • list the effects of thrombi, DIC • list the fate of a thrombus	**Thrombosis and embolism**: **Core:** • Mechanism of thrombosis • fate of thrombus, • Clinical consequence of venous thrombosis, arterial and cardiac thrombosis • DIC	L = 17 T = 10
Embolism and infarction Student will be able to: • define embolism • list types of emboli • describe the pathogenesis of pulmonary and systemic embolism and their effects • list the fates of emboli • define infarct and infarction • describe the pathogenesis of infarction • list different types and common sties of infarct • describe morphological changes and fate of an infarct	**Embolism and infarction** **Core:** • Definition of embolism • Pulmonary embolism: source and consequence • Systemic thromboembolism: source and consequence • Air embolism, fat embolism, amniotic fluid embolism: source and consequence • Infarct: definition, types, factors influencing the formation of infarct	L = 18 T = 10
Growth disturbance and adaptive change Student will be able to: • define cellular adaptation • list the different types of cellular adaptations • describe the pathogenesis and morphological features of different types of cellular adaptations.	**Growth disturbance and adaptive change** **Core:** • Adaptive change • Definitions and examples of atrophy, metaplasia, hypertrophy, hyperplasia **Additional** : Mechanism of the adaptive changes	L = 19 T = 11 P = 2

Learning Objectives	Contents	Teaching hours
Neoplasia Student will be able to: • define neoplasia and different tumor like conditions • classify tumors • list the characteristic features of benign and malignant tumors • list the characteristic features of carcinoma and sarcoma • describe the mechanism of spread of malignant tumors • classify & enlist the different carcinogens. • describe the parameters required for grading and staging of malignant tumors • describe the significance of grading and staging • list the precancerous conditions • explain the difference between invasive carcinoma, carcinoma in situ, locally malignant tumors, latent cancer and dormant cancer. • list clinical effects of neoplasia. • list the various methods in the laboratory for diagnosis of cancer. • describe briefly principles of histo-pathological examination, cytological examination, tumor markers and immunocyto/ histochemistry.	**Neoplasia** **Core**: • Definition and characteristics of neoplasia • Nomenclature • Features of benign and malignant tumour • Spread of tumour • Genetic predisposition of cancer • Example of proto-oncogene, cancer suppressor gene • Precancerous conditions **Additional:** • Molecular basis of cancer • Multiple step of carcinogenesis,	L = 20,21,22,23 T = 12,13 P = 3,4,5
Carcinogenesis Student must be able to • list the major chemical carcinogens, radiant carcinogens and biological carcinogens • explain the initiation and promotion of carcinogenesis.	**Carcinogenesis** **Core:** • Chemical carcinogen: classification • Tumour: initiation and promotion • Microbiologlogical carcinogen: name and the cancer associated with them • Name of the radiant energy and the cancer associated with them **Additional:** Mechanism of the carcinogenesis of the viruses and radiant energy particularly of HPV and EBV and H pylori	L = 24, 25, T = 14

Learning Objectives	Contents	Teaching hours
Tumor immunity and clinical aspects of neoplasia and laboratory diagnosis of tumor Student will be able to: • define tumor antigen and immune surveillance • name the antitumor mechanism • list the local and systemic effect of cancer • mention the basis of grading and staging of tumor • give an out line of the laboratory diagnosis of cancer	**Tumor immunity and clinical aspects of neoplasia and laboratory diagnosis of tumor** **Core:** • Tumor antigen • Antitumor mechanism • Immune surveillance • Cancer cachexia • Paraneoplastic syndrome • Grading and staging of tumor : basis and their use • Laboratory diagnosis: role of FNAC, cytological examination, pap smear, frozen section and immunohistochemistry **Additional:** • Mechanism of immune surveillance • Praraneoplastic syndrome • Molecular diagnosis of cancer	L = 26 T = 14
Genetics Student will be able to: • explain the basic concepts of inheritance. • classify the different genetic disorders. •	**Genetics** **Core:** • Basic definitions, mutation, type, • Classification of genetic disease, • Mendelian disorder: characteristics and examples, • karyotype, features of down syndrome, turner syndrome and Klinefelter syndrome and hermaphrodite • Name of the tools for diagnosis of genetic disease **Additional:** • Biochemical and molecular basis of single gene disorder, lysosomal storage disease • Single gene disorder non-classical inheritance • Indications of prenatal diagnosis	L = 27,28 T = 15

Learning Objectives	Contents	Teaching hours
Immunopathology Student will be able to: • Describe the basic mechanism of immunological disorders – hypersensitivity, autoimmune disease, immunodeficiency	**Immunopathology** **Core**: • Name of immune deficiency diseases • Autoimmune diseases: name of the organ specific auto immune diseases and the basic pathogenesis (name of the antibody)	L = 29, 30 T = 16
Infectious Disease Student will be able to: • Describe & classify the diseases caused by environmental hazards and infectious disease	**Infectious Disease** **Core**: • Lesions produced by tuberculosis, leprosy and syphilis	L = 31 T = 16
Nutritional disorders Student will be able to : • define and briefly describe PEM, Kwashiorkor, Marasmus & vitamin deficiencies with their clinical consequence	**Nutritional disorders** **Core**: • • Bone changes in deficiency states • Features of vitamin A, Vit B_{12} and folic acid deficiency **Additional:** • Iron metabolism • Vitamin A and D metabolism • Vitamin B_{12} and folic acid deficiency mechanism	L = 32,33 T = 17
Environmental diseases and hazards Student will be able to : • describe and classify the diseases cost by environmental hazards	**Environmental diseases and hazards** **Core:** • Diseases associated with smoking, arsenicosis, radiation hazard	L = 34,35 T = 18

Total teaching hour in General Pathology
Lecture : 35
Tutorial : 18 X 2 = 36
Practical : 05 x 1 = 05
Total teaching hours of General Pathology = 76 hours

Group II- Systemic Pathology

Learning Objectives	Contents	Teaching hours
Blood vessels Student will be able to : • define arteriosclerosis and atherosclerosis • list the risk factors and discuss the pathogenesis of atherosclerosis • list the sites of involvement of atherosclerosis. • describe the complications of atherosclerosis.	1. **Blood vessels** **Core**: • Name of different vasculitis, and vascular tumor, **Core**: • Define arteriosclerosis and atherosclerosis, aneurysm and dissection, • Risk factors of atherosclerosis, site of involvement and complications • Lipid profile **Additional** : Pathogenesis of atherosclerosis	L = 1.2 T = 1
Heart • define ischaemic heart disease and describe the types. • describe the pathogenesis of ischaemic heart disease. • describe the morphological features of myocardial infarction. • describe the haematological and biochemical changes in myocardial infarction. • define rheumatic heart disease. • describe the pathogenesis and morphology of rheumatic heart disease. • define infective endocarditis. • define the aetiology and types of infective endocarditis. • define hypertension and list the causes of essential and secondary hypertension. • discuss the pathogenesis and describe the vascular changes in hypertension.	**2. Heart** **Must know** • Ischemic heart disease and myocardial infarction : pathogenesis, morphological features and biochemical indicators, complications • Rheumatic fever: pathogenesis, morphology and complications • Infective endocarditis: pathogenesis, morphology and complications • Causes of myocarditis, pericarditis **Additional**: Names of congenital heart disease.	L = 3,4,5,6 T = 2,3

Lymphoreticular Student will be able to: • list the causes of lymphadenitis and describe the morphological features. • classify Hodgkin and non-Hodgkin lymphomas. • describe the morphological features of Hodgkin's and non-Hodgkin lymphoma and correlate with clinical course.	**3. Lymphoreticular** **Core:** • Causes of lymphadenopathy, Outline of classification of NHL • Hodgkin and non-Hodgkin lymphomas : Classification, morphology **Additional:** • Immune diagnosis of Hodgkin lymphoma • Burkitt lymphoma: morphology • Follicular lymphoma: morphology • Causes of splenomegaly	L = 7,8 T = 4 P = 1

Learning Objectives	Contents	Teaching hours
Student will be able to: • describe main findings in a peripheral blood film. • state the indications of bone marrow examination and describe normal bone marrow findings. • state normal haemoglobin level with age & sex variations and red cell indices (MCV, MCH , MCHC) • define and classify anaemia based on morphology and aetiology • list the causes of iron deficiency anaemia and state the laboratory investigations. • list the causes of megaloblastic anaemia and other conditions that leads to macrocytosis. • describe laboratory investigations for megaloblastic anaemia • classify haemolytic anaemia. • describe the findings on peripheral blood film and list further investigations to identify its aetiology. • list different types of haemoglobino-pathies and thalassaemia • describe the pathogenesis of sickle cell anaemia and thalassaemia. • list the causes of pancytopenia and describe peripheral blood film findings and bonemarrow findings of aplastic anaemia. • list the causes of haemorrhagic disorders and interpret its screening lists. • discuss haemophilia and ITP • define leukaemia, classify leukaemia and describe peripheral blood film and bone marrow findings in different leukaemias. • explain leukaemoid reactions. • define polycythemia and classify it. • define paraproteinaemia and describe the laboratory investigations of multiple myeloma	4. Hematopathology Core: • Hematopoiesis, different stages of RBC and WBC • Causes of Leukocytosis, leucopenia, eosinophilia, monocytosis and thrombocytopenia • Anemia: morphological and etiological classification • Lab. diagnosis of nutritional anemia, iron deficiency anemia, megaloblastic anemia, pernicious anemia • Hemolytic anemia: classification • Thalassemia and sickle cell anemia: lab diagnosis • Aplastic anemia: etiology and lab diagnosis • PNH, AIHA, Coombs test • Classification of bleeding disorder • ITP: causes and lab diagnosis • Hemophilia: causes and lab. investigation • Leukemia: classification and lab.diagnosis • CGL • Multiple myeloma: lab. Diagnosis Additional : • Constituents of blood and bone marrow Polycythemia Blood Group and blood transfusion Core: • Blood transfusion: grouping and cross matching, transfusion reaction, blood transmissible disease, Rh incompatibility, Blood products	L = 9-18 T = 5-12 P = 2,3,4,5 L = 19,20 T = 13,14

Learning Objectives	Contents	Teaching hours
Respiratory System Student will be able to: • mention the common inflammatory lung diseases. • define and describe the different types of pneumonia, tuberculosis and lung abscess. • list the causes and describe the pathogenesis of pneumonia, tuberculosis and lung abscess. • describe the morphology and enlist the complication of pneumonia, tuberculosis and lung abscess. • appreciate the clinical course and correlate it with the morphological features. • define the different types of chronic obstructive airway diseases. • describe the pathogenesis, morphological and clinical features of COPD. • classify lung tumours and describe aetiology and pathogenesis. • describe the morphological features and clinical course of common lung tumour. • list the causes of pleuritis and describe the various types of pleural effusion.	**5. Respiratory System** **Core:** • Cause of Pulmonary oedema • Define: ARDS, obstructive pulmonary disease and pneumoconiosis • Morphology of obstructive airway disease • Pathogenesis and morphology of Pneumonia • Lung abscess: pathogenesis and morphology • Pulmonary tuberculosis: pathogenesis, morphology, fate • Cause of pleural effusion • Classification of lung tumor **Additional**: • Congenital anomalies • Pathogenesis of obstructive airway disease, name of the granulomatous lesion of lung • Defense mechanism of lung • Definition of restrictive disease • Morphology and clinical effect of lung tumor	L = 21-26 T = 15-16 P = 6

Learning Objectives	Contents	Teaching hours
GIT Student will be able to: • define and list the causes of oral ulcer and leucoplakia • list the precancerous, benign and malignant tumour of the oral cavity and identify the predisposing factors. • classify histologically benign and malignant tumours of salivary glands. • list the tumours of oesophagus and describe their morphological features. • list the causes of acute and chronic gastritis. • define peptic ulcer and describe its pathogenesis, morphological features and clinical course. • list the various types of benign and malignant tumours of stomach and identify the predisposing factors for gastric carcinoma. • list the causes of acute appendicitis describe the morphological features and correlate with its clinical course. • name ulcero inflam matory diseas0es involving intestine. • differentiate ulcerative colitis from crohn's disease. • list the different types of polyp, benign and malignant tumour of intestine.	**6. GIT** **Core:** • Leukoplakia, , name of the carcinoma of oral cavity • Salivary gland tumor, morphology of pleomorphic adenoma • Oesophagus:causes of oesophagitis, Barretts oesophagus • Congenital anomalies of GIT – morphology of Hirschprung disease and hypertrophic pyloric stenosis • PU: pathogenesis, morphology, complications • Inflammatory bowel syndrome, difference between crohns and ulcerative colitis • Tumors of stomach • Gastric cancer: morphology and etiopathogenesis • Acute appendicitis Morphology • Ca colon: morphology and etiopathogenesis • Name of the different polyp of GIT **Additional:** • Pathogenesis of IBD • Diverticulosis • Infarction • Necrotizing enterocolitis • Ulcerative lesion of GIT	L = 27-34 T = 19-21 P = 7

Learning Objectives	Contents	Teaching hours
Hepato biliary system Student will be able to: • list the causes of hepatitis. • describe the various types of viral hepatitis and explain their modes of transmission and state their clinical outcome. • list the causes and describe the morphological features of liver abscess. • list the causes, pathogenesis and complications of cirrhosis. • lescribe the morphology of cirrhosis and correlate it with clinical features. • list the different types of benign and malignant tumours of liver and describe briefly the epidemiology. • identify the risk factors, describe the pathogenesis, morphological features and complications of cholelithiasis. • list the tumours of gall bladder.	**7. Hepato biliary system** **Core:** • Liver function tests & their interpretation • Jaundice: types, differences • Hepatitis: cause, morphology • Cirrhosis: etiology, pathogenesis, morphology and complication • Portal hypertension and hepatic failure: feature • Liver abscess: morphological features • Tumor of liver : types • Cholecystitis and cholelithiasis : etiology, pathogenesis, **Additional:** • Neonatal jaundice • Diseases of exocrine pancreas • Hepatic Cysts	L = 35-40 T = 22-24 P = 7

Learning Objectives	Contents	Teaching hours
Renal system Student will be able to: • classify glomerular diseases. • list clinical manifestations of renal diseases. describe briefly aetiology, pathogenesis and clinical course of acute and chronic glomerulonephritis. • define nephrotic syndrome, list its causes and describe the pathophysiology. • define pyelonephritis, list the causes, describe the morphological features, and clinical course of acute and chronic pyelonephritis. • define and list the causes of acute renal failure and discuss briefly its clinical course. • list the different types of renal tumours and discuss briefly the morphological features. • discuss briefly uropathy and renal calculi. • describe different types of cystitis. • list the different types of urinary bladder tumour, describe its pathogenesis and morphological features.	**8. Renal system** **Core:** • Classification of renal disease and their clinical manifestation • Renal function test including examination of urine • Immune basis of glomerulonephritis • Classification of glomerulonephritis • Acute post streptococcal glomerulonephritis: etiopathogenesis, morphology, complications • Nephrotic syndrome: definition, causes • Pyelonephritis:etiopathogenesis, morphology and complications • Renal tumour: different types • Renal cell carcinoma • Urinary bladder tumor : different types **Additional:** • Congenital disease of kidney • Polycystic kidney disease • Urolithiasis: Types • Morphology of renal cell carcinoma • Morphology of different types of cystitis	L = 41-46 T = 25-28 P = 8,9
Male genital system Student will be able to: • describe types and causes of prostatitis. • outline epidemiology, pathogenesis and morphological features of nodular hyperplasia. • describe types of pathology and methods of diagnosis of prostatic carcinoma • list the causes of orchitis and epididymitis. • classify testicular tumours and describe their morphological features and prognosis.	**9. Male genital system** **Core:** • Prostate: causes of prostatitis • Aetiopathogenesis and morphology of nodular hyperplasia • Role of PSA in prostatic carcinoma • **Testis** • Undescended testis: importance • Inflammatory diseases of testis • Testicular tumor : classification and clinical outcome • Morphology of seminoma, yolk sac tumor and embryonal carcinoma • Tumour markers for testicular tumors • Semen analysis	L = 47-49 T = 39-30 P = 10

Learning Objectives	Contents	Teaching hours
Female genital system Student will be able to: • list the causes of cervicitis and discuss briefly non-neoplastic lesions of cervix. • identify the risk factor for cervical carcinoma, discuss briefly the precancerous, and cancerous lesions of cervix and methods of diagnosis. • list the causes of endometriosis and discuss briefly neoplastic and non-neoplastic lesions of uterus. • list the non-neoplastic cysts of ovary. • describe ovarian tumours and describe briefly morphological features and clinical course of common tumour. • list the gestational trophoblastic tumours, name the type of hydatidiform mole, describe the morphological features and methods of diagnosis of hydatidiform mole. • identify the predisposing factors and discuss the morphological changes and prognosis of Choriocarcinoma.	**10. Female genital system** **Core:** • Causes of cervicitis, salpingitis • Risk factors of cervical cancer • Role of human papilloma virus –screening for cervical cancer • Different histological types of cervical cancer • Endometriosis : possible mechanism , sites and effect of endometriosis • Common tumor of the corpus of uterus : morphology of leiomyoma, • Endometrial hyperplasia : different types, their morphology and importance • Classification of ovarian tumor and role of tumor marker • Morphology of teratoma, dysgerminoma, choriocarcinoma and the different surface epithelial tumor, Krukenberg tumor • Hydatidiform mole and choriocarcinoma predisposing factors, morphology and diagnosis • Pregnancy test	L = 50 -54 T =31-32 P = 10,11
Breast Students will be able to: • list the inflammatory diseases of breast. • describe the epidemiology, types and biological importance of fibrocystic disease. • list the benign and malignant tumours of breast, classify malignant breast tumour and discuss the risk factors.	**11. Breast** **Core:** • Name of the different inflammatory diseases of breast, cause of lump of breast • Fibrocystic disease: different types and their importance • Classification of breast tumor • Breast carcinoma: risk factors and the prognostic factors • Screening of breast carcinoma	L = 55-57 T = 33 P = 11

Learning Objectives	Contents	Teaching hours
Endocrine system—thyroid and endocrine pancreas diabetis mellitus Students will be able to: • list the causes of thyroiditis and describe briefly Hashimotos thyroiditis. • discuss pathogenesis and clinical course of diffuse and multinodular goitre. • describe the morphological features of goitre. • list the benign and malignant tumors of thyroid. • describe the morphological features of papillary, follicular carcinoma and the prognosis of thyroid tumors. • types of diabetes mellitus, pathogenesis, diagnosis and complications	**12. Endocrine system—thyroid and endocrine pancreas diabetes mellitus** **Core:** • Causes of goiter, name of the different auto immune disease of thyroid • Thyroiditis: types and morphology • Different types of thyroid tumor, their morphology and prognosis • Diabetes mellitus : different types, pathogenesis, and complications • Estimation of blood sugar • Glucose tolerance test and its interpretation **Additional**: Mechanism of ketoacidosis	L = 58-61 T = 34, 35 P = 12
Student will be able to: • define the terms used in dermatology • list common papulo-squamous and visicobullous diseases of skin. • list the benign, premalignant and malignant epidermal tumors • describe briefly the morphological features of squamous cell carcinoma, basal cell carcinoma, malignant melanoma	**13. Skin** **Core:** • Terms used in dermatology • Cause of bullous lesions • Name of premalignant and malignant lesions of skin • Basal cell carcinoma, malignant melanoma and squamous cell carcinoma: morphology	L = 62 T = 36 P = 13
Student will be able to: • list the course of acute and chronic meningitis and encephalitis and describe CSF findings in different types of meningitis. • list the benign and malignant tumors of central nervous system and peripheral nerve sheath	**14. CNS** **Core:** • Indications of Examination of CSF and the findings in different types of meningitis • Name of the CNS tumor **Additional:** • Changes in cerebral infarction	L = 63 T = 36 P = 13

Learning Objectives	Contents	Teaching hours
Student will be able to: • list the tumors of eye • list the tumors of Nasal Cavity • classify the tumors of soft tissue • describe the pathogenesis of sinusitis/ otitis media • classify tumors of bone • describe causes & pathogenesis of osteomyelitis • list the disease skeletal muscle	**15. Bone, soft tissue, eye and ENT** **Core:** • Soft tissue tumor : names • Bone tumor : names and their histogenesis • Osteomyelitis: aetiopathogenesis, morphology • Name of the tumors of eye and nasal cavity **Additional:** • Morphology of retinoblastoma, giant cell tumor of bone, Ewings sarcoma,	L = 64,65 T = 37 P = 13

Total teaching hour in systemic pathology;
Lecture 65x1 = 65 hour
Tutorial 37 x2 = 74 hour
Practical 13 x1= 13 hour
Total = 152

Contents of group I and group II

Group I *will include all chapters of GP, fluid and electrolyte imbalance covering acid base balance, electrolyte disorders, CHO metabolic disorders, including hypo and hyperglycemia, lipid metabolic disorder, Cardiovascular system, lymphoreticular system and hematopathology, examination of body fluid, obesity.*

Group II, *will cover the systemic pathology and hematology. Different item of clinical pathology will be incorporated in the relevant chapter of systemic pathology, such as urine examination and KFT can be included in renal system, semen analysis in male genital system, LFT in HBS, CSF examination in CNS.*

Class Performance record Card I

SL No	Name of Item	Full Marks	Marks Scored	Signature Remarks
A. General Pathology				
1	Introduction and preservation and transportation of specimen and Tissue processing			
2	Reversible cell injury			
3	Irreversible cell injury			
4	Pigment and Calcification			
5	Acute inflammation (1)			
6	Acute inflammation (2)			
7	Chronic inflammation			
8	Repair and Healing			
9	Edema and electrolyte disorder (1)			
10	Edema and electrolyte disorder (2)			
11	Hyperemia, congestion, hemorrhage and shock			
12	Thrombosis			
13	Embolism and infarction			
14	Growth disturbance and adaptive change			
15	Neoplasia (1)			
16	Neoplasia (2)			
17	Carcinogenesis			
18	Tumor immunity,clinical aspect of neoplasia and laboratory diagnosis of tumor			
19	Outline of genetics			
20	Immunopathology			
21	Infectious disease			
22	Nutritional disorders and childhood tumor			
B. Systemic Pathology (1)				
23	Blood vessels – vasculitis, tumors and atherosclerosis, lipid profile			
24	Ischemic heart disease and hypertensive heart disease, cardiac enzymes			
25	Rheumatic heart disease, infective endocarditis,			
26	Myocarditis, pericarditis, cardiomyopathy and other			
27	Lymph Node—Lymphadenitis, Lymphoma			
28	Hematolymphoid i. Constituents of blood and bone marrow, hematopoiesis, developmental stages of RBC and WBC, causes of leukocytosis, eosinophilia, lymphocytosis, iron metabolism, RBC indices , PBF, DC, TC			
29	Hematolymphoid ii, RBC Anemia, classification, iron deficiency, folic acid and Vitamin B_{12}, deficiency anaemia			
30	Hematolymphoid iii, Hemolytic anemia			
31	Hematolymphoid iv. Thallassemia and aplastic anemia			
32	Hematolymphoid Bleeding disorder (a)			
33	Hematolymphoid Leukemia (a)			
34	Hematolymphoid -- Practical Hb estimation , ESR			
35	Hematolymphoid --- Practical DC, TC and other			
36	Blood grouping			

Class Performance record Card II

SL No	Name of Item	Full Marks	Marks Scored	Signature Remarks
	Systemic Pathology (II)			
1	Respiratory system– Congenital anomalies, inflammatory disease,			
2	Respiratory system – Obstructive air way disease ,			
3	Respiratory system–lung tumor and other diseases, pleural effusion			
4	Urinary system (i) renal function test, clinical presentation of renal disease, congenital disease			
5	Urinary system (i) Glomerular diseases			
6	Urinary system (ii)Tubular disease			
7	Urinary system ((iii) Renal tumors			
8	Urinary system –Examination of urine			
9	Diseases of urinary bladder			
10	GIT – Oral cavity, salivary gland, esophagus and peptic ulcer			
11	GIT – polyps of GIT and gastric carcinoma			
12	GIT – small intestine			
13	GIT – large gut			
14	Hepatobiliary – acute and chronic hepatitis, liver function test			
15	Hepato-biliary—Cirrhosis, portal hypertension, hepatic failure,			
16	Hepato-biliary— tumor			
17	Gall bladder			
18	MGS—testis, semen analysis			
19	MGS – Prostate			
20	FGS – cervix, ovary			
21	FGS – Corpus of uterus and placenta			
22	Breast—inflammatory and fibrocystic diseases			
23	Breast—benign and malignant tumor			
24	Endocrine – thyroid			
25	Endocrine – Diabetes mellitus			
26	Endocrine – Diabetes mellitus, GTT,			
27	GTT, Benedicts test			
28	Skin and CNS			
29	Bones and soft tissue—tumor, osteomyelitis			
30	Eye & ENT—tumor, sinusitis, otitis media			
30	An out line of autopsy			
31	Techniques in histopathology –gross examination			
32	Techniques in histopathology – FNAC, Pap smear			
33	Tissue processing			
34	Miscellaneous			

Microbiology

Departmental Objectives:

Undergraduate medical students after completing the course on Microbiology will become well versed in the etiology of microbial diseases, their pathogenesis, immunological responses involved and some important clinical features that would enable them to plan and interpret necessary laboratory investigations for diagnosis, treatment and prevention. The department will provide teaching-learning experiences to achieve the following learning objectives.

KNOWLEDGE

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

- describe and understand the aetiopathogenesis of microbial agents such as bacteria, virus, parasite and fungi commonly prevalent in Bangladesh
- explain the host-parasite relationship, normal flora of the body, pathogens and opportunistic pathogens
- understand the principles and applications of immunology involved in the pathogenesis, diagnosis and prevention of microbial and immunological diseases.
- understand hospital acquired infection and its prevention
- understand the emerging and re-emerging microbial diseases in Bangladesh and their diagnosis, control and prevention
- understand antibiotic resistant pattern and selection of appropriate antibiotics and its rational use.

SKILL:

Students will be able to:

- plan necessary laboratory investigations selecting appropriate clinical samples at the right time, using the right method of their collection and interpret the results of these laboratory investigations to arrive at laboratory diagnosis of microbial and immunological diseases.
- perform simple laboratory tests available in Upazila Health Complex.
- carry out the techniques of asepsis, antisepsis and sterilization in day to day procedures.
- undertake universal precautions in laboratory and clinical practices.

ATTITUDE:

Students will be able to:

- demonstrate the attitude for further learning, research and continuing education for improvement of efficiency and skill in the subject.

List of Competencies to acquire:

After completion of graduation, an MBBS doctor is expected to achieve the following competency in the area of Microbiology. An MBBS graduate will be competent to:

1. perceive the etio-pathogenesis of diseases caused by microbes commonly prevalent in Bangladesh
2. proceed for diagnosing a case caused by microbes in terms of :
    a. appropriate specimens necessary for diagnosis
    b. timing of specimen collection and appropriate transport
    c. appropriate diagnostic tests to advise
3. interpret the values of tests and the test results.
4. identify the basic problems of hospital acquired infection and its prevention
5. select appropriate antimicrobial agents for the treatment of common microbial diseases
6. use of antibiotics rationally
7. provide Counseling regarding vaccination against common diseases and chemoprophylaxis
8. appraise the need for research on common microbial diseases encountered in medical practice
   Note: Microbial diseases include: bacteria, parasites, viruses and fungi

Distribution of teaching - learning hours

Lecture	Tutorial	Practical	Total Teaching hours	Formative Exam		Summative exam	
				Preparatory leave	Exam time	Preparatory leave	Exam time
100 hrs	45 hrs	45 hrs	190 hrs	10 days	15 days	10 days	15 days
(Time for exam. preparatory leave and formative & summative assessment is common for all subjects of the phase)							

Teaching-learning methods, teaching aids and evaluation

Teaching Methods				Teaching aids	In course evaluation
Large group	Small group	Self learning	Others (integrated teaching)		
Lecture	Tutorial Practical	Assignment, Self study		Computer and Multimedia Bino-ocular and teaching microscope Microscope with projection (magnified) system Multimedia Overhead projector Slide projector , Fixed Learning Module (FLM) Tape slide Video Coloured charts Hand out White board /chalk board	• Item Examination • Card final • Term Examination • Term final (written, oral+ practical)

3rd Professional Examination:
Marks distribution of Assessment of Microbiology:

Total marks – 300

- Written= 100 (MCQ 20+SAQ 70+formative Assessment Marks 10)
- Structured oral examination=100
- Practical =100 (OSPE-50+Traditional- 50)

Related Equipments:
Hot air oven, Bunsen burner, slide & cover slip, pipette, Micro pipette, Gram staining, Acid fast staining and other staining materials, different reagent, Bino-ocular and teaching microscope, Microscope with projection, (magnified) system, Centrifuge machine, Colorimeter, Spectrophotometer, Incubator, Balance, Water bath, Cell Counter, Autoclave, Computer, Electrolyte and gas analyzer, Elisa reader, Petri dish, media etc.

Learning Objectives and Course Contents in Microbiology

General Bacteriology

Learning Objectives	Contents	Teaching hours
Students will be able to : • describe historical background and outline the scope and importance of Microbiology in medical science. • describe the prokaryotic and eukaryotic cells. • describe different structures of bacterial cell and their functions. • classify bacteria based on staining and morphology • explain the theoretical basis of staining and clinical significance of certain staining including Gram and Z-N staining	**CORE:** **Introduction of Microbiology:** • Brief historical background • Branches of Microbiology • Concept of medical biotechnology in relation to Microbiology • Importance and scope of microbiology in medical science. **Bacterial cell:** • Prokaryotic and Eukaryotic cells with examples • Different structures of bacterial cell and their functions. • Brief description of cell wall of Gram positive and Gram negative bacteria. • Spores structure and clinical importance. • L-forms, protoplast, spheroplast **Bacterial classification and staining:** • Nomenclature • Classification by staining and morphology. • Staining- Theoretical basis and clinical significance of Gram and Z-N • Practical on staining: Gram, Z-N staining	L–1 L –2, T - 1 L –1, T - 1

NB: L = Lecture. T= Tutorial

Learning Objectives	Contents	Teaching hours
Students will be able to: • describe the general requirements of microbial growth • classify bacteriological media and describe their uses • define sterilization, disinfection and antisepsis • describe certain methods of sterilization and disinfection, and outline their application • select appropriate method of sterilization in their clinical practice. • explain the mechanism of action of certain anti-microbial agents • select appropriate antimicrobial agents	**Nutrition and Cultivation of bacteria:** • Nutritional requirement for the growth • Growth curve: phases with clinical significance • Common bacteriological media: classification and uses. **Sterilization and Disinfection:** • Definition, classification and applications of sterilization, disinfection and antisepsis • Methods of sterilizations: details of autoclaving, hot air oven and chemical methods. • Sterilization of medical equipments: Critical. Semi-critical and non-critical devices • Disinfection body fluid spillage **Antimicrobial agents:** • Definition of antibiotics, antimicrobial agents, bacteriostatic, bacteriocidal, synergism, antagonism, selective toxicity etc. • Mechanism of action on bacteria with examples • Drug resistance: origin, mechanism, transmission and prevention • Indication of combination of antibiotics in bacterial infection • Hazards of indiscriminate use of antibiotics	L – 1 L – 2, T - 2 L –3, T-1

Systemic Bacteriology

Learning Objectives	Contents	Teaching hours
• describe the different aspects of host-parasite relationship differentiate between normal, opportunistic and pathogenic bacteria and explain their clinical importance. • enumerate the virulence factors and explain their role in pathogenesis	**CORE:** **Host-Parasite relationship:** • Terms and Definitions. • Parasite and Host attributes • Normal flora, opportunistic pathogens and their clinical importance. **Pathogenesis of bacterial diseases:** • Transmission of bacterial agents. • Koch's Postulates • Virulence factors e.g. toxins, enzymes, invasiveness and their role in pathogenesis of diseases with some examples.	L–1 L – 1

Learning Objectives	Contents	Teaching hours
Student will be able to: • enumerate the common bacterial agents in Bangladesh: describe epidemiology, their morphology, classification and important cultural characteristics • mention their virulence factors and describe pathogenesis and brief clinical features. • describe the laboratory diagnosis: selection, collection, transportation and preservation of clinical samples, laboratory tests and their interpretation	• Staphylococci: S. *aureus,* S. *epidermidis,* S. *saprophyticus*. • Streptococci *:* Gr A and Streptococcus *pneumoniae* • Neissreia: N. *gonorrhoea,* N. *meningitides* • Corynebacterium *diphtheriae* • Enterobacteriaceae: Classification, Salmonella, Shigella, and Esch. *coli*, • Vibrio *cholerae* • Helicobacter *pylori* • Mycobacterium: M. *tuberculosis*, Atypical mycrobacteria and M. *leprae*. • Anaerobic bacteria: Clostridium: Cl. *tetani*, Cl. *botulinum*, Cl. *perfringens* • Spirochaetes: Treponemma *palladium* • Important characteristics and diseases produced by: Rickettssia Haemophilus Influenza, Haemophilus *ducrey*, Mycoplasma, Chlamydia, , Nocardia, Actinomycetes species	L –2, T - 1 L –2, T -2 L –1, T - 1 L –1 L –3, T - 2 L –1, T - 1 L –1 L –3, T - 2 L –3, T - 1 L-1, T - 1 L-3, T - 2
• list the important characteristics and diseases produced by bacteria	**Additional:** • Strpt. Group B, D • Klebsiella, Proteus , Pseudomonas: Ps. *aeruginosa* , Aeromonas, Plesiomonas, Campylobacter *jejuni* • Bacteroides species • Clostridium *deficille* • Listeria	L-2, T - 2

Immunology

Learning Objectives	Contents	Teaching hours
Students will be able to: • explain the importance of history and role of immunology in modern medicine • describe the basic components of immune system • explain the normal defense mechanism • mention the disorders of the immune system • explain the immunological principles involved in different diagnostic tests	**CORE:** **1. Introduction:** • Brief historical background • Basic concepts of immunity: types and components with examples. **2. Immune system:** • Organs, cells and soluble components **3. Antigens and Immunogens:** • Terms and definitions, criteria of immunogenicity, hapten, epitopes and their clinical significance. **4. Major histocompatibility complex (MHC/ HLA):** • Terms and definitions, types and distribution, clinical and biological significance. **5. Immunoglobulins and Antibodies:** • Terms and definitions, classification, structure, biological properties and functions. **6. Complements:** • Terms and definitions, activation, biological functions and clinical significance. **7. Mechanisms of immune response :** • Antibody and cell mediated immune response. • Primary and secondary immune response **8. Hypersensitivity:** • Terms and definitions, classifications, mechanisms, clinical significance with examples. **9. Transplantation and Tumour immunity:** • Terms and definitions, types and outline of prevention of graft rejection. • Tumour antigens, role in diagnosis and clinical significance. **10. Autoimmunity:** • Terms and definitions, basic concepts **11. Immunodeficiency disorders and immunotherapy:** • Classification with examples **12. Agents of immunotherapy** **13. Immunodiagnostic tests** • Terms and definitions, types and applications in diagnostic medicine	L-1 L-2, T-1 L-1 L-1 L-2, T-1 L-1 L -1 L – 2, T-1 L –2, T-1 L –1 L –1 L –1 L –1

Parasitology

Learning Objectives	Contents	Teaching hours
Students will be able to: • mention the important characteristics and epidemiology of common parasitic diseases • describe pathogenesis • list major complications and laboratory diagnosis of common parasites in Bangladesh.	**CORE:** **Introduction:** Introduction to parasitology, common parasitic diseases of Bangladesh, Terms and definitions, classifications of parasites according to habitate, **Intestinal, luminal and free living protozoa:** **Entamoeba *histolytica*:** • Classification • Geographical distribution, morphology, disease, clinical features, pathogenesis, laboratory diagnosis ***Giardia intestinalis* and *Trichomonas vaginalis*:** • Morphology, transmission, disease, clinical features, pathogenesis, laboratory diagnosis **Blood and Tissue Protozoa:** **Leishmania species:** **Leishmania *donovani* and PKDL*:*** Geographical distribution morphology, lifecycle, disease, clinical features, pathogenesis laboratory diagnosis	L –2, T-1 L –2, T-1 L –1 L –2, T-1

Learning Objectives	Contents	Teaching hours
	Plasmodium species: Epidemiology, morphology, lifecycle, disease, clinical features, pathogenesis, complications, laboratory diagnosis	L –2, T-2
	Cestodes and Trematodes: • Classify according to habitate with examples • Morphology, lifecycle, diseases, clinical features, pathogenesis, laboratory diagnosis of Taenia *saginata* and Taenia *solium*: •	L –1
	Echinococcus granulosus: • Morphology, lifecycle, disease, clinical features, pathogenesis and laboratory diagnosis	L –1
	Intestinal Nematodes: • Geographical distribution, morphology, lifecycle, disease, clinical features, pathogenesis, laboratory diagnosis of Ascaris *lumbricoides*, Hook worm, *Trichuris trichiura*, *Enterobious vermicularis*, *Strongyloides stercoralis* and larva migrans	L-3, T- 2
	Tissue nematodes: **Wuchareria bancrofti:** • Morphology, lifecycle, disease (classical and occult filariasis, tropical pulmonary eosinophilia), clinical features, pathogenesis, complications, laboratory diagnosis	L –2, T-1
	<u>Additional:</u> 1. Important characteristics and disease produced by: • Acanthemoeba and Negleria • Toxoplasma *gondii*, Crytosporidium, Balantidium *coli* • Hymenolepes *nana*, Diphylobothrium *latum* • Trypanosoma • Loa *loa*, Onchosercous *volvulous* • Fasiolopsis *buski*, Faciola *hepatica*: habitate, disease, clinical features, laboratory diagnosis	L –2, T-2

Virology

Learning Objectives	Contents	Teaching hours
Students will be able to: • differentiate the basic structure of virus from bacteria. • mention epidemiology, diseases, important clinical features, pathogenesis and laboratory diagnosis of common viral diseases • identify the appropriate measures for prevention.	**CORE**: 1. **General virology:** • Introduction to virology, common viral diseases in Bangladesh. • Basic structure of virus • Outline of viral replication • Classification • Antiviral agents 2. **Herpes viruses:** • Classification, important characteristics, diseases, important clinical features, transmission, pathogenesis, complications, laboratory diagnosis and prevention **3. Orthomyxo and paramyxo viruses** • Important characteristics, diseases, important clinical features, transmission, pathogenesis, complications, laboratory diagnosis and prevention 4. **Hepatitis viruses:** • Classification, important characteristics, diseases, transmission, pathogenesis, complications, laboratory diagnosis and prevention	L –2, T-1 L –2, T-1 L –2, T-1 L –1, T-1

Learning Objectives	Contents	Teaching hours
	5. **Polio virus** • Important characteristics, diseases, transmission, pathogenesis, laboratory diagnosis and prevention • Merits and demerits of oral and injectable polio vaccine 6. **Rabies virus:** • Important characteristics, diseases, transmission, pathogenesis, laboratory diagnosis and prevention, merits and demerits of different types of vaccines 7. **Rota virus:** • Diseases, transmission, pathogenesis, laboratory diagnosis and prevention 8. **HIV:** • Classification, important characteristics, diseases (AIDS), transmission, pathogenesis, laboratory diagnosis and prevention 9. **Dengue** • Important characteristics, diseases (DHF, DSS), transmission, pathogenesis, laboratory diagnosis and prevention 10. **Emerging viral diseases** **Avian flue, SARS, Nipah, Swine flue, etc.** • Important characteristics of virus, important clinical features, transmission, pathogenesis, laboratory diagnosis and prevention 11. **Oncogenic virus** • Definitions, list of onchogenic viruses with their associated tumours	L –1 L –1 (+7) L –1 L – 1 L – 2 (+ 11)

Mycology

Learning Objectives	Contents	Teaching hours
Students will be able to: • describe morphology, medically important fungal agents and the diseases caused by them • describe pathogenesis, important clinical features and laboratory diagnosis of superficial, cutaneous, subcutaneous and systemic mycosis	**CORE:** **1. Introduction:** • Introduction to Mycology, beneficial and detrimental effects, morphology, classification • Difference between fungal and bacterial spores 2. **Superficial and cutaneous mycoses:** • Aetiological agents and diseases • Transmission and pathogenesis, laboratory diagnosis of Pityriasis *versicolor*, Dermatophytosis, Candidiasis. **3. Subcutaneous** • Aetiological agents and diseases • Transmission and pathogenesis • Laboratory diagnosis of Rhinosporiodiasis and Madura foot 4. **Systemic mycoses** (Primary and opportunistic): • Aetiological agents and diseases • Transmission and pathogenesis • Laboratory diagnosis of histoplasmosis, cryptococcal meningitis, candidiasis • Brief description of pneumocystis jerovici, fungus ball, mycotoxin	L-1 L -2, T-1 L –1 L – 2, T-1

Clinical Microbiology

Learning Objectives	Contents	Teaching hours
Student will be able to: • know organisms causing diseases, plan and select appropriate investigation for diagnosis • interpret the findings of the investigations • design appropriate steps for antimicrobial therapy and prevention	**CORE:** 1. Collection of samples, transportation and storage 2. Microbial diseases of Gastrointestinal and Hepatobiliary diseases and Food poisoning 3. Microbial diseases of Genito-Urinary system 4. Microbial diseases of upper and lower Respiratory Tract infections 5. Microbial diseases of CNS infection 6. Hospital Acquired Infections 7. Microbial diseases of Bone and Soft Tissue infection 8. Microbial diseases of Cardiovascular System 9. Microbial diseases of eye, ear, nose and throat 10. Pyrexia of unknown origin (Microbial cause with emphasis on blood culture).	 L –1, T-1 L –2, T-1 L –2, T-1 L –1 L –2 L –1 L –1 L –1 L – 1, T-1 L- 1, T-1

Practical

Learning Objectives	Contents	Teaching hours
Students will be able to: • perform and interpret Gram's and Z-N stain. • Observe the common bacteriological media with growth of *Staphylococcus aureus*, *Streptococcus pyogenes, Escherechia coli,Salmonella, Shigella, Klebsiella, Proteus and Pseudomonas* • Observe the drug sensitivity test of bacteria. Students will be demonstrated: • autoclave and Hot air oven.	1. Gram's staining 2. Z-N staining 3. Demonstration of culture media namely Nutrient agar, Blood agar, Chocolate agar, MacConkey's agar, Lowenstein Jensen, Robertson's cooked meat media, Blood culture media, transport media (Carry-Blair/Stuart/Peptone water) with and without bacterial growth 4. Demonstration of colony morphology of common bacteria: *Staphylococci*, *Streptococcus* Lactose fermenters, Lactose nonfermenters, *Proteus*, *Pseudomonas*. 5. Demonstration of inoculation, incubation (aerobic, CO2 and Anerobic condition) and plate reading. 6. Demonstration of catalase, coagulase, and oxidase, TSI, MIU and Simmon's citrate tests 7. Demonstration of in vitro antibiotic sensitivity test by disk diffusion method, 8. Demonstration of sterilization by chemical agents autoclaving and hot air oven.	4 4 5 3 2 4 4 2

Learning Objectives	Contents	Teaching hours
Students will be able to: • prepare stool smear and examine under microscope • observe cyst/trophozoites of intestinal and luminal protozoa namely Entamoeba histolytica, Giardia intestinalis, Trichomonas • obsserve ova of *A. lumbricoides*, *T. trichiuria*, Hook worms • observe pus cell, macrophage and RBC in stool sample • examine blood slide under microscope for demonstration of Plasmodium species and microfilaria • examine bone marrow smear for LD body • Observe and interpret the results of immunological tests • Observe skin scrapping for fungus. • observe pus cell and RBC in urine	**Demonstration** • Microscopic examination of stool for demonstration of cyst/trophozoites of protozoa, ova/larva of intestinal helminthes, pus cells, macrophage and RBC. • Microscopic examination of urine for demonstration of epithelial cells, pus cells, RBC, etc. • Examination of blood smear for demonstration of malarial parasites • Examination of bone marrow smear for LD body • Microscopic examination of Gram stain smear of throat swab, wound swab, urethral discharge. • Microspic examination of Z-N smear of sputum for AFB • Immunological tests: Demonstration and interpretation of Widal, RPR, ICT for HBsAg, Dengue and Plasmodium • Microscopic examination of skin scrapping for demonstration of fungal elements (dermatophytes and candida)	6 2 1 1 2 1 2 2

Consolidated teaching hours for Microbiology

Subject	Theoretical		Practical	Total
	Lecture	**Tutorial**		
1. General Bacteriology	**10**	**5**	**12**	**26**
2. Systemic Bacteriology	**23**	**15**	**02**	**41**
3. Immunology	**17**	**04**	**05**	**25**
4. Parasitology	**18**	**10**	**14**	**43**
5. Virology	**13**	**4**	**00**	**16**
6. Mycology	**6**	**2**	**2**	**10**
7. Clinical Microbiology	**13**	**5**	**10**	**29**
Total	**100**	**45**	**45**	**190**

1st Term Allotted time (92 Hours)				**2nd Term** Allotted time (In 98 Hours)			
Subject	Lecture – 49 hours	Tutorial– 24 hours	Practical- 19 hours	**Subject**	Lecture – 51 hours	Tutorial – 21 hours	Practical - 26 hours
General bacteriology	9	05	12	Parasitology	19	10	14
Systemic Bacteriology	24	15	02	Virology	12	04	00
Immunology	16	04	05	Mycology	06	02	02
				Clinical Microbiology	14	05	10

Grand Total = 92+98 = 190 hours

Academic Calendar for Microbiology

4th Year (In months)											
1	2	3	4	5	6	7	8	9	10	11	12
General Bacteriology **Systemic Bacteriology** **Immunology**			**Preparation + 1st Internal Assessment**	**Parasitology** **Virology** **Mycology** **Clinical Microbiology**			**Preparation + 2nd Internal Assessment**	**Prepatory leave**	**3rd Professional Exam**		

There will be 2 (two) Cards

1. **Item card 1:** General Bacteriology, Systemic Bacteriology and Immunology
2. **Item card 2:** Parasitology, Virology, Mycology and Clinical Microbiology

Medicine & Allied Subjects

Departmental Objectives

At the end of clinical postings in Medicine, the under graduate medical students will be able to:

- acquire appropriate knowledge, attitude and skill to become an effective doctor for the society
- elicit an appropriate clinical history, and physical findings, elucidate the clinical problems based on these and identify the means of solving the problems
- write requisition form for relevent laboratory tests and perform common bed side lab procedures, justify and interpret them
- outline the principles of management of various diseases considering the patient's socio-economic circumstances
- diagnose and manage medical emergencies
- recognize& provide competent initial care and refer complicated cases to secondary and tertiary care centres at appropriate time
- perform clinical procedures
- possess knowledge to consider the ethical and social implications of his/ her decision
- demonstrate the art of medicine involving communication, empathy and reassurance with patients
- develop an interest in care for all patients and evaluate each patient as a person in society
- have an open attitude to the newer developments in medicine to keep abreast of new knowledge
- learn how to adapt new ideas in situations where necessary
- learn to keep the clinical records for future references
- make them oriented to carry out clinical research in future

List of competencies to acquire

At the end of the course of Medicine the undergraduate medical students will be able to:

- diagnose and manage various common medical conditions prevalent in the community and give proper counselling to patients and relatives
- recognize & provide competent initial care and refer complicated cases to secondary and tertiary care centres at appropriate time
- diagnose and manage medical emergencies commonly encountered in hospital practice
- demonstrate the awareness of the need to keep abreast to new knowledge and techniques in medicine

Distribution of teaching - learning hours

Subject	Lecture *(in hours)*				Tutorial classes	Integrated teaching	Clinical (bedside teaching), *in weeks*			Total weeks	Block posting	Formative Exam	Summative exam
	2nd phase	3rd phase	4th phase	Total			2nd phase	3rd phase	4th phase				
Internal medicine	26	24	110	160	200	20 hrs.	14	06	12+2(OPD)	34	4 weeks	Preparatory leave-15 days Exam time -15 days	Preparatory leave-15 days Exam time -30 days
Psychiatry	-	-	20	20	-		-	03	-	03			
Dermatology	-	-	20	20	-		-	03	-	03			
Pediatrics	04	20	26	50	25		04	-	06	10			
Physical Medicine	-	-	05	05	-		-	02	-	02			
Emergency	-	-	-	-	-		02			02			
Total	30	44	181	**255**	**225**	**20 hrs.**	20	14	20	54	4 weeks		
Grand Total	**500 hours**						**58 weeks**					**75 days**	
Time for exam, preparatory leave, formative & summative assessment is common for all subjects of the phase													

Teaching-learning methods, teaching aids and evaluation

Teaching Methods				Teaching aids	In course evaluation
Large group	**Small group**	**Self learning**	**Others**		
Lecture Integrated Teaching	Bed side clinical teaching in ward, emergency room, OPD, Clinical teaching in CCU/ ICU. Clinical case presentation. Demonstration of Xray,CT scan,MRI,ECG,Instruments,Photos,Data etc. Practice in medical skill centre Practical Demonstration Writing case problem Practical Skills (Video)	Self-directed learning, assignment, self test/assesment	Integrated teaching, With other dept.	Laptop, Computer, OHP/ Multimedia presentation, Slide Projectors, Video, Slide, Dummy (Manikins), Model, Real patients, attendants, Simulation, Charts e.g. growth chart, IMCI Chart, Others e.g. ECG machine, X-ray, photographs, Black board, White board, Flow chart, X-rays, ECG Reports, Samples, Audio, Instrument, Photographs Reading materials o Modules & guidelines on different childhood /adult illnesses o Study guide o Books, journals	Item Examination Card final (written), Term Examination Term final (written, OSPE,oral+ practical+ clinical)

Final Professional Examination:

Marks distribution:

Total marks – 500 (Summative)

- Written = 200(MCQ-40+ SAQ -140+marks for formative assessment -20 =200)
- Oral and Clinical-(Oral 150+Clinical 100= 250)
- OSPE 50.

Related Equipments:

Stethescope, BP Machine, Hammer, Fluid bags, Blood bags, I.V sets & canula, Transfusion sets, Feeding tubes(Ryles tube ,Catheter,airway, X-rays, ECG, Appliances, Water seal drainage bottle ESR tube. LP needle, BM needle, Tongue depressor etc

Learning Objectives and Course Contents in Medicine

Learning Objectives	Contents	Teaching Hours
Students will be able to: • value Doctor-Patients relationship • define, differentiate, diagnose diseases • demonstrate clinical skills required for history taking, physical care and laboratory tests, care for diagnosing a disease stepwise and participate in the management plan of a patient under doctor supervision • differentiate clinically (History&Physical examination) one DD from other. • participate in patient education and counselling	**Introduction to General Medicine (to be covered in 3rd year classes)** Overview of Medicine as a discipline and subject Learning Clinical Approach 1. Doctor- Patient Relationship, Medical Ethics, Patient's safety. 2. Communication Skills 3. Behavioural Science Approach to common symptoms of disease: • General concept of Pain, chest pain and abdominal pain • Fever • Dyspnoea • Cough, expectoration, and Haemoptysis • Anorexia, Nausea, Vomiting, Weight loss and Weight gain • Haematemesis, Melaena, Haematochezia • Diarrhoea, Dysentery and Constipation • Oedema and Ascites • Jaundice • Syncope and Seizures • Fainting and Palpitations • Headache and Vertigo • Paralysis, movement disorders & disorders of gait • Coma and other disturbances of consciousness • Common urinary symptoms including anuria, oliguria, nocturia, polyuria, incontinence and enuresis • Anaemia and Bleeding • Enlargement of Lymphnodes, Liver and Spleen • Joint pain, neck pain and back ache	L- 24 hrs. 4 hrs(1x4) 20 hrs.(1x20)

Learning Objectives	Contents	Teaching Hours
The students will be able to : • define nutrition and its importance • describe normal requirement of nutrients for maintaining health at various periods of human life including healthy adult, pregnancy, infancy, childhood and adolescence • classify nutritional disorders • define protein energy malnutrition and explain its associated factors, precipitating factors • list the clinical features, describe treatment of protein-energy malnutrition • list and recognise the clinical features, provide treatment and advise for prevention and treatment of vitamin deficiency diseases • list and recognise the clinical features, provide treatment and advise to be given for prevention and treatment of deficiency diseases • list and recognise the clinical features, provide treatment and advice to be given for prevention of obesity • apply basic principles of nutrition in clinical medicine	**Clinical Medicine: Nutritional Factors in diseases** **CORE :** • Energy yielding nutrients • Protein energy malnutrition in adult • The vitamins- deficiency **Additional** • Nutrition of patients in hospital • Obesity ***Lectures to be covered on*** 1.Nutrients and vitamin deficiency 2.Obesity	L - 2 hrs.

The students will be able to :
 	
• list the clinical features, describe principles treatment and advise for prevention of heat hyperpyrexia, heat syncope and heat exhaustion and hypothermia
• list the clinical features, describe principles of treatment and advise for prevention of pollution related to :
  • Arsenic problem
  • Lead poisoning
  • Environmental radiation
	Climatic and environmental factors in disease
	
	CORE :
	
	• Disorders related to temperature
	• Disorders related to pollution
	• Drowning, electrocution and radiation hazards
	• Health hazards due to climate change
		L - 2 hrs.

Learning Objectives	Contents	Teaching Hours
The students will be able to: • diagnose infectious diseases. • explain principles of management of infection • describe general principles and rational use of antibiotics and other chemotherapy against infectious and parasitic diseases • list the clinical features, describe principles of treatment and advise for prevention of common infectious and tropical diseases.	**Diseases due to infections** **CORE :** • Approach to infectious diseases-diagnostic and therapeutic principles • General principles and rational use of antibiotics • Enteric fever • Acute Diarrhoeal Disorders • Cholera & food poisoning • Amoebiasis, Giardiasis • Tetanus • Influenza and infectious mononucleosis • Malaria • Kala-azar • Filariasis • **Helminthic diseases** ▪ Nematodes ▪ Cestodes ▪ Trematodes • HIV and infections in the immuno compromised conditions • Rabies • Herpes simplex & herpes zoster • Chickenpox • Viral haemorrhagic fever: dengue • Anthrax • Brucellosis	L-17 hrs.

Learning Objectives	Contents	Teaching Hours
The student will be able to define, describe prevalence, aetiologic factors, pathophysiology, pathology, investigations and principles of treatment of the common problems in haematology.	**Diseases of the blood** **CORE:** • Anemia • Leukaemia • Lymphoma • Multiple myeloma • Bleeding disorders • Coagulation disorders **Additional:** • Transfusion medicine • Bone marrow transplantation	L - 9 hrs.
The students will be able to: • describe applied anatomy and physiology & explain lung function tests; • describe prevalence, aetiologic factors, pathophysiology, pathology, investigations and principles of treatment of common respiratory diseases.	**Diseases of the respiratory system** **CORE :** • Applied anatomy and physiology • Investigations for respiratory diseases • Upper respiratory tract infections • Pneumonias • Tuberculosis: 1(Pulmonary) • Tuberculosis:2 (Extra-pulmonary) • Lung abscess and bronchiectasis • Diseases of the pleura: Pleurisy, Pleural effusion & empyema, Pneumothorax • Chronic Obstructive lung diseases and corpulmonale • Bronchial asthma & pulmonary eosinophilia • Acute and chronic respiratory failure • Neoplasm of the lung **Additional:** • Common occupational lung disease with DPLD	L - 13 hrs.

Learning Objectives	Contents	Teaching Hours
The student will be able to : • describe applied anatomy, applied physiology and investigations for the diseases of cardiovascular system • describe aetiology, pathophysiology, clinical features, investigations and treatment of Ischaemic heart disease • describe aetiology, pathophysiology, clinical features, investigations and treatment of acute rheumatic fever & rheumatic heart diseases • describe aetiology, pathophysiology, clinical features, investigations and treatment of valvular diseases • describe aetiology, pathophysiology, clinical features, investigations, treatment and complications of infective endocarditis • describe aetiology, pathophysiology, clinical features, investigations, treatment and complications of systemic hypertension • define and describe cardiac arrhythmias	**Diseases of the cardiovascular system** **CORE :** • Applied anatomy and physiology and investigations • Ischaemic heart disease ▫ Angina pectoris ▫ Myocardial infarction ▫ Sudden (cardiac) death • Rheumatic fever • Valvular diseases of heart ▫ Mitral stenosis & regurgitation ▫ Aortic stenosis & regurgitation ▫ Tricuspid & pulmonary valve diseases • Infective endocarditis • Hypertension • Cardiac arrhythmias (common) Sinus rhythms Atrial tachy arrhythmias Ventricular tachyarrhythymias Cardiac arrest Anti arrhythmic drugs • Heart block and pacemakers. • Heart failure – acute and chronic • Acute and chronic pericarditis, pericardial effusion, & cardiac tamponade **Additional :** • Peripheral arterial diseases • Common congenital heart diseases in child and adult • Venous Thrombosis and Pulmonary Thromboembolism	L - 12 hrs.

Learning Objectives	Contents	Teaching Hours
• describe congenital heart diseases • define, describe patho-physiology, types, clinical features, investigation and treatment of heart failure • define, describe patho-physiology, causes, clinical features, and treatment of acute circulatory failure • describe aetiology, pathophysiology, clinical features, investigations, treatment and complications of diseases of the pericardium	Congenital heart diseases ▪ ASD ▪ VSD ▪ PDA ▪ TOF ▪ Coarctation of Aorta Acute circulatory failure Diseases of pericardium ▪ Acute pericarditis ▪ Pericardial effusion Cardiac tamponade Cardiomyopathies	
The student will be able to • define, describe the aetiology, pathophysiology, investigation, complications and management. of peptic ulcer disease • define, describe the aetiology, pathophysiology, investigation and management. of gastrointestinal haemorrhage • describe Investigations of the alimentary tract. • define, describe the causes, pathophysiology, investigation and management. of gastro-oesophageal reflux disease • define, describe the aetiology, pathophysiology, investigation and management of dysphagia. • define & describe the aetiology pathophysiology, investigation and management of malabsorption disorders • define & describe the aetiology, pathophysiology, investigation and management of Inflammatory bowel disease - Crohn's disease, Ulcerative colitis. • define & describe the aetiology, pathophysiology, investigation and management of acute pancreatitis • define & describe the aetiology, pathophysiology, investigation and management of functional disorders of GIT • define & describe the aetiology, pathophysiology, investigation, complications and management of acute and chronic liver disease	**Diseases of the Gastro-intestinal and Hepato-biliary systems** **CORE :** • Applied physiology and investigation of the alimentary tract. • Stomatitis and Mouth Ulcers • Peptic Ulcer disease and non-ulcer dyspepsia • Malabsorbption syndrome • Irritable bowel syndrome • Inflammatory bowel disease • Acute viral hepatitis • Chronic Liver Diseases and its complications • Acute and chronic Pancreatitis **Additional:** • Dysphagia • Hepatotoxicity of drugs • Carcinoma of stomach/colon,Hepatocellular carcinoma	L – 12 hrs.

Learning Objectives	Contents	Teaching Hours
The students will be able to • define, diagnose, investigate and treat different nephrological diseases • make differential diagnosis • mention basic/ initial treatment • name the conditions for referral & follow-up care • describe preventive measures • explain the reasons for gender differences & issues, e.g. UTI in males & females • describe the special dietary modulations & Nutrition • outline of RRT • mention indications for RRT • list the special renal medicines & their interactions with commonly used medicines • describe nephrotoxicity of drugs • list indication for Renal biopsy and patient preparation • provide patient education about renal disorders • list the common disorders with renal sequel e.g., malaria, diabetes, hypertension, pregnancy • explain appropriate use of therapeutic tools • use interpretation of charts & lab data • orientation & care of modified anatomy & physiology, e.g. A-V Fistula,renal allograft.	**Nephrology & Urinary System** **CORE :** • Nephritic & Nephrotic Illness • UTI/ Pyelonephritis • ARF/Acute Kidney Injury • Chronic Kidney Disease • Renal manifestations of systemic diseases **Additional:** • Adult polycystic kidney disease	5 hrs.

Learning Objectives	Contents	Teaching Hours
Student should be able to: • identify syndromes of CNS & PNS diseases • identify signs of CNS & PNS diseases • identify clinical syndromes of brain, spinal cord & peripheral nerve. disorders • plan investigations in neurological disease • identify Vascular neuralgic syndromes. • define where? & What? is the lesion • describe the risk factors for CVD's • perform acute management & Subsequent management. • identify complicating, management • value the importance of rehabilitation / return of function • identify clinical syndrome of meningeal infection • plan immediate and subsequent investigations including confirmation of diagnosis. • provide give empiric therapy or clinical judgement. • provide Diagnosis & exclusion • identify & treats complications. • able to make a D/D of coma & differentiate structural cause of diseases from others • plan investigations in a suspected V. encephalitis. • describe general management of patient with fever, coma & convulsion. • state the specific Diagnosis of encephalitis & treatment • identify acute & chronic syndromes of P.N.S. • identify emergencies and manage • make D/D • describe management & Rehabilitation	**Neurology** • Concept of neurological diagnosis including investigations • Cerebrovascular diseases(I &II) • Headache • Meningitis: viral, bacterial and tuberculous • Encephalitis • Peripheral neuropathy • Disorder of cranial nerves	13 hrs.

Learning Objectives	Contents	Teaching Hours
Student should be able to: • identify a seizure & elicit history from an eyewitness. • identify common clinical syndrome of Epilepsy • plan management • advise to the patient and attendants. • identify syndrome of EP system • mention aetiologic agent(s) • plan investigations • decide for initial and subsequent treatment. • provide explanation, motivation and rehabilitation advises to patient. • identify common syndromes of motor system disease. • plan investigations • identify primary muscle diseases and differentiate from primary neurologic diseases • identify clinical syndrome of Neuromascular junctional defect. • plan investigations in a suspected muscle diseases • provide treatment for myasthenia gravis. • advises & genetic conselling for muscular dystrophy.	• Epilepsy • Extrapyramidal diseases • Common compressive and noncompressive spinal cord syndromes • Myasthenia gravis • Myopathies and skeletal muscle disease	13 hrs. (Total)

Learning Objectives	Contents	Teaching Hours
The students will be able to : • describe causes, clinical features and management of fluid and electrolyte disorders including ❑ Hyponatrenia ❑ Hypernatremia ❑ Hyperkalemia ❑ Hypokalemia • describe causes, clinical features and management of disorders of acid-base balance in particular relevance to vomiting, diagnoses of uraemia and diabetic ketoacidois.	**Water and electrolytes and acid-base homeostasis** CORE : • Disorders due to Sodium and Potassium imbalance • Disorders of acid-base balance	L – 2 hrs.
The student will be able to : • describe applied anatomy, physiology and investigations of endocrine disorders • describe epidemiology, aetiology, pathophysiology, clinical features, complications, investigation, treatment and management of diabetes mellitus • describe epidemiology, aetiology, pathophysiology, clinical features, complications, investigation, treatment and management of disorders of thyroid including ❑ Hyperthyroidism ❑ Hypothyroidism ❑ Solitary thyroid nodule ❑ Parathyroid disorders and calcium metabolism • describe epidemiology, aetiology, pathophysiology, clinical features, complications, investigation, treatment and management disorders of adrenal gland including ❑ Cushing's syndrome ❑ Addison's disease • describe epidemiology, aetiology, pathophysiology, clinical features, complications, investigation, treatment and management of disorders of hypothalamus and pituitary gland including ❑ Acromegaly, Sheehan's syndrome	**Endocrine and Metabolic diseases** CORE : • Diabetes mellitus(I & II) • Thyrotoxicosis • Hypothyroidism. • Cushing's syndrome and Addisons disease. • Hypo- and Hyperparathyroidism • Calcium and Vitamin –D related disorders ***Additional*** • Acromegaly and Sheehan's syndrome	L – 6 hrs.

Learning Objectives	Contents	Teaching Hours
The students will be able to: • classify diseases of the connective tissues, joints and bones • mention the epidemiology, aetiology, pathology, clinical features, complications, investigation, treatment and management of Inflammatory joint diseases . • mention epidemiology, aetiology, pathogenesis, clinical features, investigation, diagnosis, treatment and management of osteoarthritis. • mention the epidemiology, aetiology, pathogenesis, clinical features, investigation, diagnosis, treatment and management of connective tissue diseases including systemic lupus erythematosus & systemic sclerosis • mention the epidemiology, aetiology, clinical features, investigation, diagnosis, treatment and management of gout • mention the causes, clinical features, investigations, treatment and management of back disorders including lowback pain & spondylosis	**Connective tissue Disorder** **CORE :** • Rheumatoid arthritis • Degenerative joint diseases • Gout • Ankylosing spondylitis and other spondyloarthropathies. • The collagen vascular diseases including systemic lupus erythematosus, systemic sclerosis • Osteoporosis	L - 6 hrs.

Learning Objectives	Contents	Teaching Hours
The students will be able to : • take history of elderly patients • perform physical examination • perform mental status examination • evaluate functional capacity of the elderly • interpret the report of laboratory examinations & imaging • state the general principles of treating the elderly.	**Geriatric medicine** **CORE :** • General Principles of treating the elderly • Health problems of the elderly • Four Geriatric Giants – Acute confusional State, Falls, Incontinence and Frailty. • Healthy aging • Rehabilitation and Physical medicine.	L – 3 hrs.
The students will be able to describe medical genetics including ❑ Genes and chromosomes ❑ Mutation ❑ Genes in individual ❑ Genes in families ❑ Disorders of multifactorial causation ❑ Chromosomal aberrations The student will be able to describe the techniques of Medical genetics including ❑ Cyto genetics ❑ Biochemical genetics ❑ Molecular genetics ❑ Prenatal diagnosis ❑ Neoplasia : chromosomal & DNA analysis	**Genetic Disorders** **CORE :** • General concept of genetic diseases and management of genetic disorder • Single gene disorder • Clinical aspects of medical biotechnology • Chromosal disorder(Down, Turner, klinefelters)	L -2 hrs.

Learning Objectives	Contents	Teaching Hours
The students will be able to describe basic facts of immunology including • Immunoglobulins & antibodies • Cellular immunity • Autoimmunity The students will be able to describe aetiology, pathogenesis, pathology, clinical features, investigations and treatment of • Immunologic deficiency diseases • Autoimmune disease • Allergic disease	**Immunologic disorders** **CORE :** • Immunologic deficiency diseases • Auto immunity, Allergy & hypersensitivity and immunogenetics & transplantation • Immunosuppressive drugs	2 hrs.
The students will be able to describe : • prevention and early detection of common cancers • primary cancer treatment including ❑ Surgery and radiation ❑ Chemotherapy ❑ Adjuvent therapy • evaluation of tumour response including ❑ Tumour size ❑ Tumour markers ❑ General well being and performance status • role of nuclear medicine in diagnosis and treatment in Medical conditions.	**Oncology, Principles** **CORE :** • General principles of diagnosis and management of neoplastic diseases • Palliative care	2 hr. 1hr 1 hr.

Learning Objectives	Contents	Teaching Hours
The students will be able to describe : • initial evaluation of the patient with poisoning or drug overdose • general principles of management including ❑ Care of unconscious patient ❑ Respiratory support ❑ Cardiovascular support ❑ Special problems such as hypothermia, hypertension, arrhythmia, convulsions • management of common specific poisonings including ❑ organophosphorus compound ❑ sedative and hypnotic,(benzodiazepines) ❑ detergents, kerosene, pesticides etc. ❑ datura, methylalcohol • acute and chronic effects of alcohol and their management • venomous stings, insect bites, poisonous snakes and insects .	**Poisoning and drug overdose** **CORE :** • Initial evaluation of the patient with poisoning or drug overdose and general principles of management • Treatment of common specific poisonings a) Organophosphorous compounds b) Sedatives and Hypnotics c) Household Poisons • Venomous stings, insect bites, poisonous snakes and insects. **Additional:** • Acute and chronic effects of alcohol and Methanol and their management • Copper sulphate, Paracetamol, Kerosene etc	6 hrs.
The students will be able to describe : • general principles of intensive care • acute disturbances of haemodynamic function including Shock • aetiology, pathogenesis, clinical features, investigations, and management in acute medical emergency	**Emergency medicine** **CORE :** • Cardiac Arrest – ALS, BLS • Acute pulmonary oedema and severe acute asthma • Hypertensive emergencies • Diabetic ketoacidosis and hypoglycaemia • Status epileptics • Acute myocardial infarction, shock and anaphylaxis • Upper G.I bleeding and hepatic coma • Diagnosis and management of comatose patient **Environmental disease & heat illness** **Global warming & Health hazards**	6 hrs.

Learning Objectives	Contents	Teaching Hours
The students should be able to : • use a humane approach during history taking and performing a physical examination • examine all organs/systems in adults and children including neonates • arrive at a logical working diagnosis after clinical examination (General & Systemic) • order appropriate investigations keeping in mind their relevance (need based) and cost effectiveness • plan and institute a line of treatment which is need based, cost effective and appropriate for common ailments taking into consideration : ❑ patients ❑ disease ❑ socio-economic status ❑ institutional / government guidelines • recognise situations which call for urgent or early treatment at secondary and tertiary centres and make a prompt referral of such patients after giving first aid or emergency treatment • assess and manage fluid / electrolyte and acid-base balance • interpret abnormal biochemical laboratory values of common disease • interpret skiagram of common diseases • identify irrational prescriptions and explain their irrationality • interpret serological tests such as VDRL, ASO, Widal, HIV, Rheumatoid factor • demonstrate interpersonal and communication skills befitting a physician in order to discuss the illness and its outcome with patient and family • write a complete case record with all necessary details	**Clinical Methods in the Practice of Medicine** **CORE :** • History Taking • Physical Examination • Investigations • Diagnosis • Principles of treatment • Interpersonal skills • Communication skills • Doctor - Patient relationship • Ethical Behaviour • Patient's Safety • Referral services • Medical Certificate • Common Clinical Procedures ❑ Injections ❑ IV infusion and transfusion ❑ FIRST AID ❑ Intubation ❑ CPR ❑ Hyperpyrexia ❑ ECG ❑ Skin Sensitivity Test	W-14 weeks (3^{rd} year) See Appendix-1 W – 6 weeks (4^{th} year) See Appendix-2 W - 12weeks (5^{th} year) See Appendix-3 Opd-2 weeks

Learning Objectives	Contents	Teaching Hours
• write a proper discharge summary with all relevant information • write an appropriate referral note to secondary or tertiary centres or to the physicians with all necessary details • assess the need for and issue proper medical certificates to patients for various purposes • record and interpret an ECG and be able to identify common abnormalities like myocardial infarction, arrhythmias • start I.V. line and infusion • performe venous cut down • give intradermal / SC / IM / IV / injections • insert and manage a C.V.P. line • conduct CPR (Cardiopulmonary resuscitation) and first aid in new born/ children including endotracheal intubation. • introduce a nasogastric tube • manage hyperpyrexia	**CORE** • Lumbar puncture • Bone marrow aspiration • Thoracocentesis / paracentesis • Oxygen Therapy • Oropharygeal suction • Shock management • Brochodilator inhalation technique, nebulization • Urethral Catheterisation **Additional** • Administration of Enema • Postural drainage • Dialysis • Electro convulsive therapy	
Attitude : The student should: 1. develop a proper attitude towards patients, colleagues and the staff. 2. demonstrate empathy and humane approach towards patients, relatives and attendants. 3. maintain ethical behaviour in all aspects of medical practice. 4. develop a holistic attitude towards medicine taking in social and cultural factors in each case 5. obtain informed consent for any examination / procedure 6. appreciate patients right to privacy 7. adopt universal precautions for self protection against HIV and hepatitis and counsel patients 8. be motivated to perform skin sensitivity tests for drugs and serum	Attitudes to be supervised by clinical teachers.	

Appendix -1

Clinical Taching

2nd Phase **1st Round** **14 Weeks**

Learning Objectives	Contents	Teaching Hours
The student will be able to : • narrate the role of ward duties in learning clinical medicine. • develop interpersonal and communication skills befitting a physician in order to discuss illness and its outcome with patient and family • elicit different components of history and understand its importance – particulars of the patient, the presenting symptoms, the history of the present illness, H/O previous illness, Family history, Personal & Social history, Drug history, & allergy, menstrual history (in female) • record and analyze symptoms of presentation **History taking** The student will be able to ask patients about : • cough- nature, relation with chest pain, time of the day, any particular condition aggravates or relieves: • shortness of breath- onset, duration, relation with exertion, episodic or not etc. • haemoptysis- amount, is it rusty or fresh blood • sputum- amount, colour, odour, associated with wheezing.	**Introduction to clinical ward duties and approach to a patient** ❑ Art of Medicine ❑ Doctor patient relationship ❑ Different component of history ❑ Symptom analysis in relation to diseases of different systems: • Respiratory System ❑ Shortness of breath ❑ Haemoptysis ❑ Cough ❑ Sputum ❑ Chest pain ❑ Fever	

Learning Objectives	Contents	Teaching Hours
• The student will be able to ask patients about symptoms mentioned in contents in detail e.g. site, nature, aggravating or relieving factor of chest pain. • The student will be able to elicit informations related to the symptoms of presentation e.g. frequency of bowel, nature of stool, amount, blood in stool, tenesmus etc. if complaining of diarrhoea. The student will be able to ask patients about : • H/O vaccination, transfusion • Chronology of development of symptoms with different parameters.	**<u>CVS</u>** • Palpitation • Chest pain • Leg oedema • Shortness of breath **<u>GIT</u>** • Abdominal pain • Haematemesis and Melaena • Loss of appetite • Diarrhoea & Constipation • Haematochezia • Nausea, Vomiting • Weight loss • Difficulty in swallowing **Hepatobiliary** • Jaundice • Abdominal swelling • Impaired consciousness **<u>Rheumatology</u>** • Multiple joint pain • Monoarticular joint pain	

Learning Objectives	Contents	Teaching Hours
The student will be able to: • ask the patient about the symptoms e.g. seizure – duration, interval between attack, any injury during attack, sphincter disturbance, aura, • define fit, syncope, hemiplegia, monoplegia, paraplegia etc. The student will be able to: • ask the patients about the presenting symptom • define – oliguria, anuria, polyuria, dysuria Students will be able to take relevant history, related to disorders of Haemopoetic system The student will be able to : • take detail history about fever and different tropical & infection diseases, animal bite diseases, animal bite like snakebite, dog bite.	**Nervous System** • Loss of consciousness • Fit or convulsion • Syncope • Paralysis • Headache • Vertigo **Urinary System** • Puffiness of face • Oliguria & anuria, Polyuria • Dysuria • Incontinence • Nocturnal enuresis • Loin pain • Pus per urethra **Endocrine System** • Swelling of neck • Weight gain • Weight loss **Haemopoetic system** • Pallor • Bleeding **Other** • Tropical and infections diseases	

Learning Objectives	Contents	Teaching Hours
The student will be able to • perform general physical examination and observe record and interpret findings.	**General examination** • Appearance ➜ Facies • Built • Nutrition • Hydration status • Decubitus • Anthropometric measurement • Anaemia, Jaundice, Cyanosis • Clubbing, Koilonychia, leukonychia • Oedema, Dehydration, Pulse, BP, Temperature, Respiration • JVP • Lymph node • Thyroid, salivary gland • Skin, Hair, Nail • Skin (Petichae, purpura, echymosis, bruise, haematoma, rashes), pigmentation etc • Hair distribution • Nail • Breast • Eye – Proptosis	

Learning Objectives	Contents	Teaching Hours
Students will be able to : • record pulse e.g. radial pulse and peripheral pulse and observe Jugular Venous Pressure • record Blood Pressure • inspect chest shape, symmetry, movement, type of breathing • palpate apex beat, trachea, thrill • percuss cardiac outline, liver dullness and areas of resonance • auscultate the heart sounds, murmur, pericardial rub Students will be able to : • inspect the chest, palpate trachea, chest for expansion, vocal fremitus • percuss the lungs. • auscultate for breath sounds, rhonchi, creps, pleural rub.	**Systemic examination** **CVS** • Pulse, BP, JVP • Pericardium ❑ Inspection ❑ Palpation ❑ Percussion ❑ Auscultation of heart ❑ Auscultation of lung base • Related G/E of CVS e.g. clubbing, cyanosis,edema. **Respiratory System** • Respiration rate /Type • Inspection • Palpation • Percussion, Auscultation • Examination of sputum • Lung function test • Pleural fluid aspiration	

Learning Objectives	Contents	Teaching Hours
Students will be able to: • assess levels of consciousness • identify the facial expression • examine cranial nerves Students will be able to: • examine motor system • examine sensory system • observe different types of gait • elicit signs of meningeal irritation • perform SLR test • observe lumbar puncture • examine Fundus by ophthalmoscope	**<u>Nervous System</u>** • Higher mental function ❑ Co-operation ❑ Appearance ❑ Level of consciousness ❑ GCS ❑ Memory ❑ Speech ❑ Orientation of time, space, person ❑ Hallucination, Delusion, Illusion • Cranial nerves. (1^{st} -12^{th}) • Motor function • Sensory function • Gait • Signs of meningeal irritation • Examination of peripheral nerves • Involuntary movement **CSF Study** **<u>Ophthalmoscopy</u>** • Ophthalmoscope	

Learning Objectives	Contents	Teaching Hours
Students will be able to: • assess joints and muscles by inspection, palpation • test range of movement • test muscle around joints • assess posture Students will be able to: • inspect oral cavity, orpharynx. • palpate abdomen e.g. Liver, spleen, kidney • demonstrate fluid thrill, shifting dullness • perform PR examination • observe aspiration of peritoneal fluid Students will be able to: • detect general signs of renal disease • perform bimanual palpation of kidney, renal tenderness • examinational gthitalia • examine urine for sugar, albumin. • prepare and read blood film (eg. Malarial parasite) The student will be able to do: physical examination and certain minor procedures e.g. blood film, ESR, Hb%, Urine – albumia, Sugar, Stool ME.	**Rheumatology** • Joints ➜ (Look & feel) • Inspection • Palpation • Movement Muscle • Wasting • Swelling Skeleton • Survey **GIT** • Inspection of oral cavity & oropharynx • Abdomen Inspection / Palpation • Test for ascites • Percussion/ auscultation ❑ Per-rectal examination ❑ Examination of stool, vomitus, groin, genitalia, perianal region ❑ Aspiration of peritoneal fluid **Urinary system** • Kidneys • Bladder • Uretheral orifice • Urine analysis **Haemopoetic system** **Tropical and infectious illness** **Animal bite – snakebite, dog bite**	

Annex - 1

Department of Medicine

CARD - 1

_____ Medical College (3rd Year)

Clinical Registration No. _____

Name : _____

Roll No. _____ Batch _____

Medicine unit : _____

Professor : _____

Grading
A = 75 - 100
B = 60 - 74
C = 50 - 59
D = 40 - 49
E = 00 - 39

Duration of Placement (1st Round) from _____ to _____

No.	Items	Marks Obtained	Signature of teacher
1.	Procedure of History taking and writing and questions related to elaboration of different systems.		
2.	General examination and questions related to general examination.		
3.	Systemic examination of the Alimentary system and related questions.		
4.	Systemic examination of the Respiratory system and related questions.		
5.	Systemic examination of the Cardiovascular system and related questions.		
6.	Systemic examination of the Renal system and related questions.		
7.	Systemic examination of the Nervous system and related questions.		
8.	Examination of the haemopoietic system and related questions.		
9.	Examination of the musculoskeletal system and related questions.		
10.	Miscellaneous e.g. examination of the hands, lower limbs, neck etc.		

Total attendance _____ days, out of _____ days

Marks obtained in all items (%) _____ & in Card final Examination _____

Comment_____

_____

Professor
Department of Medicine

Registrar
Department of Medicine

Appendix -2

Clinical Teaching

3rd Phase 2nd Round 6 Weeks

Learning Objectives	Contents	Teaching Hours
Continue to develop skills in history taking & physical examination. Students will be able to: • interpret the findings in terms of diseases, possible causes, make a differential diagnosis & plan investigations.	**Approach to Sign & Symptom** **GIT & HBS** • Ascites • Hepatosplenomegaly • Oral ulcer • Abdominal swelling • Abdominal pain • Vomiting & diarroehea • Haematemesis, melaena • Jaundice **CVS** • Respiratory distress • Chest pain • Jugular Venous Pulse (JVP) • Hypertension • Abnormal heart sound & murmur • Pulse **Respiratory System** • Haemoptysis • Cough • Pleural effusion • Pneumothorax • Collapse, Consolidation, Fibrosis • Breath sound • Sputum analysis	

Learning Objectives	Contents	Teaching Hours
Students will be able to: • interpret the findings in terms of diseases, possible causes, to make a differential diagnosis & plan investigations. Students will be able to: • be acquainted with instruments commonly used for medical procedure observe the doctors performing the procedures	<u>Urinary System</u> Approach to patient with : • Oliguria, polyuria, anuria • Anasarca • Urine analysis <u>Nervous System</u> • Unconscious patient • Hemiplegia, monoplegia, paraplegia • Upper Motor Neuron Lesion (UML) • Lower Motor Neuron Lesion (LML) • Cerebellar sign • Extrapyramidali sign • Involuntary movement • Vertigo & Headache <u>Haematology</u> Approach to patient with : • Bleeding disorder • Anaemia • Lymphadenopathy <u>Rheumatology</u> Approach to patient with • polyarthiritis • oligoarthiritis <u>Clinical skills</u> • Lumbar puncture • Bone marrow aspiration • Aspiration of serous fluid/ synovial fluid • Ryles tube • Catheterization • I/V fluid, IV Canula • Stomach wash	

Annex - 2

Department of Medicine

Card - II
(4th Year)

Grading
A = 75 - 100
B = 60 - 74
C = 50 - 59
D = 40 - 49
E = 00 - 39

Name of the student: _____

Roll No. _____

Medicine unit: _____

Name of Professor: _____

Duration of Placement (2nd Round) from _____ to _____

Total attendance _____ days, out of _____ days

No.	Items	Marks obtained	Signature of Teacher
1.	Review of clinical methods		
2.	Respiratory diseases		
3.	Cardiovascular diseases		
4.	Alimentary & Hepatobiliary disorders		
5.	Renal diseases		
6.	Endocrine disorders		
7.	Haemopoietic disorders		
8.	Diseases of Nervous system		
9.	Infectious diseases		
10.	Common Laboratory investigations		
11.	Basic knowledge on X-ray & ECG		

Marks Obtained:
Comments:

Professor
Department of Medicine

Registrar
Department of Medicine

Appendix -3

Clinical Teaching

4th Phase **3rd Round** **12 Weeks**

Learning Objectives	Contents	Teaching Hours
Students will be able to : • take detailed history from a patient • carry out detailed general and systemic clinical examination • present long cases on different body system including Respiratory System Cardiovascular System Gastro-intestinal System Endocrine System Urinary System Haematology system Nervous System Rheumatology Infections • plan appropriate investigations • plan appropriate treatment of common medical conditions	**Review of history taking & clinical examinations (3rd year, 4th year)** ***Case discussion*** ❑ Long cases <u>Respiratory System</u> ❑ COPD ❑ Bronchogenic carcinoma ❑ Pneumonia ***CVS*** ❑ CCF ❑ CHD ❑ IHD ❑ VHD ❑ Rheumatic heart disease ❑ Hypertension ❑ Pericardial diseases	

Learning Objectives	Contents	Teaching Hours
Students will be able to: • evaluate the patients by follow up and monitoring • assist in managing critically ill patients • interpret various common investigation reports – ECG, X-rays, Biochemical tests, etc. • assist doctors in counselling patients and their families about treatment, follow up and prevention.	***GIT*** • Haematemesis & mealena • PUD • V. Hepatits • CLD • Carcinoma of Liver • Pancreatitis • Heapatic failure ***Endocrine*** • Hyperthyroidism • Hypothyroidism • DM ***Rheumatology*** • Rheumatoid arthritis • Seronegative arthritis • Osteoarthritis • Gout ***Urinary*** • Glomerulonephritis • Nephrotic Syndrome • Acute Kidney Injury • Chronic Kidney Disease • Urinary Tract Infection ***Haematology*** • Anaemia • Leukaemia • Bleeding diathesis	

Learning Objectives	Contents	Teaching Hours
Students will be able to: • demonstrate in-depth skills, in history taking, clinical examination, diagnosis and management of NS diseases & infectious diseases.	**Nervous System** • CVD • Multiple Sclerosis • Myasthenia Gravis • Parkinsonism • Peripheral neuropathy • GBS • Cranial neuropathy **Infection** • Enteric fever • Malaria • Kala Azar • Filarisis • Amoeabiasis • Tetanus • Rabies • Poisoning • Snake bite • Tuberculosis • Diarroehea & Dysentery • Shock • Dengue	

Learning Objectives	Contents	Teaching Hours
Students will be able to: • present short cases on different body system	**Short Cases :** ❑ Hepato or Splenomegaly or both ❑ Pleural effusion ❑ Pneumothorax ❑ Consolidation ❑ Collapse ❑ Fibrosis ❑ Hemiplegia ❑ Paraplegia ❑ Facial nerve palsy (UMN + LMN) ❑ Ascites ❑ Lymphadenopathy ❑ Thyroid ❑ Examination of knee ❑ Examination of precordium ❑ Auscultation of lung	
Students will be able to: • demonstrate certain skills • carry out certain procedures e.g. lumbar puncture under supervision, IM injection, IV injection, Infusion	**Clinical skills :** • Bone Marrow aspiration • Aspiration of serous fluid ❑ Pleural ❑ Peritoneal ❑ Pericardial • Foley's catheterization • Intercostal tube • I/V canula • Lumbar puncture • Venesection • CPR	

Learning Objectives	Contents	Teaching Hours
Students will be able to : • interpret routine examination findings for Blood, Stool, Urine • interpret FBS, GTT and HbA1C • interpret certain specific laboratory tests e.g. Liver Function Tests etc. Students will be able to: • interpret common radiological findings on plain skiagrams of chest, skull, sinuses, neck, abdomen, pelvis, upper and lower extremities	**Interpretation of Laboratory Data** • **General :** ❑ Blood for R/E ❑ Urine for R/E ❑ Stool for R/E ❑ FBS / GTT • **Specific :** ❑ Liver function test (LFT) ❑ Thyroid function test (TFT) ❑ Kidney function test ❑ Pulmonary function tests (PFT) ❑ Test for malabsorption ❑ Test for rheumatology ❑ Test for neurology ❑ Cardiac function test ❑ Haematological test ❑ Test for certain infectious diseases, e.g. Widal test. • **Radiology :** ❑ X-ray chest ❑ X-ray • Bones • Skull • Joints ❑ X-ray abdomen	

Learning Objectives	Contents	Teaching Hours
Students will be able to: • interpret findings on certain contrast X-rays e.g. Barium Meal etc. • establish a good-student patient relationship • communicate with patients in understanding manner. • observe and assist in terminal care • observe in care of death & dying patient	• Contrast X-rays : ❑ Barium Meal ❑ Barium Follow through ❑ Barium Enema ❑ OCG ❑ ERC ❑ Myelogram ❑ IVU. • USG • CT & MRI • Communication Skills • Terminal Care • Care of death and dying	

Note:

1. Each student will be able to get certain number of beds, they will write down their history, physical examination, follow-up, observe the management and follow-up including counselling.
2. Each student will submit a complete case history per week of placement in every assignment in medicine.

Annex - 3

Department of Medicine

Card - III
(5th Year)

Grading
A = 75 - 100
B = 60 - 74
C = 50 - 59
D = 40 - 49
E = 00 - 39

Name of the student : _____

Roll No. _____

Medicine unit : _____

Name of Professor : _____

Duration of Placement (3rdRound) from _____to_____

Total attendance _____days, out of _____days

No.	Items	Marks obtained	Signature of Teacher
1.	Respiratory diseases		
2.	Cardiovascular diseases		
3.	Alimentary & Hepatobiliary disorders		
4.	Renal diseases		
5.	Endocrine disorders		
6.	Bones, joints & connective issue diseases		
7.	Diseases of nervous system		
8.	Haemopoietic disorders		
9.	Interpretation of X-ray		
10.	Interpretation of ECG		
11.	Instrumental uses in clinical practice		
12.	Interpretation of laboratory investigations		

Marks obtained (%):

Professor
Department of Medicine

Registrar
Department of Medicine

Physical Medicine

Learning Objectives	Contents	Teaching Hours
Students will be able to: • describe historical aspect, spectrum of physical medicine, and various modalities of physical therapy • describe rehabilitative management of certain conditions including: ❑ Rheumatoid Arthritis and other inflammatory arthritides ❑ Degenerative Joint diseases ❑ Stroke ❑ Degenerative Joint diseases ❑ Stroke and other neurological diseases • identify the various modalities of physical therapy • plan to apply physical therapy for certain clinical conditions	**CORE:** • Introduction to physical Medicine and Rehabilitation	5^{th} year 5 hours lecure

Appendix-4

Physical Medicine
Clinical Attachment (WARD DUTY)
4th Year- 2 weeks

Learning Objectives	Contents	Teaching Hours
Students will be able to: • outline the role and importance of Physical Medicine • identify the various modalities of Physical Medicine • plan to apply physical therapy for certain clinical conditions	• Introduction to Physical Medicine ❑ History ❑ Background ❑ Spectrum ❑ Visit to Physical Medicine Ward • Modalities of Physical Therapy • Management and Rehabilitation of ❑ Neck pain ❑ Back pain ❑ Painful Conditions of upper & lower extremities ❑ Neurological conditions including Stroke ❑ Spinal injuries ❑ Arthritis & allied conditions ❑ Non-surgical & post operative complications	2 hr 2 hrs 12 hrs

Annex-4

CARD for Physical Medicine

ITEM	MARKS	Signature
Definition, Historical aspects, background, spectrum of Physical Medicine & visit in Physical Medicine ward		
Various modalities of Physical therapy		
Management and Rehabilitation of Neck Pain		
Management and Rehabilitation of Back Pain		
Management and Rehabilitation of painful conditions of upper & lower limbs		
Management and Rehabilitation of stroke and other Neurological conditions		
Management and Rehabilitation of Spinal injuries		
Management and Rehabilitation of Arthritis and allied conditions		
Management and Rehabilitation of non surgical orthopaedic & post operative complication		
Management and Rehabilitation of Cerebral Palsy and other paediatric paralytic conditions		

Time Schedule
Medicine lecture

Discipline	2nd phase (In hrs.)	3rd phase (In hrs.)	4th phase (In hrs.)	Total hours
Internal Medicine	26	24	110 hours	160
Pediatrics	04	20	26 hours	50
Psychiatry	-	-	20 hours	20
Skin & VD	-	-	20 hours	20
Physical Medicine	-	-	05 hours	05
Total	30 hrs.	44 hrs.	181 hrs.	255 hrs.

Ward duty
Subjects (weeks)
Time: 9.30-11.30am & 7.00pm- 9.00pm (4 hours)

Phase	Medicine (weeks)	Emergency (weeks)	Pediatrics (weeks)	Psychiatry (weeks)	Skin & VD Infectious disease	Total weeks
2nd	14	02	04	-	-	20
3rd	6	PHYSICAL MEDICINE 02	-	03	03	14
4th	12+2 (OPD) =14	-	06	-	-	20
Total	34 wks.	4 wks.	10 wks.	03 wks.	03 wks.	54

Note: Teachers for supervising the evening duties must be available

Final professional examination

Assessment of Medicine

Assessment systems and mark distribution

Components	Marks			Total Marks
WRITTEN EXAMINATION **Paper – I- Internal Medicine** MCQ (Format- 10 multiple true false and 10 single best response) SAQ Marks from formative assessment	20 70 10			100
Paper - II- Internal medicine with allied subjects & Paediatrics Psychiatry, Dermatology& Veneral disease, Neurology, Poisoning, Infections, Geriatrics, Genetics and Paediatrics	Int.Me.& Allied	Paediatrics	Total	100
MCQ SAQ Marks from formative assessment	10 35 05	10 35 05	20 70 10	
	Total			**200**
OSPE	10 stations x 05			**50**
ORAL & CLINICAL **<u>6 Examiners in 3 boards</u>**. Board- I- 1 examiner from internal Medicine 1 examiner from internal Medicine Board-II- 1 examiner from Internal Medicine 1 examiner from sub specialities/ allied subjects Board- III- 1 examiner from Paediatrics 1 examiner from Paediatrics **<u>Examiner will be selected according to seniority</u>** During oral examination Xrays, ECG, photographs, lab data etc. are to be included and 50 marks are to be allotted for this purpose No temp. Chart, slides, specimen in Practical Exam.	**Oral** 50 Marks for Each Board (10 marks for each board for Xray, ECG,lab data, photographs etc and 40 marks for each board for structured oral examination) **Clinical** 1 Long case =50 Marks (IM) 3 Short cases=30 Marks (IM) 2 Short cases=20 Marks (Paed)			**150** *(Oral- 40 marks x 3 boards) =120* *(Practical-10 marks x 3 boards) =30* **100**
			Grand Total	**500**

There will be separate Answer Script for MCQ. Pass marks 60% in each of written, oral and practical examinations.

After aggregating obtained marks of 3 oral boards (comprising of SOE & Practical) students pass or fail will be finalized in oral section.

INTEGRATED TEACHING EXERCISE

- The integrated teaching should be established as a routine
- It should be on selected topics
- It should be started from year 3 M.B.B.S Class
- It should involve teachers of pre-clinical, para-clinical & clinical subjects
- It should be on theoretical, clinical & Paraclinical aspects aided by audio-visual devices
- Programme should be made well ahead of commencement of the course & concerned persons shall be informed in time
- It should be mostly community, Primary Health Care & National Health problems oriented
- It should be held preferably twice a year ,each for two hours between 9 - 11 a.m
- It should involve all clinical students & teachers and the site, lecture theatre & attendance must be recorded

Some examples of Multi-Disciplinary Integrated Exericise topics are:

Trauma
Cancer
Tuberculosis
C P R
Jaundice
Acid base electrolyte balance / imbalance
Death and dying
- Medical ethics
- Maternal and child health

Diabetes Mellitus

Departments:
MEDICINE + SURGERY + OBGYNE

Day : Thursday
Time : 09.00 – 11.00 a.m.
Frequency : Once in a month

WARD PLACEMENT

- To introduce uniform card system and feasible card in all the medical colleges
- To prepare a central card for different components of medicine incorporating teachers of all medical colleges on priority basis
- Each card will carry 100 marks, 10% of the card marks will be added to the summative assessment
- 52 weeks- 100 mark.

OPPORTUNITY FOR COMMUNITY ORIENTATION

- Teaching - learning sessions will be organised in inpatient departments in different wards e.g. Internal medicine, Paediatrics, Psychiatry, Dermatology, etc, outpatient departments, emergency room, infections diseases hospital
- The patients attending the different areas will mostly represent the community
- Medical college hospitals cover a good area of community health problems
- Attempt can be made to motivate students for meeting health needs of people
- For further attitudinal shift to serve people, field site training in 3rd 4th year and a short stay (1-2 weeks) during internship in Thana Health Complex will be of much help

BLOCK POSTING

Time	: Total 4 weeks	
Break up	: Internal medicine	12days
	Paediatrics	6 days
	Psychiatry	3 days
	Dermatology	3days

WORKING HOURS

- 09.00 a.m. – 02.30 p.m (Compulsory for all)
- 02.30 p.m. – 08.30 p.m.(Roaster duty time)

Teaching / learning schedule: to be arranged locally
The duties of the students during block posting will include:

a. small group teaching,
b. ward round
c. roaster duty during morning and evening hours

Every student will have a separate log book for his attendance, performance etc
Log book to be attached with the formative assessment

SKIN & VD

Course Objectives:

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

- grasp the importance of dermatology and venereology in modern medicine
- take appropriate history from the patients and perform relevant clinical examination
- select and interpret relevant investigations
- diagnose and manage the most common skin and venereal diseases prevalent in Bangladesh
- deal dermatological and venereological emergencies
- identify problematic patients that require specialised care and refer them appropriately
- communicate effectively with patients, relatives and colleagues regarding complications, prognosis and others
- participate in the related national disease control programs
- conduct relevant research

List of Competencies:

- Appropriate history from the patients with the following diseases
- Proper cutaneous examination of the said patients
- Perform the relevant investigations and interpret the results
- Manage and counsel the patient after proper diagnosis of Skin / Venereal Disease
- Refer the complicated cases to appropriate authority for better management.

Learning Objectives and Course Contents in SKIN & VD

Learning Objectives	Contents	Teaching Hours
Students will be able to: • explain the structure and functions of the skin as an organ • describe aetiology, clinical features, and management of common skin and venereal diseases • take appropriate history from the patients and perform proper clinical examination • diagnose and manage common skin and venereal diseases • request and interpret investigations like VDRL/ TPHA/ AFB/ gram staining	**CORE:** • Cutaneous Signs /Symptoms • Scabies and Pediculosis • Atopic Dermatitis&Contact and Seborrhoeic dermatitis • Superficial fugal infections • Candidiasis,Pyoderma • leprosy • Bullous diseases(Pemphigus) • Cutaneous menifestations of systemic diseases • Viral disease(Herpes) • Syphilis • Chancroid & Genital ulcer • AIDS • Gonorrhoea,Non Gonococcal Urethritis • Psoriasis • Acne ,Skin Tuberculosis • Urticaria • Drug Reactions • Pigmentary diseases (Vitiligo), Alopecia • Chronic Arsenicosis • Skin Diseases with Climate Change	1 hour **Total: 20 hours**

Skin & Venereal Diseases
Clinical Attachment (WARD DUTY)
Total 72 hours (18 Days) in 3rd Phase

Learning Objectives	Contents	Teaching Hours
Students will be able to: • describe aetiology, clinical features, and management of common skin and venereal diseases • acquaint with universal precautions, syndromic management, counselling of STD/ AIDS Cases. • take appropriate history from the patients and perform clinical examination • diagnose and manage common skin and venereal diseases • demonstrate nerve thickening in leprosy. • demonstrate punch biopsy, electrocautery, cryosurgery, PUVA procedures.	**Dermatology** **CORE:** • Cutaneous signs/symptoms • Scabies and Pediculosis • Pyoderma • Atopic Dermatitis • Contact and Seborrhoeic Dermatitis • Dermatophytosis • Candidiasis • Acne • Psoriasis • Viral Diseases(Herpes simplex, Herpes zoster, wart, molluscum contagiosum) • Leprosy	2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours

Learning Objectives	Contents	Hours/days
Students will be able to • describe the clinical feature, management. • Interpret result of patch test/ prick test / tuberculin test. • be acquainted with syndromic management/ universal precaution, counselling on STD/ AIDS • perform gram staining/ bubo aspiration • request & interpret tests like VDRL/ TPHA/ ELISA/ Western blot/ CFT for chlamydia.	**Additional:** • Drug Reactions • Urticaria • Skin tuberculosis • Genodermatoses (Icthyosis, Neurofibromatosis, etc.) • Skin tumours • Bullous diseases (Pemphigus, Dermatitis herpetiformis) **Venereology** **CORE** • Sexually transmitted infection • Syphilis • Chancroid • Gonorrhoea • Nonspecific Urethritis • AIDS	2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours

Integrated Teaching: SKIN & VD

Topic	Learning Objective	Department
Leprosy	Student should be able to: • describe epidemiology, aetiology, investigations clinical feature and management. • demonstrate partial nerve thickening/Anaesthesia • request and interpret investigations like Slit Skin smear for AFB and BI / MI.	Skin & VD Community Medicine Microbiology Leprosy Hospital
AIDS	• describe epidemiology/ aetiology/ investigations/ CF / management • request investigation like ELISA/Western Blot.	Skin & VD Medicine Virology (Pathology) Community Medicine
Chronic Arsenicoses	• describe the epidemiology, investigation clinical features and management	Skin & VD Medicine

While taking history and examining a patient the following steps should be followed by students:

Greetings to the patient
Introduction of self as a medical student
Explanation to the patient what is to be done
Use of understandable language of patient
Seeking permission and co-operation
Adequate exposure in lighted area having maintaining privacy
Giving thanks to the patient at the end of examination
Adopting correct procedure by use of appropriate instrument while doing procedure.

Instructions for Item Cards:

Students should complete the cards during clinical attachment
Teacher should sign the card against the item completed
At the end of the attachment the card must be submitted to the Head of the department for countersigning.

Psychiatry

COURSE OBJECTIVES

After completion of the course a medical student will be able to:

- comprehend the concept of mental health care and be aware of the role of the medical doctor in detecting common mental disorder in the community
- provide appropriate management to patients in the community
- comprehend the historical concept of psychiatry and its gradual development.
- comprehend normal and abnormal human behaviour in terms of personality, memory, intelligence, and learning.
- classify psychiatric disorders, recognise clinical manifestation of common psychiatric syndrome during clinical assessment and plan their appropriate management.
- deal psychiatric emergencies in hospital and community.

Learning Objectives and Course Contents in Psychiatry

Learning Objectives	Contents	Teaching Hours 20 hours
Students will be able to : • describe the historical concepts related to psychiatry • describe psychosocial aspects of patients in medical settings • explain the basic concepts related to learning, memory, personality, and intelligence • classify common psychiatric disorders prevalent in Bangladesh • describe the aspects of mental health care to patients at the community level including drug abuse • classify common child psychiatric, neurological, behavioral, and psychosocial disorders prevalent in Bangladesh • recognise clinical manifestation of common psychiatric syndrome during clinical assessment • plan their appropriate management. • provide care to the patients presenting with psychiatric emergencies in hospital • give long term care to patients at the community level provide preventive mental health care especially to high risk groups	**CORE :** • Historical concepts & classification • Behavioural Science • Learning, memory, personality, intelligence • Symptommatology • Organic psychiatry: Dementia & Delirium • Substance Abuse & Alcoholosim • Child psychiatry including Autism • Psychosexual Disorders • Psychoparmacology **Clinical Placement:** • Mental state exam • Schizophrenia • Mood Disorders: Depression & Bipolar Mood Disorder (BMD) • Anxiety Disorders: GAD, phobia, obsession, panic dis. • Psychiatric emergencies • Psychotherapy	 1 hour 1 hour 1 hour 2 hour 1 hour 1 hour 2 hour 1 hour 1 hour 1 hours 2 hours 2 hours 2 hour 1 hour 1 hour

CARD for Psychiatry

ITEM	MARKS	Signature
History taking		
Mental State Examination		
Symptomatology		
Schizophrenia		
Mood Disorder - Mania		
Mood Disorder Depression - Suicide & DSH		
Anxiety Disorders (GAD, phobic disorders, OCD, panic disorder, PTSD, ASD)		
Somatoform Disorder (Somatization, Hypochondriasis, body dysmorphic disorders, chronic pain)		
Delirium – Dementia		
Childhood Psychiatric Disorders including Autism		
Substance Abuse Disorder & Alcoholism		
Psychotherapy & ECT		

Paediatrics

The curriculum in paediatrics, 2002 has been revised and updated in 2012 to emphasize the issues related to child health problems of the country.

The undergraduate medical students need to know these common childhood problems and how to manage these efficiently. This need based revised curriculum will certainly enable them to serve the community.

The contents of the curriculum as well as the skills to be acquired by the students are categorized as "must know", "useful to know", "nice to know" according to their importance at this level. These categories are marked as ∗∗∗, ∗∗ and ∗ respectively. Teachers are requested to follow this guideline while planning their teaching-learning sessions.

Departmental Objective:

To train medical graduates who will be able to manage common childhood problems in the community. Hence, at the end of the course they will be able to −

- manage common paediatric and neonatal problems at hospital and the community level.
- manage acute neonatal and paediatric emergencies efficiently
- identify neonatal and paediatric problems that require secondary and tertiary care and refer them appropriately.
- refer appropriately for rehabilitation where necessary
- use growth chart in order to assess the growth of a child to differentiate normal from abnormal.
- provide emergency cardiopulmonary resuscitation to newborns and children
- select and interpret relevant investigations
- perform routine therapeutic procedures
- communicate effectively with the child, parents, relatives and colleagues.
- counsel, explain and guide parents and relatives regarding the illness, the management plan, the possible complications and the prognosis
- participate in the national programmes providing both service and training and preventive activities: IMCI, NNS, EPI and other programmes
- serve the community during disaster and epidemics
- update with latest information related to core paediatric problems
- conduct research
- perform/discharge medico-legal and ethical responsibilities

List of Compentencies to be acquired:

- communicate and counsel patients, parents and relatives.***
- demonstrate empathy and humane approach towards patients, parents and relatives. ***
- exihibit a proper attitude towards colleagues and other staffs.***
- take relevant history and perform clinical examination to arrive at a working diagnosis***
- perform the anthropometric measurements in order to assess the growth of a child.***
- use and interpret the growth chart to compare the anthropometric values with the standard one.***
- suggest appropriate investigations keeping in mind their relevance and cost effectiveness***

- plan and outline a treatment at primary facilities which is need based, cost effective and evidence based***
- recognize situations which need urgent treatment at secondary and tertiary level hospitals and be able to make a prompt referral with a referral note after giving first aid or emergency treatment at primary health care facilities.***
- use and interpret the Integrated Management of Childhood Illness (IMCI) Chart prepared by WHO***
- prepare and administer oral rehydration therapy (ORT)***
- explain mother about appropriate positioning and attachment in breast feeding & effective suckling**

Students must observe the following skills

- Hand/ forearm washing***
- Cardio-pulmonary resuscitation (CPR)***
- First aid to children and neonates including endotracheal intubation and mouth to mouth breathing.**
- Lumbar puncture***
- Bone marrow aspiration***
- Thoracocentesis/ paracentesis*
- Umbilical catheterization*
- Exchange transfusion*
- Blood and blood products transfusion including mobile transfusion***
- I/V canulation, collection of samples for routine examination (RE)*
- Use of AMBU bag***
- Administration of an enema*
- Phototherapy**
- Incubator (open and closed) care*
- Oxygen therapy***
- Nebulisation***
- Bedside urine for albumin & sugar***
- Capillary blood glucose estimation**
- Preparing balanced diet**
- Performing intradermal / subcutaneous/ intramuscular/intravenous or per rectal injections in children*
- Constructing a vaccination schedule for a child*
- Applying vaccine to children*
- Mantoux test and interpret the result*
- Introduction of nasogastric tube*
- Managing hyperpyrexia or hypothermia and convulsion and other paediatric emergencies*
- Applying otoscope, tongue depressor during examination of the child*
- Writing discharge certificate*

Paediatrics

Learning Objectives	Contents	Teaching Hours
At the end of the sessions, students will be able to • define Pediatrics and Primary health care • state the stages of a child's life • describe the current child health status in Bangladesh • describe the major child health problems in the country • describe Millennium Developmental Goals (MDG), particularly MDG 4 • describe the components of essential service package (ESP) and essential newborn care (ENC) • discuss the emergency triage assessment and treatment • state the National Child Health programmes • describe the preventive programmes of paediatrics e.g. Integrated Management of Childhood Illness (IMCI), EPI, National Nutrition Services (NNS), Infant and Young Child Feeding (IYCF), vitamin-A supplementation	**Preventive Paediatrics** **CORE:** • An introduction to Paediatrics & MDG*** • IMCI*** • EPI*** • IYCF*** • IDD** • ENC** • NNS*** • ETAT** • ECD** • Vitamin-A supplementation**	1 hr 2 hrs 1hr Total = 4 hrs

Learning Objectives	Contents	Teaching Hours
At the end of the sessions, students will be able to • describe the procedure for taking care of new-born e.g. maintenance of body temperature, feeding, care of eyes etc. • define perinatal asphyxia, hypoxic ischaemic encephalopathy (HIE), describe APGAR Score, causes, management (Newborn resuscitation) & complication of perinatal asphyxia. • state the common causes of respiratory distress in newborn (RDS & meconium aspirates) & clinical presentation and management • define preterm & low birth weight, epidemiology, causes, clinical presentation, complications & management of preterm low birth weight babies.describe the common infections of newborn (neonatal sepsis), their aetiology /organism patterns, risk factors and types of neonatal sepsis • describe the clinical presentation of neonatal sepsis, diagnosis (e.g. sepsis screening), treatment and prevention of neonatal sepsis • describe the causes of neonatal jaundice, clinical presentation, complications& management of different types of neonatal Jaundice. • State the causes and clinical presentations of neonatal convulsions and it's diagnosis and treatment • describe the different types of birth injuries & their management	**Neonatology** **CORE:** • Care of a normal newborn*** • Perinatal asphyxia*** • Neonatal resuscitation*** • Pre-term/ Low birth weight/ SGA*** • Neonatal infection*** • Neonatal jaundice*** Neonatal seizure** • Birth injuries * • Respiratory distress in newborn*	1hr 1hr 1hr 1hr 1hr Total = 5 hrs

Learning Objectives	Contents	Teaching Hours
At the end of the sessions the students will be able to • define Infant and young child feeding (IYCF) • describe IYCF global & national perspectives and IYCF recommendations • describe the effective breast feeding; exclusive breast feeding (including colostrum) • describe advantages of breastfeeding and hazards of artificial feeding • describe anatomy of breast and physiology of lactation • describe techniques of breastfeeding: position and attachment & effective succling • counsel for breast feeding & complimentary feeding • describe the baby friendly hospital initiatives • describe breast milk substitute (BMS) code • describe maternal nutrition & drugs in breastfed mother • describe guiding principle of complementary feeding & advantage of complementary feeding, age specific appropriate food	**Infant and young child feeding (IYCF)** **CORE:** • Breast feeding*** • Complementary feeding***	1 hr 1hr Total = 2 hrs

Learning Objectives	Contents	Teaching Hours
At the end of the sessions the students will be able to • define growth and development • describe normal growth and development of a child • describe factors influencing growth and development • state the principles of development • describe early childhood development (ECD) and its importance • describe ways of assessing growth and development of a child • describe growth chart • define failure to thrive and state it's causes and management	**Growth and Development, ECD** **CORE:** • Growth & Development*** Failure to thrive** • Early childhood development*	1 hr 1hr Total = 2hrs
At the end of the sessions the students will be able to • define and classify protein energy malnutrition (PEM) • define severe acute malnutrition (SAM) • state the risk factors of protein energy malnutrition • describe the clinical presentation, complications & management of a child with severe acute malnutrition • describe the various types of vitamin deficiency disorders & their management • describe micro nutrients and their importance in malnutrition/child health • list the causes of obesity, consequences & management of obesity	**Nutritional Disorders** **CORE:** • PEM, SAM & CMAM*** • Vitamin deficiencies (Xerophthalmia, Rickets, Scurvy)*** • Micro nutrient deficiencies (Iron, Zinc, Calcium)** • Obesity*	1 hr 1 hr Total = 2 hrs

Learning Objectives	Contents	Teaching Hours
At the end of the sessions the students will be able to • list the common infectious diseases of children in Bangladesh • discuss the aetiology, clinical presentation, complications, treatment & prevention of vaccine preventable disease. • discuss the pathogenesis, clinical presentation, diagnosis & treatment of enteric fever • discuss the aetiology, clinical presentations of dengue fever and the complications • describe the management of a case of dengue haemorrhagic fever (DHF) and dengue shock syndrome (DSS) • describe the aetio-pathology, clinical presentation, complications and management of kala-azar • describe the aetio-pathology, clinical presentation, complications and management of malaria • describe national programme for eradication of kala-azar and malaria	**Infectious Diseases** **CORE:** • Tetanus** • Diphtheria** • Pertussis*** • Tuberculosis*** • • Measles** • Mumps** • Poliomyelitis*** • Enteric fever*** • Dengue*** • Malaria*** • Kala-azar***	1 hr 1hr 1hr 1hr 1hr 1hr Total = 7 hrs

Learning Objectives	Contents	Teaching Hours
At the end of the sessions the students will be able to • define diarrhoea, it's aetio-pathogenesis, classification, clinical presentation, complications of diarrhoea • define persistent diarrhoea and dysentery • assess dehydration & to offer appropriate management (Plan A, B,C) • select relevant investigations and their interpretation • describe the composition of ORS, Cholera Saline, Ringer's solution. • describe prevention of diarrhoea • describe helminthiasis and their management	**Gastrointestinal disorders** **CORE:** • Diarrhoeal disorders & management*** - Acute watery diarrhoea*** - Dysentery*** - Persistent diarrhoea*** • Abdominal Pain & Helminthiasis**	1 hr 1 hr Total = 2 hrs
At the end of the sessions the students will be able to • state the common respiratory illnesses of children • describe aetiology, clinical presentation, complication& management of pneumonia • describe aetiology, clinical presentation, complication& management of bronchiolitis • state the common causes of respiratory distress • differentiate asthma, pneumonia and bronchiolitis • define childhood asthma & describe the presentation & management of asthma. • describe the common differential diagnoses of stridor in children • describe the management of a case of acute laryngotracheobronchitis	**Respiratory Disorders** **CORE:** • ARI*** • Pneumonia*** • Bronchiolitis*** • Childhood Asthma*** • Croup and other causes of stridor And their management**	1 hr 1hr 1hr Total = 3 hrs

Learning Objectives	Contents	Teaching Hours
At the end of the sessions the students will be able to • list the common causes of anaemia in children • classify anaemia. • describe the risk factors, clinical presentation & management of iron deficiency anaemia. • describe the pathogenesis, clinical & laboratory features and management of congenital haemolytic anaemia (CHA) • differentiate the laboratory features of these 2 diseases • counsel the parents about the prognosis of CHA. • describe the cause/ differential diagnoses of bleeding disorder. • describe the etiopathogenesis, clinical presentations, laboratory features and management of ITP, hemophilia, von Willebrand disease and aplastic anaemia	**Haematological Disorders** **CORE:** • Iron deficiency anaemia*** • • Congenital haemolytic anaemia *** • Hypoplastic anaemia/ aplastic anaemia** • ITP *** • Haemophilia***	1hr 1 hr 1 hr Total = 3 hrs

Learning Objectives	Contents	Teaching Hours
At the end of the sessions the students will be able to • list the common causes of generalized swelling and haematuria among children • define and classify nephrotic syndrome • describe the aetio-pathology, cardinal features, complication, diagnosis, treatment and prognosis of nephrotic syndrome. • describe aetio-pathogenesis of acute glomerulonephritis, clinical presentation, complication & management of acute glomerulonephritis. • identify & describe management of a child with hypertensive encephalopathy & acute LVF • differentiate nephrotic syndrome from acute glomerulonephritis • describe the aetiology, risk factors, pathogenesis, cardinal features, complications, laboratory findings & management of UTI in children • counsel the parent for prevention of UTI • describe the causes, clinical presentation, complication & management of acute renal failure • describe the fluid & electrolytes homeostasis and acid base homeostasis • name common fluid, electrolytes and describe acid base imbalance.	**Renal disorder** **CORE:** • Nephrotic syndrome*** • Acute glomerulonephritis*** • Urinary Tract Infection*** • Acute Renal Failure** • Fluid & Electrolytes & acid base balance***	1 hr 1 hr 1hr 1hr Total = 4 hrs

Learning Objectives	Contents	Teaching Hours
At the end of the sessions the students will be able to • state the different causes of jaundice • describe the clinico-pathological consequences of hepatotrophic viruses • describe the aetiopathogenesis, clinical presentation and complications of acute hepatitis • describe the stigmata of chronic liver diseases (CLD)/ cirrhosis of liver • list the relevant investigations for a child with liver disease e.g. acute hepatitis or chronic liver disease etc and their interpretation. • describe the treatment of a child with acute hepatitis or chronic liver diseases • describe the clinical presentation & management of hepatic coma. • list the common causes of haematemesis in children • describe the aetio-pathogenesis, clinical presentation of a case of portal hypertension. • outline the management of a case of hematemesis and malaena	**Diseases of Liver** **CORE:** • Viral hepatitis *** • Fulminant hepatic failure*** • Hepatic coma/ hepatic encephalopathy*** • Portal hypertension ** • Chronic liver disease eg. cirrhosis**	1 hr 1 hr Total = 2 hrs

Learning Objectives	Contents	Teaching Hours
At the end of the sessions the students will be able to • classify congenital heart diseases • describe the haemodynamics, clinical presentation, complication & management of common congenital heart diseases e.g. ASD, VSD, TOF & PDA. • describe aetio- pathogenesis of acute rheumatic fever • describe the clinical presentation, diagnosis, & management of acute rheumatic fever and rheumatic carditis. • describe the prevention of acute rheumatic fever • describe the causes, clinical presentation & management of heart failure in infant & children	**Disease of Cardio-vascular system** **CORE:** • Congenital heart disease (ASD, VSD, TOF & PDA)*** • Rheumatic fever & Rheumatic heart disease*** • Heart failure in infancy & childhood***	2 hrs 1 hr Total = 3 hrs

Learning Objectives	Contents	Teaching Hours

At the end of the sessions the students will be able to
• describe causes of convulsions in children
• describe the criteria of diagnosis & management of febrile convulsion
• describe the aetio-pathogenesis, clinical presentation & management & prognosis of acute pyogenic and viral meningitis
• describe the aetio-pathogenesis, clinical presentation & management & prognosis of encephalitis
• describe the pathogenesis, clinical staging, management & prognosis of tubercular meningitis.
• describe the CSF findings of acute bacterial, tubercular and viral meningitis
• define and classify epilepsy
• describe the clinical presentation, management & prognosis of epilepsy
• define and list the differential diagnoses of acute flaccid paralysis (AFP).
• describe the clinical presentation, management & complication of Guillain Barre syndrome (GBS), poliomyelitis and transverse myelitis
• differentiate GBS, polio and transverse myelitis
• describe causes of mental retardation, it's management, counseling & rehabilitation
• define cerebral palsy & describe its causes, types, clinical feature, management, counseling & rehabilitation
	Disease of Nervous system
	CORE:
	• Febrile convulsion ***
	• Epilepsy**
	• Meningitis & Encephalitis
	• Mental retardation **
	• Cerebral palsy**
	• Acute Flaccid Paralysis (AFP)***
	  • Guillain Barre syndrome
	  • Transverse myelitis
	  • Polio myelitis
		1hr
		1hr
		1hr
		Total = 3 hrs

Learning Objectives	Contents	Teaching Hours
At the end of the sessions the students will be able to • Enumerate common childhood malignancies • define and classify leukaemia • describe the clinical presentation and diagnosis of acute leukaemia • describe the blood & bone marrow features of acute leukemia • describe the treatment of acute leukaemia • classify lymphoma	**Malignant diseases** **CORE:** • Leukaemia*** • Lymphoma & other tumours*	1 hr
At the end of the sessions the students will be able to • describe the causes of short stature • describe the aetiopathology, clinical presentation, diagnosis & management of hypothyroidism • classify diabetes mellitus & describe the clinical presentation, diagnosis & management of type I (IDDM) Diabetes Mellitus • classify the chromosomal disorders • describe clinical presentation, management and prognosis of Down syndrome • counsel parents about the prognosis of the diseases mentioned above	**Endocrine and Chromosomal Disorders** **CORE:** • Short stature *** • Hypothyroidism*** • Diabetes Mellitus * • Down syndrome***	1 hr 1hr Total = 2 hrs

Learning Objectives	Contents	Teaching Hours
At the end of the sessions the students will be able to • list the common causes of pain and swelling of joints • classify juvenile idiopathic arthritis (JIA) • describe clinical manifestations and complications of JIA. • describe relevant investigation and interpretation • enumerate the different treatment options of JIA • classify myopathy • describe the clinical features and diagnosis of pseudo hypertrophic muscular dystrophy/ Duchene muscular dystrophy (DMD) • describe the relevant investigations and their interpretation • describe the management including counseling & rehabilitation of pseudo hypertrophic muscular dystrophy (DMD)	**Connective Tissue & Musculo-skeletal Disorders** **CORE:** • Juvenile idiopathic arthritis (JIA)*** • Myopathy • Pseudohypertrophic muscular dystrophy**	1 hr
At the end of the sessions the students will be able to • list the common accidents and emergencies of children • describe the principles and management of poisoning • describe the clinical presentation, complications and management of kerosene poisoning • describe the clinical presentation, complications and management of organophosphorus poisoning • describe the aetio-pathogenesis, clinical presentation and management of snake bite • describe the pathogenesis and clinical presentation of drowning (salt and fresh water drowning)	**Accidental poisoning & Drowning** **CORE:** • Kerosene*** • Organophosphorus compound*** • Snake bite** • Drowning**	1 hr 1hr Total = 2 hrs

Learning Objectives	Contents	Teaching Hours
At the end of the sessions the students will be able to • state the common behavioral disorders of children • describe the risk factors & management of nocturnal enuresis • differentiate true seizure from pseudo-seizure • describe causes, early identification management & counseling of autism spectrum disorder (ASD) • describe child abuse and neglect	**Paediatric Psychological and Psychiatric disorder** **CORE:** • Childhood behavioural disorders** • Autism spectrum disorder (ASD)*** • Somatoform disorder** • Enuresis*	1 hr
At the end of the sessions the students will be able to • describe the steps of communication /counseling • counsel a parent or care giver regarding any illness	**Communication & Counseling** **CORE:** • Counseling	1 hr

Paediatrics
Teaching/ Learning Methods & Aids

Teaching methods	**Aids**
Lectures: • Large group teaching & lectures • Small Group teaching: (Clinical) ▪ Bedside teaching ▪ Case demonstration & practice ▪ Practical Skills (Video) • Field Site training : (with Community Medicine) • Integrated Teaching • Self-directed learning	OHP/ Multimedia presentation, Video, Slide • Patients • Simulated Patients • Dummy (Manikins) • Charts e.g. growth chart, IMCI Chart • Reading materials o Modules & national guidelines on different childhood illnesses o Study guide o Books, journals • Others e.g. ECG, Instruments, X-ray, photographs

ACADEMIC CALENDAR – PAEDIATRICS

<table>
<tr><td rowspan="2">LECTURE</td><td colspan="3">2nd Phase</td><td>3rd Phase</td><td colspan="2">4th Phase / Final Phase</td></tr>
<tr><td colspan="3">4 hours
INTRODUCTION
PREVENTIVE
PAEDIATRICS</td><td>20 hours
IYCF, Growth & development, Nutritional disorders, Infectious diseases, Childhood tuberculosis, Respiratory disorders, Gastrointestinal disorders, Accidental poisoning</td><td colspan="2">26 hours
Neonatology, Hematologic disorders, Renal disorders, Disease of liver, Disease of cardiovascular system, Diseases of nervous system, Malignant diseases, Endocrine and chromosomal disorders, Connective tissue & musculoskeletal disorders, , Paediatric Psychological and Psychiatric disorders, Communication and counseling</td></tr>
<tr><td rowspan="13">CLINICAL</td><td colspan="3">4 weeks</td><td></td><td colspan="2">6 weeks</td></tr>
<tr><td colspan="2">2 WEEKS</td><td>2 WEEKS</td><td rowspan="13">No clinical placement in 4th year</td><td colspan="2">INDOOR PLACEMENT</td></tr>
<tr><td>Day</td><td>IMCI</td><td>Neonatology</td><td>Morning (2 hours)</td><td>Evening (2 hours)</td></tr>
<tr><td>1</td><td>IMCI</td><td>History writing</td><td>1st Week
D1-2 : Introduction + history taking
D3 : IMCI
D4-5 : Cough & difficult breathing, diarrhoea
D6 : Presentation & discussion</td><td>
Self-directed learning
Self-directed learning
Self-directed learning</td></tr>
<tr><td>2</td><td>IMCI</td><td rowspan="3">Clinical examination of
i. Newborn
ii. Child</td><td rowspan="2">2nd Week
D1 : Bleeding disorder
D2 : Pallor
D3-4 : Fever, Leukaemia
D5 : Accidental poisoning
D6 : Presentation & discussion</td><td rowspan="2">
Self-directed learning
Self-directed learning
Self-directed learning
Self-directed learning</td></tr>
<tr><td>3</td><td>IMCI</td></tr>
<tr><td>4</td><td>IMCI</td><td>3rd Week
D1- 2: PEM
D3-4: Hepatosplenomegaly
D5 : Lymphadenopathy
D6 : Presentation & discussion</td><td>
Self-directed learning
Self-directed learning
Self-directed learning
Self-directed learning</td></tr>
<tr><td>5</td><td>IMCI</td><td rowspan="5">Common neonatal problems:
• Perinatal asphyxia
• Low birth weight
• Neonatal sepsis
• Neonatal Jaundice
• Neonatal convulsion</td><td rowspan="2">4th Week
D1- 3: Scanty urine, ARF, NS/AGN
D4 : RF & RHD
D5 : Joint swelling
D6 : Presentation & discussion</td><td rowspan="2">
Self-directed learning
Self-directed learning
Self-directed learning
Self-directed learning</td></tr>
<tr><td>6</td><td>IMCI</td></tr>
<tr><td>7</td><td>IMCI</td><td rowspan="2">5th Week
D1-4 : Neonatology
D5 : IYCF
D6 : Presentation & discussion</td><td rowspan="2">
Self-directed learning
Self-directed learning
Self-directed learning</td></tr>
<tr><td>8</td><td>IMCI</td></tr>
<tr><td>9</td><td>IMCI</td><td>6th Week
D1-2: Convulsion
D3 : Developmental Assessment
D4- 5: OSCE
D6- : Feedback</td><td>
Self-directed learning
Self-directed learning</td></tr>
<tr><td>10</td><td>IMCI</td><td>IYCF</td></tr>
<tr><td>11</td><td>Assessment</td><td>Assessment</td></tr>
<tr><td>12</td><td>Feedback</td><td>Feedback</td></tr>
</table>

PLAN FOR ACADEMIC CALENDAR – PAEDIATRICS

Annex-

FIRST PROF.	SECOND PROF.	THIRD PROF.	FINALPROF.

6m	6m	6m	6m	6m	6m	6m	6m	6m	6m
			4 LECTURE		20 LECTURE		26 LECTURE		
			Introduction to Paediatrics, MDG -1 IMCI-2 National programmes-1		IYCF-2 (breast feeding-1, complementery feeding-1) Growth & development-2 Protein energy malnutrition, SAM, CMAM- 1 Other Nutritional disorders -1 Infectious diseases -7 Respiratory disorders- 3 Gastrointestinal disorders -2 Accidental Poisoning -- 2		Neonatology – 5 Haematologic disorders – 3 Renal disorders – 4 Disease of liver – 3 Disease of cardiovascular system – 2 Disease of nervous system – 3 Malignant disease – 1 Endocrine and chromosomal disorders – 2 Musculoskeletal disorders -- 1 Paediatric psychological and psychiatric disorders – 1 Communication and counseling -- 1		
			CLINICAL				CLINICAL		
			4 WEEKS				6 WEEKS		10 days for block teaching

0	Yr -1	3rd	Yr -2	4th	Yr -3	5th	Yr -4		Yr -5

Pediatric Assessment Card

Name of the student :……..

Batch:…… Roll:……. Group:…….

Period of attachment: from……to ……..

Instruction to the students/ teachers

- Students must complete the activities shown on the card during the clinical attachment in pediatrics
- The teacher will sign the card when each item has been completed to a satisfactory standard
- The level of the teachers will be at least Registrar grade or above
- At the end of the attachment the card must be presented to the Head of Department (HOD) who will countersign it and also check whether an appropriate standard has been maintained. The card will be retained by the department (Registrar's responsibility)

Standard of performance expected

When the activity involves interaction with patients and parents or the performance of an examination/ a procedure, the teacher will be expected to see whether an acceptable standard of performance has been achieved in the following ways:

-introduction of oneself as a student
-good communication with the patient/ parents (giving salam/ greetings)
-explanation of what is to be done
-taking consent
-appropriate and understandable language used
-application of correct method of examination
-adequate exposure during examination

In case of performing a procedure, the teacher will concentrate on the following activities of the students in relation to the use of instrument:

-correct use of the instrument
-correct procedure followed
-demonstration of findings to the teacher
-proper disposal of the instrument used
-communication with patient/ parents about the findings
-explaining to the patient/ parents about the findings
-giving thanks to the patient/ parents at the end of procedureIn all cases the ability of the students to interpret the findings of the examination or procedure is expected.

Activities in Pediatric Out Patient Department (OPD)

The student is expected to take an active part in the activities listed below and not only doing mere observation

At the end of clinical attachment, the card must be presented for final review and signature by HOD

	Cases	Date	Supervisor
A. History writing			
(1)	----------	----------	----------
(2)	----------	----------	----------
(3)	----------	----------	----------
(4)	----------	----------	----------
(5)	----------	----------	----------

B. Cases to be observed in the management of the following (at least 10 cases)

(1) Diarrhoea	----------	----------
(2) Pneumonia/ bronchiolitis/ asthma	----------	----------
(3) SAM (marasmus/ kwashiorkor/ MK	----------	----------
(4) Febrile convulsion/ meningitis/ encephalitis	----------	----------
(5) NS/ AGN/ARF	----------	----------
(6) IDA/ thalassemia/ aplastic anemia	----------	----------
(7) ITP/ ALL/ Hemophilia	----------	----------
(8) Enteric fever/ tuberculosis/ FOU	----------	----------
(9) Rheumatic fever/ RHD	----------	----------
(10) Viral fever/ CLD	----------	----------
(11) Malaria/ kala-azar	----------	----------

Students should longitudinally follow up the cases since admission till discharge taking the notes of history, physical findings, investigations and treatment in separate sheets to be presented to the teacher on demand.

C. Procedures to be performed	Date	Supervisor
(1) Recording PTR	----------	----------
(2) Measurement of BP	----------	----------
(3) Clinical examination (different systems)	----------	----------
(4) Child restrain for painful examination (Throat with spatula and ear with auriscope)	----------	----------
(4) Anthropometry (wt/ Ht/OFC/ MUAC)	----------	----------

D. Procedures to be observed	Date	Supervisor
(1) Lumber puncture	----------	----------
(2) Bone marrow aspiration	----------	----------
(3) Opening IV line	----------	----------
(4) Drug administration in different routes (IV/ IM/ SC/ ID)	----------	----------
(5) NG tube introduction	----------	----------
(6) Enema administration	----------	----------
(7) Blood transfusion	----------	----------
(8) Collection of blood samples	----------	----------
(9) Collection of throat swab	----------	----------
(10) Thoracentesis/ paracentesis	----------	----------
(11) CPR	----------	----------
(12) Positioning & Attachment of breast feeding	----------	----------
(13) Hand Washing	----------	----------
(14) Preparation of F-75, F-100	----------	----------

E. Pediatric accidents and emergency management observation

(1) Acute asthma	----------	----------
(2) Convulsion	----------	----------
(3) Heart failure	----------	----------
(4) Acute poisoning (Kerosene, OPC)	----------	----------
(5) Snake bite	----------	----------
(6) Drowning	----------	----------

F. Activities in OPD observation

(1) Management of moderate dehydration ---------- ----------
(ORS preparation, administration)

G. Activities in LMC observation ---------- ----------
(Counseling, positioning and attachment)

H. EPI activities observation ---------- ----------
(cold chains, vaccines, administration, routes)

I. Activities in the neonatal wards

(1) History writing	Cases	Date	Supervisor
(a)----------		----------	----------
(b)----------		----------	----------

(J) To be observed in the management of the following cases

(1) Perinatal asphyxia ---------- ----------
(2) LBW ---------- ----------
(3) Septicemia ---------- ----------
(4) Neonatal jaundice ---------- ----------

K. Procedures to be observed

(1) Ligation of umbilical cord ---------- ----------
(2) Care of umbilical cord ---------- ----------
(3) Hand washing ---------- ----------
(4) Phototherapy ---------- ----------
(5) Exchange transfusion ---------- ----------
(6) Resuscitation ---------- ----------
(use of Ambu bag, mouth to mouth breathing
endotracheal intubation, cardiac compression)

_____ _____

Signature of the student Signature of HOD

Integrated Teaching

(4^{th} year & 5^{th} year)

Sl.	Diseases	Discipline
1	Diarrhoeal diseases	1. Community Medicine 2. Microbiology 3. Paediatrics
2	PEM: SAM, CMAM	1. Community Medicine 2. Paediatrics 3. Radiology
3	ARI diseases	1. Comunitiy Medicine 2. Microbiology 3. Paediatrics 4. Radiology
4	Tuberculosis	1. Community Medicine 2. Microbiology 3. Paediatrics/ Pharmacology 4. Radiology
5	IYCF	1. Paediatrics 2. Obstetrics & gynaecology
6	LBW	1. Paediatrics 2. Obstetrics & gynaecology
7	Perinatal Asphyxia	1. Paediatrics 2. Obstetrics & gynaecology
8	Rheumatic fever/ AGN	1. Microbiology 2. Paediatrics
9	Nephrotic syndrome	1. Pathology 2. Paediatrics

Surgery & Allied Subjects

Departmental Objectives

The aim of this course is to provide community oriented & need based education so as to produce basic doctors who will be able to:

- elicit a complete clinical history & physical findings and formulate diagnosis of common surgical problems prevalent in Bangladesh.
- carry out necessary investigations & interpret the results
- perform minor surgical procedures and treat minor surgical problems
- recognize the major surgical problems needing specialized care, initiate the primary treatment and refer to the appropriate centers
- diagnose and provide competent primary care in surgical emergencies.
- carry out the responsibility of management in common casualties or natural calamities to offer and arrange basic life support.
- take necessary preventive & prophylactic measures in surgical patients.
- be involved in continued care & rehabilitation of surgical patients.
- deliver health education in the community with emphasis on the preventive aspects of surgical disorders.
- demonstrate the right attitude in
  - Patient Care
  - Community health care
  - Continuing medical education & research
  - Observing the moral & legal codes of medical ethics

List of Competencies to acquire abilities to :

1. **Clinical –**
   a. build rapport with patients, colleagues and supporting staffs of the hospital
   b. take detail relevant history
   c. conduct thorough clinical Examination
   d. decide on a provisional working diagnosis
   e. perform and/or order relevant investigations considering the cost effectiveness
   f. interpret common laboratory and imaging investigations
   g. calculate fluid and electrolyte requirements
   h. evaluate and make initial management of acute trauma patient
   i. adopt aseptic techniques and procedures and maintain principles of sterilization
2. **Communication-**
   a. obtain permission before any examination and clinical procedures
   b. obtain informed consent for surgical procedures including organ ablation.
   c. appreciate right to privacy and information about the disease and its consequence
3. **Managerial-**
   a. provide leadership during team work
   b. implement time management skills
   c. issue certificates (discharge, death, medical and injury).
   d. write notes (case notes, operation notes, referrals)
   e. keep detail and systematic records and
   f. use computer and IT facilities.

4. Manipulative and practical skills-

a. adopt universal aseptic techniques in handling surgical patient
b. start IV lines
c. insert NG tubes
d. introduce urethral catheter and perform supra-pubic cystostomy
e. drain superficial abscess
f. perform per-rectal examination
g. achieve control external hemorrhage
h. carry out initial management of wound
i. repair minor wounds
j. complete primary management of fractures and arrange transfer to appropriate centers.
k. apply splints, slings, POP casts and slabs, tractions

Distribution of teaching - learning hours
Surgery & Allied Subjects

Subject	**Lecture** *(in hours)*				**Tutorial/Practical/Demonstration**	**Integrated teaching**	**Clinical/Bedside teaching (in week)**			**Total Weeks**	**Block posting**	**Formative Exam**	**Summative Exam**
	2nd Phase	**3rd Phase**	**4th Phase**	**Total**			**2nd Phase**	**3rd Phase**	**4th Phase**				
General Surgery	35	30	60	125	200	20	12+4	-	6	22	4 wks	**Preparatory leave -15 days Exam time –15 days**	**Preparatory leave -15 days Exam time –30 days**
Orthopaedics	5	10	30	45			-	4	4	8			
Radiology	-	-	5	5			1	-	-	1			
Radiotherapy	-	-	8	8			-	1	-	1			
Transfusion medicine	-	5	-	5			1	-	-	1			
Anesthesia	-	10	-	10			1	-	-	1			
Neurosurgery	-	2	5	7			-	1	-	1			
Pediatric Surgery	-	5	10	15			-	-	2	2			
Urology	-	5	10	15			-	-	2	2			
Burn Plastic Surgery	3	-	2	5			-	-	1	1			
Emergency & casualty	-	-	-	-			-	-	1	1			
Dentistry	-	-	-	-			1	-	-	1			
Ophthalmology	-	40 hrs		40			-	4	4	8			
Otolaryngology	-	40 hrs		40			-	4	4	8			
Total	300 hrs				200	20	20 wks	14 wks	24 wks	58wks	4wks		
Grand total	**520 hours**						**62 weeks**					**75 days**	
(Time for exam. preparatory leave and formative & summative assessment is common for all subjects of the phase)													

Teaching-learning methods, teaching aids and evaluation

Teaching Methods				Teaching aids	In course evaluation
Large group	**Small group teaching**	**Self learning**	**Others**		
Lectures	Tutorials, Problem Based Learning, Clinical demonstrations OPD / indoor Attending & observing minor operations Demonstrations of X-rays specimen, Observations in ICU, Postoperative ward, Case Presentation and discussion.	Assignment, Self study	Integrated teaching, Visit to radiotherapy & nuclear medicine centre Attend centers where investigations for hearing impairment, vertigo, Tinnitus are available.	Computer, Chalk & board, OHP, Multimedia, Photographs &Videos, Specimens, & Models, Plain & Contrast X-rays of Upper & lower GIT, I.V.U, Fractures Skull X-rays Sinogram & Fistulogram Ultrasonogrph , Abdomen HBS & Pancreas Urinary tract Scans, thyroid scans, , C.T. Scan , MRI, .	Item Examination Card final , Term Examination Term final (written, oral+ practical + clinical)

Final professional examination :

Marks distribution for assessment of surgery

Total marks – 500 (Summative)

- Written = 200 (Formative Assessment-20 +MCQ-40+ SAQ -140=200)
- Oral = 100
- Clinical = 100
- Practical = 100

Related Equipments:

General surgery	
I.V sets, butterfly needle & cannula, Transfusion sets, Feeding tubes, NG tube, Flatus tube , 'T' tube, Chest drain set, Endo-tracheal tube Blood bags, Stoma bags, Fluid bags, BP blade and handle, surgical scissors, Needle holder, Surgical suture materials, Sponge holding forceps , towel clip Alli's tissue forces, artery forceps, Sinus forceps, dissecting forceps, Kocher's artery forceps, kidney tray, gully pot, intestinal clamps, Deavers' abdominal retractor, Morris abdominal retractor	Langhanbach's retractor, Lane's twin gastro jejunostomy clamp, proctoscope, metalic urethral dilators, nephrolithotomy forceps, Bone nibber, Osteotome, chisel, hammer, amputation saw, Plaster of paris bandage, crape bandage. Splints & supporting aids- Cervial collar, Cricle brace, artificial limb, Anasthesia machine, Laryngoscope, airway tube, Umbo bag,
ENTD	
Thudicum nasal speculum, Killians self retaining nasal speculum, Lichwitz antrum puncture trocar and cannula, Higginson's rubber syringe, Walsham's forceps, Luc's forceps, Tilleys forceps, St Clair Thomson post nasal mirror, Jobson horne probe and ring curette, Tuning fork, Head mirror,	Boyle Davis mouth gag, Luc's tongue depressor, Draffins bipod metallic stand, Eve's tonsillar snare, St Clare Thomson Adenoid curette and cage, Trousseau's tracheal dilator, Jackson's metallic tracheostomy tube, Direct laryngoscope Chevalier Jackson's oesophagoscope, Negus bronchoscope etc.
Ophthalmology	
Trial lens, trial frame, Eye speculums (Wire, Universal), DCR punch, Tonometer, Ophthalmoscope, Cat's paw retractor, BP Blade & handle, Keratome, Squint hook	Iris repositor, lens dialer, two way cannula, chalazion clamp and scoop, corneal forceps, irrigating vectis, sac guard, sac dissector, lacrimal probe, punctum dialtor etc.

Learning Objectives and Course Contents in Surgery

Learning Objectives	Contents	Teaching Hours
A. Basic and Principles of Surgery Student should be able to: 1. state the history , evolution and scope of Surgery 2. assess and prepare patient for surgery 3. understand the patho-physiology of trauma 4. diagnose, treat and manage minor wounds 5. diagnose, treat and manage surgical infections (boil, abscess, carbuncle & gangrene) . 6. diagnose and provide basic treatment for shock & haemorrhage. 7. recognize all external hernias & their complications & initiate primary care for complicated hernias. 8. recognize & differentiate different types of burns and initiate primary care &take measure to prevent complications. 9. recognize fluid & electrolytes imbalance states, investigate & initiate appropriate therapy. 10. recognize, & investigate different types of skin ulcerations. 11. recognize, investigate & treat superficial skin tumour & cysts 12. take appropriate measures to prevent hospital infection. 13. understand and comply with ethical principles in clinical practice	***CORE*** ***Phase II*** 1. History , evolution and scope of surgery 2. Approach to a surgical patients 3. Surgical diagnostic process and techniques 4. Surgical Infection (Boil , Furuncle, Abscess, Carbuncle , cellulites) 5. Septicemia (causes, complications and treatment) 6. Sinus, Fistula and cysts 7. Wounds (classification and management) 8. Ulcers , pressure sores 9. Groin hernias 10. Haemorrhage 11. Shock ***Phase III*** 12. Metabolic response to injury 13. Principles of Management of Trauma 14. Management of a severely injured patient 15. Fluid and electrolytes balance 16. Enteral and Parenteral nutrition ***Phase IV*** 17. Pre operative assessment and preparation 18. Tumours of skin 19. Lymphadenopathy (causes, investigations, diagnosis, biopsy) 20. Surgical ethics ***ADDITIONAL*** Organ transplantation	20 hours 10 hours 10 hours

Learning Objectives	Contents	Teaching Hours
B. Systemic Surgery ***1. Alimentary System*** Student should be able to : 1. investigate and diagnose the common surgical diseases of alimentary system and suggest management 2. diagnose the acute conditions of alimentary system and initiate primary care 3. identify the patient requiring specialty surgical intervention & refer to appropriate centre 4. take continued care of the operated patients 5. recognise post operative complications & take appropriate measures.	**CORE** **Phase II** Complications of Peptic ulcer (Perforation, Pyloric stenosis) Upper G.I. Tract bleeding Appendicitis Intestinal obstruction; **Phase III** Abdominal trauma (Diagnostic and Management principles) Ruptured Spleen Ruptured liver Ruptured intestine **Phase IV** Tongue, Lip & other oral lesions (ulcer, cancer) Oesophagus Carcinoma oesophagus and stricture Carcinoma stomach Neoplasm of colon and rectum Intestinal tuberculosis Anal canal Haemorrhoids, Fistula, Sinus & Fissure, Carcinomma anus Colostomy & ileostomy (indications and management) Abdominal incisions (Tutorial) **ADDITIONAL** Abdominal abscess Diseases of salivary glands Hiatus hernia.	5 hours 5 hours 5 hours

Learning Objectives	Contents	Teaching Hours
2. Genito-Urinary System Student should be able to- 1. diagnose common congenital G.U. anomalies & advise / refer to appropriate centers 2. diagnose and manage acute GU conditions like • Acute retention of urine • Acute epidedymo- orchitis • Torsion testis • Paraphimosis • Phimosis • Acute ureteric colic • Urosepsis 3. evaluation of scrotal swelling 4. evaluate a case of haematuria 5. order necessary investigations, and interpret the result of investigation & suggest principles of management 6. recognize a case of retention of urine , find out causes perform aseptic catheterization 7. introduce suprapubic catheter 8. describe the steps of circumcision	**CORE** ***Phase III*** 1. Urinary symptoms & definitions 2. Urological investigations and their interpretations, 2. Devepmental genitor-urinary anomalies 3. Scrotal swelling • Hydrocele • Scrotal cullulitis 4. Acute scrotal conditions • Epidedymo- orchitis • Torsion testis ***Phase IV*** 5 Urolithiasis (Causes ,Diagnosis , Principles and modalities of treatment) 6 Retention of urine (acute and chronic 7 Hydronephrosis 8 UTI 9 Urinary tract t injury. • Renal injury • Urethral injury 10. Renal Neoplasm • RCC • Wilm's Tumour 11 Testicular Tumour 12 BPH 13 Stricture urethra ***<u>ADDITIONAL</u>*** • Male infertility • Minimal Invasive Surgery in Urology	20 hours 10 hours

Learning Objectives	Contents	Teaching Hours
3 Hepatobiliary & Pancreas Student will be able to: 1. diagnose, investigate cholecystitis, cholelithiasis & Choledocholithiasis 2. suspect pancreatitis; initiate primary case management & suggest management 3. investigate & interpret the results in case of obstructive jaundice & suggest appropriate treatment 4. diagnose & investigate suspected case of liver & sub-phrenic abscess & suggest appropriate treatment.	**CORE** **Phase II** Cholelithiasis (causes and complications) Cholecystitis (acute & chronic) Pancreatitis (acute pancreatitis) **Phase IV** Obstructive jaundice Pancreatic tumours Liver abscess **ADDITIONAL** Hepatic neoplasm Cysts of liver Neoplasm of Gall Bladder	5 hours 5 hours 4 hours
4 Endocrine & Breast Students will be able to: 1. assess, investigate & diagnose thyroid swelling & thyrotoxicosis and suggest principles of management 2. diagnose & manage a case of breast abscess 3. assess, investigate & interpret the status and diagnose a case of breast lump & suggest principles of treatment.	**CORE** **Phase IV** ***Thyroid*** Goiter and Neoplasms of thyroid ***Breast*** Breast pain, Mastitis and Breast Abscess Fibro-adenosis and Fibroadenoma Carcinoma of breast **ADDITIONAL** Diseases of adrenal gland Diseases of Parathyroid gland	4 hours 4 hours 2 hours

Learning Objectives	Contents	Teaching Hours
5 Chest Students will be able to: • assess & diagnose traumatic haemopneumo-thorax, associated injuries & introduce water seal drain in appropriate case.	**CORE** ***Phase IV*** Chest injury (Haemothorax, Pneumothorax) **ADDITIONAL** Dysphagia Empyaema thoracis	3 hours
6. Cardio-vascular System Students will be able to: 1. recognize chronic ischaemic conditions of limbs 2. take appropriate preventive measures & refer to specialised centre. 3. take appropriate measure to prevent DVT 4. recognize early cases of DVT ***7. Plastic & Reconstructions*** Students will be able to 1. manage Burn patient and minimize their complications 2. take any major wound care 3. suggest measures for con. External deformity & disfiguration	**CORE** ***Phase III*** Vaso occlusive disorders Atherosclerosis, Buerger's disease Varicose vein Deep vein thrombosis **ADDITIONAL** Pulmonary embolism Angeoplasty, CABG and cardiac surgery **Core** ***Phase II*** Burn (Causes , complications and management) Skin grafting ***Phase IV*** Skin tumours, Special area burn , Inhalation and electric burn	5 hours 3 hours 2 hours

Learning Objectives	Contents	Teaching Hours
8. Neuro surgery Students will be able to: 1. provide primary care of head injury & Spinal injury cases. 2. take measures to prevent complications in neuro surgical patients. 3. involve effectively in continued care & rehabilitation of neuro surgical cases.	**CORE** **Phase III** Head injury **Phase IV** Spinal injury Paraplegia/hemiplagia **ADDITIONAL** Hydro cephalus Tumours of brain Tumours of spinal cord	2 hours 5 hours
9. Operative Surgery Student should be able to perform: 1. primary & delayed primary & Secondary suture closure of wounds 2. Circumcision 3. Vasectomy 4. drainage of superficial Abscess 5. Venesection 6. Hydrocele operation 7. excision of superficial cysts & tumours 8. dressing of surgical wounds	**CORE** **Phase III** Principles of Asepsis & Antisepsis Pre-operative assessment & preparation Venesection Cricumcision Operation for hydrocele Repair of D.U perforation Wound care ***Tutorials*** Universal precautions (Scrubbing , gloving & gowning) O.T. environment & behavior Preoperative skin preparation and draping Suturing materials ,Stitches	5 hours 5 hours

Learning Objectives	Contents	Teaching hours
Student should be able to : • assist in common major operations & take post operative care	**Phase IV** Common Abdominal incision Operation for inguinal hernia Drainage of abscesses Catheterisation , Supra-pubic cystostomy Anastomosis Appendicectomy Cholecystectomy Gastrojejunostomy Basic principles of Laparoscopy. **Additional** Thyroidectomy, Nephrectomy, Mastectomy / Prostatectomy	10 hours
10. Orthopedic Surgery Student should be able to: • apply ATLS protocol to provide resuscitation of polytrauma patient . • manage simple and undisplaced factures • demonstrate skill in wound excision of open fractures . • demonstrate skill in: ▪ application of splints, slings , traction. ▪ application of plaster slab and cast ▪ manipulative reduction of common fracture and dislocation. ▪ aseptic technique of joint fluid aspration . • diagnose and outline treatment for acute osteomylities and septic arthritis • identify patient for referral to appropriate centre • demonstrate knowledge and understanding of the basic principle of physiotherapy and rehabilitation.	**CORE** ***Phase II*** **a) General Orthopaedics** • Introduction to orthopaedics • Hard tissue trauma :- - Fracture classification - Principal of management of open and closed facture - Fracture healing –nonuninon, malunion, delayed union. • Infection of bone (Acute and chronic osteomyelitis) ***Phase III*** **b) Regional orthopedics** Upper limb Colles' fracture Supracondylar fracture Clavicle fracture Radius Ulna fracture (Shaft) Humerus fracture (Shaft) Lower limb Fracture of Shaft of femur Fracture of Tibia fibula	5 hours 10 hours

Learning Objectives	Contents	Teaching Hours
	Phase IV **Regional Orthopaedics** • Upper Limb Hand injuries and Hand Infection • Lower Limb Frac ture of Neck of femur Fracture of Pelvis Ankle and foot injuries Amputations Additional Dislocation – Hip, Haemarthosis • Soft tissue trauma (muscle and tendon injuries, compartmental syndrome) . • Infection of joint including osteoarticular tuberculosis b) Mass Casuality-ATLS, Disaster management. c) Regional Orthopaedics **Additional** Dislocation of shoulder and elbow d) Paediatric orthopaedics : Congenital anomaly talipes , CDH e) Bone tumors : Classification of bone tumor Common benign and malignant bone tumor – osteochondroma, Giant cell tumor , Osteosarcoma, Metastatic bone tumor . f) Spine : Tuberculosis of spine Vertebral fracture – (primary management, transportation. Principles of definitive management) **Additional** g) Tendinitis, Tenosynovitis , bursitis .	15 hrs

Learning Objectives	Contents	Teaching Hours
11. Anaesthesiology Student should be able to : • be aware of the safety in Anaesthesia. • be aware of the possible complications & management • demonstrate basic knowledge and perform Cardio-Pulmonary Resuscitation (CPR) • describe the scope of Anaesthesia in rural environment. **Practical Skills** Student should be able to perform : • pre-operative assessment • induction • intubation • I/V line • artificial ventilation • post-operative room care	**CORE** a) Anaesthesia as a subject: its scope, outline- present & future b) Anaesthesia Pharmacology: Drugs: induction, maintenance, muscle relaxants c) Intra-operative management d) Post-operative management and complication e) General Anaesthesia (G.A) f) Local/Regional anaesthesia g) Management of Pain (chronic) h) Intensive Care Unit (ICU) i) Cardio-Pulmonary Resuscitation (CPR) **Exposure to practical procedures** (Tutorial) : • Pre-operative assessment • Induction • Endo tracheal Intubation • CV line • Artificial ventilation • Face mask ventilation. • Recovery room experience	10 hours

Learning Objectives	Contents	Teaching Hours
12. Radio Diagnosis & Imaging Student should be able to : • demonstrate knowledge and understanding of the principles of radiology and imaging • appreciate the importance of imaging as investigation & diagnosis of clinical conditions • describe the hazards of radiation • describe the protection measures for personal patient and the community. • write proper requisition for various x-rays & imaging. ***X-RAY Chest*** Student should be able to : • differentiate normal anatomical images from those due to pathological states, • diagnose the common conditions like tuberculous consolidation, pleural effusion, pneumothorax, lung abscess, collapse, bronchogenic carcinoma. • make radiological diagnosis of mediastinal masses	**<u>CORE</u>** **Phase IV** • Introduction of radiology & imaging including CT & MRI • Hazards of radiation and protection for personals, and patients . • Principles of ultra-sonography & its clinical application • Plain & contrast X-Rays • Interventional imaging • USG **<u>CORE:</u>** • Normal and pathological image • Pneumonic and Tuberculous consolidation • Pleural effusion • Pneumo Thorax **<u>Additional</u>** • Lung abscess • Mediastinal mass	6 hours 2 hours

Learning Objectives	Contents	Teaching Hours
Gastro intestinal system Student should be able to : • diagnose intestinal obstruction, perforation etc. • recognise indications and contra-indication for barium studies e.g. meal, swallow, follow-through & enema. • make differential diagnosis of stones & calcification on plain X-Ray. • diagnose gastric ulcer, duodenal ulcer, growth in the stomach, oesophageal cancer on barium studies. • interpret the finding of cholangiogram.	**Core:** • Plain X-ray findings of Acute abdomen. • Indications & contraindicatious for barium studies. Hepatobiliary system Cholangiogram & ERCP • USG of HBS and Pancreas **Additional:** MRCP	
Skeletal system Student should be able to : • diagnose common fractures, dislocations & bone tumours bone infections with the help of X-rays ***Excretory System*** Should be able to : • identify renal calculi in plain X-ray • understand USG & IVU findings in renal stone and other renal diseases.	**CORE** • Diagnosis of common fractures of upper and lower limb • skull fractures • Spinal fractures and caries spine • osteomylitis • common bone tumours • diseases of joints • dislocations **CORE** • X-ray KUB & IVU • USG of Kidney, Ureter , Bladder and prostate	

Learning Objectives	Contents	Teaching Hours
13. Radiotherapy Students will be able to: • appreciate the role of radiotherapy in the management of cancer • demonstrate knowledge of radiation • identify different sources of radiation • refer the patients to radiotherapy department • recognize common radiation hazards after primary care Students will be able to: • recognise common cytotoxic drugs. • refer appropriate cases for chemotherapy. • recognise common complication & offer primary care.	**<u>CORE</u>** ***Introduction to Radiotherapy*** **Radiation oncology, basic principles and practices :** • Aims of radiation oncology • Sources of radiation , Isotopes and their mechanism of action • Curative/Palliative radiotherapy • Radiosensitivity, radioresistance, radiocurability and normal tissue tolerance. • Common radiation reactions and management. **Medical oncology, basic principles and practice :** • Cell cycle and Mechanism of action of cytotoxic drugs • Clinical aspect of cancer chemotherapy • Complications of chemotherapy (Infection and bleeding tendency) • Chemotherapy of common cancers, • Common Chemotherapeutic regimes	5 hours

Learning Objectives	Contents	Teaching Hours
Students will be able to: • appreciate the role of doctors in prevention and early diagnosis of cancer & referral of cancer patients. • take leadership in the community to offer rehabilitative support • offer follow up & terminal care of cancer patients. • recognise clinical condition as which could be diagnosed by radio-isotope & interpret the results. • recognise diseases requiring isotope therapy.	**Prevention of common cancer :** • Primary prevention , Secondary prevention • Early diagnosis • Referral to appropriate centre **Palliative support and terminal care :** • Follow-up of cancer patients and terminal care **Nuclear Medicine, basic Principles and practice :** • Radio-isotope in diagnosis • Radio-isotope in therapy	1 hour 1 hour 1 hour

Learning Objectives	Contents	Teaching Hours
14. Paediatric Surgery Students will be able to: • identity common paediatric surgical problems including emergencies. • initiate primary care • refer the cases to appropriate hospital	**CORE** **Phase III** • Examination of a child and neonate (Special considerations) • Infantile Inguino scrotal swellings • Acute abdomen in infants & children • Congenital hypertrophic pyloric stenosis **Phase IV** • Neonatal/Infantile intestinal obstruction • Intussusception • Anorectal malformations. • Maldescended Testis • Torsion Testis • Haemangioma and other Cutaneous lesions • Child-hood tumours. • Rectal bleeding and prolapsed rectum **Tutorials** • Cystic hygroma, Branchial fistula • Phimosis/balanitis • Paraphimosis • Phimosis/balanitis • Paraphimosis	5 hours 10 hour

Appendix-1

COLLEGE MONOGRAM

Photograph of the student

CLASS PERFORMANCE RECORD CARD

DEPARTMENT OF SURGREY

---------- Medical College

Bangladesh.

Name of the student: .....

Father's Name: ……

Address: -- Village/road with no……

P.O: ……P.S: ……..Dist: ……..

Postal Code no…….Country: ……..

Telephone No: ……..Mobile No: ……..

Batch..... Roll No: ..... Session..... Local

Address: ..... ……..

Hostel:-…… Room No: .....

Year of admission in 1st year MBBS.....

Promoted to 3rd year: Jan/ July - Year.....

2nd Professional examination due in- Jan/ July- Year.....

2nd professional passed on Jan/July-Year……

3rd Professional due on Jan/July, Year----------

3rd Professional Passed on Jan/July----------

Final Professional examination due in- Jan/ July- Year.....

For foreign students

Citizenship: .....

SURGERY

Cl. Reg. No.	
Roll No.	
Group	
Batch	

Card No.	1 (One) :16 wk
Year	3rd year
Total marks	100
Pass marks	60%

Name of the student						
Period of placement	From :		To :		Unit :	
Professor / Associate Professor						
Academic Co-ordinator						

No.	CLINICAL	Satisfactory / Unsatisfactory	Marks	Signature
1.	Rapport development with patient and hospital supporting stuffs			
2.	History taking and writing (at least 10 different cases)			
3.	General examination and general principle of examination			
4.	Examination of swelling, ulcer, sinus, fistula, etc. (at least 10 different cases)			
5.	Examination of a) Inguino-scrotal swelling b) Vascular system			
6.	Examination of chronic abdominal conditions. (5 cases) a) G.I. tract condition • Lumps in different quadrants. • Gastric outlet obstruction b) Hepato biliary conditions c) Pancreatic conditions			
7.	Examination of acute abdominal conditions • Acute Appendicitis • Perforation of the hollow viscus • Acute Pancreatitis • Intestinal obstruction			
8.	Short cases in out patient clinics • Lipoma, Neurofibroma • Cyst • Haemangioma • Inguinal Hernias ,Hydrocele			

No.	PRACTICAL	Satisfactory / Unsatisfactory	Marks	Signature
1.	5-infusions are to be observed & recorded			
2.	10 I.M. injections are to be given & recorded			
3.	Observe Ryles tube introduction in 5 cases			
4.	10 X-rays are to be seen & findings recorded			
5.	6 operations are to attain & observe in OT & record			
6.	Specimen-Gallstone, G. Bladder, Appendix, Urinary stones			
7.	Instruments			
	TUTORIAL			
1.	Shock			
2.	Fluid electrolyte balance			
3.	Strelization, Tetanus, gas gangrene			
4.	Gangrene, Boil, abscess, crubucle, ulcers			
5.	Sepsis and asepsis in surgery			
6.	Preoperative & postoperative care			

OFFICIAL RECORD

(To be completed by department of Surgery)

Date of issue of Card			
Date of return of the Card			
Date of entry of the Result			
Date of issue of next Card			
Card No.			

Remarks and Counter signature of
Unit Chief

Registrar
Department of Surgery

Neurosurgery (1wk)

No.	CLINICAL	Satisfactory / Unsatisfactory	Marks	Signature
1.	Examination of Neurosurgical patients			
2.	Examination of Hydrocephalus, Meningocele, Brain tumours, Extradural & Sub dural haemorrhage, Brain Abscess			
5.	Examination and assessment of Head injury patients.			
6.	PLID- Back pain			

CARD COMPLETION EXAMINATION

Attendance		out of	
Total marks obtained in items		Percentage	
Marks obtained in card Completion		Percentage	
Remarks			

Unit chief of Orth-Surgery

Registrar
Ortho- Surgical Unit

OFFICIAL RECORD

(To be completed by department of Surgery)

Date of issue of Card			
Date of return of the Card			
Date of entry of the Result			
Date of issue of next Card			
Card No.			

Remarks and Counter signature of
Academic Co-ordinator

Dealing Assistant
Department of Surgery

Cl. Reg. No.	
Roll N0.	
Group	
Batch	

Card no.	2(Two)-A
Year	4th year
Total marks	100
Pass marks	60%

ORTHOPAEDIC & TRAUMATOLOGY

Name of the student						
Period of placement	From:		To:		Unit:	
Professor/Associate Professor						
Academic coordinator						

	CLINICAL	Satisfactory/ Unsatisfactory	Marks	Signature
1.	General principle of Musculoskeletal history taking			
2.	General principle of Musculoskeletal examination			
3.	Clinical examination of Hand & Wrist, Elbow& Shoulder .			
4.	Clinical examination Hip, Knee, Foot & Ankle.			
5.	Examination of Bone disorders – Chronic pyogenic osteomyelitis, Bone tumours.			
6.	Examination of fractures & dislocations			
7.	Examination and assessment of polytrauma patient.			
8.	Examination of bones & joints deformity, club foot.			

No.	PRACTICAL	Satisfactory /Unsatisfactory	Marks	Signature
1	**ORTHOPAEDICS** a. Splint, Bandage, technique of immobilization-Plaster slab & cast. b. Observation of orthopaedics OT			
2	**CASUALTY** a. At least five emergency cases to be received at Emergency Department & recorded. b. At least five minor wounds to be repaired. c. At least three operations are to be assisted.			
3	**X-ray** of fractures, dislocations, tumours and osteomyelitis **Specimens** of BoneTumours and Ostemyelitis Common Orthopaedic I**nstruments**			
	TUTORIAL			
1	Fracture, Complication			
2	Dislocation,Subluxation			
3	Open fracture Management			

CARD COMPLETION EXAMINATION

Attendance		Out of	
Total marks obtained in items		Percentage	
Marks obtained in card completion		Percentage	
Remarks			

Professor of Orthopeadics Registrar (Ortho Unit-)

ORTHOPAEDIC & TRAUMATOLOGY

Cl. Reg. No.	
Roll No.	
Group	
Batch	

Card No.	2 (Two)-B
Year	5th year
Total Marks	100
Pass marks	60%

Name of the Student						
Period of placement	From:		To:		Unit:	
Professor/Associate Professor						
Academic coordinator						

N	**CLINICAL**	Satisfactory/ Unsatisfactory	Marks	Signature
1	Review on General principle of Musculoskeletal history taking&examination			
2	Clinical examination of upper & lower extremities.			
3	Principle of examination of muscles, tendons & joints instabilities.			
4	Examination of muscles, tendons & joints instabilities of Knee& Shoulder.			
	Examination of Spine& spinal cord injury.			
6	Examination of peripheral nerves.			
7	Long cases presentation & discussion.			
8	Short cases presentation & discussion.			

No.	**PRACTICAL**	Satisfactory/ Unsatisfactory	Marks	Signature
1	ORTHOPAEDICS a. Use of functional braces, Walking aids, Caliper. b. Observation of orthopaedics OT&Operations (At least five)			
2	CASUALTY a. At least five emergency cases to be received at Emergency Department & recorded. b. At least five minor wounds to be repaired. c. At least three operations are to be assisted.			
3	**X-ray** of fractures, dislocations, tumours and osteomyelitis **Specimens** of BoneTumours and Ostemyelitis& others Common Orthopaedic I**nstruments**			
	TUTORIAL			
1	Bone tumours& Osteomyelitis			
2	Children fractures& Compart ment Syndrom			
3	Mass casualty & ATLS			

CARD COMPLETION EXAMINATION

Attendance		Out of	
Total marks obtained in items		Percentage	
Marks obtained in card completion		Percentage	
Remarks			
Professor of Orthopaedics Registrar Ortho unit---			

SURGERY

Cl. Reg. No.	
Roll No.	
Group	
Batch	

Card No.	3 (Three) 6 wk
Year	5th year
Total marks	100
Pass marks	60%

Name of the student						
Period of placement	From :		To :		Unit :	
Professor / Associate Professor						
Academic Co-ordinator						

No.	CLINICAL	Satisfactory / Unsatisfactory	Marks	Signature
1.	Examination of neck swelling • Lymph Nodes • Thyroid • Thyroglossal Cyst			
2.	Examination of extremities for peripheral vascular conditions			
3.	Examination of chronic abdominal conditions. (5 cases) a) G.I. tract condition • Lumps in different quadrants. • Gastric outlet obstruction b) Hepato biliary conditions c) Pancreatic conditions			
4.	Examination of acute abdominal conditions • Acute Appendicitis, lump • Perforation of the hollow viscus • Acute Pancreatitis • Intestinal obstruction			
5.	Examination of face & oral cavity			
6.	Examination of breast & axillary's lymph node (Benign & Malignant tumours)			
7.	Examination of anorectal condition			
8.	**UROLOGY**(2 Wk) Examination of Genitor-Urinary system a. Hydronephrosis, Kidney tumours b. Bladder tumours c. BEP & Carcinoma Prostate with Retention of Urine d. Scrotal Swellings, Epididymo orchitis e. Hypospedias, Phimosis, Para phimosis			

9.	**PAEDIATRIC SURGERY (2 WK)** Examination of Paediatric surgical cases • Anorectal malformation • Hernias • Urogenital malformations • Congenital Hypertrophic Pyeloric stenosis • Cleft lip, palate. • Haemangioma, Cystic Hygroma, Branchial cyst • Neonatal Intestinal obstruction			
10.	Short cases in out patient clinics • Lipoma, Neurofibroma • Cyst • Haemangioma • Inguinal Hernias ,Hydrocele • Neck swellings • Breast tumours & abscess			
	PRACTICAL			
1.	Ten complete histories with clinical examination are to be taken & recorded			
2.	Three proctoscopic examination are to be done & recorded			
3.	Observe surgical dressings & stitch-usually in 3 cases.			
4.	Ten X-rays (Including Urological) are to be seen and findings recorded			
5.	Three operations are to be assisted			
6.	Observe & introduce urethral Catheter in 5 cases			
7.	Specimen-Ca-Breast, Prostate, Sequestrum, Stomach, Thyroid, testis, Gallstones & Urinary stones.			
	TUTORIAL			
1.	Gastro-intestinal bleeding			
2.	Acute abdomen			
3.	Surgical jaundice			
4.	Chronic abdominal condition			
5.	Burn, Fluid & electrolytes, Parentral Nutrition			
6.	LUTS, Haematuria			
7.	Retention of urine			

CARD COMPLETION EXAMINATION			
Attendance		out of	
Total marks obtained in items		Percentage	
Marks obtained in card Completion		Percentage	
Remarks			

Unit Chief of Surgery

Registrar
Surgical Unit

OFFICIAL RECORD

(To be completed by department of Surgery)

Date of issue of Card			
Date of return of the Card			
Date of entry of the Result			
Date of issue of next Card			
Card No.			

Remarks and Counter signature of
Unit Chief of Surgery

Registrar
Department of Surgery

Ophthalmology

Departmental Objectives

The objective of this course is to provide need-based education so as to produce a quality doctor who will be able to

- deal with common ocular ailments
- identify, give initial management & refer ocular emergency cases appropriately
- provide leadership in the sphere of primary eye care in the country as well as abroad.

To achieve the above mentioned departmental objectives, the following learning objectives will be required:

List of Competencies to acquire:

1. Measure visual acuity of adult and children, a. unaided b. with pin hole c. with glass;
2. Examine color vision & examination of visual field (confrontation method)
3. Examine ocular movement and alignment; assessment of pupillary light reflex (direct and consensual)
4. Perform direct ophthalmoscopy.
5. Perform digital tonometry.
6. Perform Regurgitation test of lacrimal sac.
7. Perform Fluorescein dye test, irrigation of conjunctival sac & installation of eye drops/ointment.
8. Perform eversion of upper lid & removal of conjunctival foreign body.
9. Diagnose and give treatment of bacterial conjunctivitis, vitamin A deficiency disease (night blindness, Bittot's spot, xerophthalmia), initiate treatment of minor trauma, correction of simple presbyopia and referral of difficult cases.
10. Diagnose and initiate treatment and referral of ocular emergency cases:
    a. trauma, b. painful red eye. c. corneal ulcer/keratits, d. corneal foreign body, e. acute dacryocystits.
11. Diagnose and referral for specialist management: cataract, chalazion, pterygium, leucocoria of children, squint, cases with reduced vision

Fundamentals and principles of ophthalmology

Goal: The students will have the overall understanding of external and internal ocular structures of the normal human eye and will be able to perform the eye examination in normal and disease conditions.

Topic Specific objectives:

At the end of the teaching of the course the students will be able to:

- describe normal ocular anatomy.
- obtain detail ocular history.
- measure and record visual acuity in adults and children.
- assess pupillary reflexes.
- evaluate ocular motility.
- use the direct ophthalmoscope for gross assessment of red reflex, the optic disc and fundus examination.
- perform and evaluate visual fields by confrontation.

Specific contents in this subject will include:

A. Ocular Anatomy.

Students should be able to define gross anatomy of the eyeball& adnexa

1. Eyelids.
2. Extraocular muscles.
3. Lacrimal apparatus
4. Conjunctiva.
5. Cornea
6. Sclera.
7. Anterior chamber
8. Iris
9. Pupil.
10. Lens
11. Ciliary body
12. Posterior chamber
13. Vitreous cavity.
14. Retina
15. Optic disc.
16. Macula.
17. Choroid.
18. Optic nerve.

Learning Objectives

A. Knowledge components:

Students will be able to describe:

1. basic ocular anatomy
2. concept of measuring visual acuity without correction ,with pinhole and with correction
3. the importance of assessing ocular motility in the six cardinal positions of gaze and ocular alignment in primary position
4. the basic function of ophthalmoscope
5. importance of dilatation of pupil for fundus examination
6. abnormal fundal appearance in diabetic and hypertensive retinopathy
7. the concept of measuring intraocular pressure
8. the technique of determining the peripheral visual field by confrontation method
9. referral guideline

B. Skill Components:

At the end of the course, the students will able to demonstrate the skill of:

1. examination of each eye individually.
2. test V/A each eye individually and with pinhole.
3. evaluation of the position of the lids, and inspection of the conjunctiva, sclera, cornea and iris with a penlight.
4. examination of the pupil and assessment of the pupillary reaction.
5. ocular motility test in six positions and cover test
6. manual sac regurgitation test
7. assessment of intraocular pressure by digital method
8. performing visual field assessment by confrontation method
9. eversion of the upper lid and examine for the presence of foreign bodies
10. fluorescein dye test and its interpretation.
11. performing direct ophthalmoscopy and identify structures eg. optic disc, macula, and major vessels.

C. Attitude component:

Students will show continuous interest in gaining information in the subject and at the end of the teaching; they will be able to demonstrate the following:

a. A patient-centered role:
b. Scientific Integrity:
c. Ethical medical Professional Behavior:
d. Dedication to Continuous Learning:

Learning will be facilitated by:

Active participation in the

a. Classroom discussion
b. Completion of assignments
c. Formal presentations in tutorials.
d. Self-initiated independent thinking, presentation skill.

Evaluation:

Students will be evaluated by

a. Written examination(Short Essay test and MCQ test)
b. Formal and informal observations by instructor
c. Terms examinations
d. Final assessment together with other topics in the final Professional MBBS examination.
e. Class and ward attendance

Remediation during training:

1. The course coordinator will review the student's performance and will:
   i. Identify any specific deficits
   ii. Document all areas requiring remediation or additional concentration.
   iii. Provide additional recommendations for remediation of specific lackings.

Method of teaching:

a. Didactic lecture
b. In-class group session
c. Clinical class in the hospital out-patient, in-patient and Operation Theatre settings
d. Problem based discussion.

Materials

Models, power point presentation will be provided and students will get copies of handout whenever available.

Learning Objectives and Course Contents in ophthalmology

Learning Objectives	Contents	Teaching Hours
Student will be able to: 1. describe the anatomy of orbit and its contents 2. describe gross anatomy of the extra ocular muscles 3. diagnose orbital cellulitis, proptosis, squint /deviation and asymmetry and refer to specialist care 4. list the conditions for further referral to specialist care	**Orbit:** **1. Gross Anatomy:** a. Bones of the orbit constituting walls, roof and floor b. Contents of the orbit **2. Clinical examination of orbital disease:** **3. Orbital diseases:** a. Orbital cellulitis b. Proptosis	2 hrs
Students will be able to 1. describe gross anatomy of the lid 2. describe surgical steps of chalazion operation. 3. demonstrate the skill of step wise clinical examination, 4. describe diagnosis and treatment procedure of the followings; Stye, chalazion and blepharitis. 5. identify and refer the following: Trichiasis, ptosis, ectropion, entropion, chalazion 6. perform eversion of the lid.	**Eye lids:** **1. Gross Anatomy of the eye lid & its disease** **2. Clinical Examination procedure** a. Corneal light reflex & palpebral fissure height b. Visual inspection of eyelids and periocular area. **3. Diseases of Lid** a. Malpositions.(definitions) i. Trichiasis ii. Ptosis iii. Ectropion iv. Entropion. b. Inflamations. i. Stye ii. Chalazion iii. Blepharitis iv. Internal hordeolum	2 hrs

Learning objectives	Contents	Teaching Hours
Students will be able to : 1. describe gross anatomy of conjunctiva 2. name diseases of the conjunctiva 3. describe surgical steps of pterygium operation. 4. examine the conjunctiva 5. diagnose and manage of viral, bacterial, allergic conjunctivitis & ophthalmia Neonatorum 6. diagnose pterygium and refer for surgical management 7. remove superficial conjunctival foreign body	**Conjunctiva:** **1. Gross Anatomy of the Conjunctiva & its diseases:** **2. Examination procedure for conjunctiva** **3.Disease of conjunctiva**: a. Conjunctivitis - Bacterial - Viral - Allergic b. Ophthalmia neonatorum c. Trachoma (Gross idea) d. Pterygium **4.Precautionary measures:**	2 hrs
Students will be able to: 1. describe the anatomy of lacrimal apparatus 2. describe production, and functions of tear. 3. describe steps of sac patency test with interpretation 4. describe symptoms, signs of lacrimal sac diseases. 5. diagnose and manage lacrimal sac diseases. 6. mention indication, contraindication and major complications of DCR and DCT 7. perform digital regurgitation test 8. perform digital massage in congenital nasolacrimal duct obstruction. 9. initiate treatment of acute & chronic dacryocystitis, and congenital nasolacrimal duct obstruction, and referred to an ophthalmologist	**Lacrimal Apparatus:** **1. Gross Anatomy of the Lacrimal Apparatus& its diseases:** **2. Physiology:** Function of tear. **3.Examination Technique:** **4. Lacrimal sac disease:** a. Actute dacryocystitis. b. Lacrimal sac abscess c. Chronic dacryocystitis. d. Congenital nasolacrimal duct obstruction	2 hrs

Learning objectives	Contents	Teaching Hours
Students will be able to 1. describe gross anatomy of the fibrous coat of the eye 2. describe supply of nutrition to cornea and maintenance of its transparency 3. describe steps of performing fluorescein dye test. 4. describe Keratoplasty 5. examine cornea 6. perform fluorescein dye test (to detect corneal epithelial defect) 7. remove superficial nonimpacted corneal foreign body 8. diagnose, and initiating treatment of corneal ulcer, keratitis and appropriate referral	**Cornea and sclera:** **1. Gross anatomy of cornea and sclera** **2. Physiology:** a. Maintenance of nutrition& transparency of cornea b. Function of cornea c. Tear film **3. Diseases of cornea** a. corneal ulcer b. keratitis c. Keratoplasty (Gross idea)	3 hrs
Student will be able to 1. describe the parts of uveal tract. 2. describe diseases of uveal tract, symptoms, signs and management of acute iritis & endophthalmitis 3. identify circumcorneal / ciliary congestion 4. perform pupil examination 5. identify ciliary tenderness 6. diagnose, initiation of treatment of iritis, endophthalmitis and appropriate referral.	**Uveal tract** **1. Gross Anatomy** **2. Diseases of uveal tract** a. Anterior uveitis/uveitis b. Endophthalmitis c. Panopthalmitis	2 hrs

Learning objectives	Contents	Teaching Hours
Students will be able to: 1. describe clinical features of age related cataract 2. describe stages of senile cataract 3. mention indications of cataract surgery 4. mention complications of untreated cataract 5. perform the preoperative evaluation 6. state ECCE, SICS and phaco surgery. 7. mention Complications of cataract operation 8. state Advantage of IOL implantation over spectacle 9. demonstrate the skill of diagnosis of cataract and referral to proper ophthalmologist	**Lens and cataract:** **1. Gross Anatomy:** **2. Physiology:** Accommodation **3. Disease of the lens** a. Cataract b. Pseudophakia c. Aphakia **4. Management of cataract:** a. Cataract surgery (Gross idea) b. Intraocular lens and its advantage (Gross idea) **5. Referral criteria of a cataract case**	3 hrs
Student will be able to: 1. describe anatomy of the anterior chamber and anterior chamber angle 2. describe production circulation and outflow of the aqueous humor 3. define and classify glaucoma. 4. describe Symptoms, signs and management of POAG, PACG and congenital glaucoma 5. demonstrate the skill of: a. taking history of glaucoma patients. b. digital tonometry. c. conformation test d. direct ophthalmoscopy 6. diagnose and provide initial management of PACG and early referral. 7. counseling of all glaucoma patient regarding blinding nature of disease & necessity of life long regular treatment & follow up	**Glaucoma:** **1. Gross Anatomy** **2. Physiology** a) Production, circulation and outflow of the aqueous humor. b) Intra ocular pressure and factors influencing IOP. **3. Classification of glaucoma.** **4. Disease.(gross aspect)** **a)** Primary angle closure glaucoma i) Risk factors ii) Symptoms iii) Signs iv) Management **b)** Primary open angle glaucoma: i) Risk factors ii) Symptoms **c)** Congenital glaucoma i) Genetics ii) Symptoms iii) Signs **d)** Secondary Glaucoma: Causes **6. Principles of Management:** a. Pharmacological treatment. b. Surgical Management: c. Laser treatment	4 hrs

Learning objectives	Contents covered in this topic	Teaching Hours
Student will be able to: 1. describe the gross anatomy of the retina and its function 2. describe the normal fundus. 3. describe the fundal features of diabetic, hypertensive retinopathy. 4. examine normal eye with use of direct ophthalmoscope 5. identify or suspect vitro retinal disorder and refer patient	**Retina and vitreous:** **1. Gross Anatomy:** i. Vitreous ii. Retina **2. Function of retina.** i. Normal vision.(acuity of vision) ii. Color vision **3. Symptoms Suggestive of vitro- retinal disorder.** **4. Examination of normal eye with direct ophthalmoscope.** **5. Fundal features of** a. Diabetic retinopathy. b. Hypertensive retinopathy. **6. Referral criteria** a. Abnormal red reflex of fundus b. Visual loss or symptoms	3 hrs
Student will be able to: 1. define the common refractive errors eg. myopia, hypermetropia & astigmatism. 2. define Aphakia and pseudophakia 3. define presbyopia and describe the rule of thumb for correction of presbyopia 4. demonstrate basic knowledge about contact lens and refractive surgery. 5. define low vision and mention importance of low vision aid for rehabilitation. 6. record visual acuity. 7. do prescription of presbyopic glass as per rule of thumb and referring difficult patients to ophthalmologists. 8. refer all cases for final correction by ophthalmologist 9. detection of cases with low vision and refer to low vision aid centers	**Refraction, Contact lens, Refractive Surgery and Low vision (Gross idea):** **1. Refractive status& management** a. Emetropia. b. Myopia. c. Hypermetropia. d. Astigmatism. e. Presbyopia f. Aphakia- I. Spectacle correction II. Contact lens III. Intraocular lens and pseudophakia IV. **Refractive surgery** (Basic idea) **6. Low vision.** Definition of low vision. Refer to low vision aid centre	3 hrs

Learning objectives	Contents	Teaching Hours
Students will be able to. 1. name tumors affecting the eye and adnexa 2. name the causes of leucokoria in children. 3. describe stages, symptoms, signs and management of retinoblastoma 4. diagnosef Leucokoria and mention its importance for early referral	**Leucocoria in children** a. Cataract b. Retinoblastoma c.. Endophthalmitis d. Persistent fetal vasculature(PVF/PHPV) e. Retinopathy of prematurity	1 hrs
Student will be able to: 1. describe Strabismus. 2. describe the importance of measuring visual acuity of children of two to five years old 3. describe the causes of amblyopia in children 4. describe the causes of Leukocoria 5. demonstrate the skill of: a. recording visual acuity in children b. ocular motility test c. recognize strabismus, nystagmus and amblyopia for immediate specialist referral. 1.	**Ocular motility and paediatric ophthalmology:** **1. Gross Anatomy.** Extra-ocular muscles **2. Amblyopia.**- Definition, cause & impact **3. Strabismus/squint:** Definition, cause, diagnosis,effects and management principle **4. Nystagmus:** Definition & identification	2 hrs

Learning objectives	Contents	Teaching Hours
Student will be able to: 1. describe visual and pupillary, path ways. 2. describe manifestations of III, IV & VI cranial nerve palsy. 3. describe Papilloedema 4. record visual acuity. 5. perform confrontation visual field testing in four quadrants for each eye. 6. examine pupillary light reflex 7. recognize and diagnose nystagmus. 8. examine the optic disc with the direct ophthalmoscope	**Optic Nerve and Neuro Ophthalmology:** **A. Gross Anatomy** 1. Visual path way. 2. Pupillary Pathway **B. Examination procedure:** 1. VA 2. Visual field testing (confrontation) 3. Pupillary light reflex. 4. Direct Ophthalmoscopy	2 hrs
Student will be able to: 1. describe types of ocular injury 2. explain the effect of different types of ocular trauma 3. mention criteria for referral of the patients 4. demonstrate skill of: a) examination of the eye to assess the effect of injury b) removal of superficial conjunctival, sub-tarsal and superficial corneal foreign body c) performing pad-bandage of the eye d) providing primary management of ocular trauma e) referring the patient after primary management to ophthalmologist /hospital	**Ocular trauma:** 1. Blunt injury (Details) 2. Perforating Injury. 3. Foreign Body:(Extra and intra ocular) 4. Chemical Injury (details) 5. Thermal injury (Basic idea) 6. Radiation injury (Basic idea)	2 hrs

Learning objectives	Contents	Teaching Hours
Students will be able to: a. describe fundal change in hypertension b. describe fundal change in diabetes mellitus. c. describe ocular manifestation of vitamin-A deficiency and management. d. provide health education regarding importance of yearly eye checkup by ophthalmologist for prevention of blindness due to diabetes. e. demonstrate the skill of detecting disc oedema on fundus examination with direct ophthalmoscope f. recognize Bittot's spot, xerophthalmia and Kerotomalacia & referal.	**Ocular Manifestations of systemic diseases (Gross idea):** 1. Diabetes mellitus 2. Hypertension 3. Vitamin A Deficiency 4. Auto-immune diseases (Basic idea) 5. Tuberculosis 6. AIDS	2 hrs
Student will be able to: a. describe etiology, magnitude and impact of blindness. b. demonstrate the concept of 'Primary Eye care' c. describe Ocular hygiene. d. describe diseases and conditions for referral. e. describe concept of school sight test. f. define low vision g. demonstrate gross idea about communicable and preventable eye diseases. h. perform school sight test i. identify cases of low vision and referral. j. implement "Primary Eye Care" concept at the place of work k. develop awareness about eye donation in the community. l. diagnose & initiate initial management of ocular emergency	**Miscellaneous & Community eye care:** 1. Etiology and magnitude of blindness 2. School sight test. 3. Primary eye care 4. Referral guide line 5. Low vision and rehabilitation 6. Outreach activities. 7. Eye donation & eye banking. 8. Vision 2020, The right to sight (Gross idea) 9. Ocular therapeutics 10. Ocular emergency 11. Sudden loss of vision 12. Painful loss of vision 13. Painless loss of vision 14. Gradual dimness of vision 15. Red eye 16. Ocular effects of environmental change	5 hrs

EXAMINATION SKILLS	Skills-		Assist	Observe
	Able to perform Independently	Able to Perform under Guidance		
1. Visual Acuity test and Use of pinhole (including light perception, projection)	✓			
2. Colour Vision test		✓		
3. Visual field by confrontation	✓			
4. Examination of ocular movements	✓			
5. Flourescien staining to identify corneal abrasion		✓		
6. Pupillary size and reaction	✓			
7. Distant direct ophthalmoscopy on dilatedpupils to diagnose lens opacities		✓		
8. Method of Direct ophthalmoscopy		✓		
9. Digital tonometry	✓			
10. Schiotz tonometry				✓
11. Regurgitation for NLD Block	✓			
12. Syringing				✓
13. Instillation of eye drops/ ointment	✓			
14. Irrigation of conjunctiva	✓			
15. Applying of patching	✓			
16. Epilation of cilia		✓		
17. Eversion of upper eye lid	✓			
18. Removal of corneal foreign body				✓
19. Cataract surgery				✓
20. Glaucoma surgery				✓
21. Chalazion/Stye				✓
22. Tarsorraphy			✓	
23. Assessment of Opacity in the media	✓			
24. Lacrimal Sac Surgery				✓

DEPARTMENT OF OPHTHALMOLOGY

CARD FOR EVALUATION

First clinical Card (4th year) **Total Marks = 100**

Name of the student			
Roll No		**Class**	
Session		**Batch**	
Period of placement in Eye 4 weeks			
From		**To**	

No.	Items	Day of teaching	Marks obtained	Teacher's Signature
1.	History taking	1 day		
2	Examination of the Eye: Adnexa, **Lid, Chalazion, Ext.Hordeolum, Int.Hordeolum** Visual Acuity (Adult & children unaided, with pinhole, with present glass), Ant. Segment. Ocular motility, Digital tonometry, Confrontation test.(Visual field test)	3 days		
3	Methods of application of ocular drugs: Eye Bandage, removal of sup. Corneal F.B, Irrigation of conj. Sac.	1 day		
4	'RED EYES' - case demonstrations. Including fluorescein dye test & cilliary tenderness.	2 day		
5	Trial box, Snellen's chart	1 day		
6	Regurgitation test, Sac Patency Test and Epiphora 3 cases	1 day		
7	Assessment	1 day		
8	Total	10 days		

Total No. of attendance	
Marks obtained	
Comment	
Signature of the Registrar/RS	**Signature of Head of the Department**

DEPARTMENT OF OPHTHALMOLOGY

CARD FOR EVALUATION

Second clinical Card (5th Year) Total Marks = 100

Name of the student			
Roll No		**Class**	
Session		**Batch**	
Period of placement in Eye Ward 4 (four) weeks. (ward + OPD)			
From		**To**	

Total No. of attendance	
Marks obtained	
Comment	
Signature of the Registrar/RS	**Signature of Head of the Department**

Teaching Hours

No.	Items	Day of teaching	Marks obtained	Teacher's Signature
1.	History & Exam (Colour vision, Field of vision, pupillary light reflex)	4 days		
2.	Corneal ulcer, Corneal abrasion: Diagnosis and management.	2 days		
3.	Uveitis: Diagnosis and management.	2 days		
4.	Cataract diagnosis and management.	3 days		
5.	OT, surgical demonstration Chalazion, Stye, DCR, Cataract surgery with IOL implantation (SICS/ECCE/Phaco)	2 days		
6.	Glaucoma.	3 days		
7.	Ocular Injury, Conjunctival irrigation, Eversion of lid, Epilation	2 days		
8.	Ophthalmoscopy, Tonometry, Assessment of opacity in media	2 days		
9.	Dacryocystitis: Diagnosis & management.	2 days		
10.	Xerophathalmia, paediatric cases.	2 days		
11.	Assessment	2 days		
	Total	**26 days**		

Methods	Total
Lectures	40 hours
Ward Teaching	8 weeks

Otorhinolaryngology & Head-Neck Surgery

Departmental Objectives

The aim is to teach undergraduate medical students so as to produce need based community oriented doctors who will be capable of :

1. diagnosing and managing common ENT & Head-Neck disorders.
2. referring complicated ENT and head-neck disorders to appropriate centres if and when necessary
3. managing common emergencies in ENT & head-neck disease
4. giving preventive advice on certain aspects of ENT & head-neck diseases

To achieve above mentioned departmental objectives the following learning objectives should be achieved:

1. The art of appropriate history taking
2. Should perform primary ENT & head-neck examination procedure
3. Should use the aural speculum, nasal speculum, tongue depressor, laryngeal mirror, tuning fork and head mirror/light, otoscope & other instruments as listed in the enclosure
4. Should be able to describe the clinical application of basic anatomy & physiology of Ear, Nose and Throat
5. Should be able to describe the pathology of common ENT disorders & disorders of the Head-Neck region
6. Should list commonly used drugs and describe their adverse effects
7. Should recommend common investigative procedures and special investigation (CT, MRI, and sonography, etc)

Learning Objectives and Course Contents in Otorhinolaryngology & Head-Neck Surgery

Learning Objectives	Contents	Teaching Hours
Students will be able to: 1. demonstrate the applied Anatomy of ear. 2. demonstrate the applied Physiology of ear. 3. take History of ear diseases 4. conduct clinical hearing test and value the significance of audiometry and caloric test. 5. diagnose various ear diseases by clinical examination (FB, Otitis Exerna, Traumatic Tympanic membrane perforation, ASOM, CSOM, Otosclerosis. 6. remove impacted wax, foreign body, Aural toileting 7. diagnose ear diseases and Its complications and refer to appropriate hospital when needed. e.g.- perichondritis otosclerosis extra and intracranial complications of middle ear diseases 8. make D/D of earache 9. differentiate safe from unsafe variety of CSOM.	**EAR** **CORE** 1. applied Anatomy of ear 2. applied Physiology of ear:- hearing, Balance 3. congenital diseases of ear-Preauricular sinus 4. causes of earache 5. causes of deafness 6. diseases of ext. ear-Furuncle, Otitis externa ,Otomycosis, Foreign body,Trauma,Perichondritis of pinna 7. diseases of middle ear-ASOM, CSOM, OME, Otosclerosis. 8. diseases of internal Ear-Meniere's disease, Labyrinthitis. 9. Tuning fork test, Audio metry, Caloric test 10. micro ear surgery-Myringotomy Myingoplasty & different types of mastoidectomies. 11. neurootological complications: Lateral sinus thrombosis, general idea about intra cranial complications of ASOM & CSOM. **Additional:** 12. causes of Vertigo &Tinnitus 13. management of deafness.	

Learning Objectives	Contents	Teaching Hours
Student will be able to : 1. describe applied anatomy and applied physiology of nose. 2. manage epistaxis 3. remove FB and reduction of Fracture nasal bone. 4. diagnose nasal diseases by clinical examinations 5. refer the patient to specialized ENT centre 6. apply ANS Pack. 7. history taking of disease of Nose and PNS.	**<u>NOSE</u>** **CORE:** 1. Anatomy of nose 2. Physiology of nose 3. Epistaxis. 4. FB nose, Fracture nasal bone 5. Nasal allergy 6. Nasal polyp 7. Rhinitis, Sinustitis 8. DNS, septal perforation, septal abscess, septal haematoma 9. Nasal papilloma, rhinosporidiosis. 10. Atrophic rhinitis 11. Nasopharyngeal angiofibroma and naso-pharyngeal carcinoma. 12. Sino-nasal malignancy **Additional** Headache Tumours of nose and PNS Common nasal and sinus Operation:- Polypectomy SMR, Septoplasty Caldwell Luc operation BAWO	

Learning Objectives	Contents	Teaching Hours
Student will be able to : 1. Describe anatomy of oral cavity, pharynx, larynx and oesophagus. 2. Describe Physiology of deglutition. 3. Make D/D of white patches, ulcers in oral cavity, Leukoplakia and Sorethroat. 4. Diagnose Diphtheria and refer it to appropriate hospital 5. Diagnose acute & recurrent tonsillitis, adenoids, 6. Describe indications of adenotonsillectomy and principles of post operative management and contraindications. 7. Diagnose complications of adenotonsillectomy and its management 8. List D/D of dysphagia. 9. List D/D of hoarseness of Voice. 10. List D/D of Stridor 11. Describe indications of trachestomy & its steps, postoperative management and complications.	**Mouth cavity, pharynx, larynx and esophagus** **CORE** 1. Anatomy of oral cavity, pharynx, larynx and Oesophagus 2. Physiology of salivation, deglutition and functions of larynx, pharynx. 3. Diseases of oral cavity Congenital anomalies like Hare lip, cleft palate White patch-oral cavity, oral ulceration, Leukoplakia and neoplasm. 4. Acute & recurrent tonsillitis faucial diphtheria. 5. Adenoids 6. Tonsillectomy and adenoidectomy 7. Peritonsillar abscess, retro pharyngeal abscess, parapharyngeal abscess. **Larynx** Acute Epiglottitis, Acute Laryngo tracheo bronchitis Acute & chronic laryngitis Papillomalarynx Stridor Causes of hoarseness of voice Tracheostomy Carcinoma-larynx. Foreign Body larynx, trachea, bronchus.	

Learning Objectives	Contents	Teaching Hours
	Pharynx FB Malignancy of Pharynx **Oesophagus** PV syndrome Dysphagia Foreign Body Benign & malignant lesion of Oesophagus (strictures, rupture) **Head-Neck** 1. Applied anatomy of salivary glands, Thyroid & Parathyroid glands 2. Physiology of salivary glands, Thyroid & Parathyroid glands 3. Salivary gland diseases 4. Thyroid and parathyroid diseases 5. Neck mass 6. Congenital sinus & cyst of head neck (Thyroglossal cyst, Branchial cyst, Branchial sinus) **General Idea about head neck malignancies**	

Integrated Teaching

Topic	Learning Objective	Teaching Aids	Assessment	Department
• Otogenic and Rhinogenic extra-cranial & intra-cranial complications • Facio-Maxillary Neoplasm	Student will be able to: • state the causes of extra-cranial & intra-cranial complications of ASOM and CSOM • describe the symptoms & signs of acute mastoiditis, facial palsy, labyrinthitis lateral sinus thrombosis. • Investigate & interpret the results of investigation. • treat different complications (gross idea) State common causes of maxillary swelling/carcinoma of Maxilla.	Video cassette film of C.T. Scan, X-ray, Diagram, Otoscope, Hammer, Cotton, Pin & Patients. Tongue depressor, PNS mirror, laryngeal mirror Nasal speculum. (Nice to know fundoscopy) Ophthalmoscope	Performance, Interpretation, Short Question, Modified short Question, MCQ Practical Exam OSCE	ENT & Neuro Surgery ENT & Eye

Teaching Methods:

- Lecture/ Mini Lecture
- Tutorial/ Demonstration - Video
- Case presentation- Subject – Operation- Programe side Teaching Theatres
- Discussion, Visit to RHC / Specialised Centre (If available)

Teaching Hours for Otorhinolaryngology & Head-Neck Surgery

Methods	Total
Lectures	40 hours
Ward Teaching	8 weeks

CARD SYSTEM FOR WARD & OUTDOOR DUTIES

Clinical Card in Otorhinolaryngology & Head-Neck Surgery

(4 weeks in 4th year and 4 weeks in 5th year - Total marks = 100)

Name of the student			
Roll No		**Class**	
Session		**Batch**	
Period of placement in ENT Outdoor /Ward			
From		**To**	

4th - YEAR

No.	Item	Date of teaching & learning	Marks obtained	Signature of teacher
1.	History taking, examination & investigations of ear diseases			
2.	History taking, examination & investigations of diseases of nose & Paranasal Sinuses.			
3.	History taking, examination and investigation of diseases of pharynx, larynx & Oesophagus			
4.	Examination of Head-Neck & differential diagnosis of neck swellings.			
5.	Observe 10 cases of discharging ears and establish diagnosis			
6.	Observe 10 cases of deafness and establish diagnosis			
7.	Observe 10 cases of nasal obstruction & establish diagnosis. Learn all about septal deviation			
8.	Observe 5 cases of nose bleeding and learn nasal packing			
9.	Observe 5 cases of wax in ears and learn toileting			
10.	Observe 10 cases of neck swellings and establish diagnosis			

5th - Year

No.	Items	Date of teaching & learning	Marks obtained	Signature of teacher
1.	Observe 5 cases of Recurrent tonsillitis tonsillectomy, also learn pre & postoperative management.			
2.	Observe cases of Peritonsillar abscess/ retropharyngeal abscess. Establish diagnosis. Learn principles of management			
3.	Observe 10 cases of hoarseness of voice. Establish diagnosis & learn principles of treatment			
4.	Observe instruments for laryngoscopy, oesophagoscopy & bronchoscopy. Learn procedures of each			
5.	Observe 5 cases of tracheostomy. Learn technique of pre & post-operative management			
6.	Observe 2 antral washout operation. Learn instruments & principles of operation. See 3 cases of FB Nose. Learn technique of removal.			
7..	Observe 5 cases of dysphagia. Learn management. Learn all about nasogastric feeding			
8.	Observe 10 cases of Head & Neck swellings Establish diagnosis.			
9.	Observe ENT X-rays. Interpret common findings			

Total Number of attendance		**Out of**	
Punctuality			
Attitude to learning			
Relationship with staff & patients			
Percentage of marks obtained in items examination			
Signature of Professor / Associate Professor	**Date :**		

Instruments

1. Ear speculum
2. Otoscpe
3. Nasal speculum (Thudicum)
4. Antrum puncture trocar and cannula (Lichwitz)
5. Tongue depressor (Luc's)
6. PNS mirror
7. Laryngeal mirror
8. Boyle Davis mouth gag
9. Adenoid curette with / without cage (St Clare Thomson)
10. Tracheostomy tube-metallic/PVC
11. Laryngoscope
12. Oesophagoscope
13. Bronchoscope
14. Head light/mirror
15. Tuning Fork

Operative Procedures

a. Tonsillectomy
b. Adenoidectomy
c. Septoplasy/SMR
d. Caldwell-Luc operation
e. Myringoplasty
f. Mastoidectomy
g. Thyroidectomy
h. Salivary gland excision
i. Biopsy for diagnosis of carcinoma of tongue, oral lesions etc
j. Direct larygnoscopy
k. Neck node biopsy
l. Antral washout

X-ray

m. X-ray paranasal sinus (occipito-mental view)
n. X-ray nasopharynx – lateral view
o. X-ray mastoid
    - Towne's view
p. X-ray neck
    - Lateral view
    - Ba swallow x-ray of esophagous

Nice to know

CT scan /MRI

FOL – Fibre Optic Laryngoscopy

CLINICAL PLACEMENT OF STUDENTS DURING PHASE II, III & IV (for 62 weeks)

WEEKS	PHASE II 20 WEEKS	WEEKS	PHASE III 14 WEEKS	WEEKS	PHASE IV 12+12 + 04 WEEKS
01-16	**Surgery indoor -12 wks Surgery opd- 04 wks**	**01-04**	**Othopaedics & traumatology**		**1st term**
17	**Anaesthesia**	**05-08**	**Ophthalmology**	**01-04**	**Orthopedics**
18	**Blood transfusion**	**09-12**	**Entd**	**05-08**	**Ophthalmology**
19	**Radiology**	**13**	**Radiotherapy**	**09-12**	**Entd**
20	**Dentistry**	**14**	**Neurosurgery**		**2nd & final term**
				01-06	**Surgery**
				07-08	**UROLOGY**
				09-10	**PAEDIADRIC SURGERY**
				11	**EMERGENCY & CASUALTY**
Card completion exam at the end of rotation & Term exam at 41st week		**Term exam at 41st week**		**12**	**BURN & PLASTIC SURGERY**
				04 weeks	**BLOCK POSTING**
					Final assessment

Time schedule for the lecture classes (number)

DICIPLINE	2ND PHASE	3RD PHASE	4TH PHASE	TOTAL
Gen Surgery	35	30	60	120
Orthosurgery	5	10	30	30
Radiology	0	0	5	5
Radiotherapy	0	0	8	8
Transfusion Medicines	0	5	0	5
Anaesthesia	0	10	0	10
Neurosurgery	0	2	5	7
Paediactric Surgery	0	5	10	15
Urology	0	5	10	15
Burn Plastic Surgery	3	0	2	5
	38	**57**	**125**	**220**

LARGE GROUP TEACHING

All lectures should be interactive one.
It should be directed to develop analytical and problem solving attitude.

Student should be encouraged to adopt self-directed learning.

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Clinical Teaching and tutorials

- Students are to attend the wards as per placements twice in a day in morning and evening sessions as fixed by the respective college authority.
- They must be well dressed along with apron & nameplate.
- They will carry stethoscope, percussion hammer, pencil torch and measuring tape and other necessary clinical examination tools .
- During their ward visit, they will examine patients and try to make working diagnosis and write the history as per prescribed format.
- They will go through hospital documents and look what necessary measures and decision has been taken to follow the management of the patient in the ward.
- They will observe and practice techniques of IV & IM injection, infusion, dressing of the wounds. Student will also attend the operation theater and observe the instruments and equipments used in the operation theater.
- They will observe the techniques of different anaesthesia and the drugs used, techniques of hand

  scrubbing, gowning gloving, scrubbing and draping of operation field, making incisions, haemostesis, saturating technique and wound repair.
- Students performance will be assessed by item examinations, ward and term examinations.

Integrated teaching-

It should be run throughout the year under a centrally prepared routine involving as many as specialties possible. There should be at least once in a month, duration of the program will be 02.30hours 12 noon to 2.30pm.

Following topics are being proposed from the department of surgery-

1. Jaundice
2. Vomiting
3. Per rectal bleeding
4. Abdominal pain
5. Multiple Trauma
6. Respiratory distress
7. Surgical complications of Diabetes Mellitus
8. Extra pulmonary Tuberculosis
9. Endoscopic diagnostic and therapeutic procedures
10. Documentation and record keeping
11. Communication Skills (Counselling, Breaking bad News)
12. Rehabilitation after trauma and ablative procedures

Assessment-

1. **Internal assessment: (Marks for formative assessment)**
   a. Items & Card completion examination ,
   b. Year final assessment at the end of Phase-II & III (written)
   c. Final assessment examination (similar to final professional examination) at the end of block posting. (Medicine, Surgery, Obs & Gynae)
2. **Final professional MBBS Examination:**
   a. **Written:** (MCQ- 20; SAQ- 4 X 17.5 =70) each paper
   Time allocation: MCQ- 30 minutes; SAQ/SEQ – 02hrs 30minutes.

   i. Paper – I SAQ consists of 4 groups.
      1. Group -1:- Principles of surgery, Vascular Diseases, Anaesthesia, Radiology, Radiotherapy, Blood Transfusion.
      2. Group -2:- GIT, Paediatric surgery, Operative Surgery.
      3. Group -3:- HBS & Pancreas, Urology, Breast, Endocrine.
      4. Group - 4 :- Orthopaedics & Traumatology, Neurosurgery, Chest disease

      There will be 06 questions in each group and out of those 05 are to be answered carrying 3.5 marks each.
      Each group will contain compulsory 01 problem solving and 02 analytical questions.

   ii. Paper –II (Ophthalmology-- MCQ-10 & SAQ-35; ENTD-- MCQ-10 & SAQ-35)
      1. Group-1and group 2 Ophthalmology
      2. Group-3 and Group 4 ENTD

   Iii Questions will be of
   recall type- 30%,
   understanding or data interpretation type- 30% and
   problem solving type- 40%

   iv Question should cover the whole syllabus .
   80% of the questions should preferably be from core content and 20% from additional content of course.

b. OSPE –

i. Stations will be constructed centrally by two experience examiners nominated and supervised by chairman of the examination committee of the respective university.
ii. Each station will of 3 minutes time and marks will be allocated according to rules mentioned in the subject concerned.
iii. All the examinee under each university will appear in OSCE/OSPE exam in their respective centers on a same date and time scheduled by University for a particular subject.
iv. OSPE examination of Surgery, Ophthalmology and ENTD will be in two different days.
v. Answer scripts of OSPE will be divided among the examiners for evaluation and the marks are to be submitted prior to final day of the oral examination scheduled in the respective centre.

vi. Every examination center should be prepared for testing competencies including different procedure stations, data analysis, counseling, displaying x-ray, specimens and instruments.
vii. Station setup
    1. Total 20 stations will be made comprising 10 from Surgery,
    2. 5 Ophthalmology and
    3. 5 ENT stations.

    Out of those, at least two stations from surgery, one from Ophthalmology and one from ENT will be procedural station.

ix Marks allocation

Surgical stations are- (10 x 6 = 60 marks)

		No.
a.	Plain x-ray	-1
b.	Contrast x-ray	-1
c.	Orthopaedic X-ray	-1
d.	Specimen	-1
e.	Instrument/s	-1
f.	Appliances (Catheter, tubes, stoma or reservoir bags etc)	-1
g.	Data interpretation	-1
h.	Procedure stations	-2
i.	Splint/bandage	-1

4. Ophthalmology -5 and ENT-5 stations are- (5+5) x4 = 40 marks)

		No.
a.	Instrument station	= 1
b.	X-ray station/ Specimen	= 1
c.	Clinical photograph/ tracing	= 1
d.	Procedure	= 1

c. Structured Oral Examination. (SOE)

Paper-1 (General surgery and allied) Marks-30X2=60

i. Two separate boards comprising one internal and one external examiner will assess written scripts, oral, practical and clinical examination.
ii. There are two other reserve examiners in each internal and external pool.
iii. Out of four examiner one will preferably be an orthopaedician.
iv. There will be four boxes covering questions on surgery and allied specialties assigned for each examiner.
v. Each box will contain at least 20 sets of questions.
vi. A set of question will contain 3 small questions of three-difficulty level (Must Know, Better to Know & Nice to Know)
vii. Content of the box-
    1. Box-1:- Principles of surgery, Vascular Diseases, Anaesthesia, Radiology, Radiotherapy, Blood Transfusion.
    2. Box-2:- GIT, Paediatric surgery, Operative Surgery.
    3. Box-3:- HBS & Pancreas, Urology, Breast, Endocrine.
    4. Box-4 :- Orthopaedics & Traumatology, Neurosurgery, Chest disease.

Paper –II (Ophthalmology and ENTD) Marks 20X 2= 40

i. Two separate boards for each specialty comprising one internal and one external examiners will assess written scripts, oral, practical and clinical examination.
ii. There will be one reserve examiner in each specialty.
iii. Instruments and x-rays will not be examined in viva board.
iv. Each student will be allocated 15 minutes
v. Problem solving skills / Judgment of knowledge should be examined
vi. The question and answer will be constructed by the examiners in advance
vii. Question is typed in a card and put in box of defined domain
viii. A number of questions from each topic should be constructed covering the content area.
ix. Content will be changed on alternate days
x. The candidate randomly selects one card from each box and answer.
xi. The candidate should answer selected number of question in the board
xii. The examiner read the question, repeat it if necessary or the candidate reads the question if allowed.
xiii. When candidate answers the questions, the examiner will put a tick in appropriate site on a prepared rating scale

d. Clinical examination of surgery

i. Surgery -60
    1. Short cases 3 x 10 =30
    2. One Long case- 30.
ii. Ophthalmology cases -2 x 10=20
iii. ENTD cases- 2 x 10=20

Mark distribution of oral, clinical and practical examination in surgery in final professional examination

Subject	Oral	Practical/OSPE	Clinical	Total
Surgery	30+30	30+30	30+30	180
Ophthalmology	20	20	20	60
ENTD	20	20	20	60
Total	100	100	100	300

ssss

- There will be separate Answer Script for MCQ
- Pass marks 60 % in each of theoretical, oral, practical and clinical
- Oral, Clinical & Practical Examination will be in 2 days,
  One day- G. Surgery, another day- Ophthalmology + ENT.

FINAL PROFESSIONAL EXAMINATION

Assessment of Surgery

(MARKS DISTRIBUTION)

Components	Marks On each component	Sub total Marks	Total Marks
Written examination			
Formative assessment marks			
General Surgery	10	20	20
Ophthalmology	05		
ENT	05		
Written			
Paper – 1: General Surgery : (MCQ+SAQ)	(20+70)	90	180
Paper – II: Ophthalmology: (MCQ+SAQ)	(10+35)	45	
ENT : (MCQ+SAQ)	(10+35)	45	
Oral, Clinical & Practical			
General Surgery (Oral+ Clinical+ Practical)	(60+60+60)	180	300
Ophthalmology (Oral+ Clinical+ Practical)	(20+20+20)	60	
ENT (Oral+ Clinical+ Practical)	(20+20+20)	60	
Oral examination should be structured.			
Grand Total Marks			500

Obstetrics & Gynaecology

Departmental Objectives

At the end of the course of obstetrics & gynaecology the undergraduate medical students will be able to:

- provide proper care in managing women's health including pregnancy, labour and puerperium and to ensure maternal and neonatal health and well being and give proper advices.
- diagnose and manage patients with common obstetrical and gynaecological problems.
- describe the basic concept of Counselling and counsel the women in the field of Obstetrics and Gynaecology.
- refer high risk cases appropriately.
- resuscitate new born babies and impart proper care.
- initiate & promote infant & young child feeding practices including exclusive breast feeding
- demonstrate appropriate attitude required to practise obstetrics and gynaecology.
- demonstrate an understanding about the impact of socio-cultural beliefs and environmental factors on women in pregnancy, labour and puerperium including their overall reproductive health.
- counsel and motivate women about contraception and family planning, and women's right.
- be acquainted with ongoing programme to reduce maternal mortality & morbidity.
- value the ethical issues in obstetrics and gynaecology.

List of Competencies to acquire:

- History taking, communication skill, obstetrical examination, gynaecological examination.
- Diagnosis of common clinical problems
- Preparation of a patient before anaesthesia
- Writing a discharge certificate after
  - Normal delivery
  - Caesarean section
  - D & C
  - Evacuation of mole
  - Hysterectomy
- Care of antenatal patients
- Care of postnatal patient
  - Appropriate technique of breast feeding including position and attachment.
  - Demonstation of complementary feeding- amount, frequency, content of food
- Management of normal labour
- 1st stage, 2nd stage & 3rd stage (AMTSL)
- Skill about Episiotomy
- PPH management
- Management of Eclampsia
- Shock management
- Writing a BT order
- Blood transfusion note
- Insertion of a cannula
- Catheterization
- Drawing of blood
- Hand washing

- Wearing of gloves
- Identification of instruments/suture materials
- Trolly preparation for major & minor surgery

Distribution of teaching /learning hours

Lecture		Tutorial / Demonstration	Integrated Teaching	Total hours	Clinical bed side teaching in 3rd & 4th phase	Block placement	Formative Exam		Summative exam	
							Preparatory leave	Exam time	Preparatory leave	Exam time
3rd Phase	4th Phase									
30 hrs	70 hrs	85 hrs	15hrs	200 hrs	16 weeks (8+8)	4 weeks	15 day	15 day	15 day	30 day
(Time for exam. preparatory leave and formative & summative assessment is common for all subjects of the phase)										

Teaching/learning methods, teaching aids and evaluation

Teaching Methods				Teaching aids	In course evaluation
Large group	Small group	Self learning	Others		
Lecture (video presentation)	Bed side teaching, Tutorials PBL (Problem based learning) OPD- teaching Teaching in Family planning clinic Demonstration in Operation theatre Demonstration in wards/ skill room (video presentation) Field side teaching	Assignment, Self study	Integrated	Laptop, Computer & Multimedia OHP, Transparency & Marker White board & Marker, Black board & chalks, Flip Chart, Slide projector Video, Dummy, Ultrasonography report, X-ray plate, View Box Model, Television, VCR, Cassette, Specimen, Analysis report	• Item Examination • Card final • Term Examination • Term final (written, oral+ practical+clinical)

Final Professional Examination:
Marks distribution of Assessment of Obstetrics & Gynaecology
Total marks – 500 (Summative)

- Written =200 (Formative =20, MCQ=40, SAQ & SEQ=140)
- SOE=100
- Clinical=100
- Practical=100

Related Equipments/Instrument :
Forceps, Ventouse, Female bony pelvis & dummy foetus, Folley's catheter, Plain rubber catheter
Sponge holding forceps, Alli's tissue forceps, Artery forceps, Volsellum, Hegar's dilators,
Uterine sound & Currette, Sim's vaginal speculum, Cusco's speculum, BP blade with handle,
Dissecting forceps, Niddle holder, Suture materials
Contraceptives – OCP, Implanol, Injectable contraceptives, IUCD, Barrier methods.
MR Syringe with Canula

Core contents of Obstetrics:

Conception and development of fetoplacental unit

(a) Fertilisation, implantation, fetoplacental unit, placental barrier
(b) Placenta, amniotic fluid and umbilical cord: Development, structure and function

Anatomical and physiological changes during pregnancy
Diagnosis of pregnancy
Consulting in reproductive health:
Antenatal care
(a) Counselling
(b) Objectives, principles of antenatal care, identification of high risk pregnancy
(c) Nutrition during pregnancy and lactation
(d) Vomiting in early pregnancy

Normal labour
Assessment of Patients in labour.
(a) Onset of labour
(b) Stages, mechanism of normal labour
(c) Management of normal labour
(d) Diagnosis of stages and assessment of progress of labour
(e) Partograph
(f) Pain relief
(g) Monitoring Progress of labour:

Foetal condition, Maternal conditions.
Normal puerperium
(a) Anatomical and physiological changes during puerperium
(b) Management of normal puerperium
(c) IYCF -- Breast feeding & Complementary feeding

Hypertensive disorder in pregnancy including pre-eclampsia and eclampsia
Medical disorders in obstetrics
(a) Anaemia in pregnancy
(b) Urinary problems in obstetrics
(c) Diabetes
(d) Heart disease
(e) Hepatitis

Ante-partum haemorrhage
Definitions, classification, clinical features, complications and management
Rh incompatibility and blood transfusion in Obstetrics
Multiple pregnancy
Definitions and types, clinical features, complications, diagnosis and principles of management
Malposition and malpresentation: causes and management
Types, causes, diagnosis, complications and management
Abnormalities of labour
(a) Prolonged labour: Definition, aetiology, diagnosis, complications, management
(b) Obstructed labour: Definition, aetiology, diagnosis, complications, management

Post-partum haemorrhage (PPH)
Definitions, causes (atonic, traumatic and others) of PPH, prevention and management, follow up.

Abnormal puerperium
Abnormal puerperium and management

The newborn
Resuscitation, examination and care of the newborn.
Definitions related to newborn
Neonatal problems

Birth Asphyxia
Jaundice
Infection
Feeding
Other problems of newborn
IYCF -- Breast feeding & Complementary feeding

IUGR & IUD
Causes, diagnosis and management

Obstetric operative procedures
perineotomy, caesarean section, vacuum and forceps deliveries, version, destructive operations: their indications an complications

Vital statistics:
Maternal morbidity & mortality
Perinatal morbidity.and mortality
Neonatal morbidity & mortality

Diagnostic aids in obstetrics
(a) Ultrasonography
- Basics of ultrasound
- Role in obstetrics

(b) Fetal monitoring- CTG
(c) Amniocentesis and other prenatal diagnostic techniques

Social Obstetrics
(a) Maternal & perinatal morbidities and mortalities
(b) Direct causes of maternal & perinatal morbidity and mortality – Contributing socio-economic & environment factors
(c) Importance of family planning in prevention of obstetric problem
(d) Strategies for promotion of maternal health & prevention of illness emphasising maternal nutrition, hygiene & medical care
(e) National programs for MCH&FP, EOC, Combined service delivery

Core contents of Gynaecology

Anatomy of the female reproductive organs
(a) Basic anatomy of uterus, ovaries, tubes, vagina and vulva
(b) Relationship of uterus, ovaries, tubes and vagina to other pelvic organs
(c) Developmental anomaly of genital organs

Physiology of reproduction
(a) Puberty, menstruation, ovulation
(b) Fertilisation and implantation

Bleeding in early pregnancy
- Abortion:
  Definition, types, causes and management of all types of abortion and this complications.
- Ectopic pregnancy:
  Definition, aetiopathology, clinical feature, differential diagnosis and abdomen of acute principles of surgical management
- Trophoblastic tumours:
  (i) Hydatidiform mole: types, clinical features, complications, differential diagnosis, management and follow up.
  (ii) Choriocarcinoma: diagnosis and management, follow up

Vaginal discharge
Physiological and pathological, Diagnosis and treatment.

Menstrual disorder
(a) Amenorrhoea:
  Types, causes and principles of management
(b) Menorrhagia:
  Definition, causes and management
(c) Metrorrhagia:
  Definition, causes and management
(d) Dysmennorhoea : Definition types, causes and management.
(e) Dysfunctional uterine bleeding:
  Definition, classification, diagnosis, principles of investigation and management

Genital tract infection
(a) Defensive mechanism of genital tract
(b) Pelvic inflammatory diseases: acute and chronic
(c) Sexually transmitted diseases
(d) Genital tuberculosis

Urinary incontinence – definition, types
(a) Genitourinary fistula:-
  Types, causes, clinical features, principles of management, prevention

Other genital tract injuries:
(a) Perineal tear
(b) RVF

Genital prolapse

Types, aetiology, clinical features, diagnosis, differential diagnosis, principles of management

Endometriosis

Definition, types, clinical features, principles of management

Neoplasia of reproductive organs

- Benign & malignant conditions of vulva & vagina
- Benign and malignant conditions of cervix
- Benign and malignant conditions of uterus
- Benign and malignant tumours of ovary

Infertility counselling

(a) Causes, investigation and management both male and female partner.
(b) Assisted reproductive techniques
(c) Concepts of medical biotechnology in relation to Obstetrics

Contraception

Counselling

Importance of contraception: personal and national characteristics of ideal contraceptive, classification, mechanism of action, advantages, disadvantages, complications of all methods particularly sterilization and MR.

Menopauses

(a) Definition, physiological basis, changes in different organs of body, clinical features of menopausal syndrome, principles of management
(b) Post-menopausal bleeding
(c) Hormone replacement therapy

Diagnostic Technique

(a) Cervical smear
(b) Laparoscopy
(c) Hysteroscopy
(d) Colposcopy
(e) Ultrasonography

Principles of common gynaecological operations

Additional Contents

Obstetrics

(1) Developmental structure of placenta
(2) Antenatal foetal screening
(3) Mechanism of onset of normal labour (theories)
(4) Labour analgesia
(5) Thromboembolism
(6) Other hypertensive disorders
(7) Pathophysiology of pre-eclampsia and eclampsia in details
(8) Haemolytic anaemia
(9) Nephritis and renal failure in obstetrics
(10) Treatment of Rh incompatibility
(11) Management of IUGR
(12) Management of inversion of uterus

(13) Diagnostic aids in obstetrics
  (a) Ultrasonography
  (b) Foetal monitoring-CTG
  (c) Amniocentesis, CVS, MSAFP
  (d) X ray

Gynaecology

(1) Genital tuberculosis
(2) Management of endometriosis - recent advances
(3) Assisted reproductive techniques
(4) Hormone replacement therapy
(5) Diagnostic techniques
  (a) Laparoscopy
  (b) Hysteroscopy
  (c) Colposcopy
  (d) Ultrasonography
(6) Hormonal disorders in gynaecology
(7) STDS

Lectures in Obstetrics (4th Year)

Content		Lecture Hours (16)
FIRST PHASE		
1. Conception and development of fetoplacental unit		1 hour
2. Fertilisation,implantation, placental barrier		1 hour
3. Placenta, amniotic fluid and umbiliucal cord: Development, structure and function		1 hour
4. Anatomical and physiological changes during pregnancy		1 hour
5. Diagnosis of pregnancy		1 hour
6. Antenatal care	(a) Objectives, principles of antenatal care (b) identification of high risk pregnancy (c) Nutrition during pregnancy, lactation and Counseling on IYCF (d) Vomiting in early pregnancy	1 hour 1 hour 1 hour 1 hour
Evaluation		1 hour
SECOND PHASE		
7. Normal labour	(a) Def, Stages, mechanism of normal labour (b) Management of normal labour	1 hour 1 hour
8. Normal puerperium	Physiology & Management	1 hour
9. Baby	(a) Examination and care of newborn baby (b) IYCF	1 hour 1 hour
Evaluation		1 hour

Lecture contents in Obstetrics (5th Year)

Content		Lecture Hours
FIRST PHASE		
1. Hypertensive disorder in pregnancy including pre-eclampsia and eclampsia		2 hours
2. Medical disorders in obstetrics	(a) Anaemia in pregnancy (b) Diabetes (c) Heart diseases (d) UTI , Hepatitis, malaria & other	4 hours
3. RH incompatibility		1 hour
4. Ante-partum haemorrhage	(a) Definitions, classification, clinical features, complications and management	2 hours
5. Multiple pregnancy	Types and definitions, clinical features, complications, diagnosis and principles of management	1 hour
6. Malposition and malpresentation: causes and management		3 hours
Formative Assesment		1 hour
SECOND PHASE		
7. Normal labour 8 Induction of labour	• Review of what has already been taught • Diagnosis of stages and assessment of progress of labour • PARTOGRAPH • Pain relief • Foetal monitoring	2 hours 1 hour
9. Abnormal labour	(a) Prolonged labour: Definition, aetiology, diagnosis, complications, management (b) Obstructed labour: Definition, aetiology, diagnosis, complications, management (c) Ruptured uterus	3 hours
10. Post-partum haemorrhage (PPH)	Definitions, causes (atonic, traumatic and others) of PPH, prevention and management	1 hour
11. Puerperium	(a) Review of what has already taught (b) Abnormal puerperium and management	1 hour 1 hour
12. The new born	(a) IYCF --Breast feeding and complementary feeding (b) Management of asphyxia neonatorum (c) Jaundice & other problems in new born	2 hours 1 hour 1 hour
Formative Assesment		1 hour

THIRD PHASE		
12. IUGR, Pre-maturity, Post-maturity & IUFD and their complication		3 hours
13. Obstetric operative procedures	perineotomy, caesarean section, vacuum and forceps deliveries, version, destructive operations: their indications and complications	2 hours
14. Vital statistics: MMR and perinatal mortality and morbidity: Definitions & ethical obstetrics, MDG, EOC		2 hours
15. Diagnostic aids in obstetrics and modern advances in obstetrics (a) Ultrasonography - Basics of ultrasound - Advantages of ultrasound - Role in obstetrics - Limitation (b) Foetal monitoring - CTG (c) Amniocentesis, CVS		2 hours
Formative Assesment		1 hour

Learning Objectives and Course Contents in Obstetrics

Learning Objectives	Contents	Teaching hours

The student should be able to
• define the common terms used in obstetrics
• define conception, fertilization implantation, fetoplacental unit and placental barrier.
	• Feto placental Unit :
	  • Terms & definition
	  • Fertilisation, implantation, fetoplacental unit, placental barrier
		2hrs

• mention development, structure & function of placenta. • describe the formation, circulation and function of amniotic fluid. • mention structural, function and development of umbilical cord.	• Placenta, amniotic fluid and umbilical cord: Development, structure and function	1 hr
• describe the anatomical changes during pregnancy • describe the physiological changes of pregnancy	• Anatomical and physiological changes during pregnancy	1 hr
• take history of early pregnancy • mention the early symptoms and signs of pregnancy	• Diagnosis of Pregnancy • Antenatal care	1 hr 4 hours
• describe the characteristics of normal labour. • recognise each stage of labour • plot the events of labour on partograph and interpret the graph • describe the mechanism of labour • mention the management of each stage of labour	• Normal Labour – stages, Mechanism and management.	2 hrs
• define pre-eclampsia, eclampsia, mention incidence, etiology, theories ognise complications and describe management	• Pregnancy induced Hypertension • Pre-eclampsia • Eclampsia	3 hrs
• define APH, mention its causes understand the types of APH • differentiate between placenta previa and abruptio placentae • mention the complication of abruptio placentae including DIC. • manage the placenta praevia, abruptio placentae	• APH • Placenta previa • Abruptio placenta	2 hrs
• define post-dated pregnancy, state etiological factors, diagnose post-dated pregnancy, list complications, manage post-dated pregnancy	• Post Dated Pregnancy	1 hr

Learning Objectives	Contents	Teaching hours
The student should be able to • define and describe, incidence, complications, diagnosis and management of anaemia, Diabetes in pregnancy , Hypertensive disorders and heart disease in pregnancy	• Medical disorder in pregnancy :- a. Anemia b.Diabetes in pregnancy c.Hypertensive disorders d. Heart disease in pregnancy	6hrs
The student should be able to • define obstructed labour • mention the etiological factors • diagnose and manage the obstructed labour • describe the complications of obstructed labour • define prolonged labour • differentiate prolonged labour from obstructed labour • describe the complications • manage the prolonged labour • define the ruptured uterus • mention the etiological factors and incidence • diagnose and manage	**Abnormal labour:** • Obstructed Labour • Prolonged Labour • Raptured Uterus	3 hrs
• define PPH • list the types • describe the causes of PPH • describe the complications of PPH • describe retained placenta • diagnose and manage retained placenta • diagnose and manage PPH.	• PPH • Retained placenta	1 hrs

Learning Objectives	Contents	Teaching hours
The student should be able to • describe the common obstetric procedures • describe the role of these procedures in obstetrics • define and to differentiate it from trial of Labour • mention the types of induction • describe the indication and complication of each type of induction • define and know the types • describe the procedure of version • describe the indication and complications • describe the post version management • define and state the types and Episiotomy • explain the indication and procedure • describe the management • describe the complications • list the types • explain the indication and prerequisite and contraindications • describe the procedure • list the complications • write down the postnatal management	**Obstetric operative procedure:** • Induction of Labour • Version • Episiotomy /perineotomy • Forceps delivery	2 hrs

Learning Objectives	Contents	Teaching hours
The student should be able to • describe the ventouse extraction • mention the indications and contraindications • mention the advantages • describe the complications • give postnatal management • describe common obstetrics operations • mention the history & define LUCS • mention the different types • describe the indications • mention the steps of operation • describe the complications • write down the pre-operative and post-operative treatment. • describe the different types & perineal tear • diagnose and to manage the perennial tears • describe Cervical Tears • mention the etiological feature • diagnose and manage • mention the complications and its relations to PPH	• Ventouse • LUCS • Perineal tear • Cervical Tear	

Learning Objectives	Contents	Teaching hours
The student should be able to • describe the different destructive operations • mention the indication of each destructive operations • mention the pre-operative and post-operative management • describe the complication of each destructive operation • mention the role of destructive operations in modern obstetrics	• Destructive operations	2hrs
• define and understand the normal puerperium • mention the anatomical and physiological changes in normal puerperium • describe the process of involution • manage the normal puerperium • describe the abnormal puerperium • mention the complications of puerperium • manage the abnormal puerperium	• Normal and abnormal puerperium	1hrs
• describe the care of new born • mention the immunization schedule of new born care • mention the management of umbilical cord	• Care of New Born:	1 hr

Learning Objectives	Contents	Teaching hours

The student should be able to
• describe the asphyxia neonatorum
• mention the causes of asphyxia
• describe APGAR score and its interpretation
• diagnosis and manage
• list the complications
• describe the physiology of lactation
• describe the pre-lacteal feed, attachment, nipple infection, exclusive Breast feeding Describe the physiology of lactation
• mention the advantages of breast feeding
• describe
  • exclusive Breast feeding
  • colostrum and mature milk
  • position, attachment and expression
  • breast problem
  • breast feeding in special situation
• list the 10 (Ten) steps
• describe BMS code
• describe LAM
• state maternity protection (leave and creche)
• counsel a mother for Breast feeding
• mention the advantages of breast feeding
• counsel a mother for Breast feeding
• list the 10(Ten) steps
• list the types
• describe the aetiology
• manage the birth injuries
• describe the common neonatal infection
• outline Diagnose and to manage
• list the complications
• describe foetal monitoring in pregnancy and in labour
• mention the different method used for foetal monitoring
• recognise the foetal distress and describe the management
• describe the interpretation of foetal monitoring.
	• Asphyxia, Neonatorum
	• Breast Feeding & IYCF
	• Birth Injuries
	• Neonatal Infections
	• Neonatal Jaundice
	
	• Foetal Monitoring
		5 hours

Learning Objectives	Contents	Teaching hours
The student should be able to • describe the diagnosis and in obstetrics • mention the principles of ultrasound • mention the role and advantages of ultrasonography in obstetrics • describe the indications of ultrasonography • mention the limitations • mention the principles of radiology • mention the role and advantages • describe its limitation in obstetrics • mention the different views of Radiology in obstetrics • define amniocentesis • mention the advantages • state the indications	**Diagnostic aid in obstetrics :** • Ultrasonography • Radiology • Amniocentesis, CVS	2 hrs

Learning Objectives for Obstetrics

The student will be able to apply knowledge and understand of the following:

1. Normal pregnancy
    - Diagnosis of pregnancy
    - Antenatal Care
    - Screening for high risk pregnancy
    - Nutrition and Hygiene of a pregnant mother

2. Hypertensive disorders of pregnancy including pre-eclampsia, Eclampsia. APH, Rh incompatibility, IUGR, Multiple pregnancy, grand multiparity, pre-maturity, post maturity.
    - Definition
    - Aetiology
    - clinical presentation
    - Diagnosis
    - Management
    - Complication
    - Follow up of treatment.

3. Medical disorders in pregnancy (Anaemia, Diabetes, UTI, Heart disease, Jaundice, Tuberculosis & others)
    - Incidence of diseases
    - Natural history of diseases
    - Aetiology
    - Clinical presentation
    - Diagnosis
    - Management
    - Effect on pregnancy and vice versa

4. Normal labour –
    - Definition
    - Stages; mechanism
    - Diagnosis
    - Management
    - Partograph

5. Abnormal labour
    - Definition
    - Types
    - Diagnosis
    - Management
    - Follow-up

6. Puerperium:
    - Definition of normal puerperuim
    - Anatomical and physiologial changes
    - Management of normal puerperium
    - Post-natal care including general advice
    - Course of abnormal puerperium
    - Management of abnormal puerperium

7. New born:
    - Definitions related to newborn
    - Examinations and care of newborn
    - Resuscitations
    - Diagnosis and management of asphyxia, jaundice and neonatal infections
    - Feeding problems

8. Common diagnostic techniques Ultrasonography, Radiology, Foetal Monitoring and Amniocentesis, CVS
    - Uses
    - Advantages
    - Disadvantages

9. Obstetric procedures and operations:
    - Induction of labour
    - Version
    - Episiotomy
    - LUCS
    - Forceps delivery
    - Ventouse delivery
    - Destructive operations

10. Vital statistics and social obstetrics
    - Maternal & Perinatal mortality and morbidities
    - Causes of maternal and perinatal mortality and morbidities including socio-economic and environmental factors.
    - Method of calculating MMR, PNMR
    - National programs for MCH&FW, EOC,
    - Counseling –basic concepts and specific counselling in specific obstetric situations.
    - Ethical issues in obst. & gynae

Lectures in Gynaecology (4th Year)

Content		Lecture Hours
FIRST PHASE		
1. Anatomy of the female reproductive organs	(a) Basic anatomy of uterus, ovaries, tubes, vagina and vulva (b) Relationship of uterus, ovaries, tubes and vagina to other pelvic organs (c) Development & developmental anomaly of genital organs	2 hours
2. Physiology of reproduction	(a) Puberty, menstruation, ovulation (b) Fertilisation and implantation	2 hours
3. Formative Assesment		1 hour
SECOND PHASE		
4. Bleeding in early pregnancy	(a) Abortion Definition, types, causes and management of all types of abortion (b) Ectopic pregnancy Definition, aetiopathology, clinical features, differential diagnosis and principles of surgical management. (c) Trophoblastic tumours I. Hydatiform mole: types, clinical features, complication differential diagnosis, management and follow up. II. Choriocarcinoma: diagnosis and management	2 hours 1 hour 1 hours
4. Formative Assesment		1 hour
THIRD PHASE		
6. Vaginal discharge	(a) Physiological, vaginal discharge (b) Pathological and their management	1 hour
7. Menstrual disorder	(a) Amenorrhoea Types, causes and principles of management (b) Menorrhagia Definition, causes and management (c) Metrorrhagia Definition, causes and management (d) Dysmennorhoea (e) Dysfunctional uterine bleeding Definition, classification, diagnosis, principles of investigation and management	1 hour 2 hours 1 hour
8. Formative Assesment		1 hour

Lecture contents in Gynaecology (5th Year)

Content		Lecture Hours
FIRST PHASE		
1. Genital tract infection	(a) Defense mechanism of genital tract (b) Pelvic inflamatory diseases: acute and chronic (c) Sexually transmitted diseases including AIDS (d) Genital tuberculosis	1 hour 1 hour 1 hour
2. Urinary incontinence	(a) Definition, types (b) Genitourinary fistula: Types, causes, clinical features, principles of management, prevention	1 hour 1 hour
3. Genital tract injuries:	(a) Perineal tear (b) RVF (c) Vaginal stenosis	1 hour
4. Genital prolapse	Types, aetiology, clinical features, diagnosis, differential diagnosis, principles of management	2 hours
5. Formative Assesment		1 hour
SECOND PHASE		
6. Endometriosis	Definition, types, clinical features principles of management	1 hour
7. Neoplasia of reproductive organs	(a) Benign and malignant tumours of cervix Classification (fibroid, polyp, carcinoma cervix), clinical features, staging investigation, diagnosis, principles of management (b) Benign and malignant tumours of uterus (c) Benign and malignant tumours of ovary	6 hours 3+2+1
8. Infertility	(a) causes, investigation and management both male and female partner (b) Assisted reproductive techniques	2 hours
9. Formative Assesment		1 hour
THIRD PHASE		
10. Contraception	Importance of contraception: personal and national characteristics of ideal contraceptive, classification, mechanism of action, advantages, disadvantages, complications of all methods particularly sterilization and menstrual regulation.	4 hours
11. Menopause	(a) Definition, physiological basis, changes in different organs of body, clinical features of menopausal syndrome, principles of management (b) Post menopausal bleeding (c) Hormone replacement therapy	2 hours
12. Diagnostic Technique	(a) Cervical smear (b) Laparoscopy (c) Hysteroscopy (d) Coloscopy (e) Ultrasonography	2 hours
13. Principle of common gynaecological surgeries		1 hour
14. Formative Assesment		1 hour

Learning Objectives and Course Contents in Gynaecology

Learning Objectives	Contents	Teaching hours
At the end of session the students will be able to: • describe the gross anatomy of ovaries, uterus, fallopian tubes, vagina & vulva • mention the blood supply, lymphatic drainage and nerve supply of these organs • discuss the relations of the pelvic organs with each other • describe the development and developmental anomly of pelvic organs	**Basic Anatomy of genital organs**	2 hours
• define puberty, ovulation, menstruation, menopause, climacteric, fertilisation and implantation • mention the changes in reproductive organs in different stages of life • describe the mechanism of ovulation, menstruation fertilisation, implantation • mention the situations where physiology can get disturbed. • describe the subject more clearly • demonstrate communication and presentation skill.	**Physiology of reproduction**	2 hours

Learning Objectives	Contents	Teaching hours
At the end of session the students will be able to: • define each problems • mention the incidence of each problem • classify abortions • differentiate different abortions • describe the pathology of mole and choriocarcinoma • diagnose each problem • manage each problem • mention the complication of each problem • describe the physiology of vaginal discharge. • differentiate physiological and pathological vaginal discharge. • diagnose the diseases causing vaginal discharge • mention the treatment of vaginitis, cervicitis • define amenorrhoea, menorrhagia, polymenorrhoea, polymenorrhagia, Metrorrhegia, dysmenorrhoea, dysfunctional uterine bleeding. • mention types of amenorrhoea its causes and management • mention types of dymenorrhoea • describe the causes and management of metrorrhagia • mention the classification, diagnosis, principles of investigations and management of dysfunctional uterine bleeding.	**Bleeding in early pregnancy Abortion, ectopic pregnancy, hydatidiform mole, choriocarcinoma** **Vaginal discharge** **Menstrual Disorder**	(2 + 1+ 2+ 1) hour 1 hour 4 hours

Learning Objectives	Contents	Teaching hours
At the end of session the students will be able to: • describe the defence mechanism of genital tract • define, classify, diagnose manage pelvic inflammatory disease. • mention the effects of sexually transmitted diseases on reproductive health of women • diagnose and treat a case of genital tuberculosis. • define and classify urinary incontinence • mention the types, causes, diagnosis, presentation and management of genitourinary fistula. • mention different types of perineal tear • diagnose and manage perineal tear and RVF, vaginal stenosis • describe the aetiology of genital prolopse • classify genital prolapse • mention the clinical features • diagnose a case of genital prolapse • mention the principles of management of genital prolapse. • demonstrate communication and presentation skill	**Genital Tract infections** **Urinary Incontinence** **Genital tract injuries** **Genitourinary prolapse**	3 hours 2 hours 1 hour 2 hours 2 hours

Learning Objectives	Contents	Teaching hours
At the end of session the students will be able to: • define endometriosis and adenomyosis • mention the clinical features and pathology of endometriosis • describe the effects of endometriosis on reproductive health • mention the principles of treatment of endometriosis.	**Endometriosis**	1 hours
• mention the different types of tumours arising from uterus, cervix, ovraries, vagina, vulva • classify the tumours of individual organs • diagnose the tumours • differentiate tumours arising from different organs. • describe the complications of different tumours. • discuss the principles of management of tumours of individual organs. • name different screening tests done for gynaecological cancers.	**Neoplasm of reproductive organs**	6 hour
• define infertility • classify infertility • describe the aetiology of infertility • suggest investigations for both male and female partners. • interprete the investigation reports. • suggest appropriate treatment • mention the assisted reproductive techniques available.	**Infertility**	2 hours

Learning Objectives	Contents	Teaching hours
At the end of session the students will be able to: • define contraception • mention different types of contraceptions available • describe the characteristics of ideal contraceptive • describe the mechanism of action of each contraceptive • state the advantages and disadvantages of different contraceptives. • describe the methods of tubal ligation and vasectomy and anaesthesia used • mention the complications of tubectomy • define MR. • name the instruments used in MR. • describe the procedure and importance of follow-up • mention advantages and complications of MR • mention the importance of counselling • define menopause • describe the anatomical and physiological changes in menopause • describe menopausal syndrome and its management • define post-menopausal bleeding (PMB) • mention the causes of post-menopausal bleeding • write down the investigation PMB • mention the management • mention the hormone replacement therapy(HRT) in post-menopausal women	**Contraception** **Menopause**	4 hours 2 hours

Learning Objectives	Contents	Teaching hours
At the end of session the students will be able to: • mention the different diagnostic techniques commonly used • mention the indication of cervical smear • describe the procedure of cervical smear • interprete the findings • explain its relation with carcinoma cervix • be acquainted with instruments used in laparoscopy • mention the indications and contraindications • describe the procedure • mention the complications • interprete the findings • describe colposcopy • be acquainted with instruments • mention the indications • describe the procedure • interprete findings • describe the advantages • be acquainted with ultrasonography • be acquainted with instrument • describe the role of ultrasonography in gynaecology • interprete the findings	**Diagnostic Technique** **Cervical Smear** **Laparoscopy** **Colposcopy** **Ultrasonography**	2 hours

Learning Objectives	Contents	Teaching hours
At the end of session the students will be able to: • describe the different gynaecological operations • mention the indication of each operation • describe the complications of each operations • write down the pre-operative treatment of each operation • mention the pre-operative investigation of each operation • write down post-operative treatment of each operation • mention the relation of each operation with pregnancy and reproductive life. • describe the name of anaesthesia for each operation	**Common Gynaecological Surgery**	1 hour

CLINICAL TEACHING OF OBSTETRICS & GYNAECOLOOGY

INTRODUCTION

The Core Curriculum for Clinical Attachment of 16 weeks has been organised into components of clinical experience as follows:

1.	Basic Clinical Skills (in-patient)	4 weeks
2.	Family Planning Clinic	2 weeks
3.	Gynae & Antenatal Out-patient Clinic	2 weeks
4.	Routine Obstetrics	3 weeks
5.	Routine Gynaecology	3 weeks
6.	Emergency Obstetric Care E.O.C (Labour Room)	2 weeks

Fourth year M.B.B.S. students will participate in batches in turns in components 1, 2 and 3.

Component 1 will have 24 clinical teaching and learning sessions (4w x 6d=24) and component 2 & 3 will have 12 like-wise sessions each (2w x 6d = 12).

Each session will be conducted for 2 hours every morning from 09.00 a.m. – 11.00 a.m.

In the evenings, students will clerk/ practise for 2 hours from 07.00 p.m. – 09.00 p.m., under supervision

Fifth year M.B.B.S. students will participate in components 4, 5 and 6.

Component 4 and 5 will have 18 clinical teaching and learning sessions each (3w x 6d =18) and component 6 will have 12 like-wise sessions (2w x 6d =12).

Each session will be conducted for 2 hours every morning from 09.00 a.m. – 11.00 a.m.

In the evenings, students will clerk/ practise under supervision from 7.00 p.m. – 9.00 p.m.

The evening timing for component 6, however, will be from 4.00 p.m. – 9.00 p.m.

CONTENTS:

Topics included are relevant to every day clinical practise in the field of Gynaecology and Obstetrics.

Learning objectives (skills) are shown against each topic under each sessions.

Many of the topics of the content of the clinical course are supplemented by a study guide.

The study guides are structured to provide students with varied opportunities to facilitate active involvement and self-directed learning and also to enable them to exercise responsibility under guidance by making maximum and productive use of the period of time of their clinical attachment.

The study guide for the respective topic details

(a) introduction,
(b) pre-requisite learning,
(c) the learning objectives,
(d) learning opportunities,
(e) assignments,
(f) tasks to be performed,
(g) resources,
(h) self assessment questions.

4TH YEAR BASIC CLINICAL SKILLS
(COMPONENT – ONE)

4 weeks – 24 sessions in the morning

SESSIONS	TOPIC	LEARNING OBJECTIVES	TEACHING METHOD	
			TEACHERS' ROLE	STUDENTS' ROLE
Session 1	(a) Introduction to Obstetrics & Gynaecology Review 1. Common diseases 2. Commonly used definitions (b) Brief students on course objectives/ activities and student's cards (c) Visit to ante-natal/ postnatal wards; labour/ eclampsia room; septic ward; Gynae ward; operation theatres	At the end of the session student will acquire knowledge and understanding of: (a) common gynaecological & obstetrics terms, common disease of O&G that are prevalent in the community (b) Course objectives, activities and students, continuous assessment card	Tutorial/small group discussion Organise	Participate in the discussion Visit to different activity areas of O&G Department
Session 2	Obstetric History taking This session will take the format of a discussion detailing Obs. History taking, followed by the opportunity to clerk an Obs. patient in the ward and subsequently present the case history.	Student will be able to: (a) Take history of an obstetrical case (b) Record the information on the history sheet (c) Present case history	Demonstration by teacher	a) Practice by students in groups b) Practice by individual student c) Case presentation

SESSIONS	TOPIC	LEARNING OBJECTIVES	TEACHING METHOD	
			TEACHERS' ROLE	STUDENTS' ROLE
Session 3	Gynaecology history taking This session will take a similar format to Session II.	Student will be able to: (a) Take history of gynaecological case (b) Record the information on the history sheet (c) Present a case	Demonstration by teacher	a) Practice by students in groups b) Practice by individual student c) Case presentation
Session 4	Obstetric examination	(a) Perform obstetrical examination (i) General (ii) Abdominal	Demonstration by teacher	a) Practice by students in groups b) Individual case study using study guide c) Present clinical findings
Session 5	Gynaecological examination Taking of cervical smears (using models).	Perform gynaecological examination I. General II. Abdominal III. Speculum examination IV. Bimanual examination	Demonstration by teacher	Practice by students on dummy in clinical skill room
Session 6	Antenatal care with identification of high risk pregnancies	1. To record the finding on the antenatal cards by (I) Taking proper history (II) Performing general & abdominal examination 2. To advise pregnant women for appropriate investigation for screening for common risks	(a) Demonstration by a teacher (b) Lecture	Practice by case study in groups Case study by group
Session 7 & 8	Bleeding in early pregnancy Abortion, Ectopic Pregnancy, molar pregnancy- chorio-carcinoma	Rationalize the plan of management	Lecture/ video show	Discussion on individual case study

SESSIONS	TOPIC	LEARNING OBJECTIVES	TEACHING METHOD	
			TEACHERS' ROLE	STUDENTS' ROLE
Session 9	Septic Abortion	Rationalize the plan of management	Lecturette/ video show	Discussion, individual case study
Session 10 to 12	Normal labour and Partogram Diagnosis, stages, Mechanism, Management with partogram	Recognise the events of labour Plot the events on the partogram and interpret the graph Rationalize the use of analgesic Conduct normal labour	Arrange video show/ Demonstration on partograph Demonstration of conducting normal labour	a. Observe video show b. Observe teacher's demonstration c. Plotting on partograph by individual d. Conduction of labour under supervision
Session 13	APGAR score, examination of new born, resuscitation & care of new born, breast feeding	Examine, diagnose problems and take immediate care of a new born	Arrange video show/ slide show/ demonstration	Observe: - video show - slide show - teacher's demonstration
Session 14 & 15	Normal puerperium & post natal care Abnormal puerperium	Counsel on (a) Nutrition of mother (b) Personal hygiene (c) Postnatal exercise (d) Breast feeding and weaning (e) Immunisation of baby (f) Postnatal check-up (g) Contraception	Role play by teacher	Role play by students in small group Practice with patients

SESSIONS	TOPIC	LEARNING OBJECTIVES	TEACHING METHOD	
			TEACHERS' ROLE	STUDENTS' ROLE
Session 16	Abnormal uterine bleeding Definition, differential diagnosis	(a) Collect appropriate clinical information by history taking and examination (b) Suggest appropriate investigation (c) Interpret and correlate the investigations data with clinical findings for clinical diagnosis (d) To plan and rationalize the management	Lecture/ video show/ case demonstration	Discussion Individual case study
Lump Abdomen	-do-	-do-	-do-	
Abdominal / pelvic pain – P.I.D.	-do-	-do-	-do-	
Theatre sessions Preparation of patient, preoperative management, operative procedure, post operative management	(a) Write up appropriate pre & post operate order (b) Rationalize the order	Demonstration	Practise by students and peer group discussion Using study guide	
Evening Session	Clerk patients, observe labour room activities and practise the skills that the student learned in the morning sessions.			
Session 23	**Assessment (Oral/ Clinical / OSCE)**			
Session 24	Feedback			

N.B: Students must submit 3 obs. & 2 Gynae, history and must fill up assessment card.

Family Planning Course
For
4th year Medical Students
(COMPONENT –TWO)

Venue – Model Clinics of the Medical College Hospitals **Duration–2 weeks**

Day	1	-	Administration and maintenance of records	
	2	-	Promotion of family planning	
	3	-	Counselling	
	4	-	Oral contraceptive pills	
	5	-	Intra-uterine contraceptive device	
	6	-	Permanent methods	
	7	-	Injectable contraceptives	
	8	-	Norplant	
	9	-	Safe period, lactation, condoms, spermicides, coitus interruptus	
	10	-	Day visit:	Management issues in family planning. Organisation of a clinic.
	11	-	Day visit:	Organisation of a clinic(continued) Working as a member of a team. Acting as a supervisor.
	12	-	Assessment and feedback	

Family Planning Course

Methods	Aids	Assessment
• Lecture • Visit antenatal clinic & paediatric clinic. • Group discussion • Demonstration of record keeping • Inspection of raw data collected at the clinic. • Interpretation of the results in group discussion • Small group teaching • Role play • Demonstration • Brainstorming • Visit postnatal ward, Interview of patients individually to motivate them towards family planning. • History of patients & counselling observation of examination. • Demonstration of operative steps on models or video • Demonstration of counselling of a patient in real life or by video • Lecturette • Demonstrating on injection, syringes, needle • Demonstrate on storage • Demonstration of condoms • Referral procedures	• Black board • OHP • Radio • Cassette • Posters • Flip chart • Video • Variety of OCPs • Menstrual chart • Client • Specimen of IUCD • Clients and dummy • Models • Chart • Different types of injectable contracepting • Norplant capsule • Model of arm Methods • Model breast + baby • Condom •	• Question & answers • Observation of students • Check-list completion

Day 1: Administration and Maintenance of records

Intermediate Educational Objective: At the end of the session the student will be able to perform the necessary supervisory and administrative procedures of a family planning clinic and maintain proper records.

Specific educational objectives	Contents
The student will be able to: 1) monitor staff programme maintain harmonious staff relations maintain good communications monitor the out put of a worker 2) make appropriate referrals in an effective way between departments like the antenatal clinic, paediatric clinic, menstrual regulation clinic, and the family planning clinics 3) follow standard procedures which will prevent medico-legal problems 4) write useful clinical records and maintain the ledger book 5) maintain data in an accessible and analysable form. analyse data collected at a family planning clinic and interpret the results	Administration (organogram, responsibility, supervisory method, Method of communication) Staff pattern Interdepartmental linkages and Co-operation. Informed consent before prescription or procedure. Written consent. Standard procedure manuals. Communication with other staff Clinical record keeping Data recording, analysis and interpretation.

Day 2: Promotion of Family Planning

Intermediate role: At the end of the session the student will be able to play a leadership role in the promotion of family planning.

Specific educational objectives	Contents
A. At the end of the session the student should be able to: 1. define Family Planning 2. describe the importance of Family planning, particularly for our country 3. demonstrate understanding that pregnancies can be avoided and spaced 4. describe the personal benefits of birth spacing 5. communicate with, advice and motivate individuals and group of clients 6. supervise and support health education programme 7. administer available posters/ leaflets 8. use electronic and other media 9. demonstrate the ways and means of community education/ mobilization 10. list the opportunities a medical practitioner has to promote Family Planning B. At the end of this session the students should have acquired the required skill to: 1. communicate with an individual client about family planning 2. build rapport	Definition of family planning The population explosion - Health & population indices - Demographic pattern & trends in Bangladesh Benefits of Family Planning: - personal - national - environmental Health education Community mobilization and participation The use of media in the promotion of family planning The role of general practitioners, medical officers and specialists in the promotion of family planning Health care interview

Day 3: Counselling

Intermediate Educational Objective: At the end of the session the student should be able to explain the component of counselling, and be able to achieve good Inter-personal relations in a counselling situation.

Specific educational objectives	Contents
A. At the end of the session the student should be able to: i) explain and define counselling and it's need ii) explain inter-personal communication iii) list the barriers to inter-personal communication B. Students should have acquired the skill to be able to: 1. greet the client 2. establish rapport 3. ask reasons for coming 4. Inform about available contraceptive methods with their - mode of actions - effectiveness - method of application - availability of services - follow up - referral system 5. Assist the client in making decisions	I) Definition of counselling and the need for it II) Level of communication III) Inter-personal communication and feedback IV) Barrier to communications i) Communication skill ii) Counselling skill iii) Taking account of educational status of the client Merits and demerits

Day 4: Oral Contraceptive Pill

Intermediate Educational Objective: At the end of the session the student will be able to prescribe an appropriate Oral Contraceptive pill to the client.

Specific educational objectives	Contents
The student should be able to: 1. explain the mode of action and effectiveness of the OCP 2. list the advantages and disadvantages of OCP 3. make a checklist for indications and contraindications, and make appropriate case selection 4. describe different OCP for making options for the client and advise the client about proper administration of OCP 5. write history and physical findings to identify contraindications to the OCP 6. list the appropriate investigations 7. explain the follow-up procedure to the patient 8. describe the side-effects and complications of OCP and their management 9. describe how to keep proper records for patients on OCP	Pharmacology of Oral contraceptives Comparison of OCP with other contraceptives Side effects and complications of their management History and physical examination prior to OCP prescription

Day 5: I.U.C.D.

Intermediate Educational Objective: Student will be able to advise clients on I.U.C.D. insertion & refer them to specific clinic.

Specific educational objectives	Contents
A. At the end of the session the student should have acquired knowledge of the following and be able to: 1. explain IUCD as a method of contraception 2. explain mode of action of IUCD and its effectiveness 3. explain the advantage & disadvantage of IUCD 4. list different types of IUCD 5. take history and describe the steps of physical examination for case selection 6. describe the insertion procedure 7. describe the follow-up procedure 8. explain the need of record keeping	1. Definitions & varieties 2. Mode of action and effectiveness 3. Advantage & disadvantage 4. Selection criteria 5. Time of insertion 6. P.V. steps of examination 7. Management of complications and referral
B. Student should have acquired skills to do the following: 1. Communicate with client 2. Build rapport with his/her client 3. Assure clients 4. Take history of the client 5. Physical examination of the client 6. Refer to insertion centre	a. Health care interview - interview planning - time - space - kind of exchange - interview questions - termination of interview b. Assurance c. Steps of history taking d. Steps of physical examination e. procedure of referral
C. Should be able to describe the 3(three) procedure of IUCD insertion	Procedure of insertion of IUCD

Day 6: Permanent Methods

Intermediate Educational Objective: Students will be able to counsel clients to enable them to make a choice about the acceptance of vasectomy or tubal occlusion.

Specific educational objectives	Contents
At the end of the session, students should be able to: 1. name and define different permanent methods of contraception and their effectiveness 2. counsel the patients 3. select the patients 4. list the merits and demerits of these methods 5. refer the patients to the appropriate centres 6. take informed consent of the couple 7. describe the steps of the operative techniques of these methods and the anaesthetic techniques used 8. list the complication sand their management 9. mention the time of effectiveness of each method 10. describe the importance of record keeping 11. give appropriate advice for post-operative follow-up 12. give advice about the very limited scope of reversal and the techniques used	Description of different method Health care interview Steps of history taking and physical examination Steps of operative techniques Advantages and disadvantages Complications and their management

Day 7: Injectables

Intermediate Educational Objective: Student will be able to select suitable patients for use of injectable contraceptives and counsel them appropriately.

Specific educational objectives	Contents
At the end of the session the student should be able to: 1. name different types of injectables 2. counsel the clients 3. establish rapport 4. describe mode of action 5. describe the advantage of injectables 6. describe the route of administration and duration of action 7. take an appropriate history and carry out an appropriate physical examination 8. identify the different injectables and state their dose 9. select appropriate cases 10. list and manage the complications 11. advise the clients for follow-up 12. describe the importance of record-keeping	Nature and type of injectables Mode and duration of their action Advantages and disadvantages Indications and contra-indications Complications and their management

Day 8: Norplant

Intermediate Educational Objective: Student will be able to advise clients on norplant implantation and refer them to specific clinic for implantation.

Specific educational objectives	Contents
A. At the end of the session the student should be able to: 1. explain norplant as a contraceptive method 2. explain mode of action of norplant and its effectiveness 3. list advantages and disadvantages of norplant 4. describe how to take history 5. describe how to do physical examination needed for selection of client for implantation 6. list important laboratory investigation before doing implantation 7. describe implantation procedure 8. describe follow-up procedure 9. explain the management of minor complication 10. describe the implant removal procedure	1. Definition 2. Role of norplant as contraceptive method 3. Pharmocokinetics of norplant 4. Mode of action of norplant 5. Advantages and disadvantages of norplant 6. Steps of history taking of the client for norplant 7. Steps of physical examination 8. Hb% urine for routine and microscopy 9. Implantation procedure 10. Follow-up procedure 11. Management of minor complications and referral for the major one 12. Implant removal procedure with indications
B. At the end of the session the student should acquire skills to do the following: 1. Communicate with the client 2. Build rapport 3. Obtain consent paper signed by couple 4. assure client 5. take history of the client 6. physical examination of clients 7. refer to implantation clinic C. Should be able to describe the procedure of norplant implantation	1. Health care interview - interview planning - time - space - kinds of exchange - interview questions - terminating interview 2. Consent paper and obtain sign/ agreement from the couple 3. Assurance 4. Steps of history taking 5. Steps of physical examination 6. Procedure of referral Procedure of norplant implantation

Day 9: Safe period, lactation, condoms, spermicides, coitus interruptus

Intermediate Educational Objective: Student will be able to advise clients about safe period as contraceptive procedure.

Session 1 – Safe period

Specific educational objectives	Contents
A. At the end of the session the student should acquire knowledge of the following and be able to: 1. explain safe period as a method of contraceptive 2. explain how safe period works as contraception 3. list advantages and disadvantages of safe period 4. describe how to produce menstrual chart and its use 5. describe follow-up procedure B. Should be able to: 1. communicate with the client 2. take history of the client 3. construct menstrual chart and explain to client	1. Definition of safe period 2. Physiology of safe period and its role as contraceptive 3. Advantages and disadvantages 4. Menstrual chart - definition - preparation - use 5. Follow up advice 1. Health care interviewing 2. Steps of history taking 3. Menstrual chart and its use

Session 2- Lactation

Intermediate Educational Objective: Student will be able to advise clients about lactation as a contraceptive method.

Specific educational objectives	Contents
A. At the end of the session the student should acquire knowledge of the following and be able to: 1. explain lactation as a method of contraception, & describe exclusive breast feeding 2. explain the amount of protection afforded by 'exclusive breast feeding' 3. describe the mode of action 4. list the advantages and disadvantages 5. describe the steps of history taking of breast feeding 6. describe the follow-up advice 7. explain the place of adopting additional method B. Should have skill of the following and be able to: 1. communicate with client 2. take history of breast feeding of the client	1. Physiology of lactation 2. Role of lactation as contraception 3. Advantages and disadvantages of lactation as contraceptive method 4. History taking of breast feeding 5. Follow-up measures 6. Place of adopting additional method 1. Communication skill 2. Steps of history taking of breast feeding

Session 3 – Condom

Intermediate Educational Objective: Student will be able to advise the clients about the condom and its use.

Specific educational objectives	Contents
A. At the end of the session the student should acquire knowledge of the following and be able to: 1. explain condom as a method of contraception 2. describe its mode of action 3. list its advantages and disadvantages 4. describe the role of condoms in preventing STD/HIV infection. B. At the end of the session the student should acquire skill of the following and be able to: explain what to tell about the use of condom to the client	1. Description of condom - materials 2. How it works as contraceptive 3. Advantages and disadvantages - follow-up 4. STD/HIV- AIDS Use of condom

Session 4 – Spermicide

Intermediate Educational Objective: Student will be able to advise clients about the Spermicide

Specific educational objectives	Contents
A. At the end of the session the student should acquire knowledge of the following and be able to: (10 minutes) 1. explain spermicide as a method of contraceptive 2. describe the mode of action 3. list advantages and disadvantages 4. explain to the client how to use spermicide	1. Definition and varieties of spermicide 2. Mode of action 3. Advantages and disadvantages 4. Use of spermicide

Session 5 – Coitus Interruptus

Intermediate Educational Objective: Student will be capable of advising a client about coitus interruptus

Specific educational objectives	Contents
At the end of the session the student should be able to: 1. describe the place played by coitus interruptus in reducing the fertility rate in the population 2. recognise from what a couple say that they are using coitus interruptus as a method of family planning 3. communicate with clients about the method and describe its advantages and disadvantages, especially the failure rate	1. Local terminology used to describe coitus interruptus 2. Reasons for failure of the method 3. Advantages and disadvantages

Day 10:

Management issues in family planning. Organisation of a clinic

Specific educational objectives	Contents
At the end of the session the student should be able to: 1. list characteristics of a good Manager/ Team Leader 2. identify weaknesses of a bad Manager/ Team Leader 3. differentiate good management and poor management 4. identify management issues	1. Management issues 2. Leadership - strengths - weaknesses

Day 11

Organisation of a clinic. Working as a member of a team. Acting as a supervisor

Specific educational objectives	Contents
5. discuss organisational issues related to: - booking of patients, - record keeping, - signed consent forms, - prescription, and - follow-up procedure - issuing & administration of FP methods 6. describe a good referral procedure B. Should acquire the necessary skill and be able to: 1. write report on day visit 2. present in forum	3. Record keeping - booking - signed consent form - follow-up procedure 4. Referral procedure 1. Report writing 2. Presentation

Day 12: Assessment and Feedback

(1) An OSCE will be held. Questions will be based on the educational objectives.

(2) Feedback on performance will be given by different teachers

(3) Students will provide the teacher with feedback on their perception of the course

(4) Marks will be awarded for attendance,
General performance,
Team performance on report and presentation,
The O.S.C.E.
Marks will be sent to the students the week after the course.

4TH YEAR GYNAE AND ANTENATAL OUTPATIENT CLINIC
COMPONENT – THREE

2 weeks (12 sessions in the morning)

SESSION	TOPIC	LEARNING OBJECTIVES	TEACHING METHOD	
			TEACHERS' ROLE	STUDENTS' ROLE
Session 1	Introduction to Gynaecology and obstetrics (a) Commonly used definitions (b) Common diseases prevalent in the community (c) Vital statistics: birth rate, MMR, causes, prevention, perinatal mortality, live birth, still birth (d) Brief students on course objectives/ activities and student's cards.	At the end of the session student will demonstrate knowledge and understanding of: (a) common gynaecological & obstetrics terms, common disease of O &G that prevalent in the community (b) vital statistics (c) course objectives, activities and students continuous assessment card	Lecture	Participate Discussion Collect student assessment card
Session 2	History taking (obstetric & Gynae history)	Student will be able to: (a) take history of an obstetric and a gynaecological case (b) record the information on the history sheet	Demonstration by teacher	a) Practice by students in groups b) Practice by individual

SESSION	TOPIC	LEARNING OBJECTIVES	TEACHING METHOD	
			TEACHERS' ROLE	STUDENTS' ROLE
Session 3	Clinical examination (Obstetrical & Gynaecology)	(a) Perform obstetrical & gynaecological examination (i) General (ii) Abdominal	Demonstration by teacher	a) Practice by students in groups b) Individual case study using study guide
Session 4 & 5	(a) Diagnosis pregnancy, antenatal care and advice and advice. (b) Hyperemesis and minor ailments common in pregnancy.	(a) Collect appropriate clinical information by history taking and examination (b) Suggest appropriate investigation (c) Interpret and correlate the results of investigations with clinical findings for clinical diagnosis (d) To plan and rationalize the management	Case demonstration Tutorial	Participation by students Case study in groups
Session 6 to 11	Common out patient gynaecological problem Abdominal swelling, abdominal pain/ P.I.D., vaginal discharge, amenorrhea, menorrhagia, infertility.	-do- Counsel patient or her spouse or relative or hospitalization for any common gynaecological problems	Case demonstration Tutorial Demonstration Role play	Participation by students Case study in groups Role play Practice by students
Session 12	**Assessment (Oral/ Clinical/ OSCE) & feedback**			

5th YEAR ROUTINE OBSTETRICS

(COMPONENT – FOUR)

3 weeks – 18 sessions in the morning

SESSION	TOPIC	LEARNING OBJECTIVES	TEACHING METHOD	
			TEACHERS' ROLE	STUDENTS' ROLE
Session 1 & 2	Ante-natal Care and Screening for high risk pregnancies	1. Interpret the findings obtained by history taking physical examination and investigation	Demonstration by a teacher	Practise by case study in groups
		2. Identify anaemia clinically		Case study by group
		3. Identify nutritional status	Lecture	Practice by students on individual cases
		4. Identify hypertension		-do-
		5. Counsel women on importance of	Demonstration by the teacher	
		(a) Regular antenatal care (b) Nutrition (c) Personal hygiene		Role play by students in small group
		(d) Healthy life style during pregnancy (e) Breast feeding (f) Contraception	Role play by a teacher	Exercise with patient

SESSION	TOPIC	LEARNING OBJECTIVES	TEACHING METHOD	
			TEACHERS' ROLE	STUDENTS' ROLE
Session 3 &4	Hypertensive disorders in pregnancy	(a) Collect appropriate clinical information by history taking and examination (b) Suggest appropriate investigation (c) Interpret and correlate the investigations data with clinical diagnosis (d) Plan and rationalize the management	Case demonstration by the teacher	Practise with problem solving exercise in tutorial
Session 5	Abnormal lie/ presentation (Breech)	-do-	-do-	-do-
Session 6	Multiple pregnancy & hydromnios	-do-	-do-	-do-
Sessions 7 & 8	Medical disorders Diabetes, Heart disease & others	-do-	-do-	-do-
Session 9	Rh isoimmunization/ Grand Multipara / BOH/ H/O / C/S	-do-	-do-	-do-
Session 10	Ante partum haemorrhage	-do-	-do-	-do-
Session 11	I.U.G.R.	-do-	-do-	-do-
Session 12 to 13	Puerperium & its complications	-do-	-do-	-do-

SESSION	TOPIC	LEARNING OBJECTIVES	TEACHING METHOD	
			TEACHERS' ROLE	STUDENTS' ROLE
Session 14 to 16	Theatre Session Writing of preoperative orders, operation note, post operative order, observe common obstetric operations.	To write preoperative orders, operation notes, post operative orders	Demonstration by teacher	Write preoperative orders, operation notes, post operative orders Observe common obstetric operations
Evening Session	Clerk patients, observe labour room activities and emergency operations and practise skills that the students learned in the morning sessions			
Session 17	**Assessment (Oral/ Clinical/ OSCE**			
Sessions 18	Feedback			

N.B. All students must submit 5 histories and fill up the assessment card.

5TH YEAR ROUTINE GYNAECOLOGY

(COMPONENT – FIVE)

3 weeks – 18 sessions in the morning

SESSION	TOPIC	LEARNING OBJECTIVES	TEACHING METHOD	
			TEACHERS' ROLE	STUDENTS' ROLE
Session 1 & 2	Bleeding in early pregnancy Abortion, ectopic pregnancy, molar pregnancy including choriocarcinoma	(a) Collect appropriate clinical information by history taking and examination (b) Suggest appropriate investigation (c) Interpret and correlate the investigations data with clinical findings for clinical diagnosis (d) To plan and rationalize the management	Case demonstration by the teacher Arrange problem solving tutorial	Practise with problem solving exercise in tutorial Case study
Session 3 & 4	Abnormal uterine bleeding/ Amenorrhea	-do-	-do-	-do-
Session 5	Abdominal pain Pelvic inflammatory disease	-do-	-do-	-do-
Sessions 6	Abdomino-Pelvic swelling Ovarian tumour, Fibroid	-do-	-do-	-do-
Session 7 & 8	Infertility Causes, investigations and treatment	-do-	-do-	-do-
Session 9 &10	Genital cancer Carcinoma Cervix, Endometrial Carcinoma	-do-	-do-	-do-
Session 11	Genital tract injuries Vesico vaginal fistula, recto vaginal fistula, third degree perineal tear, vaginal stenosis	-do-	-do-	-do-

SESSION	TOPIC	LEARNING OBJECTIVES	TEACHING METHOD	
			TEACHERS' ROLE	STUDENTS' ROLE
Sessions 12 & 13	Fertility Control O.C.P, P.O.P, post-coital contraception , barrier and natural methods, I.U.D., T.O.P/ M.R.	Counsel clients on: Fertility Control O.C.P, P.O.P., post-coital contraception, barrier and natural methods, I.UD., T.O.P./ M.R.	Demonstration by teacher Video Role play Tutorial	Role play Practise with the clients
Sessions 14 to 16	Theatre Session Pre-operative management, post-operative management To Observe common gynaecological operation	Write preoperative orders, operation notes, post operative orders	Demonstration by teacher	Write preoperative orders, operation notes, post operative orders Observe common gynaecological operations
Evening Session	Clerk patients, observe gynae ward activities and practise those had learned in the morning sessions			
Session 17	**Assessment (Oral/ Clinical/ OSCE**			
Sessions 18	Feedback			

N.B. All students must submit 5 histories and fill up the assessment card.

5TH YEAR/ EMERGENCY OBSTETRIC CARE (EOC) AND LABOUR ROOM

(COMPONENT – SIX)

2 weeks – 12 sessions in the morning

SESSION	TOPIC	LEARNING OBJECTIVES	TEACHING METHOD	
			TEACHERS' ROLE	STUDENTS' ROLE
Session 1	Management of normal labour, partogram	Recognise the events of labour Plot the events on the partogram and interpret the graph Rationalise the use of analgesic Conduct normal labour	Arrange video show/ Demonstration on partograph Demonstration on conducting normal labour	a. Observe video show b. Observe teacher's demonstration c. Plotting on partograph by individual d. Conduction of labour under supervision
Session 2	Induction of labour	(a) Collect appropriate clinical information by history taking and examination (b) Suggest appropriate investigation (c) Interpret and correlate the investigations data with clinical findings for clinical diagnosis (d) Plan and rationalize the management	Demonstration by the teacher	Practise with problem solving exercise in tutorial
Session 3	Management of bleeding in early pregnancy	-do-	-do-	-do-
Sessions 4	Management of bleeding in late pregnancy	-do-	-do-	-do-
Session 5	Management of eclampsia	-do-	-do-	-do-
Session 6	Management of prolonged and obstructed labour/ ruptured uterus	-do-	-do-	-do-
Session 7	Management of retained plaenta & PPH	-do-	-do-	-do-
Session 8	Management of shock & sepsis	-do-	-do-	-do-
Session 9	Obstetric operations (C.S, Forceps & ventouse deliveries, craniotomy.)	Write preoperative orders, operation notes, post operative orders	Demonstration by teacher	Write preoperative orders, operation notes, postoperative orders Observe obstetric operations

SESSION	TOPIC	LEARNING OBJECTIVES	TEACHING METHOD	
			TEACHERS' ROLE	**STUDENTS' ROLE**
Sessions 10	Clinical Project work	Present a case in a small group or seminar	Allocate students the project works. At the outset of the labour room placement the students will be divided into sub groups and allotted with a common clinical problem.	They will collect data and information about etiology, diagnosis and management of the problem which will be presented by them during this session
Evening Session	Review sessions 1– 9:			
Session 11	**Assessment (Oral/ Clinical/ OSCE**			
Sessions 12	Feedback			

OBSTETRICS & GYNAECOLOGY MBBS COURSE SCHEDULE
TOTAL TEACHING HOURS =200

4TH YEAR M.B.B.S in 3rd Phase

Lecture 28 hours + Evaluation 2 hours =30 hours

PHASE – I = 15 hours		PHASE – II = 15 hours	
Lecture – 14 hours	Evaluation 1hr (MCQ, SBA, SEQ, SAQ)	Lecture – 14 hours	Evaluation 1hr (MCQ, SBA, SEQ, SAQ)
Obstetrics		Gynaecology	

5th YEAR M.B.B.S

Lectures 67 hours +Evaluation-3hr+ Demonstration/Practical/Tutorial 85 hours+ Integrated teaching 15 hrs = Total 170 hours

PHASE – 1 = 24 hours		**PHASE – II = 22 hours**		**PHASE – III = 24 hours**		**Demonstration/Practical/Tutorial in Phase I, II & III= 85 hours**
23 hours	**Evaluation 1hr**	**21 hours**	**Evaluation 1hr**	**23 hours**	**Evaluation 1hr**	
Lecture – 23 hours	*NB: Lectures will be followed by evaluation* (MCQ, SBA, SEQ, SAQ)s	Lecture – 21 hours	*NB: Lectures will be followed by evaluation* (MCQ, SBA, SEQ, SAQ)	Lecture – 23 hours	*NB: Lectures will be followed by evaluation* (MCQ, SBA, SEQ, SAQ)	Demonstration / Video presentation
Gynae – 10 hrs Obs – 13 hrs		Gynae – 11hours Obs – 10 hours		Gynae –11 hours Obs –12 hours		Gynae & Obs

(*) A demonstration will be a practical teaching session with a small group of students. It will be based on a patient's history, specimens or instruments, graphs or models or employ a video. Student participation is expected.

***Integrated teaching : Only for 5th year- 15 hours (7 classes)**

Integrated Teaching

Topic	*Learning Objective*	*Teaching Aids*	*Assessment*	*Department*
• Medical disorders in pregnancy - Hypertension in pregnancy (PIH) - Diabetes, -Anaemia, - Jaundice	• Pathology, management	Multimedia	On presentation	Internal Medicine
• APH • PPH	• Aetiology, Management	Multimedia		Haematology Blood Transfusion
• Septic Abortion:	• Pathophysiology, management	Multimedia		Blood transfusion Pathology Onchology
• Acute abdomen in obstetrics and gynaecology	• Aetiology, management	Multimedia		Surgery,pathology
• Genital tract infection	• Defensive mechanism • PID, STD, Genital tuberculosis	Multimedia		Pathology
• Ca cervix	Aetiology, prevention, management	Multimedia		Immaging, Oncology

CLINICAL SCHEDULE

TOTAL TEACHING HOURS – 336 HOURS

1ST ROUND – 4TH YEAR 8 WEEKS = 144 HOURS						**2ND ROUND – 5TH YEAR 8 WEEKS = 192 HOURS**					
2 Weeks 2W × 6D × 2 HS = 24 HOURS		2 Weeks 2W × 6D × 2 HS = 24 HOURS		4 Weeks 4W × 6D × 4 HS = 96HOURS		3 Weeks 3W × 6D × 4 HS = 72 HOURS		3 Weeks 3W × 6D × 4 HS = 72 HOURS		2 Weeks 2W × 6D × 4HS = 48 HOURS	
Family Planning	Assessment	GOPD	Assessment	Basic clinical skill (indoor placement) -morning 2 hrs -evening 2 hrs	Assessment	Routine obstetrics (indoor placement) -morning 2 hrs -evening 2 hrs	Assessment	Routine Gynaecology (indoor placement) -morning 2 hrs -evening 2 hrs	Assessment	E.O.C. (Labour Word Placement) -morning 2 hrs -evening 2 hrs	Assessment OSPE

Final Professional Examination

Assessment of Gynaecology & Obs.

Components	Marks	Total Marks
WRITTEN EXAMINATION		
Paper – I –SBA & MCQ	10+10 =20	
SAQ	35	100
SEQ	35	
Marks from formative assessment	10	
Paper - II- SBA & MCQ	10+10 =20	100
SAQ	35	
SEQ	35	
Marks from formative assessment	10	
PRACTICAL EXAMINATION		
OSCE / OSPE		100
CLINICAL EXAMINATION		
Obs. Case	50	100
Gynae. Case	50	
ORAL EXAMINATION (Structured)		
Obs	50	100
Gynae	50	
Grand Total		**500**

- Pass marks 60 % in each of theoretical, oral and practical
- There will be separate answer script for MCQ & SBA

Appendix I

MBBS doctors will be competent enough to diagnose and manage the following diseases / health problems.

Medicine and Allied Subjects

Diarrhoea Common cold, upper respiratory tract infection, Pneumonia Fever (especially viral fever / flue / hyperpyrexia) Enteric fever Shigellosis, Amoebic dysentery Peptic ulcer diseases, GERD, Dyspepsia, Vomiting , Hiccough, Dysphagia & Constipation Irritable Bowel Syndrome Jaundice / Viral hepatitis Hypertension U T I Diabetes Mellitus Headache (especially migraine and tension headache) Anaemia (nutritional) Cough, Bronchial asthma, Bronchitis Arthritis & arthralgia, Rheumatoid arthritis, Osteoarthritis of knee, Gout Tetany	Tuberculosis, Leprosy, Malaria, Kala-azar, Dengue, Measles, Mumps, Chickenpox, Tetanus, Pertussis, Filariasis, Insect bite, Snake bite (nonpoisonous) Mild to moderate adverse reaction of drugs Helminthic infestation Febrile convulsion Rheumatic fever Neonatal care Infantile colic Bronchiolitis Nutritional assessment, growth monitoring & nutritional counseling Counseling for breast feeding and weaning (complementary feeding) Mild malnutrition /PEM /obesity/ underweight Deficiency disorders (Specially Vitamin-A, Iodine, Iron, Vitamin-B and protein) Physiological jaundice, Omphalitis Nocturnal enuresis, Overactive bladder / urge incontinence	Scabies Urticaria/ Allergy Atopic dermatitis / Eczema /contact dermatitis Candidiasis & Ringworm Pityriasis versicolor Syphilis & genital ulcers Gonorrhoea / Urethritis & vaginitis Herpes simplex / herpes zoster Acne Impetigo /bacterial Skin infection Aphthous ulcer Seborrheic dermatitis Uncomplicated psychiatric disorders (Anxiety neurosis, HCR) Malingering Vertigo Insomnia Bell’s palsy

Surgery and Allied Subjects

Abscess (superficial), Boil, Carbuncle, paronychia, Erysipelas, cellulitis, Minor trauma, wound, haemorrhage, burn and animal bite Lymph adenitis Corn, pyogenic granuloma, watt Sebaceous cyst, superficial tumours Epididymo-orchitis Circumcision	Frozen shoulder Back pain, Cervical pain & other musculoskeletal pain Conservative management of tonsillitis, sinusitis, acute otitis media Rhinitis (allergic, viral) Infantile dacryocystitis, Sty Conjunctivitis (allergic, viral, bacterial) Non impacted foreign body in eye, ear and nose

Obstetrics and Gynecology

Ante natal care Conduction of normal labour Intra- natal and post natal care of mother and child Birth spacing and family planning advice	Trichomoniasis, Moniliasis Menstrual disorders Pelvic inflammatory disease Post-menopausal syndrome

Appendix II

MBBS doctors will be competent enough to diagnose and refer after primary management of the following diseases /health problems

Medicine & Allied Subjects

Acute severe chest pain Diabetes with complications Complicated hypertension Valvular heart diseases Left ventricular failure Complicated pneumonia, Respiratory failure, Pleural effusion, haemothorax, pneumothorax, Meningitis, Septicemia Pancreatitis Cancers / carcinomas Snake bite (poisonous) Oedema , ascites, CCF, Chronic liver diseases	Complicated UTI, Acute renal failure, Chronic renal failure, Nephrotic syndrome, Acute glomerulonephritis (AGN) Cerebro vascular accident Parkinson's disease Urinary & fecal incontinence Loss of libido, impotency, premature ejaculation MDR and complicated Tuberculosis, Typhoid, Rabies, HIV & AIDS, Polio, Diphtheria Psoriasis, severe drug reactions / SJS, Arsenecosis Drug addiction, Complicated psychiatric disorders (schizophrenia, depressive illness, psychosomatic disorders, personality disorders etc.)	Persistent Diarrhoea, Febrile convulsion (1st attack) Ascariasis crisis Severe Under-nutrition / PEM / Low birth weight, prematurity, Birth asphyxia, birth injury, neonatal septicemia, high neonatal jaundice Delayed mile stone of development (cretinism, Autism), Epilepsy Haemophilia, purpura, haemepoetic disorders, leukemia, Goiter, hypothyroidism, Thyrotoxicosis, hormonal disorders Congenital diseases and deformities

Appendix II continued

Surgery & Allied Subjects

Deep abscess Complicated trauma, wound, haemorrhage and burn (including acid injury), Appendicitis, Cholecystitis and cholelithiasis Hydrocele, hernia & testicular torsion Intestinal obstruction (including gastric outlet obstruction, intussusception, volvulus), perforation, peritonitis, paralytic ileus,	Stone in urinary tract, retention of urine, prostatic enlargement, haematuria Fracture of bone, dislocation of joints, Gangrene, deep vein thrombosis, head / spinal injury, injury to vital organs Disc prolapse, osteomyelitis Per rectal bleeding (Anal fissure, Rectal polyp, Hemorrhoids, rectal cancer) Deep tumor and cancer Peripheral vascular occlusive diseases	Cataract, pterygium, Refractive error, Glaucoma, corneal ulcer & corneal injury, Chalazion, Impacted foreign body in eye, ear & nose Perforation and injury of tympanic membrane, Deafness, epistaxis, Chronic tonsillitis, Chronic otitis media, Chronic sinusitis,

Obstetrics and Gynecology

High risk pregnancy APH, IPH, PPH Eclampsia & preeclampsia Obstructed Labour Ectopic pregnancy Abortion DUB	Pelvic tumor (fibroid uterus, ovarian tumour, hydatidiform mole, Ca cervix etc.) Sterility	Obstetrical and Gynecological cases with medical conditions with like heart, renal diseases etc.

Appendix III

MBBS doctors will be competent enough to perform the following professional task independently--

Taking history from patient systematically	All clinical subjects,
Performing general and systemic examination of patient	
Writing and interpretation of history and examination findings of a patient for provisional diagnosis.	
Advising appropriate investigations and interpretation of the investigation findings to conform the diagnosis.	
Writing rational prescription	Pharmacology, All clinical subjects
Identifying any adverse effect of those dug and taking necessary measure to protect the patient	
Writing a discharge certificate as per ICD	All clinical subjects, Physiology & Pathology
Writing a death certificate as per ICD	
Writing a requisition form for different investigation	
Measuring blood pressure, pulse rate, body temperature	
Introducing naso gastric (N/G) tube, mouth gauge	
Introducing enema simplex, flatus tube,	
Performing tepid sponging	
Performing air-way suction	
Appling pressure bandage	
Performing CPR	
Performing P/R examination	
Tacking care of bed sores	
Tacking care of peripheral and central venous line	
Maintaining a input & output chart	
Performing pre-operative management when it is indicated	Surgery, Gynecology and Obstetrics'
Collecting sputum for AFB	Pathology, Biochemistry & Physiology
Collecting , preserving and sending of blood and urine samples for different investigations including culture	
Collecting , preserving and sending of body tissues for histopathology	Pathology & all clinical subjects
Measuring urine protein, sugar & urine analysis	Pathology, Physiology, all clinical subjects
Performing pregnancy test	Pathology, Gynecology and Obstetrics'
Measuring Hb%, ESR, TC, DC, TPC	Pathology, Physiology
Preparing blood film for malarial parasite	
Measuring blood glucose	Pathology & Biochemistry
Taking nose, throat, skin and wound swabs	Microbiology, all clinical subjects
Performing and interpreting a electrocardiograph (ECG)	Medicine, Physiology
Performing and interpreting basic respiratory function tests	
Performing lumber puncture	

Appendix III continued

Administering oxygen	All clinical subjects
Making up drugs for parenteral administration	
Administering intravenous, intramuscular, subcutaneous and intradermal injections	
Establishing peripheral intravenous access including venipuncture and setting up an infusion devices	
Establishing safe blood transfusion / fluid infusion	
Dosage and administration of insulin and use of sliding scales	
Introducing male and female urinary catheter	
Maintaining correct techniques for 'moving and handling' of sick and injured patients	
Use of personal protective equipment (gloves, gowns, masks)	
Controlling cross infection among patients in relation to procedures and infectious patients	
Ensuring safe disposal of clinical waste, needles and other 'sharps'	
Explaining the patients and attendants about the disease and its outcome	
Giving information about the procedure and treatment options to the patients and attendants	
Obtaining and recording consent from patients and attendants for invasive procedure	
Developing and maintaining medical records	
Counseling the patients and attendants about the medication and aftercare	
Giving follow-up to the patients when needed	
Instructing patients and attendants about oral, per rectal, parenteral, tropical and inhaler medications including eye and ear drops.	Pharmacology, All clinical subjects
Washing hands (including surgical 'scrubbing up' before any invasive procedure)	Surgery Gynaecology and obstetrics
Handling of sterile instruments	
Ensuring wound care and basic wound dressing	
Use of local anaesthetics	
Skin suturing	
Nutritional assessment, growth monitoring, nutritional advice	Community medicine Pediatrics Obstetrics
Birth spacing & family planning	
Immunization advice	
Breast feeding and weaning / complementary feeding advice	
Advice of hygiene and healthy lifestyles	Community medicine All clinical subjects
Participating in disaster management (cyclone, earth slide, flood, epidemic outbreak, earth quake etc.), Perform triage, Perform mass casualty management(MCM)	
Work in community setting	
Promoting community health of people and preventing communicable and non-communicable diseases at individual and community level by counseling and involving in the activities about safe drinking water, food safety, healthy life styles, sanitary disposal of wastage and refuse, environmental sanitation, occupational health, school health program etc.	Community medicine
Conduct survey to assess community health problems and using health related data to provide cost effective better health care.	
Injury/assault assessment for medico-legal purposes	
Performing autopsy for medico-legal purposes, Handling & Managing Dead body	Forensic medicine
Writing report for medico-legal purposes /writing medical certificates.	

Appendix IV

MBBS doctors will be competent enough in providing management in following emergency situation and will be able to refer the patients appropriately when necessary-

Acute chest pain / Ischemic heart diseases (Myocardial Infraction) Acute abdomen Any kind of moderate to severe pain CVA / Unconscious patients / Convulsion Pre-coma, Coma and All types of Shock Cardio Respiratory arrest Dyspnoea Cyanosis Dehydration Haemorrhage Anaphylactic reactions	Electrolyte imbalance Drowning Poisoning, Snake bite Burn including Acid injuries Haematemesis Melaena Haemoptysis Severe vomiting Pancreatitis All types of injuries , Road Traffic Accidents Mass casualty (cyclone, flood, epidemic outbreak, earth quake etc.)

Doctor should refer a case when there is any complication in the course of treatment / management.

The areas of the competencies listed in the above table have shown to be obtained from one or more disciplines arbitrarily. In reality, to obtain one single competency multiple disciplines (possibly all) have to contribute.

This list provided to find out the minimum competencies that all doctors must be obtained from MBBS course and internship training. A MBBS doctor may show more competencies in certain areas beyond the list.
List of competencies are also provided in the concerned subject.

Appendix –V

Outline of a Prescription

Registration No:….....

Name of Doctor
Degree(s), (Specialty)
Address of Chamber
Telephone No:

Name of Patient: ……...

Age : ……..... Sex : …….....

Address of Patient : …….....

Chief complaints :

-
-
-

Examination findings :

- Pulse…./min
-
-

Investigation :

-
-
-

Provisional diagnosis :
……
Diagnosis :
……

Advise :

-
-
-

℞

1.
2.
3.

Signature of Doctor

Date : …….

Reg. No.: ……..

Appendix –VI

Outline of Medical & Fitness Certificate

Signature of the applicant ……

After careful examination of the case hereby I certify that Mr./Ms. …… whose signature is given above, is suffering form …….. . I consider that a period of absence from duty / study / job for ……days with effect from ……. to …… is absolutely necessary for the restoration of his / her health.

Place :
Date :

(Signature of Doctor)
Name of the Doctor
Registration No:

CERTIFICATE OF MEDICAL FITNESS

Signature of Applicant : …….

After careful examination of the case hereby I certify that Mr./Ms. ……..……whose signature is given above is now fit to resume duty / study / job from ……... . I also certify that before arriving at my decision I have examined the original medical certificate(s) and statement(s) of the case (or the certified copies thereof) on which leave was granted or extending, and have taken these in consideration in arriving at my decision.

Place :
Date :

(Signature of Doctor)
Name of the Doctor
Registration No:

Appendix –VII

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ii) Members of the academic councils, teachers of different subjects, interns doctors, students of nearly all the medical colleges contributed during the need assessment study for reviewing & updating MBBS curriculum.

Technical Support by :

Centre for Medical Education (CME)

Mohakhali, Dhaka-1212, Bangladesh

www.cmedhaka.gov.bd

Computer Compose

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Cover page: Design & Graphics

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nted with WHO BAN HRH Programme support