STUDY GUIDE OF MBBS
MBBS COURSE

Contents

INTRODUCTION

Medical education is a life-long process and MBBS curriculum is a part of the continuum of education from pre-medical education, MBBS, proceeding to house job, post-graduation, continuous medical education and continuous professional development (CME/CPD).

Curriculum development is a dynamic process and works best in an environment conducive to learning, and thrives on monitoring, quality assurance and continuous quality improvement. It consists of not only the formal curriculum but also the informal learning that takes place through day-to-day interactions of students with peers, teachers, colleagues, other health care providers, and the patients and their families.

With the information explosion of the last century and scientific discoveries expanding the boundaries and restructuring the concepts of current knowledge, it is essential to work towards curricular integration, identify a core curriculum which all students must master, with plenty of opportunities for students to follow their own interest as electives.

The curricular model should be grounded in educational theory and adult learning principles, which will promote learning of basic sciences in the clinical context. Medical schools should ensure building of analytical and critical thinking, clinical and lifelong learning skills, and desired professional behaviors in medical and dental graduates by appropriate multi-modal teaching, learning, and assessment and feedback strategies.

Billions of people worldwide lack access even to basic health care. Out of the roughly 250 million operations performed each year, only 3.5% are performed on the poorest third of the world's population. Healthcare has a crucial role to play in achieving universal health coverage including the United Nations Millennium Development Goals, a set of goals set by the UN in 2000 to be fulfilled by 2015. This is not to say that surgery is any more important than other types of treatment, but it is certainly as important as other global health priorities.

The global burden of disease is massive, of which much is un-diagnosed and untreated. All doctors need to understand which options are possible and many of the treatments are basic and well-established. The graduating medical student should have an awareness of health services in local environment, including the place of health services in global healthcare.

CURRICULUM MBBS

Independent Medical College, Faisalabad.

Independent Medical College is an institution established to train medical Students for MBBS course. The College is accredited by Pakistan Medical and Dental Council for undergraduate training, and affiliated with University of Health Sciences. The educational programs are developed on principles laid down by PM&DC and the college follows the path of training charted by UHS.

The Independent Medical college is responsible for training medical students in the all disciplines of MBBS. The main functions of Department of Medical education is to develop and implement a strategy to achieve minimum standard of training in for MBBS students and Prescribe content of studies for the disciplines for MBBS.

For this purpose senior teachers of were invited to review the Curriculum of MBBS by PM&DC and syllabus given by University of Health Sciences. A draft curriculum was finalized after due consideration of the comments and suggestions received from the faculty members.

The curriculum prepared by the Department of Medical Education was approved by Academic Council of College which is being circulated for implementation by the concerned department.
This Curriculum is to be followed by all Department of College.

Mission Statement

Guiding your passion to profession

IMC Strives to improve health care in Faisalabad, our country and the world through excellence.

We seek to foster the development of dedicated clinicians, scientists, professionals and educators to provide leadership in education, services and discovery.

Vision:

To be an institution with

- An environment to develop creative free thinking and life long learners.
- A culture of objective research to transform health care delivery.
- Quality professional educational program based on innovation and collaboration.
- High moral and ethical values.
- Serving the needs of community in the best tradition of profession.

Goals:

- To develop humanist, skilled, intellectually disciplined and innovative medical professionals with dedication to those who they treat, lead and serve
- To educate and guide the next generation of leaders in healthcare and medical science to provide and sustain achievements in service, teaching and research.
- To provide comprehensive and effective patient centered, culturally sensitive, compassionate and innovative health care of highest quality to all.
- To recruit, develop and nurture and independent and academically outstanding community of faculty, student, trainees and staff, who each contribute to excellence in our missions.
- To promote professional and personal growth, productive, accountability, integrity and synergistic collaboration and synergy of faculty, students and staff

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Curricular Perspective
Medical education is a life-long process and MBBS is a part of the path proceeding to house job, post-graduation, continuous medical education and continuous professional development.

Curriculum development is a creative and ongoing process and requires an environment suitable for to learning. The progress of this process relies on monitoring, quality assurance and continuous quality improvement. It consists of not only the formal curriculum but also the informal learning that takes place through day-to-day interactions of students with peers, teachers, colleagues, other health care providers, and the patients and their families.

The revolution in the amount of information, the way information is available and expanding concepts of current knowledge, it is essential to work towards innovative curricular models. Identify a core curriculum mandatory for all students, with opportunities for students to pursue their interest as electives.

This curricular model is grounded in **behavioral and constructivist model**, which will ensure building of analytical and critical thinking, clinical and lifelong learning skills, and desired professional behaviors in medical graduates by appropriate multi-modal teaching, learning, and assessment and feedback strategies. The Group of students in this curriculum in the educational environment will construct new knowledge adopt certain behaviors essential to achieve curricular goals.

Design of Curriculum
This is a **competency based curriculum with horizontal integration**. Competencies are skills essential to beginning the practice of surgery. Competencies combine appropriate supporting Knowledge and professional attitudes, and they are performed reliably in natural settings without assistance(1). Faculty will use performance-based methods to determine if students have attained competence(2). As a major educational innovation, the new competency-based curriculum will be successfully woven into the fabric of the medical school learning environment.

OUTCOMES
Competencies and desired outcomes are required by a medical graduate to provide optimal care, leading to better health outcomes for patients and societies. These competencies set the standards of care for all learners of this program. Each competency describes a core ability of a competent doctor.

These competencies provide a framework for the development of educational programs for undergraduate MBBS level.

EDUCATIONAL HOURS

This is a five year Curriculum for final year MBBS students. The course work is for 36 weeks / year and total educational hours 6000. The program includes placement in wards. The program will conclude with annual professional examination by University.

Year	Disciplines	Weeks /hours	Assessment
First year & 2nd Year	1. Anatomy 2. Physiology 3. Biochemistry 4. Pak studies & Islamyat	600 hours 600 hours 300 hours 50 hours	1st professional part 1 1st professional part 2
3rd year	1. Pharmacology 2. General pathology 3. Forensic medicine 4. Behavioral science 5. Patients safety 6. Professionalism 7. Infection control	300 hours 500 hours 100 hours 150 hours 30 hours 30 hours 20 hours	2nd professional
4th year	1. Special pathology 2. Community Med 3. Research 4. ENT 5. Ophthalmology	500 hours 150 hours 120 hours 150 hours 150 hours	3rd professional
Final year	1. Surgery & Allied 2. Medicine & Allied 3. Pediatrics 4. Obstetrics & gynecology	900 hours 950 hours 200 hours 300 hours	Final professional
	Electives	100 hours	
	Total hours	**6200 hours**	

AT THE END OF FIVE YEAR CURRICULUM STUDENT WILL BE ABLE TO

Graduates of medical and dental colleges of Pakistan should be able to demonstrate following outcomes demonstrating competpencies of a seven star doctor.

- A competent medical practitioner
- A professional
- A researcher
- A role model leader

Clinical, Cognitive and Patient Care Skills (Skillful):

Competent medical and dental graduates require sound clinical skills grounded in knowledge and skills in patient-centered care. They should be able to demonstrate they can.

- Take a focus history
- Perform physical and mental state examination(s)
- Formulatje a provisional disgnosis with justification
- Order appropriate investigations and interpret their reports
- Perform basic medical procedures
- Debate the advantages, disadvantages, indications, contra-indications, limitations and complications of current treatment
- Formulate management plans
- Advice and counsel the patients and their family members for appropriate health promotions
- Educate the patient regarding the health problem
- Recognize and take into consideration issues of equality, equity and deversity
- Manage time and prioritise tasks and use of resources
- Ensure patient safety

Scientific Knowledge for Good Medical Practice (Knowledgeable):

This embodies knowledge of basic medical and clinical sciences required for the practice of medicine. A medical and dental graduate should be able to:

- Differentiate between normal and abnormal structure and functions of the body, normal and abnormal molecular, cellular, biochemical, and physiological and pathophysiological mechanisms and processes
- Differentiate between normal and abnormal human behavior
- Identify the effects of growth, development and aging, biological and social determinants and risk factors of disease, various etiological cause(s) and causative agents
- Relate the available therapeutic options, other relevant biochemical, pharmacological, surgical, psychological, social interventions
- Apply evidence-based medicine concepts to provide best possible cost-effective care
- Ensure compliance with the legal system as it impacts health care and the PM&DC regulations, patient safety guidelines

Knowledge of Population Health and Health Systems (Community Heath Promoter):

To deal with problems of population-based primary health care, including health promotion and disease prevention with special emphasis on vulnerable populations, medical and dental graduates require knowledge of population health and health systems. Medical graduates should understand their role and be able to

- Understand their role and be able to take appropriate action
- Relate effects of life-styles and genetic, demographic, environmental, social, cultural economic, psychological and determinants of health and illness on populations
- Take appropriate action for infectious, non-communicable disease and injury prevention
- Evaluate national and global trends in morbidity and mortality of diseases and injuries of social significance
- Work as an effective member of the health care team
- Adopt a multidisciplinary approach for health promoting
- Apply the basics of health systems including policies
- Make decisions for health care using demography, biostatistics and epidemiology

Critical Thinking, Problem Solving and Reflective Practice (Problem-solver):

The ability to critically evaluate existing knowledge, technology and information, and to be able to reflect on

it, is necessary for solving problems. Medical and dental graduates should be able to demonstrate:

- Use of information obtained and correlated from different sources
- Critical data evaluation (interpret, analyse, synthesize, evaluate to form decisions)
- Dealing effectively with complexity, uncertainty
- Regular reflection on their own practice and on standards of medical practice
- Initiating, participating in or adapting to change as required
- Flexibility and a problem-solving approach
- Commitment to quality assurance
- Raising concerns about public risk and patient safety

Competencies related to Professional Attributes (Behavioral Sciences and Professionalism):
Competent medical and dental graduates require professional values, attitudes and behaviors that embody good medical practice, that is, life-long learning, altruism, empathy, cultural and religious sensitivity, honesty, accountability, probity, ethics, communication skills, and working in teams.

The medical graduates should be able to

- Demonstrate continuous learning
- Manage information effectively
- Provide evidence of continuing career advancement
- Function effectively as a mentor and a teacher with training
- Respond positively to appraisals and feedback.
- Demonstrate professional values of empathy, altruism and cultural sensitivity in arranging or coordinating the best possible care:
- demonstrate professional values of self and professional accountability, honesty, probity, and ethics

Collaborator
The medical graduate should be able to demonstrate skills of teamwork to best serve the interests of the patient, profession and institution by

- Working as an effective team member, understanding the importance of each role;
- Demonstrating collegiality and respect for juniors, peers, seniors and the health team;
- Continuously assessing themselves and others in their roles, and acting accordingly;
- Sharing information and handing over care appropriately
- Focusing on a collegial but problem-solving approach

Communicator
Medical and dental graduates should be able to demonstrate

- Non-Verbal Communication Skills,
- Verbal Communication Skills,
- Written and Electronic Communication Skills,
- Confidentiality, and balance confidentiality with public risk;
- Dissemination of information & research findings to improve health care.

Researcher:
Medical and dental graduates are expected to demonstrate constructive criticism, a spirit of enquiry, creativity and a researchoriented attitude. They graduates should be able to:

- Identify a researchable problem and critically review literature;
- Phrase succinct research questions and formulate hypotheses; 20
- Identify the appropriate research design(s) in Epidemiology and analytical tests in Biostatistics to answer the research question;
- Collect, analyze and evaluate data, and present results where possible;
- Demonstrate ethics in conducting research and in ownership of intellectual property.

Leader and Role Model:
Medical and dental graduates are expected to demonstrate exemplary conduct and leadership potential in

- Advancing patient and health care;
- Enhancing medical education;
- Initiating, participating in and adapting to change, using scientific evidence and approaches;

- Enhancing the trust of public in the medical and dental profession by being exceptional role models at work and also when away from work;
- Accept leadership if required;

EDUCATIONAL RESOURCES

The departments will require following resources for implementation resources:
Human resource

- Instructors (faculty members)
- Curriculum coordinator curriculum secretary
- Medical educationists

Infrastructure

- Lecture hall with AV aids
- Tutorial room with AV aids
- Clinical skills Lab with manikins
- Simulated patients and simulated manikins
- Computers
- Laboratories
- Libraries
- E-library
- Dissection hall
- Wards
- Operation theatres
- Outpatient departments

EDUCATION STRATEGIES

The educational strategies in this curriculum are multiple and aligned with domain of learning and according to the desired outcome

Interactive lectures

One-third of the curriculum will be delivered in a traditional didactic format including PowerPoint presentations and case discussions. Didactic education is considered to be a one-way transmission of material from teacher to learner, we cannot overlook the possibility of meaningful interaction between experts and learners during live lectures. This type of interaction, which allows for immediate clarification of concepts and extension of knowledge, may be particularly important for novice learners who have relatively little exposure to the subject matter, such as our study population(4).

Case based Discussion/ Problem based learning

A lot of emphasis is on case based discussion during ward placement. Problem-based learning (PBL) is complex and heterogeneous. A wide variety of educational methods are referred as PBL. These include Lecture-based case, Case based lecture, Case based discussions, Problem or inquiry based and Closed loop or reiterative. Incorporation of case based discussion in teaching enhances the critical thinking and problem-solving skills. It also helps in developing a broader prospective of clinical case scenarios (5).

Small Group Discussion

Small group discussion provides a unique environment to achieve high standards in medical education. Activation of prior knowledge, exchange of ideas, and engagement at a higher cognitive level are assumed to result in deeper learning and better academic achievements by students (6).

Clinical Skills Sessions

Clinical skills session are important part of curriculum to achieve psychomotor and affective outcomes. Learning manual skills is a fundamental part of health care education, and motor, sensory and cognitive learning processes are essential aspects of professional development. Simulator training has been shown to enhance factors that facilitate motor and cognitive learning. Students learned manual skills, how to perform the procedure, and professional behaviour. They learned by preparing, watching, practising and reflecting. The simulator contributed by providing opportunities for students to prepare for the skills training, to see anatomical structures, to feel resistance, and to become aware of their own performance ability (7).

Video sessions

Anatomy is a subject which involves visual learning and formulating concepts. Video assisted learning sessions also provides opportunities to learn gross anatomy.

Laboratory Sessions

Laboratory sessions are important as they provide opportunity for experiential learning in terms of study of slides and identification of tissues

Early clinical Exposure (ECE)

Clinical skills session are important part of curriculum to achieve psychomotor and affective outcomes. This provide opportunity for medical students in early years and will stimulate contextual learning.

ASSESSMENT

MCQ's and SEQ's

Multiple choice question and short essay question test will be used at the end of part of curriculum to assess the learning of knowledge. These all assessment exercises will be formative. The written tests like Multiple-Choice Questions (MCQs) and Short-Essay Questions (SEQs) test formats are used for the assessment of cognitive domain. The MCQs are more objective and essentially select type of item response format. MCQs have a cueing effect, which promotes guessing and leads to higher scores. In addition, writing MCQs of higher cognitive level of problem solving is challenging. On the contrary, the SEQs are more subjective and have a supply or construct type item response format, which does not have any cueing effect and can effectively assess problem solving skills(8).

OSCE AND SHORT CASE

Short case and OSCE will be used to evaluate clinical skills and procedural skills at the ward end of placement. The OSCE is a method of clinical skill assessment, and it has been reported to be appropriate for assessing learning achievement levels in the psychomotor and emotional domains, which are difficult to evaluate with written examinations(9).

CLINICAL LOG BOOK

Clinical log book is meant for self directed learning (SDL) and assessment of students. The clinical logbook includes reflection which helps the students to set educational goals.

MINI-CEX

Mini-CEX is used to assess the clinical skills and problem solving skills of medical students. This is the tool used by clinical teachers. This can assess all three domains, Pyschomotor, cognitive and affective. This also used as formative assessment.

Evaluation plan		
Each Module	Written test (MCQ and SEQ)	Formative
After 12 weeks of ward placement	Ward test (OSCE and short case)	Formative
At end of 36 weeks	Send up exam (MCQ and SEQ) Viva voce	Formative
Annual	University Professional exam	Summative

INTERNAL ASSESSMENT

i. The weightage of internal assessment shall be 10% of totals marks.
ii. Continuous internal assessment shall consist of evaluation at the end of each assignments, e.g. stages/ sub-stage, class tests etc., attitudinal assessment from educational supervisors.
iii. Assessment of knowledge, Skills and Attitude shall contribute toward internal assessment. Methods used to assess these domains shall include Multiple Choice Questions of one-best type, Short essay questions, Oral/Viva, and Practical/Clinical axaminations.
iv. The score of internal assessment shall contribute to the score in the final examination, Final university examination of each subject shall contribute 90 to total score, and the candidate shall pass in aggregate.
v. Proper record of continuous internal assessment shall be maintained.

PROGRAMME EVALUATION

Purpose of Evaluation

The major goals of the evaluation are to provide information that the students can use to achieve curricular objectives and that the faculty can use to monitor quality of and improve curriculum.

Design of Evaluation

The evaluation design as only posttest.

Users of evaluation: students, curriculum faculty, Principal Office

Resources: Curriculum faculty and departmental secretaries. No additional funding

Evaluation question:

- What percentage of students achieved 75% mandatory attendance?
- What percentage of students achieved pass marks in university exam?
- What are the strengths of the curriculum? What are the weaknesses? How can the curriculum can be improved?

Because of limited resources, the evaluation was kept simple. Data Collection was integrated into the curriculum schedule. The major goals of the evaluation are to provide information that the students can use to achieve curricular objectives and that the faculty can use to monitor quality of and improve curriculum. The evaluation design as only posttest.

End of curriculum evaluation form:

This will be filled by students and faculty members for evaluation of adequacy with each content was covered, whether they would recommend the curriculum to others and written comments on curriculum strengths, weaknesses and suggestions for improvements.

Annual Report:

Based on evaluation of the educational programe report will be generated annually and submitted to Medical Educational Department.

INDEPENDENT MEDICAL COLLEGE

Guiding your passion to profession

2021 ACADEMIC CALENDER

JANUARY'21 — 01

Mon	Tue	Wed	Thu	Fri	Sat	Sun
				01	02	03
04	05	06	07	08	09	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

FEBRUARY'21 — 02

Mon	Tue	Wed	Thu	Fri	Sat	Sun
01	02	03	04	05	06	07
08	09	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

MARCH'21 — 03

Mon	Tue	Wed	Thu	Fri	Sat	Sun
01	02	03	04	05	06	07
08	09	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

APRIL'21 — 04

Mon	Tue	Wed	Thu	Fri	Sat	Sun
			01	02	03	04
05	06	07	08	09	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

MAY'21 — 05

Mon	Tue	Wed	Thu	Fri	Sat	Sun
31					01	02
03	04	05	06	07	08	09
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

JUNE'21 — 06

Mon	Tue	Wed	Thu	Fri	Sat	Sun
	01	02	03	04	05	06
07	08	09	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

JULY'21 — 07

Mon	Tue	Wed	Thu	Fri	Sat	Sun
			01	02	03	04
05	06	07	08	09	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

AUGUST'21 — 08

Mon	Tue	Wed	Thu	Fri	Sat	Sun
30	31					01
02	03	04	05	06	07	08
09	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

SEPTEMBER'21 — 09

Mon	Tue	Wed	Thu	Fri	Sat	Sun
		01	02	03	04	05
06	07	08	09	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

OCTOBER'21 — 10

Mon	Tue	Wed	Thu	Fri	Sat	Sun
				01	02	03
04	05	06	07	08	09	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

NOVEMBER'21 — 11

Mon	Tue	Wed	Thu	Fri	Sat	Sun
01	02	03	04	05	06	07
08	09	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

DECEMBER'21 — 12

Mon	Tue	Wed	Thu	Fri	Sat	Sun
		01	02	03	04	05
06	07	08	09	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

IMPORTANT DAYS

01	Kashmir Day	February 5
02	Pakistan Day	March 23
03	Labour Day	May 1
04	Eid-ul-Fitr	May 14 to 16
05	Eid-ul-Azha	July 21 to 23
06	Independence Day	August 14
07	Muharram	August 18 to 19
08	Eid Milad-un-Nabi (SAW)	October 19
09	Quaid-e-Azam Day	December 25

- Vacation
- 3rd Year Term Test:
- 4th Year Term Test:
- Islamic Holidays will depend upon moon sighting

1st Year MBBS		
Session:	16-02-2021 to 17-10-2021	
	Duration	Test
1st Term:	16-02-21 to 24-04-21	26-04-21 to 01-05-21
2nd Term:	03-05-21 to 10-07-21	12-07-21 to 17-07-21
3rd Term:	19-07-21 to 11-09-21	13-09-21 to 18-09-21
Send Up:	11-10-2021 to 17-10-2021	

2nd Year MBBS		
Session:	29-03-2021 to 27-11-2021	
	Duration	Test
1st Term:	29-03-21 to 05-06-21	07-06-21 to 12-06-21
2nd Term:	14-06-21 to 21-08-21	23-08-21 to 28-08-21
3rd Term:	30-08-21 to 23-10-21	25-10-21 to 30-10-21
Send Up:	22-11-2021 to 27-11-2021	

3rd Year MBBS		
Session:	29-03-2021 to 06-11-2021	
	Duration	Test
1st Term:	29-03-21 to 05-06-21	07-06-21 to 12-06-21
2nd Term:	14-06-21 to 21-08-21	23-08-21 to 28-08-21
3rd Term:	30-08-21 to 23-10-21	25-10-21 to 30-10-21
Send Up:	22-11-2021 to 27-11-2021	

4th Year MBBS		
Session:	15-03-2021 to 04-12-2021	
	Duration	Test
1st Term:	15-03-21 to 22-05-21	24-05-21 to 29-05-21
2nd Term:	31-05-21 to 07-08-21	09-08-21 to 14-08-21
3rd Term:	16-08-21 to 09-10-21	11-10-21 to 16-10-21
Send Up:	12-12-2021 to 24-12-2021	

Final Year MBBS		
Session:	29-03-2021 to 20-11-2021	
	Duration	Test
Send Up:	13-12-2021 to 24-12-2021	

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ANATOMY 1ST YEAR MBBS
EDUCATION PLAN

	General Anatomy & Embryology	Gross Anatomy	Histology	Assessment	Week
1st Term (11 weeks)	General Anatomy		Introduction of Histology		1
	General Anatomy	Pectoral region	Microscopy		2
		Axilla, Brachial plexus	Preparation of slide & staining procedure	Test 1 General Anatomy	3
	1st week of development	Cervical & scapula	Cell & its part		4
	1st week of development	Back, scapular Region	Epithelium	Test 2 1st Sub stage	5
	1st week of development	Arm, cubital fossa, sternoclavicular joint, humerus,	Stratified epithelium		6
	1st week of development	Shoulder joint, front of forearm	Transitional epithelium & pseudostratifies epithelium	Test 2 2nd Sub stage	7
		Wrist, palm, radius & ulna.	Glands	Test 3 Histo & Embryo	8
		Back & lateral side of forearm, dorsum of hand,	Connective tissue	Test 4 3rd Sub stage	9
		Elbow joint, all joint of hand, carpal metacarpal bones, phalanges, surface marking & radiology.	Classification of connective tissue	Test 5 4th Sub stage	10
	Upper limb Stage / 1st term test				11
2nd Term (11 weeks)	2nd week of development	Front & medial side of thigh	Cells of connective tissue		12
	2nd week of development	Hip bone	Connective tissue proper	Test 6 1st Sub stage	13
	2nd week of development	Gluteal region. Popliteal fossa, Back of the thigh	Cartilage		14
	2nd week of development	Femur, Hip Joint	Bone	Test 7 2nd Sub stage	15
	3rd week of development	Front & Lateral side of the leg	Muscular tissue	Test 8 1st Sub stage	16
	3rd week of development	Medial side of the leg	Nervous tissue		17
	3rd week of development	Dorsum of foot	Neurons		18
	3rd week of development	Tibia & Fibula	Gray Matter & White Matter	Test 9 3rd Sub stage	19
	4th week of development	Back of leg, Sole of foot & Knee joint	Immune System	Test 10 Histo & Embryo	20
	4th week of development	All joints of foot, Tarsal, Meta Tarsal bones, Phalanges, surface marking & rediology	Tonsils	Test 11 4th Sub stage	21
	Lower limb Stage / 2nd term test				22
3rd Term (9 weeks)	4th week of development	Introduction walls of thorax, Thoracic Cavity	Thymus		23
	4th week of development	Thoracic Cavity & Sternum	Spleen	Test 12 1st Sub stage	24
	5th-8th week of development	Lungs & Pleura	Circulatory system		25
	5th-8th week of development	Anterior mediastinun	Respiratory System		26
	9th week of development	Middle mediastinun	Respiratory System	Test 13 2nd Sub stage	27
	Placenta and fetal membranes	Posterior mediastinun, great Vessels, trachea, esophagus	Integumentary system	Test 14 Histo & Embryo	28
	Placenta and fetal membranes	Joints of thoracic cage	Integumentary system	Test 15 3rd Sub stage	29
	Human birth defects	Surface Anatomy & radiology		Test 16 4th Sub stage	30
	Thorax Stage / 3rd term test				31
(4 Weeks)	Preparation Leaves				32
					33
					34
					35
	Sendup Examination				36

DEPARTMENT OF MEDICAL EDUCATION

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CURRICULUM ANATOMY (1st YEAR)

Module 1: GENERAL ANATOMY (Skeletal system)

Content	Objectives	Strategy				Assessment			
		LEC	SGD	PBL	LAB	SEQ	MCQ	OSPE	VIVA
	Explain anatomical terms and sectional planes of the body.	**	**			**	**		
	Classify the skeleton system (appendicular and axial).	**	**			**	**		
	Classify bones on the basis of shape, size, evolution, structure, development, region.	**	**			**	**		
	Describe general features of bones of human body.	**	**			**	**		
	Explain the functions of bones.	**	**			**	**		
	Discuss the general concepts of ossification and growth of bones.	**	**			**	**		
	Describe the blood supply of bones.	**	**			**	**		
	Explain the basis of classification of joints.	**	**			**	**		
	Discuss the characteristics, types and movement of synovial, cartilaginous and fibrous joints.	**	**			**	**		
	Describe the factors responsible for the stability of joints.	**	**			**	**		
	Explain general principles of blood and nerve supply of joints.	**	**			**	**		
	Understand, describe, and analyze different clinical scenario resulting into dislocation of joints	**	**			**	**		
	Describe different terms related to muscles.	**	**			**	**		
	Comprehend the basis of classification of muscles.	**	**			**	**		
	Describe principles of blood and nerve supply of muscles.	**	**			**	**		
	Explain sprain, spasm, trophic degeneration and regeneration changes	**	**			**	**		
	Define and explain the mechanism of sprain and spasm.	**	**			**	**		
	Explain the function of synovial structures related to muscles (tendon sheaths, bursae).	**	**	**		**	**	**	
	Describe different form of fibrous structures (aponeurosis, tendon, raphae).	**	**			**	**		
	Comprehend clinical correlates (rickets,osteoporosis, osteomalacia, sternal puncture, avascular necrosis, radiological appearance of bone, cartilage and fractures)	**	**			**	**		

Module 2: GENERAL ANATOMY (Circulatory system)

	Describe different types of cardiovascular circulation (Systemic, Pulmonary and Portal)	**	**			**	**		
	Explain the classification and structures of different types of blood vessels.	**	**			**	**		
	Define, understand and classify anastomoses with examples and their clinical correlates	**	**			**	**		
	Define and describe components of lymphatic system (lymph nodes and lymph vessels)	**	**			**	**	**	
	Comprehend the mechanism of production and circulation of lymph.	**	**			**	**		
	Describe the functions of lymphatic system and its role in spread of infection and cancer	**	**			**	**		

CURRICULUM ANATOMY (1st YEAR)

Module 3: GENERAL ANATOMY (Nervous System & Skin and Fascia)

Content	Objectives	Strategy				Assessment			
		LEC	SGD	PBL	LAB	SEQ	MCQ	OSPE	VIVA
	Name different components of nervous tissue (neuron, ganglion, nuclei, nerve, tracts)	**				**	**		
	Define and classify different types of nervous system (Somatic and Autonomic)	**				**	**		
	Enumerate different parts of somatic nervous system, their morphology and functions.	**				**	**		
	Describe the formation and distribution of a typical spinal nerve.		**			**	**		
	Discuss the nerve plexus formation; define dermatomes and g1ve their clinical importance.		**			**	**		
	Enumerate and describe different parts of autonomic nervous system and their functions.		**			**	**		
	Define and comprehend reflex, reflex arc and referred pain.		**			**	**		
	Name different types of skin and mention its components (dermis and epidermis).	**	**			**	**		
	Enumerate its appendages and give their function.	**	**			**	**		
	Comprehend and describe the structure and function of superficial and deep fasciae.	**	**			**	**		
	Describe the skin lines and their significance.	**	**			**	**		
	Give clinical significance of discolouration of skin (Jaundice, cyanosis and anemia).		**	**		**	**	**	

Module 4: GENERAL ANATOMY (Common diagnostic techniques)

	Interpret normal radiographs of different regions of the body.		**					**	
	Identify displacement of the fracture segments of the bone.		**					**	
	Diagnose dislocation of the joints.		**					**	
	Understand and interpret ultra-sonographs of abdominal viscera.		**					**	
	Understand principle of CT scan and interpret the normal scans.		**					**	
	Interpret normal images of different diagnostic techniques i.e. X-rays, CT scans, MRI.		**					**	
	Take the Biopsy and prepare it for examination.				**			**	

CURRICULUM ANATOMY (1st YEAR)

Module 5: GROSS ANATOMY (Upper Limb)

Content	Objectives	Strategy				Assessment			
		LEC	SGD	PBL	LAB	SEQ	MCQ	OSPE	VIVA
	Develop an expertise in identification of structures in a cadaver		**		**	**	**		
	Develop clear concepts of the topographic anatomy of the regions.		**			**	**		
	Explain muscle attachments, their actions, nerve supply and effect of paralysis.		**			**	**		
	Develop concept structure and mechanism of joints and the clinical conditions involving them.		**			**	**		
	Describe bones of the appendicular skeleton, their general and special features.		**			**	**		
	Describe the bones of the foot and hand individually, in articulation and in skiagrams.		**			**	**		
	Develop clear concept about common fractures of the bones, displacement.		**			**	**		
	Describe nerve plexuses of limbs, their normal variations and ·different clinical conditions.		**			**	**		
	Demonstrate different kinds of injuries to the important nerves of the extremities.		**			**	**	**	
	Recognize important superficial veins and their clinical uses.		**			**	**	**	
	Explain anatomical relevance to important clinical conditions in the regions.		**			**	**	**	
	Describe the scheme of regional lymphatic drainage and vascular supply.		**			**	**	**	
	Interpret normal skiagrams, C.T. Scans, MRI and Ultrasound.		**			**	**	**	

Module 6: GROSS ANATOMY (Lower Limb)

	Develop an expertise in identification of structures in a cadaver		**		**	**	**		
	Develop clear concepts of the topographic anatomy of the regions.		**			**	**		
	Describe muscle attachments, their actions, nerve supply and effect of paralysis.		**			**	**		
	Develop concept structure and mechanism of joints and the clinical conditions involving them.		**			**	**		
	Explain bones of the appendicular skeleton, their general and special features.		**			**	**		
	Recognize and describe the bones of the foot and hand individually, in articulation and in skiagrams.		**			**	**		
	Develop clear concept about common fractures of the bones, displacement.		**			**	**		
	Describe nerve plexuses of limbs, their normal variations and ·different clinical conditions.		**			**	**		
	Demonstrate different kinds of injuries to the important nerves ofthe extremities.		**			**	**		
	Recognize important superficial veins and their clinical uses.		**			**	**	**	
	Explain the mechanism by which the blood is pumped from lower limb and varicose veins.		**			**	**	**	
	Corelate anatomical relevance to important clinical conditions in the regions.		**			**	**	**	
	Explain the scheme of regional lymphatic drainage and vascular supply.		**			**	**	**	
	Interpret normal skiagrams, C.T. Scans, MRI and Ultrasound.		**			**	**	**	

CURRICULUM ANATOMY (1st YEAR)

Module 7: GROSS ANATOMY (Thorax)

Content	Objectives	Strategy				Assessment			
		LEC	SGD	PBL	LAB	SEQ	MCQ	OSPE	VIVA
	Develop an understanding of the topographic anatomy of the region and describe it.		**		**	**	**		
	Describe the anatomy of the bony thorax and costo-vertebral and the mechanism of respiration.		**			**	**		
	Mark the important thoracic viscera and pleural reflections on the surface of the body.		**			**	**		
	Describe the importance of percussion nodes in eliciting the extent of resonant and non-resonant viscera and their clinical importance.		**			**	**		
	Give a precise account of the Anatomy of thoracic viscera, muscles, nerves, blood vessels and fasciae of the region and correlate anatomical information to common clinical conditions.		**			**	**		
	Describe the scheme of the regional lymphatic drainage and lymph nodes.		**			**	**		
	Interpret normal skiagram, CT scan, MRI and other diagnostic techniques.		**			**	**		

Module 8: GROSS ANATOMY (Applied Anatomy of upper limb, lower limb and thorax)

	Describe clinical effects of nerve injuries of the upper and lower limbs								
	Explain the anatomical aspects of fracture of bones of upper and lower limbs (clavicle, humerus, radius, ulna, femur, tibia, fibula, scaphoid) and ribs								
	Explain the anatomical aspects of dislocation of joints of limbs								
	Describe anatomical basis of contracture, ganglia, pulp infection, carpel tunnel syndrome								
	Explain the anatomical basis of femoral hernia, vancose veins, bursitis and lymphadenitis								
	Describe anatomical basis of spread of carcinoma breast								
	Explain clinical importance of coronary circulation with reference to angina and myocardial infarction								
	Define cardiac temponade, pericarditis and paracentesis in relation to anatomical aspects								
	Define pleural effusion pleurisy, pleural tap, pneumothorax, hydrothorax, haemothorax, pneumonia, bronchogenic carcinoma, foreign body in airways in relation to anatomical aspects								

CURRICULUM ANATOMY (1st YEAR)

Module 9: EMBRYOLOGY (General)

Content	Objectives	Strategy				Assessment			
		LEC	SGD	PBL	LAB	SEQ	MCQ	OSPE	VIVA
	Comprehend and describe the process of cell division (mitosis and meiosis) and gametogenesis.		**		**	**	**		
	Understand and describe ovarian and menstrual cycle.		**			**	**		
	Understand and describe fertilization, cleavage,blastocyst formation and implantation of the embryo (first week of development).		**			**	**		
	Comprehend and describe stages of early embryonic development in second and third week of intrauterine life.		**			**	**		
	Understand and describe development of embryo (4th- 8th week of development).		**			**	**		
	Comprehend and describe fetal period (9th week to birth).		**			**	**		
	Defme and describe fetal structures (anmion, chorion, yolk sac, allantois and umbilical cord)		**			**	**		
	Comprehend and describe formation of placenta, its structure and anomalies.		**			**	**		
	Understand and describe the basis of multiple pregnancies.		**			**	**	**	
	Understand and describe procedures for assessment of fetal status.		**			**	**	**	
	Defme clinical correlates i.e. anovulatory cycles, semen analysis and abnormal sites of implantation.		**			**	**	**	
	Understand In-Vitro Fertilization (IVF), assisted in-vivo fertilization.		**			**	**	**	
	Describe the rationale of choriocarcinoma, pregnancy test, sacro coccygeal teratoma, hydatidiform mole.		**			**	**	**	
	Understand the check points of estimation of gestational age and viability of fetus.		**		**	**	**		
	Understand the basis of intrauterine growth retardation, hydramnios, twin transfusion syndrome, con-joined twins, umbilical cord length variation, and anmiotic bands.		**			**	**		
	Define teratogenesis and name common teratogens.		**			**	**		
	Describe the development of Integumentry system including manunary gland and their anomalies.		**			**	**		
	Describe the development of limbs and vertebral column including their anomalies.		**			**	**		
	Understand and describe the development of muscular system and their anomalies.		**			**	**		
	Understand and describe the structural and numerical chromosomal anomalies i.e.Klinefelter syndrome, Turner's syndrome, Super-female, Down's syndrome, Polyploidy.		**			**	**		

CURRICULUM ANATOMY (1st YEAR)

Module 10: HISTOLOGY (General)

Content	Objectives	Strategy				Assessment			
		LEC	SGD	PBL	LAB	SEQ	MCQ	OSPE	VIVA
	Enumerate and describe structure of different components of cell								
	Classify the basic tissues of the body.								
	Classify and describe different types of epithelia with examples.								
	Comprehend and describe surface modification of plasmalemma (intercellular junctions, microvilli, cilia, stereocilia, basal striations).								
	Define, classify and describe different types of connective tissue proper with examples.								
	Describe the structures of connective tissue cells, fibers and ground substance.								
	Classify and describe different types of cartilages with examples.								
	Classify bones from histological point of view (spongy and compact), and describe their microscopic structure.								
	Describe histogenes is of bone (intramembranous and intracartilagenous).								
	Describe light and electron microscopic structure of muscles (smooth, cardiac and skeletal).								
	Describe the structure of neuron, neuroglial cells and nerve fibre								
	Describe microscopic structure of lymphoid organs (lymph node, spleen, tonsils and thymus) and give their functions.								
	Describe different sub-division of vascular system.								
	Describe microscopic structure of different types of blood vessels.								
	Describe microscopic structure of skin and its appendages (hair follicle, sebaceous and sweat glands) and give their functions.								
	Describe the microscopic structure of mammary gland in different functional stages.								
	Describe the microscopic structure of respiratory system (nasal cavity, epiglottis, trachea, bronchi and lungs) and give the changes in structure correlating these to their functions.								
	Define hypertrophy,atrophy,metaplasia,hyperplasia, and anaplasia, neoplasia, necrosis.								
	Identify, draw and label light microscopic structures of above mentioned tissues.								

ANATOMY 2nd YEAR MBBS
EDUCATION PLAN

	Embryology	Gross Anatomy	Histology	Assessment	Week
1st Term (11 weeks)					1
					2
					3
					4
					5
					6
					7
					8
					9
					10
	Upper limb Stage / 1st term test				11
2nd Term (11 weeks)					12
					13
					14
					15
					16
					17
					18
					19
					20
					21
	Lower limb Stage / 2nd term test				22
3rd Term (9 weeks)					23
					24
					25
					26
					27
					28
					29
					30
	Thorax Stage / 3rd term test				31
(4 Weeks)					32
					33
					34
					35
	Sendup Examination				36

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CURRICULUM ANATOMY (2nd YEAR)

Module 11: GROSS ANATOMY (Neuroanatomy)

Content	Objectives	Strategy				Assessment			
		LEC	SGD	PBL	LAB	SEQ	MCQ	OSPE	VIVA
	Define, enumerate and describe the structure and functions of receptors.		**		**	**	**		
	Define and describe motor end plates and their functions.		**			**	**		
	Describe the meninges of brain and spinal cord.		**			**	**		
	Describe subdural and subarachnoid spaces including subarachnoid cisterns.		**			**	**		
	Describe internal structure of spinal cord at different levels:		**			**	**		
	Describe ascending and descending tracts of spinal cord, their functions and effects of their lesions.		**			**	**		
	Describe internal structure of medulla oblongata.		**			**	**		
	Comprehend and describe the internal structure of pons.		**			**	**		
	Describe internal structure of mid brain.		**			**	**	**	
	Comprehend and describe the surfaces of cerebral hemisphere, its Jobes, their sulci and gyri.		**			**	**	**	
	Locate, identify and describe functions of different functional areas of the brain.		**			**	**	**	
	Locate, identify and describe different types of projection and association fibres of brain and their functions.		**			**	**	**	
	Identity, locate and describe hypothalamus, its nuclei and their connection and functions.		**			**	**	**	
	Identity, locate and describe thalamus, its nuclei and their connection and functions.		**		**	**	**		
	Identity, locate and describe metathalamus and its connections and functions.		**			**	**		
	Describe the ventricular system of the brain.		**			**	**		
	Comprehend and describe production and circulation of CSF and clinical conditions associated with it.		**			**	**		
	Comprehend, describe and discuss blood supply of the brain and spinal cord and the effect of hemorrhagic and thrombotic lesions.		**			**	**		
	Describe intra cranial course of cranial nerves and their applied aspects.		**			**	**		
	Identify, locate and describe cranial nerves nuclei and their connection and functions.		**			**	**		
	Describe different lobes of cerebellum, its white and grey substances including the deep cerebellar nuclei.								
	Describe afferent and efferent connections of cerebellum and correlated these to its functions.								
	Describe the signs and symptoms of cerebellum disease with logical explanation.								
	Describe clinical conditions related to nervous system.								
	Explain neuroanatomical basis of the following, Hemiplegia I hemiperesis, Upper motor and lower motor neuron lesions, Parkinsonism, Syringomyelia. Hemi-section I complete section of spinal cord, Cerebellar ataxia, Other clinical conditions								

CURRICULUM ANATOMY (2nd YEAR)

Module 12: GROSS ANATOMY (Head and Neck)

Content	Objectives	Strategy				Assessment			
		LEC	SGD	PBL	LAB	SEQ	MCQ	OSPE	VIVA
	Describe mandible and different foramrn of the articulated skull.		**		**	**	**		
	Identify individual bones of the skull, their parts with important features.		**			**	**		
	Give post-natal growth changes in skull and face.		**			**	**		
	Comprehend cranial fossae, identify the foramina of the skull base and structures passing through them.		**			**	**		
	Describe the vertebral column and comprehend clinical problems of the region.		**			**	**		
	Describe cervical vertebrae, and the joints of the region		**			**	**		
	Describe important muscles of the region comprehend their actions nerve supply, effect of injury t and clinical tests applied for diagnosis.		**			**	**		
	Name and identify muscles of the floor of the mouth, sternocleidomastoid, trapezius, levator scapulae, and describe their origin, insertion, nerve supply, actions, important relations and effects of injury to their nerves and clinical tests to diagnose the nature of injury.		**			**	**		
	Describe important arteries of the region, their branches and distribution.		**			**	**	**	
	Comprehend clinical importance related to the arteries of head and neck		**			**	**	**	
	Identify subclavian, internal, external, and anterior Jugular vein and give their course, relationship, tributaries and clinical importance.		**			**	**	**	
	Describe cranial venous sinuses and give their clinical significance.		**			**	**	**	
	Enlist the regional lymph nodes and describe the scheme of lymphatic drainage of the region.		**			**	**	**	
	Describe the course and distribution of the cervical spinal and cranial nerves; comprehend formation of Cervical and Brachial plexuses, describe their branches and distribution.		**		**	**	**		
	Describe clinical conditions related to the nerve plexuses and their clinical manifestations.		**			**	**		
	Describe the effects of injuries to different nerves and their clinical tests.		**			**	**		
	Identify sympathetic trunk and describe the scheme of sympathetic and parasympathetic innervations of the region, including the four parasympathetic ganglia, along with the clinical and applied anatomy..		**			**	**		
	Identify and describe the boundaries, contents and subdivisions of the anterior and posterior triangles of the neck.		**		**	**	**		
	Understand and describe the superficial and deep fasciae of the region and correlate different fascial planes to their clinical importance.		**			**	**		
	Describe the viscera of the region i.e. salivary, thyroid, parathyroid glands,		**			**	**		
	trachea and esophagus, and describe their anatomy and i applied aspect		**			**	**		
	Identify the anatomical features of the oral cavity, tongue, cheek, lips, gums and teeth, and describe these in detail with their clinical applications.		**			**	**		

CURRICULUM ANATOMY (2nd YEAR)

Module 12: GROSS ANATOMY (Head and Neck)

Content	Objectives	Strategy				Assessment			
		LEC	SGD	PBL	LAB	SEQ	MCQ	OSPE	VIVA
	Understand and describe the anatomy of the scalp, orbital and cranial cavities, their contents including meninges with highlights on important clinical aspects.		**			**	**		
	Understand and describe the anatomy of the nasal cavity, Para nasal sinuses, eye ball and external, middle and internal ear along with the clinical aspects.		**			**	**		
	Understand and describe the anatomy of pharynx, its muscles, their nerve supply and actions; clinical and applied aspects of pharynx.		**			**	**		
	Comprehend and describe the anatomy of larynx, its joints, muscles, their nerve supply and actions; clinical conditions related to the organ.		**			**	**	**	
	Correlate the anatomical information of the region to their clinical applications.		**			**	**	**	
	Interpret normal radiographs, CT Scans, MRI, and ultrasound image		**			**	**	**	
	Cranial nerves distributions and lesions,		**			**	**	**	
	Dislocation of temporomandibular and intervertebral joints,		**			**	**	**	
	Scalp wounds, danger area of face, Little's area,		**		**	**	**		
	Homer's syndrome, cavernous sinus thrombosis, intracranial hemorrhages, tracheostomy, mumps, sinusitis and retropharyngeal abscess,		**			**	**		
	lymph nodes and lymphatic drainage of head and neck and, different conditions associated with lymphatics.		**			**	**		
	Important muscles of head and neck their functions and effect of their nerve lesions.		**			**	**		

CURRICULUM ANATOMY (2nd YEAR)

Module 13: GROSS ANATOMY (Abdomen and Pelvis)

Content	Objectives	Strategy				Assessment			
		LEC	SGD	PBL	LAB	SEQ	MCQ	OSPE	VIVA
	Develop understanding of the topographic anatomy of the regions.		**		**	**	**		
	Mark the regions of the abdomen on the surface of the body.		**			**	**		
	Mark the abdominal and pelvic viscera on the surface of the body.		**			**	**		
	Understand the importance of percussion notes in eliciting the extent of resonant and nonresonant viscera and their clinical importance.		**			**	**		
	Give a description of the Anatomy of the anterolateral and posterior abdominal walls.		**			**	**		
	Understand and give clear description of inguinal canal, different external hernias and their complications.		**			**	**		
	Understand the peritoneum, peritoneal cavity and possible sites of internal hernias along with their clinical features.		**			**	**		
	Comprehend, understand and describe the abdomino-pelvic fasciae and their clinical importance.		**			**	**		
	Give a precise account of the Anatomy of abdominal and pelvic viscera, muscles, nerves and blood vessels of the regions and correlate anatomical information to common clinical conditions.		**			**	**	**	
	Understand the clinical effects and apply clinical tests to verify injuries to different nerves of the region.		**			**	**	**	
	Develop clear concepts of anatomy of normal male and female pelvises, and differences between them.		**			**	**	**	
	Understand the dimensions of the normal and contracted adult female pelvis and their clinical importance in the mechanism of delivery.		**			**	**	**	
	Understand the anatomy of the perineal region in both male and female and comprehend the anatomical basis of clinical conditions of the area.		**			**	**	**	
	Understand anatomical basis of possible birth injuries to the mother in difficult labor and the clinical conditions produced thereafter.		**		**	**	**		
	Understand the scheme of the regional lymphatic drainage and lymph nodes.		**			**	**		
	Comprehend normal radiological anatomy of the region, CT Scans, MRI, Ultrasound and, other diagnostic techniques.		**			**	**		
	Porto systemic anastomosis, spread of carcinoma stomach, duodenal and peptic ulcer, appendicitis, hemorrhoids, anal fistula, anterior abdominal wall hernias, abdominal incisions, varicocele, hydrocoele, benign prostatic hyperplasia and carcinoma of prostate uterus prolapse.		**			**	**		

CURRICULUM ANATOMY (2nd YEAR)

Module 14: HISTOLOGY (Systemic)

Content	Objectives	Strategy				Assessment			
		LEC	SGD	PBL	LAB	SEQ	MCQ	OSPE	VIVA
	Name and describe the epithelium lining the oral cavity, tongue, gums, hard and soft palate, pharynx and lips and, explain the histology of tongue.		**		**	**	**		
	Understand and describe the histological structure of oesophagus, stomach, small intestine, large intestine, appendix and anal canal; explain the change in structure of their epithelium in relations to the function.		**			**	**		
	Comprehend and describe the histological structure and functions of salivary glands.		**			**	**		
	Understand and describe the histological structure and functions of Liver, Pancreas and Gall Bladder.		**			**	**		
	Comprehend and describe the histological structure of kidney, ureter and urinary bladder, and their functions.		**			**	**		
	Comprehend and describe histological structure of testis, epididymis, vas deferens, seminal vesicle and prostate, and relate it to their functions.		**			**	**		
	Understand and describe histological structure of ovaries, fallopian tube, uterus and vagina, and explained their functions related to their structure.		**			**	**		
	Understand and describe the histological structure and functions of the following glands: 1. Pituitary 2. Thyroid 3. Parathyroid 4. Adrenal 5. Islets of Langerhans.		**			**	**		
	Understand and describe the histological structure of eyeball with emphasis on cornea and retina, and give their functions related to their structure.		**			**	**	**	
	Comprehend and describe the Membranous Labyrinth and give the histological structure of different parts; correlate their functions to the structure.		**			**	**	**	
	Understand and describe the histological structure of spinal cord, cerebellum and cerebrum and correlate it to the functions.		**			**	**	**	
	Identify, draw and label light microscopic structures of above mentioned tissues.		**			**	**	**	

CURRICULUM ANATOMY (2nd YEAR)

Module 15: EMBRYOLOGY (Special)

Content	Objectives	Strategy				Assessment			
		LEC	SGD	PBL	LAB	SEQ	MCQ	OSPE	VIVA
	Describe the development and derivatives of pharyngeal apparatus (arch, cleft, pouch and membrane).		**		**	**	**		
	Describe the development of tongue, Face and palate.		**			**	**		
	Describe the development of thyroid gland, pituitary gland.		**			**	**		
	Describe different congenital malformations of the region.		**			**	**		
	Discuss the development of the body cavities, mesenteries and diaphragm.		**			**	**		
	Describe the development of gastrointestinal tract (fore-gut, mid-gut and hind- gut).		**			**	**		
	Describe the development of liver, pancreas and gall bladder, Spleen		**			**	**	**	
	Discuss different congenital malformations of the region.		**			**	**	**	
	Describe the development of upper and lower respiratory passages, and give their congenital anomalies.		**			**	**	**	
	Describe the development of heart, aortic arches, aorta, superior and inferior vena cavae and portal vein.		**			**	**	**	
	Describe the foetal circulation and changes at birth, congenital anomalies of CVS		**		**	**	**		
	Describe the development of kidneys, ureters, urinary bladder and urethra, and their congenital malformations.		**			**	**		
	Describe the development of testes, epididymis, vas deferens, seminal vesicles and prostate.		**			**	**		
	Describe development of the ovaries, uterus and vagina.		**						
	Describe the development of external genital organs.		**						
	Name different brain vesicles, comprehend and describe their derivatives, Ear & Eye								
	Describe the development of spinal cord, derivatives of neural crest.								
	Describe congenital abnormalities of the nervous system.								
	Describe the development of external, middle and internal ear.								
	Describe congenital abnormalities of the region.								
	Describe the development of lacrimal apparatus, eyeball and their congenital abnormalities.								

PHYSIOLOGY 1ST YEAR MBBS
EDUCATION PLAN

	Module	Topic	Assessment	Week
1st Term (11 weeks)		Homeostasis		1
		Organelles & Transport	Test 1 MCQs / SEQs	2
		Generics introduction anemia, RBC		3
		WEB, blood types & transfusion	Test 2 MCQs / SEQs	4
		immunity		5
		Blood coagulation & hemostasis	Test 3 MCQs / SEQs	6
		Basic physics & RMP		7
		Action potential	Test 4 MCQs / SEQs	8
		Anatomy & physiology of skeletal		9
		Homeostasis, cell, blood & nerve		10
	1st Term Test			11
2nd Term (11 weeks)		Muscle contraction skeletal		12
		Smooth muscle contraction		13
		Varalia muscle & functions	Test 5 MCQs / SEQs	14
		Excitation of caralia muscle		15
		ECG & arrhythmia	Test 6 MCQs / SEQs	16
		Biophysics of circulation & Microcirculation		17
		Nervous regulation	Test 7 MCQs / SEQs	18
		Local control & B.P regulation		19
		CO & venous return		20
		Nerve & muscle, heart, CVS (Partially)	Test 8 MCQs / SEQs	21
	2nd Term Test			22
3rd Term (9 weeks)		Circulatory stock		23
		Pulmonary ventilation		24
		Pulmonry circulation & edema	Test 9 MCQs / SEQs	25
		Gas exchange & Transport of gases		26
		Regulation of respiration	Test 10 MCQs / SEQs	27
		Skin & temperature		28
		Sports physiology	Test 11 MCQs / SEQs	29
		CVS, respiration, skin & body temperature	Test 12 MCQs / SEQs	30
	3rd Term Test			31
(4 Weeks)	Preparation Leaves			32
				33
				34
				35
	Sendup Examination			36

DEPARTMENT OF MEDICAL EDUCATION

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CURRICULUM PHYSIOLOGY (1st YEAR)

Module 1: Basic and Cell Physiology

Content	Objectives	Strategy				Assessment			
		LEC	SGD	PBL	LAB	SEQ	MCQ	OSPE	VIVA
	Describe functional organization of human body.		**		**	**	**		
	Explain homeostasis & control systems in the body.		**			**	**		
	Describe structure, functions of cell membrane and its transport mechanisms.		**			**	**		
	Enlist cell organelles and describe their functions.		**			**	**		
	Outline basic concepts about DNA and RNA.		**			**	**		

Module 2: Blood Physiology

	Describe the composition and general functions of blood		**		**	**	**		
	Enumerate plasma proteins, give their properties, their sites of production and explain their functions		**			**	**		
	Explain erythropoiesis and factors affecting erythropoiesis		**			**	**		
	Explain the functions of red blood cell		**			**	**		
	Describe the structure; describe functions of hemoglobin and enumerate its different types.		**			**	**		
	Describe the role of various elements especially iron in hemoglobin synthesis.								
	Enumerate and define various blood indices								
	Explain leucopoiesis and describe types and functions of white blood cells								
	Describe monocyte-macrophage system and functions of spleen								
	Explain various types of immunity								
	Explain thrombocytopoiesis and describe functions of platelets								
	Explain hemostasis, mechanism of blood coagulation, fibrinolysis and anticoagulants								
	Explain the blood groups and their role in blood transfusion								
	Describe Jaundice & fate of red blood cells and bilirubin formation								
	Anemia, its types and the effects on human body								
	Polycythemia, its types and effects on the human body								
	Blood indices in various disorders, RBC count, Platelet count, Red cell indices, TLC, DLC								
	Clotting and bleeding disorders, Determination of bleeding and clotting times								
	Blood groups, Hazards of blood transfusion, Rh incompatibility, Abnormal immune responses								
	Use of the microscope, Determination of haemoglobin, Osmotic fragility of RBCs								
	Determination of erythrocyte sedimentation rate		**		**	**	**		
	Determination of packed cell volume		**			**	**		

CURRICULUM PHYSIOLOGY (1st YEAR)

Module 3: Nerve and Muscle

Content	Objectives	Strategy				Assessment			
	Understand the structure of the neuron and describe the properties of nerve fibers								
	Classify the nerve fibers								
	Describe the physiological basis of resting membrane potential								
	Describe the genesis and propogation of action potential and compound action potential								
	Outline the structural-functional relationship of skeletal muscle, Neuromuscular junction & transmission								
	Explain and compare the mechanism and characteristics of contraction of the three muscle types.								
	Differentiate between the isometric and isotonic contraction								
	Understands the difference between tetany and tetanization, Excitation contraction coupling								
	Explain chemical changes during muscle contraction and muscle fatigue								
	Describe Peripheral nerve injuries, Myasthenia gravis, Muscular dystrophy / Hypertrophy / atrophy								
	Explain Rigor mortis & contracture, Drugs & poisons affecting neuromuscular junctions								

Module 4: Cardiovascular system

	Describe circulation through the heart and body		**		**	**	**		
	Describe the properties of cardiac muscles & the generation of cardiac impulse and its conduction		**			**	**		
	Compare and contrast action potential of SA node and ventricular myocardium		**			**	**		
	Describe the various events in cardiac cycle		**			**	**		
	Explain the mechanism for production of heart sounds								
	Describe the lead systems for a 12 lead ECG								
	Define, draw and label normal ECG and explain the physiologic basis of waves, segments and intervals								
	List types of blood vessels and their function								
	Describe the haemodynamics of blood flow (local control systemic circulation its regulation and control)								
	Explain the microcirculation and capillary dynamics.								
	Discuss peripheral resistance its regulation and effect on circulation								
	Describe the arterial pulse								
	Define venous return and explain the factors affecting it.								
	Explain cardiac output and its control								
	Describe blood pressure and its regulation								
	Describe coronary circulation and factors affecting it								
	Describe the factors regulating cerebral and cutaneous circulations								

CURRICULUM PHYSIOLOGY (1st YEAR)

Module 4: Cardiovascular system

	Define shock and its various types with their physiological/ pathophysiological basis								
	Describe the various stages of shock and their physiological compensation.								
	Basic concepts related to electrical axes and cardiac vectors								
	Differentiation between various ECG recordings on the basis of rate and rhythm (bradycardia, tachycardia, heart-blocks, ventricular fibrillation, atrial fibrillation, myocardial ischemia I infarction)								
	Describe Development of Oedema & Effects of hypertension and cardiac failure								
	Outline Clinical significance of heart sounds and murmurs								
	Explain Physiology of Varicose veins								
	Performe Cardiopulmonary resuscitation (to be coordinated with the department of medicine)		**		**	**	**		
	Examination of arterial pulse, Examination of jugular venous pulse		**			**	**		
	Recording EGG and interpretation of normal EGG		**			**	**		
	Recording of arterial blood pressure		**			**	**		
	Compare the effects of exercise and posture on blood pressure								
	Apex beat and normal heart sounds, Triple response								
	ICU I CCU I Medical ward visit to study the cases of CCF, Murmurs, Hypertension, Myocardial infarction etc.								

CURRICULUM PHYSIOLOGY (1st YEAR)

Module 5: Respiratory system									
	Describe the functional organization of the respiratory tract.								
	Describe respiratory & non-respiratory function of the respiratory tract								
	Explain the mechanics of breathing, lung volumes and capacities including dead space								
	Describe production, function of surfactant & compliance of lungs & the protective reflexes								
	Describe pulmonary circulation and pulmonary capillary dynamics								
	Describe the composition of atmospheric, alveolar and expired air								
	Describe the diffusion of gases across the alveolar membrane								
	Explain the relationship between ventilation and perfusion, Causes of abnormal ventilation and perfusion								
	Describe the mechanism of transport of oxygen and carbon dioxide in blood								
	Describe the nervous and chemical regulation of respiration & abnormal breathing								
	Define and explain hypoxia and cyanosis, its causes and effects								
	Describe effects of bronchial asthma, pneumothoax, pleural effusion & pneumonia, Respiratory failure								
	Outline artificial respiration and uses & effects of 02 therapy								
	Explain clinical significance of hypoxia, asphyxia, cyanosis, and dyspnoea								
	Describe respiratory distress syndrome								
	Compare obstructive & restrictive lung disorders on the basis of pathophysiology and lung function test								
	Interpret respiratory acidosis and alkalosis.								
	Demonstrate clinical examination of respiratory system								
	Explain pulmonary volumes, capacities and their clinical interpretation								
	Demonstrate Recording of respiratory movements using Stethograph								
Module 6: Skin and body temperature									
	Describe body temperature regulation and its abnormalities, Recording of body temperature								
	Describe functions of skin								
	Describe cardiovascular, muscular and respiratory adjustments in exercise								
	Explain physiologic responses to high altitude and space								
	Explain physiologic responses to deep sea diving and hyperbaric conditions								
	Acute and chronic mountain sickness								
	Nitrogen narcosis and decompression sickness								

PHYSIOLOGY 2ND YEAR MBBS
EDUCATION PLAN

	Module	Topic	Assessment	Week
1st Term (11 weeks)				1
				2
				3
				4
				5
				6
				7
				8
				9
				10
	1st Term Test			11
2nd Term (11 weeks)				12
				13
				14
				15
				16
				17
				18
				19
				20
				21
	2nd Term Test			22
3rd Term (9 weeks)				23
				24
				25
				26
				27
				28
				29
				30
	3rd Term Test			31
(4 Weeks)	Preparation Leaves			32
				33
				34
				35
	Sendup Examination			36

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CURRICULUM PHYSIOLOGY (2nd YEAR)

Module 7: Body fluids and kidney									
	Describe the components and quantitative measurements of body fluids.								
	Discuss the different fluid compartments, tissue and lymph fluid.								
	Describe the structure of the kidney and nephron, and explain general functions of the kidney.								
	Describe the GFR and its regulation & Discuss plasma clearance.								
	Explain the formation of urine including filtration, re-absorption and secretion.								
	Outline the mechanism of concentration and dilution of urine, acidification of urine and its importance.								
	Explain regulation of osmolality, water balance and acid base balance								
	Describe the role of the kidney in blood pressure regulation.								
	Describe the hormonal functions of the kidney.								
	Describe the mechanism of micturition & Abnormalities of micturition								
	Interpret Renal plasma clearance tests and their clinical significance.								
	Explain dehydration, rehydration, over hydration and oedema.								
	Describe Renal failure, dialysis, Metabolic acidosis and alkalosis.								
Module 8: Endocrine system									
	Classify the hormones and describe mechanism of their action								
	Name the hormones of the anterior and posterior pituitary and describe their regulation and functions.								
	Describe the neuroendocrine functions of the hypothalamus								
	Describe the physiological changes of growth and aging.								
	Describe the functions and regulation of the hormones secreted by thyroid gland.								
	Describe the hormones regulating calcium homeostasis (parathormone, vitamin D and calcitonin)								
	Name the hormones secreted by the adrenal cortex and describe their functions and regulation.								
	Name the hormones secreted by the adrenal medulla and describe their functions and regulation.								
	Describe the endocrine functions of the pancreas and regulation of pancreatic hormones.								
	Describe the endocrine functions of pineal gland.								
	Explain Acromegaly, gigantism and dwarfism and Effects of panhypopitutiarismm, Diabetes insipidus.								
	Describe Thyrotoxicosis, myxoedema and cretinism, Pheochromocytoma,								
	Explain Cushing's disease or syndrome, Addison's disease, Adrenogenital syndrome, Conn's syndrome.								
	Outline diabetes mellitus and hypoglycaemia.								

CURRICULUM PHYSIOLOGY (2nd YEAR)

Module 10: Gastrointestinal system									
	Describe the general functions of gastrointestinal tract.								
	Describe the enteric nervous system, control of gastrointestinal motility and secretion								
	Describe mastication, swallowing and their control								
	Describe the motility of the stomach, small intestine, large intestine and regulation.								
	Describe the functions of GIT hormones								
	Describe gallbladder motility and its regulation								
	Explain mechanism of vomiting and its control pathway								
	Explain defecation and its control pathway								
	Discuss Dysphagia, Achalasia cardia, Diarrhea and constipation, Megacolon								
Module 11 : Reproductive System									
	Describe the functions of the male reproductive system.								
	Describe the mechanism of erection .and ejaculation.								
	Describe the production and function of testosterone.								
	Describe the physiological changes during male puberty.								
	Describe the function of the female reproductive system.								
	Explain the production and function of oestrogen and progesterone.								
	Describe the functions of hypothalamo hypophysio gonadal axis.								
	Describe the ovarian and endometrial cycle.								
	Describe the physiological changes during female puberty and menopause.								
	Discuss pregnancy and explain the physiological changes taking place in the mother.								
	Describe the functions of placenta.								
	Discuss the hormones regulating parturition, lactation and development of breast.								
	Discuss Male infertility, Female infertility.								
	Explain Postmenopausal syndrome I Andropause.								
	Outline methods of Contraception.								
	Describe the Physiological Basis for pregnancy tests.								
	Explain Hypogonadism I hypergonadism, Cryptorchoidism.								

CURRICULUM PHYSIOLOGY (2nd YEAR)

Module 12: Special senses

	Describe the optics of the eye, mechanism of accommodation, light reflex.								
	Explain visual acuity, depth perception, neural functions of the retina.								
	Describe the errors of refraction and their corrections.								
	Describe the secretion, circulation, drainage and functions of aqueous humor.								
	Describe the movements of eyeballs.								
	Describe the visual transduction, color vision, visual cortex and visual pathway.								
	Describe the mechanisms for the light and dark adaptation.								
	Describe the functions of external ear.								
	Enumerate the contents of middle ear cavity and functions of the middle ear								
	Describe the structure and functions of internal ear.								
	Explain the sound frequency, loudness, direction of sound, auditory pathway and auditory cortex.								
	Describe the signal transduction for hearing.								
	Describe the signal transduction for taste and smell.								
	Describe the pathways for the sense of taste and smell.								
	Explain the Types of deafness.								
	Discuss Errors of refraction, Lesions of the visual pathway, Night blindness, Colour blindness, Squint.								
	Describe the Argyll Robertson pupil, Horner's syndrome, Glaucoma.								
	Abnormalities of sense of smell and taste.								
	Plotting of the field of vision (perimetry and confrontational methods).								
	Testing the visual acuity for near and distant vision.								
	Elicitation of light reflex (direct and consensual) and accommodation reflex.								
	Ophthalmoscopy.								
	Testing the colour vision.								
	Testing for hearing.								
	Testing taste and smell.								

Objectives	Strategy				Assessment			
Module 1: Cell Biochemistry								
Introduction to biochemistry: An overview of biochemistry and its significance in medicine.								
Biochemical composition and functions of cell: Organization and composition of eukaryotic and prokaryotic cells (only biochemical aspects)								
c) Cell membranes (biochemical composition).								
d) Membrane phenomena: Transport of substances across the cell membrane via active (primary and secondary active) transport; diffusion (simple and facilitated) , and vesicle-mediated transport (phagocytosis, endocytos is, and exocytosis); Gibbs-Donnan equilibrium, osmosis and osmotic pressure.								
e) Membrane receptors and other biologically important regulatory and catalytic membrane-bound proteins like G-proteins, adenlylyl cyclase, phospholipase.								
Basic methods to study cell biochemistry: Centrifugation , ultracentrifugation , radioimmunoassay, ELISA (enzyme-linked imnunosorbent assay) ; chromatography; electrophoresis , spectrophotometry, and pH metry.								
Module 2: Water, Buffers and pH								
Ionization of water; weak acids and bases								
pH and pH scale: Concept of pH and related topics (determination of pH), and concept of pi.								
pKa value, dissociation constant (Ka), and titration curve of weak acids								
Determination of pH of buffer: Henderson-Hasselba lch equation and its applicat ions (derivation not required).								
Body buffer systems (bicarbonate , ammonia , phosphate, and proteins) and their mechanism of action.								
Module 3: Carbohydrates								
Definition, biochemical functions and classification of carbohydrates .								
Structure and function of biologically important monosaccharides and their important derivatives.								
Isomerism in carbohydrates (types and description)								
Biologically important disaccharides, their properties and their biomedical importance								
Oligosaccharides, their combination with other macromolecules and their biomedical importance								
Homopolysaccharides of biologic significance and their structural and functional characteristics								
Structural and functional characteristics of heteropo lysaccharides including details of glycosaminoglycans; proteoglycans, peptidoglycans; and mucopolysaccharidoses.								

Objectives	Strategy				Assessment			
Module 4: Proteins and AminoAcids								
Biomedical importance and classification (biologic functions ; nutritional value ;and overall shape of molecule) of proteins.								
Structure, functions and properties of amino acids								
Classification of standard (proteinogenic) amino acids (based upon side chain structure, polarity of side chain, nutritional , and metabolic end-products) , biologically important non-standard (non-proteinogenic) amino acids and their principal functions .								
Dissociation and titration of amino acids; determination of pi of amino acids with two and three dissociable groups; importance of amino acids in the maintenance of pH; and mechanism of buffering action of proteins.								
Structural organization of proteins: Details of four orders of protein structure (primary, secondary, tertiary, and quaternary); denaturation of proteins; and protein misfolding (amyloidoses and prion disease).								
Important techniques for separation of proteins (electrophoresis, isoelectric focusing, chromatography, filtration, centrifugation, and dialysis).								
Immunoglobulins; their types ; structure, and biomedical significance.								
Plasma proteins (viz, prealbumin, albumin, haptoglobin, ceruloplasmin, alpha1-anti-trypsin; alpha 2-macroglobulin and transferrin) and their principal biologic functions along with their clinical significance. Alpha fetoprotein and clinically important acute phase proteins (alpha 1-acid glycoprotein , C-reactive protein).								
Glycoproteins : components of glycoproteins (overview of linkages between proteins and carbohydrates, N-and 0-linked oligosaccharides)								
Module 5 Nucleotides								
Chemistry of purines and pyrimidines ; their types and structure								
Structure and functions of nucleotides and nucleosides (EXCLUDING metabolism of nucleotides).								
Natural and synthetic derivatives of purines and pyrimidines and their biomedical role.								
Structure, functions and types of nucleic acids (EXCLUDING metabolism)								

Objectives	Strategy				Assessment			
Module 6: Lipids and Fatty Acids								
Classification of lipids and their general biological functions.								
Fatty acids: Definition; nomenclature; classification ; chemical and physical properties; isomerism in fatty acids; role of saturated and unsaturated fatty acids in health and disease ; role of trans fatty acids (trans-fats) in coronary heart disease; omega-3 and omega-6 fatty acids and the importance of their dietary use.								
Nutritionally essential fatty acids and their functions								
Eicosanoids and their biologic functions along with their significance in health and disease								
Physical and chemical properties of fats and oils (triacylglycerols); saponification, iodine number, and acid number of fats; rancidity of fats								
Structure and biologic functions & significance of phospholipids, glycolipids , sulfolipids and gangliosides								
Cholesterol and its related compounds such as bile acids: Structure (constituent structural components), properties and biologic role								
Lipid peroxidation and its significance								
Module 7: Enzymes								
Introduction, classification and nomenclature of enzymes: Definitions of enzymes and IU of enzyme activity; Enzyme Commission Classification of enzymes along with main subclasses.								
Properties of enzymes : Chemical nature, active site , catalytic efficiency ,specificity, proenzymes , and kinetic properties								
Coenzymes and cofactors : Coenzymes derived from va rious vitamins along with the examples of enzymes requiring these coenzymes; and metal cofactors								
Isozymes and their clinical significance								
Allosteric enzymes and their biological significance								
Factors affecting enzyme activity								
Types of enzyme inhibitors and their biomedical importance: Effects of competitive, non-competitive and uncompetitive inhibitors on enzyme activity, effects of competitive and non-competitive inhibition on Lineweaver-Burke plot.								
Mechanism of enzyme action and kinetics of enzyme activity.								
Regulation of enzyme activity (covalent modification, allosteric regulation and regulationby gene induction, repression & de-repression of enzyme synthesis)								
Therapeutic use of enzymes and diagnostic application of determination of enzyme activities of certain enzymes in plasma in hepatic, muscle, prostatic, pancreatic,bone and cardiac diseases.								

Objectives	Strategy				Assessment			
Module 8: Porphyrins and proteins								
Chemistry and biosynthesis of heme and other porphyrins including disordersof heme bionsynthesis (porphyrias)								
Important hemoproteins found in body along with their principal biologic functions; structure and function of hemoglobin and myoglobin, and types of hemoglobin. Hemoglobin A 1c								
Oxygen binding capacity of hemoglobin, factors affecting and regulating the oxygen-bind ing capacity of hemoglobin. Methaemoglobin (metHb) and methaemoglobinemia								
Bilirubin Metabolism: Degradation of heme, synthesis, hepatic uptake, conjugation, and excretion of bilirubin and fate of bilirubin in intestine.								
Hyperbilirubinemias: Causes of hyperbilirubinemias along with the acquired and congenital disorders leading to hyperbilirubinemias; jaundice and kernicterus.								
Hemoglobinopathies: Sickle cell anemia (biochemical cause and its clinica l manifestations), haemoglobin C disease, haemoglobin SC disease and thalassemias.								
Module 9: Vitamins and minerals								
General features of vitamins as essential nutrients								
Classification of vitamins according to their physico-chemical nature and biochemical functions								
Important dietary sources and recommended dietary allowances of vitamins .								
Intestinal absorption , transport and storage of vitamins.								
Mechanism of action of vitamins and their biochemical functions in body.								
Disorders associated with vitamin deficiency and hypervitaminoses .								
Minerals (sodium , potassium, chloride , calcium , phosphorus , magnesium, and sulfur) and trace elements (iron, zinc , selenium, iodine, copper, chromium, manganese , cadmium and fluoride) in human nutrition and their sources, absorption, transport, storage , and biochemical functions along with their recommended dietary allowances (RDA).								

Objectives	Strategy				Assessment			
Module 10: Nutrition								
Energy metabolism: Caloric value of food , Specific dynamic action (SDA) of food , respiratory quotient , metabolic rate (determination and factors affecting metabolic rate), basal metabolic rate (BMR) (measurement , calculation, and factors affecting BMR)								
Balanced diet								
Proteins in nutrition: Obligatory nitrogen loss, nitrogen balance , nutritionally essential amino acids and their role in body growth and nitrogen equilibrium, determination of comparative nutritional efficiency and quality of dietary protein, recommended dietary allowance of protein, protein energy malnutrition (kwashiorkor and marasmus).								
Fats and lipids in nutrition: Fats as a source of energy, role of saturated and unsaturated fats in health and disease, effect of dietary intake of transfats on health, and nutritionally essential fatty acids.								
Carbohydrates in human nutrition: Protein sparing effect of carbohydrates, dietary carbohydrates and blood glucose along with the details of glycemic index, dietary fibers (types and biomedical importance) .								
Calculation of caloric requirement of a person and nutritional requirements in pregnancy, lactation, infancy, and old age.								
Obesity and food additives (artificial sweeteners and flavor enhancers)								
Module 11 Extracellular matrix								
Collagen : Types and structure of collagen ; biosynthesis & degradation of collagen ; collagenopathies (Ehlers-Danlos syndrome (EDS) and Osteogenesis imperfecta)								
Elastin: Structural characteristics of elastins ; role of alpha1-antitrypsin in elast in degradation ; major biochemical differences between collagen and elastin; genetic disorders associated with elastin like Williams-Beuren syndrome, supravalvular aortic stenosis, pulmonary emphysema , and aging of the skin.								
Fibrillin-1 as a protein of microfibrills; Marfan syndrome ; fibronectin and its role in cell adhesion and migration ; laminin as a protein component of renal glomerular and other basal laminas.								
Glycosaminoglycans (GAGs): Structure , classification , functions and distribution of GAGs ; diseases associated with enzyme deficienc ies of degradation of GAGs (mucopolysaccharidoses - Hunter syndrome & Hurler syndrome)								
Structure and functions of proteoglycan								

Objectives	Strategy				Assessment			
Module 12 Practical biochemistry tests								
Introduction to use of laboratory fac ilities I equipment including safety measures								
Preparation of solutions : Preparation of solutions (molar and normal) from various kinds of laboratory chemicals (solid and liquids);								
Preparation of various kinds of buffer solutions ;								
Basic methods of laboratory calculations;								
Introduction and convers ion of conventional and SI measur ing units.								
Demonstration of buffer action, and determination of pH (by using indicators and pH meter).								
Qualitative analysis of carbohydrates and proteins.								
Tests to detect monosaccharides of biomedical significance — glucose , fructose and Galactose (Benedict 's test , Selivanoff's test , and Osazone test)								
Tests to detect proteins I peptides I amino acids (Heat coagulation test , sulphosalicylic acid test, Heller's Ring test and Ninhydrin test)								
Collection and storage of urine samples for laboratory analysis, and physical and chemical analysis of urine to detect normal and abnormal constituents.								
Module 13 Bioenergetics and Biological Oxidation								
Endergonic and exergonic reactions, free energy, free energy change, ATP and other compounds as carriers of energy.								
Electron transport chain: Components and organization of electron transport chain (ETC).								
Reactions of electron transport chain, redox potential, methods of electron transfer among the components of electron transport chain, and energy release during electron transport.								
Oxidative phosphorylation: ATP synthesis in ETC, inhibitors and uncouplers of oxidative phosphorylation, and chemiosmotic hypothesis of oxidative phosphorylation.								

Objectives	Strategy				Assessment			
Module 14 Carbohydrate Metabolism								
Glycolysis :Reactions of aerobic and anaerobic glycolysis occurring in RBCs and other tissues, Biomedical significance and energy yield of aerobic and anaerobic glycosis and its significance, and substrate-level phosphorylation, Regulation of glycolytic pathway, Metabolic fates of pyruvate, Lactic acidosis; genetic deficiency of pyruvate kinase and pyruvate dehydrogenase.								
Tricarboxylic acid (TCA) cycle: Reactions of TCA cycle and their regulation along with energy yield ,Importance of TCA cycle and its amphibolic role								
Gluconeogenesis: Reactions of gluconeogenesis using pyruvate and glycerol as precursors, and regulation of gluconeogenesis, Important gluconeogenic precursors: Entrance of amino acids, intermediates of TCA cycle, glycerol, and other compounds as gluconeogenic precursors, Biomedical significance of gluconeogenesis: Role of gluconeogenesis in plasma glucose level regulation, and the Cori cycle, and glucose-alanine cycle.								
Glycogen metabolism: Synthesis and importance of UDP glucose, Reactions of glycogenesis and glycogenolysis, Regulation of glycogenic synthase and glycogen phosphorylase, Importance of allosteric regulation of glycogen phosphorylase 'a' (a plasma glucose sensor) by plasma glucose, Disorders of glycogen metabolism (glycogen storage diseases), The hexose monophosphate pathway and other pathways of hexose metabolism, Hexose monophosphate (HMP) pathway: Reactions of oxidative and non oxidative phases of HMP pathway, importance of HMP pathway along with uses of NADPH, and glucose 6-phosphate dehydrogenase deficiency, Reactions of uronic acid pathway along with its biologic importance., Metabolism of fructose: Metabolic fate of fructose in human body, sorbitol metabolism along with effect of hyperglycemia on sorbitol metabolism, essential fructosuria and hereditary fructose intolerance ,Metabolism of galactose: Metabolic fate of galactose in body and synthesis of lactose; and disorders of galactose metabolism (galactokinase deficiency and classic galactosemia), Metabolism of ethanol.								
Regulation of blood glucose level : Regulation of plasma glucose hormonally (insulin, glucagon, growth hormone, epinephrine, and cortisol) and non-hormonally, and the role of various metabolic pathways in blood glucose level regulation, Hypoglycemia and hyperglycemia: An overview of hypoglycemia and hyperglycemia, their important causes, and clinical manifestations, Diabetes mellitus: Types of diabetes mellitus along with its clinical manifestations, metabolic changes in type 1 and type 2 diabetes mellitus, and diagnosis of diabetes mellitus.								

Objectives	Strategy				Assessment			
Module 15: Lipid Metabolism								
de novo synthesis of fatty acids: Production of cytosolic acetyl CoA, fatty acid synthase multienzyme complex, reactions of cytosolic fatty acid synthesis, elongation of fatty acid chain, synthesis of polyunsaturated fatty acid, and regulation of fatty acid synthesis.								
Synthesis and storage of triacylglycerols in body.								
Mobilization of stored triacylglycerols along with its regulation								
Oxidation of fatty acids: Activation of fatty acid, translocation of fatty acyl CoA into mitochondrial matrix, reactions of B-oxidation of saturated and unsaturated fatty acids, energy yield of B-oxidation, fate of acetyl CoA, and other types of fatty acid oxidation (alpha-oxidation, omega-oxidation, and oxidation of odd-carbon fatty acids).								
Synthesis and utilization of ketone bodies: Reactions of hepatic ketogenesis, and utilization of ketone bodies by extrahepatic tissues.								
Ketoacidosis and regulation of ketogenesis.								
Synthesis of eicosanoids, their regulation and functions along with their biomedical importance.								
Metabolism of phospholipids and sphingolipids: Synthesis of phospholipids (phosphatidylcholine and phosphatidylethanolamine), synthesis of glycerol ether phospholipids (cardiolipin and platelet activating factor), degradation of phospholipids, deficiency of lung surfactant, metabolism of glycolipids, biosynthesis of ceramide, sphingomyelin, and gangliosides, and degradation of sphingolipids along with sphingolipidoses.								
Cholesterol metabolism: Reactions and regulation of cholesterol biosynthesis, and fate and functions of cholesterol in body.								
Biosynthesis and fate of bile acids and their significance in health and disease.								
Plasma lipoproteins: Synthesis, transport, and fate of chylomicrons, VLDL, IDL, LDL, and HDL; disorders associated with impairment of lipoprotein metabolism, and atherogenic effect of oxidized LDL.								
Biochemical defects leading to fatty liver								

Objectives	Strategy				Assessment			
Module 16: Metabolism of proteins and amino acids								
overview of protein turnover in human body; nitrogen balance (positive and negative).								
Inter-organ amino acid exchange in normal post-absorptive state								
Degradation of amino acids; removal of nitrogen from amino acids by transamination and deamination; sources of ammonia in body; transport of ammonia, ammonia toxicity; fate of ammonia in body, reactions and regulation of the urea cycle along with metabolic disorders of the urea cycle.								
An overview of amphibolic intermediates formed from the carbon skeleton of amino acids								
of glucogenic and ketogenic amino acids; an outline of the metabolism of individual amino acids like glycine, cysteine, arginine, proline, phenylalanine, tyrosine, histidine, tryptophan, methionine amino acids; causes and salient features of important metabolic defects in amino acid metabolism like phenylketonuria, maple syrup urine disease (MSUD), histidinemia, alkaptonuria, cystathioninuria, homocystinuria, hyperprolinemia, cystinuria, cystinosis, tyrosinemias, and albinism.								
of epinephrine and norepinephrine, creatine, creatinine, histamine, gamma-aminobutyrate, serotonin, melatonin, and melanin								
Module 17: Integration and Regulation of Metabolic Pathways								
Fed-fast cycle and starvation.								
Basic concepts of intermediary metabolism, introduction of anabolic and catabolic pathways.								
An overview of regulation and integration of various metabolic pathways (role of liver, heart, brain, skeletal muscle and adipose tissue).								
Module 18 :Metabolism of Nucleotides								
de novo Synthesis of purines and pyrimidines; the salvage pathways of nucleotide synthesis; degradation of purine and pyrimidine nucleotides								
Disorders associated with purine nucleotide metabolism like adenosine deaminase deficiency, purine nucleoside phosphorylase deficiency, and hyperuricemia.								
Natural and synthetic derivatives of purines and pyrimidines and their role in health and disease.								

Objectives	Strategy				Assessment			
Module 19: Biochemical Genetics								
The structural basis of cellular information								
Organization of DNA: chromosomes, Karyotyping.								
Replication of DNA: Reactions of DNA replication in eukaryotes and prokaryotes; types of damage to DNA and DNA repair; mutations								
Transcription (DNA-dependent RNA synthesis): Steps in the transcription of eukaryotic and prokaryotic genes; post-transcriptional modifications (processing) of RNA; reverse transcription in retroviruses and its relation to cancers and AIDS.								
Translation (protein synthesis): The genetic code; components required for protein synthesis, composition of eukaryotic and prokaryotic ribosomes; steps of protein synthesis; post-translational modifications of polypeptide chains; protein targeting.								
Regulation of gene expression in prokaryotes and eukaryotes								
Molecular biology techniques: Basic information and biomedical importance of molecular biology techniques; DNA extraction; recombinant DNA technology; DNA cloning; polymerase chain reaction (PCR); hybridization; blotting techniques.								
Oncogenes and their role in carcinogenesis; mechanisms of activation of proto-oncogenes; mechanism of action of oncogenes; tumour supressor genes and oncogenic viruses.								
Genetic basis of disease								
Important tumor markers and their clinical significance (Carcinoembryonic Antigen, Alpha fetoprotein, human chorionic gonadotropin, calcitonin and prostatic acid phosphatase).								

Objectives	Strategy				Assessment			
Module 20: Biochemistry of endocrine system								
An overview of endocrine system; classification of hormones based on their mechanism of action and chemical nature; mechanisms of action of each class of hormone ; general characteristics of various types of hormone receptors ; types and actions of various kinds of G-proteins in mediating the actions of hormones; signal transduction pathways of various hormones; types and role of various kinds of second messengers.								
Pituitary and hypothalamic hormones: Structure, biosynthesis, secretion, transport, regulation, catabolism, and biologic actions of all hypothalamic and pituitary hormones; disorders associated with hyper- and hypo-activities of these hormones such as growth hormone deficiency (dwarfism), gigantism, acromegaly, Cushing's syndrome , Addison's disease , Diabetes insipidus, and the inappropriate secretion of ADH (SIADH).								
Thyroid Hormones: Structure, biosynthesis, secretion, transport, regulation, catabolism, and biologic actions of all thyroid hormones; disorders associated with hyper- and hypo-activities of these hormones like goiter, hypothyroidism , hyperthyroidism , Graves' disease.								
Calcium Regulating Hormones: Structure, biosynthesis , secretion, transport, regulation, catabolism, and biologic actions of parathyroid hormone; disorders associated with hyper- and hypo-activities of these hormones like; role of parathyroid hormone, calcitriol, and calcitonin in calcium homeostasis; hypoparathyroidism, hyperparathyro idism (primary, secondary, and tertiary), pseudohypoparathyroidism, rickets, and osteomalacia).								
Adrenal Cortical Hormones: Structure, biosynthesis, secretion, transport, regulation, catabolism, and biologic actions of all adrenal cortical hormones ; disorders associated with hyper- and hypo-activities of these hormones like Cushing's disease I syndrome , secondary adrenal deficiency, Addison's disease , primary aldosteronism and secondary aldosteron ism.								
Adrenal Medullary Hormones: Structure, biosynthesis, secretion, transport, regulation, catabolism, and biologic actions of all adrenal medullary hormones; and associated disorders like pheochromocytoma.								
Male and Female Gonadal Hormones: Structure, biosynthesis, secretion, transport, regulation, catabolism, and biologic actions of all male and female gonadal hormones; disorders associated with hyper- and hypo-activities of these hormones like; hypergonadism and hypogonadism in males and females.								
Hormones of Pancreas: Structure, biosynthesis, secretion, transport, regulation, catabolism, and biologic actions of all pancreatic hormones (insulin, glucagon, somatostatin and pancreatic polypeptide); disorders associated with hyper- and hypo-activities of these hormones like; pathophysiology of insulin deficiency and diabetes mellitus.								

Objectives	Strategy				Assessment			
Module 21: Biochemistry of Gastrointestinal system								
Introduction, chemical composition, and secretion and regulation of various digestive juices of GIT such as saliva, gastric juice & HCl, pancreatic juice, bile, and succus entericus.								
Hydrolysis (digestion) of carbohydrates, lipids, proteins, and nucleic acids in gastrointestinal tract.								
Absorption of carbohydrates, lipids and amino acids.								
Disease states associated with GIT disorders like achlorhydria, peptic ulcers, lactose intolerance, cholelithiasis and pernicious anemia, cystic fibrosis and celiac disease.								
Site of synthesis and major actions of gastrointestinal hormones like gastrin, cholecystokinin (CCK), secretin, gastric inhibitory peptide (GIP), vasoactive intestinal polypeptide (VIP), motilin, enkephalins, substance P, neurotensin, and enteroglucagon.								
Module 22: Metabolism of xenobiotics								
Definition and classes of important xenobiotics of medical relevance, their phases of metabolism and clinical significance (Cytochrome P450: Cytochrome P450 hydroxylase cycle in microsomes; role of cytochrome P450 in phase I metabolism of xenobiotics; induction of cytochrome P450).								
Phase II metabolism of xenobiotics; types of phase II reactions;								
Responses to xenobiotics including pharmacologic, toxic, immunologic and carcinogenic effects.								
Module 23: Water & electrolyte balance; acid-base regulation								
Biochemical mechanisms to regulate water and electrolyte balance in body: Fluid compartments of the body; gain and loss of body water; regulation of body water balance, effect of pure water deprivation, water excess or water intoxication; and electrolytes of body fluids (sodium, potassium, magnesium and chloride).								
Body buffer systems, role of lung and kidney in maintenance of acid-base balance.								
Acid-base disturbance in the body like respiratory and metabolic acidosis (lactic acidosis and ketoacidosis); respiratory and metabolic alkalosis; concept of anion gap, base excess and base deficit.								
Clinical interpretation of laboratory report of arterial blood gases.								

Objectives	Strategy				Assessment			
Module 24 Practical special biochemistry								
The introduction of techniques and instrumentation of clinical biochemistry like centrifugation,spectrophotometry (visible, UV, infra red and atomic absorption), pH metry, chromatography, electrophoresis, enzyme-linked immunosorbent assay (ELISA), micropipetting, flame photometry and ion selective electrode (ISE) technique.								
Collection, preservation, and storage of blood sample.								
Estimation of various substances in blood and other biological fulids, like glucose, creatinine, urea, protein, albumin, uric acid, and calcium, total cholesterol; HDL cholesterol, and triacylglycerols; demonstration of creatinine clearance; and oral glucose tolerance test (OGTT).								
Determination of plasma enzyme activities of alanine aminotransferase (ALT), aspartate aminotransferase (AST), amylase, creatine phosphokinase (CK), alkaline phosophatase (ALP), and lactate dehydryogenase (LDH).								
Clinical interpretation of common laboratory values of the compounds and enzymes as listed above.								
Determination of amino acids in urine by paper chromatography (demonstration)								

Objectives	Strategy				Assessment			
Module 1: General Pharmacology.								
Definition of pharmacology, objectives of learning pharmacology, definition of drug and drug nomenclature.								
Branches/divisions of pharmacology.								
Sources of drugs.								
Active principles of drugs and pharmacopoeias.								
Dosage forms and doses of drugs.								
Route of drug administration.								
Absorption of drugs and processes involved in drug absorption.								
Factors modifying absorption of drugs.								
Transport of drugs across cell-membrane.								
Bio-availability, its clinical significance and factors affecting bioavailability.								
Drug reservoirs, distribution and redistribution of drugs, plasma protein binding.								
Pro-drug, bio-transformation of drugs, enzyme induction, enzyme inhibition and entero-hepatic circulation.								
Plasma half-life of drugs, steady state concentration, its clinical importance and factors affecting it.								
Excretion of drugs.								
Mechanism of drug action.								
Dose response curves, structure-activity relationship.								
Factors modifying action and doses of drugs.								
Pharmacokinetics, pharmacodynamics and receptors.								
Pharmacogenetics.								

Objectives	Strategy				Assessment			
Module 2: Dermatological and topical drugs (Locally Acting Drugs)								
Demulcents, emollients, irritants, counter irritants, astringents.								
Antiseborrhoeics, locally acting enzymes.								
Antiseptics and disinfectants.								
Ectoparasiticides.								
Module 3: Drugs Acting on Gastrointestinal Tract:								
Emetics and anti emetics.								
Drugs affecting motility of GIT.								
Ulcer healing drugs.								
Purgatives/ laxatives.								
Antidiarrhoeals.								
Module 4: Cardiovascular Drugs								
Antiarrhythmic drugs.								
Inotropic drugs.								
Antihypertensive drugs.								
Thrombolytics/ anticoagulants/ antiplatelets.								
Antihyperlipidemic drugs.								
Anti-anginal drugs.								
Drug management of CCF.								
Module 5: Diuretics								
Module 6: Autocoids								

Objectives	Strategy				Assessment			
Module 7: Drugs Acting on Autonomic Nervous System Cholinergic Drugs.								
Choline esters.								
Anticholine-esterases cholinomimetic alkaloids.								
Anti-cholinergic drugs								
Anti muscarinic								
Anti nicotinic								
Sympathomimetics / adrenergic drugs:								
Catecholamine								
Non catecholamine								
Sympatholytics/antiadrenergics								
Alpha adrenergic receptor blockers.								
Beta adrenergic receptor blockers								
Adrenergic neuron blockers								
Autonomic ganglionic blockers								
Skeletal muscle relaxants								
A) neuromuscular blocking agents - d-tubocurarine, suxamethonium, etc.								
B) central muscle relaxants , meprobamate, mephenesin, diazepam, etc.								
Central Nervous System								

Objectives	Strategy				Assessment			
Module 8: Central Nervous System								
Sedative-hypnotics.								
Anti-epileptics.								
General anaesthetics.								
Local anesthetics.								
Drugs for movement disorder/ muscle relaxant.								
Alcohol.								
Drugs for migraine.								
Stimulants of the central nervous system:								
Caffeine, theophyline, theobromine, Brain stem stimulants: picrotoxin, nikethamide, Ethamivan, doxapram, Spinal cord stimulants: strychnine.								
Psychopharmacology:								
Anti-psychotics, Anxiolytics, Anti-depressant / anti mania drugs, Alcohol and drugs of abuse, Anti-parkinson drugs, Anti epileptic drugs								
Module 9: Analgesics								
Opioids and narcotics analgesics.								
Nonsteroidal anti inflamatory drugs (nsaid).								
Antigout drugs.								
Module 10: Drugs Acting on Respiratory System								
Drugs used in treatment of bronchial asthma.								
Expectorants.								
Mucolytics.								
Antitussives.								

Objectives	Strategy				Assessment			
Module 11: Drugs Acting on Endocrine System								
Pituitary-hypothalamic drugs.								
Adrenocorticoids.								
Sex hormones								
Thyroid/ parathyroid drugs.								
Pancreatic hormones and oral anti diabetic drugs.								
Oral contraceptives and anabolic steroids.								
Module 12: Drugs Acting on Endocrine System								
Ergometrine, Terbutaline, Dinoprostone, Carboprost, Ritodrine, Oxytocin, Antimicrobial Drugs, Sulfonamides, Penicillins, Cephalosporins, Aminoglycosides, Tetracyclines, Macrolide, Chloramphenicol, Quinolones, Anti- tuberculous drugs, Antileprosy drugs, Anti fungal drugs, Antiviral drugs, Anti-protozoal drugs, Anti- malarial drugs, Anti-amoebic drugs, Urinary tract antiseptics, Anti cancer drugs, Immunosuppressive agents, Miscellaneous, Vaccines and immunoglobulin drug interaction.								
Module 13: A - EXPERIMENTAL PHARMACOLOGY								
Experiments designed to observe the action of drugs on animals and isolated tissue.								
Experiments on the actions of selected drugs to be demonstrated to the students.								
Effects of drugs on reflex time.								
Effects of drugs on frog's heart in situ.								
Effects of drugs on rabbit's eye.								
Effects of Acetylcholine and Atropine on isolated rabbit's ileum.								
Effects of histamine and antihistamines on isolated rabbit's ileum.								
Schemes to find out unknown drug having stimulatory or inhibitory effect on isolated rabbit's ileum.								
Effects of neuromuscular blocking agents on frogs rectus abdominus muscle.								
Methodology of clinical trials.								
Introduction to Biostatistics.								

Objectives	Strategy				Assessment			
Module 14: B. PRESCRIPTION WRITING								
General principles								
Guideline for rational use of drugs, Prescription writing for common ailments, Acute watery diarrhea, Bacillary dysentery, Amoebic dysentery, Ascariasis, Tape-worm infestation, Acute streptococcal pharyngitis, Iron deficiency anemia, Allergic rhinitis, Scabies, Acute malarial fever, Cerebral malaira, Typhoid fever, Bronchial asthma, Hypertension, Migraine, Cardiac failure, Shock.								
Clinico-Pharmacological Seminars on Rational Drug Therapy and								
Drug Interaction should be conducted								
Antibiotics: Frequency distribution of antibiotic prescribed in different clinical settings/units.								
Rational prescribing pattern of antibiotics. Parameters: provisional diagnosis, investigation, empirical therapy. Prescribing after culture and sensitivity.								
Vitamins: Parameters, Groups of vitamin prescribed, Vitamins prescribed on basis of therapeutic indication or empirical, Single / multiple vitamins, Frequency of prescribing and rational use of vitamins/ otherwise.								
Analgesics, Parameters, Frequency distribution of various groups of analgesic prescribed.								
Single / multiple drug prescription, Non specific indications of analgesic prescription.								
Adverse Drug Reactions, Anti-microbials, Cytotoxic drugs , Steroids etc.								

Objectives	Strategy				Assessment			
Module 1: Pakistan's Legal System:								
The powers and jurisdiction of courts, procedures for inquest, and legal procedures. Important legal terms. Application of relevant Legal Sections of the Penal Code. The role of a medical doctor in the medico-legal system. To give Medical evidence in courts. Document information to be prepared by a medical doctor for legal procedures. Procedure of court attendance and recording of evidence.								
Module 2: Forensic Sciences:								
Role of Forensic Sciences in crime detection.								
Module 3: Law in relation to medical men:								
Privileges and obligations of Registered medical practitioner. Doctor-patient relationship in the context of the highest ethical standards. Temptations to professional misconduct. Guarding professional secrets and privileged communication. Maintaining highest ethical principles in medical examination and when obtaining consent. Medical negligence. Declaring Brain death, using the highest ethical and biological principles for the decision. The pros and cons of organ transplantation in each individual case.								
Develop and defend a personal moral view on Artificial insemination, Therapeutic abortions, Euthanasia, Biomedical research etc. in keeping with the norms of society and highest ethical principles.								
Module 4: Personal Identity								
Parameters of personal identity, methods of identifying living, dead, decomposed, mutilated and burnt bodies, and skeletal and fragmentary remains, using special techniques (Dentistry Radiology, Neutron Activation Analysis etc.), and objective methods of identification (Osteomtery, Dactyloscopy, D.N.A. Technique, Super imposition photography, etc.) Describe the role of various blood groups in resolving paternity and maternity disputes. Methods to determine time since death.								
Methods of determination of age, sex and race by various methods with their medico-legal aspects.								
Methods to trace evidence, Locard's Principle of exchange and its medico-legal significance.								
Module 5: Thanatology								
Scientific concepts regarding death, medico-legal aspect of brain death, indicators of death, medico-legal aspects of sudden and unexpected deaths, causes, manner, mode and mechanisms of death.								
Physicochemical changes subsequent to death occurring in various body tissues and organs under various environmental conditions.								
To write a certification of death according to W.H.O guidelines.								

Objectives	Strategy				Assessment			
Module 6: Traumatology								
Mechanical Injuries: Mechanisms of wound production, classification of wounds, wounds produced by conventional weapons and their medico-legal aspects. Firearms, ammunition, classification, nomenclature, wound ballistics and medico-legal aspects.								
Mechanical injuries medicolegal considerations: Laws in relation to causing bodily harm, wounding and homicide.								
Examination of an injured person, certify nature, manner of injury, causative agent and dating of wounds.								
Link Sequelae of trauma to its original cause and search for the relationship of sequelae to pre-existing disease.								
Causes of death from wounds.								
Difference between ante-mortem and post-mortem wounds.								
To diagnose whether death is suicidal, homicidal or accidental.								
The student should also have knowledge of and be able to describe methods of treatment and possible etiologies of regional injuries, and should be able to suture simple superficial wounds of:								
Head (scalp, skull, brain) and face, vertebral column and its contents, neck, chest, abdomen, limbs, bones and joints. and Special trauma such as transportation injuries, police torture, and Death in custody and Should be able to determine the medico-legal aspects of heat, cold, electrical injuries.								
Module 7: Violent deaths due to asphyxia								
Anatomical, physiological, biochemical and pathological signs of violent death and of mechanical, chemical and environmental as physical death and their medico-legal implications. Death due to drowning.								
Module 8: Autopsy:								
Types, objectives, rules, and techniques and describe procedure for postmortem.								
Methods for assessment of fatal period and postmortem interval. Post-mortem artifacts. Risks and hazards of autopsy, and autopsy protocol.								
Procedure for selection and preservation, labeling and dispatch of biological and non-biological materials for laboratory examination; and collection of relevant samples.								
Exhumation procedures, and their value and limitations.								

Objectives	Strategy				Assessment			
Module 9: Forensic Sexology.								
Virginity, pregnancy and criminal processes during delivery, their medico-legal aspects, examination procedure and reporting.								
Module 10: Sexual offences and relevant sections of law (Zina and Hudood Ordinance)								
Natural and unnatural sexual offences. Medical examination of victim and assailant, collection of specific specimens and writing a required certification.								
Common sexual perversions and their cause.								
Module 11: Miscarriage								
Medico-legal aspects applicable to miscarriage examining mother and aborted material.								
Sending aborted material in proper preservative for examination.								
Module 12: Crime against new born, infants and child:								
Infanticide, and criminal and non-accidental violence or abuse to a newborn, infant or child.								
Module 13: Forensic Psychiatry								
To diagnose mental illness.								
To distinguish between true and feigned insanity.								
To advise on procedure of restraint of the mentally ill,								
Limitations to civil and criminal responsibilities of mentally ill.								
Module 14: Examination of biological specimens								
Forensic importance of biological specimens (blood, semen, salvia, vomitus, breath, urine, hair),								
The method of their collection, preservation, dispatch and the common laboratory tests performed.								
Module 15: General principles of Toxicology								
The scope of Toxicology.								
To access the laws regulating drugs and noxious products.								
Common Toxicants in our environments and their abuse.								
Cause of drug dependence, the fate and detoxification of poisons in the biological tissues.								
To diagnose toxicological cases in acute and chronic exposure in living and dead. Utilize general principles of treatment with antidotal therapy and management.								
To handle specimens, work within the framework of duties of Doctor in cases of poisoning to prepare and interpret chemical examiners reports.								
Autopsy techniques with collection, preservation and dispatch of biological material to analytical laboratory.								

Objectives	Strategy				Assessment			
Module 16: Specific Poisons								
Poisons/drugs of abuse prevailing in our society along with medico-legal aspects:								
Alcohol, Opiates, opioids and other narcotics, Salicylates and paracetamol, Hypnotics and sedatives, Stimulants (cocaine), cannabis, Poisonous plants (aconite, belladonna, hyoscyamus, stramonium, digitalis, ergot, mushrooms, nux vomica, oleander, tobacco), Venomous insects (snakes), Inorganic elements, antimony, arsenic, lead, mercury, phosphorus, Volatile poisons and corrosives (carbon monoxide, hydro carbons, cyanides, sulfuric acid, oxalic acid, carbolic acid and alkalis), Pesticides, herbicides and insecticides								
Module 17: Practical work will include								
Autopsies								
Medico-legal examination of injured								
Estimation of age and forensic radiology								
Sexual assaults and sex related cases (impotence, pregnancy etc.).								
Procedure of preservation, dispatch of biological and other evidentiary material.								
Practical in biological laboratory (identification of blood, semen, saliva, etc.).								
Procedure of consent taking and medical certification.								
In Toxicology, students should have an understanding of and be able to describe :								
Diagnostic and management process (alcohol, narcotics and insecticide poisons).								
Collection, preservation and dispatch of biological materials.								
Visual, olfactory and tactile identification of common poisons.								
Visits to Court, Forensic science laboratory, Psychiatric unit or jail, Site during conduction of exhumation.								

Objectives	Strategy				Assessment			
Module 1: Inflammation, Mediators of Inflammation								
Role of inflammation in the defense mechanisms of the body.								
Vascular changes of acute inflammation and their relation to morphological and tissue effects.								
Process of Chemotaxis, Opsonization and Phagocytosis.								
Role of cellular components in inflammatory exudate.								
Exudates and transudate.								
Important chemical mediators of inflammation.								
Pathway of Arachidonic Acid metabolism.								
Role of products of Arachidonic acid metabolism in inflammation.								
Mechanism for development of fever, with reference to exogenous and endogenous pyrogens.								
Chronic inflammation including Granulomas.								
Granuloma and its types along with causes.								
Systemic effects of acute and chronic inflammation and their possible outcomes.								
Significance of ESR.								
Induced hypothermia in medicine.								
Healing in specialized tissue.								
Module 2: Wound Healing								
Repair and regeneration.								
Wound healing by first and second intention.								
Wound contraction and cicatrisation.								
Formation of granulation tissue.								
Complications of wound healing.								

Objectives	Strategy				Assessment			
Module 3: Disorders of Circulation								
a. Thrombo-embolic disorders and their modalities								
Etiology and pathogenesis of thrombosis.								
Possible consequences of thrombosis								
Difference between thrombi and clots								
Classification of emboli according to their composition.								
Difference between arterial and venous emboli.								
b. Hemorrhage, Hyperemia and Congestion								
Definitions of common types of Hemorrhage								
Types of hyperemia								
Difference between hyperemia and congestion								
c. Infarction								
Types of infarction								
Difference between anemic and hemorrhagic infarct								
Morphological picture of infraction in different organ systems								
d. Disorders of the circulation and shock								
Edema, ascites, hydrothorax and anasarca.								
Pathophysiology of edema with special emphasis on CHF.								
Pathogenesis of four major types of shock (Hypovolemic, cardiogenic, vasovagal & septic) and their causes.								
Compensatory mechanisms involved in shock.								

Objectives	Strategy				Assessment			
Module 4: Microbiology								
Defence mechanisms of the body.								
Microbial mechanisms of invasion and virulence.								
Difference between sterilization and disinfection.								
Methods of disinfection and sterilization of the following:								
a. Facility where the doctor practices,								
b. Examination table,								
c. Any spillage e.g. sputum, vomitus, stool, urine, blood,								
d. Examination tools, e.g., thermometer, nasal and ear specula and spatula,								
Principles of aseptic techniques such as Venepuncture, urinary catheterization, bandaging, suturing and lumber puncture.								
Universal precautions for infection control.								
General principles of the following serological tests:								
a. ELISA – Hepatitis (A,B,C,D,E,G) Rubella, CMV and HIV								
b. PCR								
c. Haemagglutination – TPHA								
d. Western Blot –HIV Malaria.								
8. Interpretation of :								
a. Culture reports								
b. Serological reports and								
c. Microscopic reports of gram stain and ZN stain.								
Principles of proper collection and submission of specimens for laboratory investigations								
General characteristics and taxonomy of Bacteria, Rickettsia, Chlamydia, Viruses and Fungi.								
Communicable, Endemic, Epidemic, and Pandemic Diseases, Carriers Pathogens, Opportunists, Commensals and Colonizers.								

Objectives	Strategy				Assessment			
Module 4: Microbiology								
Common organisms causing CNS Infections								
(i) Bacteria: Steptococcus pneumoniae, Beta hemolyticus srteptococcus group-b, Neisseria meningitides, Haemophilis influenzae Mycobacterium tuberculosis. E.coli, Listeria monocytogenes								
(ii) Viruses: Enterovirus, Mumps Herpes Adenovirus								
(iii) Fungus: Cryptococcus neoformis								
(iv) Protozoa Malaria Toxoplasma								
Common organisms causing respiratory tract infection								
(i) Bacteria: Steptococcus pneumoniae, Beta hemolyticus streptococcus group b Diptheria sp., Bordetella sp. Hemophilus influenzae, Mycobacteriurn tuberculosis Klebsiella, Legionella, Mycoplasma pneumoniae								
(ii) Viruses: Herpes Adeno virus Measles Influenza Para influenza Rhinovirus RSV								
(iii) Protozoa: Pneumocystic carinii								
Organisms causing gastrointestinal tract infection / infestation								
(i) Bacteria: Clostridium difficile Mycobacterium tuberculosis Salmonella, Shigella Vibrio cholera, Vibrio parahemolyticus Campylobacter jejuni Helicobacter pylori								
(ii) Viruses: Hepatitis A Rota, Astro								
(iii) Fungus: Cryptococcus neoformis								
(vi) Protozoa: Giardia lamblia Entameba histolytica Cryptosporidium								
Common organisms causing hepatic infections								
(i) Bacteria: Streptococcus species, Coliforms, Anaerobes								
(ii) Viruses: Herpes, Hepatitis A, B, C, D, E CMV, EBV								
(iii) Protozoa: Entameba histolytica, Tape worms, Echinococcus granulosus								
Common organisms causing skin infection								
(i) Bacteria: Staphylococcus aureus, Streptococcus pyogenes, Actinomyces israelli, Nocardia asteroides, Mycobacterium tuberculosis, Mycobacterium leprae, Corynebacterium diphtheriae								
(ii) Viruses: Herpes, Measles Rubella, Chicken pox, Moluscum contagiosum								
(iii) Fungus: Candida albicans, Tinea species								
(iv) Arthropodes: Sarcoptes scabiei, Pediculus species, Cinex lectularius								
(v) Helminths: Filaria species, Strongyloides stercoralis, Schistosoma sp.								
(vi) Protozoa: Leishmania species.								

Objectives	Strategy				Assessment			
Module 4: Microbiology								
Common organisms causing bone and joint infection								
Bacteria: Staph aureus, Streptococcus pyogenes, Haemophilus influenzae, Neisseria gonorrhoeae, Brucella melitenesis, Salmonella typhi, Strep. pneumonae, Pseudomonas sp. and Mycobacterium tuberculosis.								
Common organisms causing genital infection								
(i) Bacteria: Mycoplasma urealyticum								
(ii) Viruses: Pox, Herpes, Hepatitis B, HIV								
(iii) Fungus: Candida albicans								
(iv) Arthropodes: Sarcoptes scabiei								
(v) Protozoa: Tricomonas vaginalis								
Common organisms causing zoonosis								
(i) Viruses: Rabies,								
(ii) Protozoa: Toxoplasma gondii, Leishmania sp.								
(iii) Helmenthics: Echinococcus sp.								
Module 5: Principles of anti-microbial action.								
Antibiotics, selective toxicity, bacteriostatic and bactericidal.								
Host determinants in relation to selection of an antimicrobial drug for therapy.								
Minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC)								
Bacterial resistance and the mechanisms involved in acquiring bacterial resistance								
Mechanisms involved in transfer of drug resistance to bacterial resistance.								
Mode of action of various antimicrobial drug groups.								
Superinfection and cross sensitivity								

Objectives	Strategy				Assessment			
Module 6: Genetics								
Common sex linked, autosomal recessive and autosomal dominant disorders.								
Common genetic mutations.								
Diseases associated with consanguineous marriages.								
Molecular biology techniques.								
Module 7: Growth Disorders/Neoplasia								
Atrophy and Hypertrophy, Agenesis, Dysgensis, Aplasia, Hypoplasia, Hyperplasia, Metaplasia, Dysplasia, Neoplasia, Anaplasia,.								
Cell cycle and cell types (stable, labile, permanent)								
Mechanisms controlling cell growth								
Classification systems of tumors.								
Characteristics of benign and malignant tumors								
Difference between Carcinoma and Sarcoma.								
Grading and staging system of tumors.								
Biology of tumor growth								
Process of carcinogenesis								
Host defense against tumors.								
Mechanism of local and distant spread.								
Local and systemic effects of tumors.								
Tumor markers used in the diagnosis and management of cancers.								
Common chemical, physical agents and viruses related to human cancer.								
Epidemiology of common cancers in Pakistan.								
Radiation and its effects on tissues.								
Cancer screening.								

Objectives	Strategy				Assessment			
Module 8: Immunology								
Antigen, antibody, epitope, hapten and adhesion molecules.								
Difference between innate and acquired immunity.								
Structure and function of major histocompatibility complex (MHC).								
Cytokines.								
Mechanism of humoral and cell medicated immunity.								
Hypersensitivity reactions, Type I, Type II, Type III and Type IV.								
Autograft, homograft, allograft and xenograft.								
Mechanism involved in allograft rejection and steps that can be taken to combat rejection.								
Classification of Immunodeficiency disorders								
Basis of autoimmunity.								
Tissue transplantation.								
Pathology and pathogenesis of AIDS.								
Lab diagnosis of immunological diseases.								

Objectives	Strategy				Assessment			
Module 9: BLOOD VESSELS & HEART								
Atherosclerosis: Etiology and pathogenesis, Early lesion, Late and complicated lesion, Vessels affected, Complications								
Monkeberg's medial calcific sclerosis								
Arteriolosclerosis.								
Hypertension: Classification, Causes of secondary hypertension, Vascular changes in hypertension.								
Common pathogenetic mechanisms of vasculitis.								
Aneurysm: Classification, Etiology.								
Atherosclerotic aneurysm: Pathogenesis, Type of vessel involved, Morphological & clinical features								
Varicose veins: Common sites, Predisposing factors, Clinical features.								
Benign and malignant tumours of blood vessels.								
Pathogenesis of ischemic heart disease.								
Myocardial infarction: Sequence of changes in myocardial infarction (M.I), Pattern of elevation of biochemical markers used in the evaluation of M.I, Complications.								
Causes of sudden cardiac death.								
Cor-pulmonale								
Predisposing disorders.								
Rheumatic Endocarditis								
Bacterial Endocarditis								
Etiology, Pathogenesis, Morphological & clinical features, Complications								
Myocarditis.								
Morphological and clinical features of myocarditis.								
Cardiomyopathy: Dilated, Hypertrophic, Restrictive.								
Pericarditis.								
Clinical and morphological feature of pericarditis.								
Primary & secondary cardiac tumours.								
Fallot's tetralogy								
Coarctation of aorta								

Objectives	Strategy				Assessment			
Module 10: HEMATOPOIETIC AND LYMPHOID SYSTEMS								
Stages in the formation of red blood cell and white blood cells.								
Normal values of red cell count, Hemoglobin level, Packed cell volume, MCH, MCV, MCHC, WBC Count, Platelet count,								
Anemia Classification, Causes, Etiology, Blood picture, clinical features and Lab Diagnosis of, Iron deficiency anemia, Megaloblastic anemia, Folate deficiency anemia, Vit. B12 deficiency anemia, Anemia of chronic disease, Nutritional deficiency anemia.								
Hereditary spherocytosis, Incidence, Etiology, Pathogenesis, Morphological and Clinical features.								
Thalassemia, Classification, Pathogenesis, Blood picture, Clinical and genetic features.								
Hemolytic anemia								
Glucose-6-phosphate dehyrogenase deficiency.								
Immunohemolytic anemia.								
Warm and cold antibodies immunohemolytic anemias.								
Aplastic anemia, Etiology, Pathogenesis, Clinical features, Lab. Diagnosis.								
Neutropenia								
Agranulocytosis								
Leukocytosis								
Infectious mononucleosis, Epidemiology, Morphology, Clinical features.								
Acute and chronic nonspecific lymphadenitis.								
Non-hodgkin's lymphoma, Classification (real and working formulations)								
Hodgkin's disease, Classification, Clinical stages, Etiology and pathogenesis								
Leukemia								
Prognostic factors of acute lymphoblastic and acute myeloblastic leukemias.								
Pathophysiology of chronic myeloid and chronic lymphocytic leukemias.								
Multiple myeloma, Etiology, Pathogenesis, Morphology, Clinical features								
Disseminated intravascular coagulation, Etiology, Pathogenesis, Clinical features, Laboratory diagnosis								
Causes of decreased production and decreased survival of platelets.								
Idiopathic & thrombotic thrombocytopenic purpura								

Objectives	Strategy				Assessment			
Module 10: HEMATOPOIETIC AND LYMPHOID SYSTEMS								
Value of following tests in the assessment of bleeding disorders								
Bleeding time, Clotting time, Platelets count, Platelet function test, Partial thromboplastin time, Prothrombin time, Mixing test studies								
Polycythemia, Etiology, Pathogenesis, Clinical significance, Lab. Diagnosis								
ABO and Rhesus blood groups								
Screening of Donors								
Hazards of blood transfusion and their prevention.								
Module 11: RESPIRATORY SYSTEM								
Micro-organisms causing upper respiratory tract infection.								
Etiology and clinical features of; Rhinitis, Nasal polyps, Acute pharyngitis, Acute tonsillitis, Acute bacterial epiglottis, Acute laryngitis, Pleural effusion, Hemothorax, Hydrothorax, Pleuritis, Pneumothorax, Chylothorax.								
Malignant & benign tumours of nasopharynx and larynx.								
Atelectasis, Classification, Pathogenesis								
Restrictive & obstructive lung disease								
Etiology pathogenesis, morphology & clinical features of; Asthma, Various types of emphysema, Chronic bronchitis, Bronchiectasis, Adult respiratory distress syndrome, Restrictive lung diseases, Sarcoidosis, Hypersensitivity pneumonitis, Idiopathic pulmonary fibrosis, Goodpasture's syndrome, Thromboemboli, Pulmonary infarction, Pulmonary hypertension and vascular sclerosis.								
Acute bacterial pneumonia.								
Micro-organisms causing atypical pneumonia.								
Etiology, pathogenesis & clinical features of; Tuberculosis of the lung, Pneumoconiosis								
Fungi (candida, pneumocystis carinii) causing lung infections.								
Bronchogenic carcinoma and mesothelioma, Classification, Etiology, Pathogenesis, Clinical features								

Objectives	Strategy				Assessment			
Module 12: THE ORAL CAVITY AND GASTROINTESTINAL TRACT								
Oral cavity: Leukoplakia, Oral cancer, Risk factors, Morphology, Clinical feature.								
Benign and malignant tumours of salivary glands.								
Pleomorphic adenoma, Clinical features, Morphology								
Esophagus: Predisposing factors of esophagitis, Carcinoma of the esophagus.								
Stomach: Etiology, pathogenesis, morphological and clinical features of								
Acute gastritis: Chronic gastritis, Peptic ulcer, Gastric carcinoma, Risk factors, Pathogenesis, Morphology								
Clinical features and diagnosis, Prognosis.								
Intestine: Etiology, pathogenesis, morphological and clinical features of, Hirschsprung's disease, Celiac sprue, Tropical sprue, Ischemic bowel disease, Crohn's disease, Ulcerative colitis.								
Acute appendicitis								
Major causes of intestinal obstruction.								
Clinico-pathological features of following diseases of intestine, Amebiasis, Tuberculosis, Typhoid								
Non-neoplastic polyps of intestine.								
Adenomas: Classification on the basis of epithelial architecture, Clinical and morphological features								
Colorectal carcinoma								
Classification, Etiology, Pathogenesis, Morphological and clinical features, Aster-Coller classifications of carcinoma of the colon and rectum,								
Carcinoid tumour								
Peak incidence, Most prevalent sites in the gut, Morphological features, Clinical features of carcinoid syndrome.								
Etiology, pathogenesis, morphological and clinical features of tumours of appendix.								
Liver and Biliary Tract: Liver, Pathway of bilirubin metabolism and its elimination from the body, Jaundice, Classification, Causes, Clinical features, Lab diagnosis, Intrahepatic and extrahepatic biliary obstruction.								

Objectives	Strategy				Assessment			
Module 12: THE ORAL CAVITY AND GASTROINTESTINAL TRACT								
Etiology, pathogenesis, morphology, clinical features and complication of; Hepatic failure, Cirrhosis,								
Viral hepatitis A,B,C,D and E								
Route of transmission, Incubation period, Clinical features.								
Potential outcome of acute infection.								
Carrier state, Acute and chronic hepatitis.								
Etiology, morphological and clinical features of liver abscess.								
Drugs and toxins causing hepatic injury								
Pathogenesis of alcohol liver disease.								
Morphological and clinical features of alcoholic hepatitis and cirrhosis.								
Classification, etiology, pathogenesis, morphological and clinical features of; Hemochromatosis, Secondary hemochromatosis, Wilson's disease, Alpha-1 antitrypsin deficiency, Neonatal hepatitis, Primary and secondary biliary cirrhosis, Hepatocellular carcinoma.								
Biliary tract: Epidemiology, Pathogenesis, Morphology, Clinical features								
Pathogenesis and risk factors of cholelithiasis.								
Morphological and clinical features of acute and chronic cholecystitis.								
Clinical and morphological features of gall bladder cancer. Pancreas, Acute and chronic pancreatitis, Etiology, Pathogenesis, Morphology, Clinical features.								
Clinical and morphological features of carcinoma of pancreas.								

Objectives	Strategy				Assessment			
Module 13: THE URINARY SYSTEM								
Etiology, pathogenesis, clinical features and complications of; Azotemia, Uremia, Acute renal failure, Chronic renal failure, Polycystic kidney disease (its Classification), Glomerulonephritis (its Classification), Nephrotic and nephritic syndrome, Acute pyelonephritis, Chronic pyelonephritis, Hydronephrosis.								
Pathogenesis and clinical course of acute tubular necrosis.								
Benign and malignant nephrosclerosis								
Characteristics of various types of renal stones								
Pathogenesis, clinical features and lab diagnosis of nephrolithiasis								
Epidemiology, morphology, clinical features and prognosis of Wilm's tumour								
Classification, Epidemiology, morphology, clinical features and prognosis of renal cell carcinoma.								
Etiology, morphology & clinical features of cystitis.								
Clinical features, etiology and morphology of transitional cell carcinoma of the urinary bladder.								
Module 14: MALE GENITAL SYSTEM								
Hypospadias								
Undescended testis								
Urethritis (Gonococcal, Non gonococcal): Etiology, Route of infection, Pathogenesis, Diagnosis								
Etiology, pathogenesis and natural history of; Prostatitis, Prostatic hyperplasia.								
Causes, pathogenesis and clinical features of scrotal swelling. Testicular adnexa, Varicocele, Hydrocele, Spermatocele, Testis and epididymis, Inflammation (Orchitis), Epididymitis.								
Causes, pathogenesis and relevant investigations of male inferitlity.								
Classification, pathogenesis, morphology, clinical features and prognosis of the tumours of the male genital tract (Prostate,Testis)								

Objectives	Strategy				Assessment			
Module 15: FEMALE GENITAL SYSTEM								
Causes, routes of infection & methods of diagnosis of sexually transmitted diseases.								
Route of infection, pathogenesis and Lab diagnosis of; Gonorrhea, Syphilis, Chlamydia, HPV, Herpes simplex, Trichomonas vaginalis.								
Cervical intraepithelial neoplasia								
Neoplasms of cervix								
Causes, pathogenesis and clinical features of dysfunctional uterine bleeding with special reference to endometrial hyperplasia,endometrial polyp and carcinoma.								
Etiology, clinical features and pathogenesis of; Adenomyosis, Endometriosis, Ectopic pregnancy, Toxemia of pregnancy.								
Classification, pathogenesis, morphology, clinical features and prognosis of the tumours of the female genital tract (uterus, ovary and Gestational trophoblastic tumours).								
Module 16: BREAST								
Etiology and causes of lump in the breast								
Etiology, Pathogenesis, Morphology and clinical features; Mastitis, Fibrocystic disease of the breast, Intraductal papilloma								
Benign tumours of the breast (Fibroadenoma and Phyllodes tumour)								
Gynaecomastia								
Carcinomas of the breast (Ductal and Lobular)								

Objectives	Strategy				Assessment			
Module 17: MUSCULOSKELETAL SYSTEM								
Pathogenesis and clinical features of ; Achondroplasia, Osteogenesis imperfecta, Osteoporosis.								
Acute and chronic osteomyelitis Common causative micro-organism, Common routes of spread, Complications.								
Common sites involved in tuberculous osteomyelitis								
Pathogenesis, morphological and clinical features of Paget's disease (osteitis deformans).								
Benign and malignant bone forming tumours.								
Common sites, morphological and clinical features of osteogenic sarcoma.								
Benign and malignant cartilaginous tumours.								
Chondrosarcoma: Peak incidence, Common sites of origin, Morphological and clinical features.								
Most frequent sites, clinical and morphological features of giant cell tumours of bone.								
Ewing's sarcoma: Peak incidence, Common sites of origin, Chromosomal abnormality, Morphological and clinical features.								
Pathogenesis, morphological and clinical features of osteoarthritis.								
Rheumatoid arthritis: Pathogenesis, Morphological and clinical features, Lab Diagnosis.								
Gout. Classification, Pathogenesis, Morphological and clinical features, Lab Diagnosis.								
Pathogenesis, morphological and clinical features of; Duchenne muscular dystrophy, Myotonic dystrophy, Congenital myopathies, Inflammatory myopathies, Myasthenia gravis.								
Lipoma and lipasarcoma.								
Rhabdomyosarcoma: Peak incidence, Histological variants, Frequent sites.								

Objectives	Strategy				Assessment			
Module 18: ENDOCRINE SYSTEM								
Pituitary, Causes of hyperpituitarism, Morphology and clinical features of, Pituitary adenomas, Acromegaly, Gigantism.								
Causes of hypopituitarism, Etiology, pathogenesis and clinical features of, Sheehan's syndrome, Dwarfism, Etiology, clinical features, pathogenesis and lab findings in inappropriate secretion of ADH.								
Adrenal Cortex and Medulla								
Adrenal cortical hyperfunction. (CUSHNG'S SYNDROME), Etiology, pathogenesis clinical features and lab diagnosis of;								
Conn's syndrome, Adrenogenital syndrome, Causes of hypofunction of adrenal cortex.								
Etiology, pathogenesis and clinical features of Addison's disease.								
Tumours of adrenal medulla and cortex.								
Clinical features and diagnosis of pheochromocytoma.								
Thyroid								
Etiology and clinical features of hyperthyroidism.								
Etiology and clinical features of hypothyroidism including Cretinism and Myxedema.								
Investigation / lab tests for diagnosis of thyroid dysfunction.								
Goiter and its types								
Etiology, pathogenesis and clinical features of diffuse and multinodular goiter.								
Causes of solitary thyroid nodule and its diagnostic approach.								
Thyroiditis: Types, Pathogenesis, Morphology, Clinical features								
Etiology, pathogenesis, morphology and clinical features of; Follicular adenoma, Papillary carcinoma, Follicular carcinoma, Medullary carcinoma, Undifferentiated.								
Types of MEN syndromes.								

Objectives	Strategy				Assessment			
Module 18: ENDOCRINE SYSTEM								
Parathyroid								
Etiology and clinical features of hyperparathyroidism and hypoparathyroidism.								
Primary, secondary and tertiary hyperparathyroidism.								
Calcium homeostasis								
Causes of hyper and hypocalcemia.								
SKIN, Macule, papule, nodule, plaque, vesicle, bulla, blister, putsule, scale,lichenification, excoriation, hyperkeratosis, parakeratosis, acanthosis,dyskeratosis, acantholysis, papillomatosis, lentiginous spongiosis.								
Morphological and clinical features of urticaria.								
Etiology, pathogenesis morphological and clinical features of; Eczematous dermatitis, Contact dermatitis, Atopic dermatitis, Photoeczematus eruptions, Primary irritant dermatitis, Erythema multiforme, Psoriasis, Pemphigus, Bullous pemphigoid.								
Premalignant epithelial lesions.								
Types of warts and their most frequent locations.								
Predisposing factors, morphology, clinical features and prognosis of;								
Squamous cell carcinoma, Basal cell carcinoma.								
Types, clinical and morphological features of; Nevocellular Nevi, Dysplastic nevi.								
Malignant melanoma: Classification, Frequent site of origin, Clinical and morphological features.								

Objectives	Strategy				Assessment			
Module 19: NERVOUS SYSTEM								
Clinico-pathological features of hydrocephalus.								
Cerebral edema (vasogenic & cytotoxic).								
Types of herniation of brain and their clinical significance.								
Intra-cranial hemorrhage.								
Etiologic agents, clinical and morphological features of; Acute purulent meningitis, Acute lymphocytic meningitis, Chronic meningitis, Brain abscess Tuberculosis meningitis, Viral encephalitis								
Clinico-pathological features of Guillain Barre syndrome.								
Polyneuropathies								
Toxic neuropathy								
Important intracranial tumours (astrocytoma,oligodendrogliomas, ependymoma, medulloblastoma and meningioma)								
Clinical significance of glial tumours.								
Frequent metastatic tumours to the brain								
Primary peripheral nerve sheath neoplasms								

Objectives	Strategy				Assessment			
Module 1: Concept of Health & Disease								
Concept of health								
Definition of health (Dimensions, physical, mental, social and spiritual).								
Spectrum of health								
Determinants of health. Responsibility for health								
Indicators of health								
Concept of disease. Concept of causation (all theories including ecological triad, agent, host & environmental factors).								
Spectrum of disease. Iceberg phenomenon.								
Natural history of disease. Levels of prevention.								
Disease elimination and eradication. Disease surveillance.								
Module 2: Introduction to Public Health and Health Systems in Pakistan								
Background and Concepts:								
Definitions and concepts in Public Health								
Development of Public Health in Pakistan.								
Economics and Health. Health Policy and planning in Pakistan.								
“Health for all”, background, concepts and progress.								
“Primary Health Care”: Concepts and progress.								
The National Disease Control programmes; policies, strategies and operations.								
Health System in Pakistan:								
The role of Federal and Provincial Governments in Health care.								
The District Health System, in the context of devolution.								
The Physician as a manager:								
Functions of manager, management of material, human and financial resources.								
Leadership and motivation.								
Partners in Health:								
The public and private sector.								
Nongovernmental Organizations and International Agencies.								
Resources for health. Community Mobilization.								

Objectives	Strategy				Assessment			
Module 3: Epidemiology and disease control								
General epidemiology and research methodology.								
Background and concepts, uses, basic measurements in epidemiology (morbidity, mortality, disability and fatality).								
Epidemiological methods (descriptive, analytic and experimental). epidemiological transition. Association and causation.								
Investigation of an outbreak or an epidemic.								
Screening for disease. Community diagnosis.								
Research and survey methodology.								
Introduction to qualitative research methodology.								
Module 4: Prevention and control of Infectious diseases								
Definitions to differentiate between:								
Infection, contamination, pollution, infestation								
Infectious disease, communicable disease, contagious disease								
Host, Immune and susceptible persons								
Sporadic, Endemic, Epidemic, Pandemic								
Epizootic, Exotic, Zoonosis								
Contact, fomites, Carriers, Insect Vectors, Reservoir of infection								
Incubation period, Infective period, Generation time								
Cross infection, Nosocomial infection, Opportunistic infections, Iatrogenic (Physician induced) disorders								
Surveillance, Eradication, Elimination.t								
Module 5: Dynamics of infections disease Transmission								
Reservoir and source of infection, Escape of organism, Mode of transmission, Entry into the body, Susceptible host, Immunity (different types of immunity and immunization)								

Objectives	Strategy				Assessment			
Module 6: Control of infection.								
Controlling the reservoir-notification, early diagnosis treatment, isolation, quarantine, disinfections.								
Interruption of transmission.								
The susceptible host (active & passive immunization,Combined Chemoprophylaxis, Nonspecific measures).								
Health advice to travelers.								
National case management guide lines.								
Module 7: Epidemiology, control and prevention of infectious diseases of Public Health importance.								
Diseases transmitted through inhalation								
Diseases transmitted through faeco-oral route								
Arthropod borne diseases.								
Diseases of animals conveyed to man.								
Diseases due to direct contact								
Module 8: Epidemiology, control and prevention of non-infectious diseases of Public Health importance.								
Hypertension,								
Coronary heart disease								
Cancers,								
Injuries								
Diabetes mellitus								
Obesity								
Rheumatic fever and heart disease.								

Objectives	Strategy				Assessment			
Module 9: Biostatistics								
Concepts and uses								
Data and its types								
Rates, ratios and proportions								
Crude, specific and standardized rates.								
Collection and registration of vital events in Pakistan								
Sources of health related statistics								
Measures of central tendency, (Mean, Median, Mode),								
Measures of dispersion (Range, Standard deviation, Standard error)								
Normal curve								
Methods of data presentation (tables, graphs & diagrams).								
Interpretation of data (t-test and Chi-square test)								
Sampling and its various techniques.								
Health Management Information System								
Module 10: Demography and Population dynamics								
Concept, demographic principles and demographic processes								
Census, definition, methodology, types.								
Determinants of fertility, mortality								
Population pyramid, and its interpretation.								
Demographic transition, demographic trap and its public health importance.								
Demographic and social implication of high population growth.								
Social mobilization								
Urbanization								

Objectives	Strategy				Assessment			
Module 11: Food and Nutrition								
Concepts (nutrition, nutrient, food, diet).								
Food groups and their functions.								
Role of fiber in diet.								
Balanced diet.								
Malnutrition at all stages of life its types causes and prevention.								
Common nutritional problem of public health importance and their prevention and control.								
Dietary requirements of normal human being at different stages of life.								
Food hygiene, pasteurization, fortification, additives & adulteration and preservation								
Food poisoning								
Assessment of nutritional status of a community.								
Module 12: Reproductive and child health								
Safe mother hood, and its components. (ante-natal, post-natal, family planning & emergency obstetric care).								
Maternal mortality, causes and prevention.								
Infant care: growth and development. Breast feeding,								
Common causes of morbidity and mortality, their prevention And control.								
Child care: health promotion strategies. Common ailments, home accidents, child mortality prevention .								
Strategic approaches of integrated management of childhood illness (IMCI).								
Adolescent health								
Reproductive tract infections: guidelines for management of STD's.								
Module 13: Health of school age children.								
Role of teachers and role of doctor in maintenance of health								
Procedures for determining health status of school age children.								
Common health problems of school children.								

Objectives	Strategy				Assessment			
Module 14: Environmental Health Sciences								
Air: Composition of air. Causes of Air pollution. Purification of Air. Diseases caused by impurities in air and their prevention.								
Water: Sources of Water. Daily water requirement. Water pollution its causes and prevention. Purification of Water.								
Water quality Standards. Diseases due to polluted water.								
Waste disposal: contents, hazards and safety measures for solid and liquid; domestic, industrial and hospital waste.								
Climate: Climate and weather. Global environmental concerns								
Green house effect, depletion of ozone layer, acid rains.								
Effect of extremes of temperature, humidity, atmospheric pressure on human health and their prevention.								
Radiation: Sources, types, causes , hazards and prevention.								
Healthful housing. Urban and rural slums. Refugee camps and hostels.								
Noise : Definition, causes, acceptance level, hazards and control.								
Module 15: Occupational Health								
Concepts, of occupational health, occupational medicine and occupational hygiene.								
Ergonomics and its importance.								
Occupational hazards. Principles of control.								
General principles of occupational disease prevention.								
Organization of occupational health services.								
Health Insurance and Social Security Schemes Arthropods and their public health importance								
Common arthropod borne diseases								
Control of arthropods of medical importance.								
Insecticides and their public health importance								

Objectives	Strategy				Assessment			
Module 16: Arthropods and their public health importance								
Common arthropod borne diseases								
Control of arthropods of medical importance.								
Insecticides and their public health importance								
Module 17: Prevention and control of parasitic diseases of public health importance								
Snake Bites: personal protection and management								
Module 18: Mental Health								
Concept. Common mental health problems, their causes, prevention and control.								
Juvenile delinquency								
Module 19: Behavioral Sciences and lifestyle								
Concept, attitudes, health and illness behaviour.								
Drug abuse, addiction and smoking								
Child abuse and child labour								
Role of physical exercise in health and disease.								
Module 20: Information, Education and Communication (IEC)								
Concept. Aims and objectives								
Approaches used in public health								
Contents, principles and stages of health education								
Communication methods, barriers and skills in health education								
Planning, organizing and evaluating a health education programme								
Social marketing								
Module 21: Disaster								
Definition, classification, (natural disasters like earthquake, floods.								
Epidemic of communicable diseases, man made disasters.								
Accidents, thermo nuclear warfare, causes and prevention),								
Magnitude and effects of disaster and public health consequences								
Disaster: preparedness and management								

Objectives	Strategy				Assessment			
Module 22: Medical Ethics								
Background concepts and components								
National recommended guidelines.								
Module 23: PRACTICAL AND COMMUNITY BASED TRAINING								
Student should have practical experience in questionnaire development, data collection, compilation, presentation, analysis and report writing.								

Objectives	Strategy				Assessment			
Module 1: Nose								
Anatomy and physiology								
History taking and examination								
Module 2: Diseases of external nose								
Congenital lesions, choanal atresia, meningiocoele,encephalocoele, trauma, cut nose, fractures, external deformities.								
Module 3: Diseases of septum								
Epistaxis								
DNS								
Haematoma								
Septal abscess								
Perforation								
Module 4: Rhinitis								
Allergic								
Atrophic								
Hyper-trophic								
Foreign bodies.								
V.M.R.								
Module 5: Polyps								
Mucous								
Ethmoidal								
Antrochoanal								
Bleeding polypus								
Module 6: Foreign body nose								
Rhinolith								
Maggots								

Objectives	Strategy				Assessment			
Module 7: Sinusitis								
Acute sinusitis								
Chronic sinusitis, complications								
Fungal infection of nose and paranasal sinuses								
CSF rhinorhea								
Module 8: Tumours								
Basal cell carcinoma								
Squamous cell carcinoma								
Pappiloma								
Osteoma								
Headache and its ent causes								
Module 9: BUCCAL CAVITY, ORAL CAVITY, OROPHARYNX								
Anatomy and physiology								
History and examination								
ORAL CAVITY ULCERS: Traumatic, Aphthus, Vincents angina, Agranulocytic, Tuberculous, Maligant uclers, Thrush, Leukoplakia, Behcet's disease, Ulcerative lesions of oral cavity,								
OROPHARYNX								
Acute tonsillitis, Chronic tonsillitis, Peri tonsillitis and abscess, Diphtheria, Differential diagnosis of white patch on the tonsil, Tonsil/oral cavity								
Tumours of tonsil								
Retro-pharyngeal abscess								
Pharyngeal abscess acute/chronic								
Sleep apnea syndrome								
AIDS								
Ludwig's angina								

Objectives	Strategy				Assessment			
Module 10: LARYNX								
Anatomy, Physiology								
History, Examination								
Glottic stenosis/larynogocoele, Laryngomalacia								
Truama, Foreign Body & Infections of Larynx								
Supraglottitis, Acute laryngitis								
Laryngotracheobronchitis, Diphtheria								
Chronic laryngitis, Tuberculosis								
Syphilis, Leprosy								
Non specific chronic laryngitis								
Vocal nodules, Vocal cord paralysis, Functional aphonia								
Tumuors								
Papilloma laryrnx								
Polyp								
Carcinoma larynx								
TNM classification								
Tracheostomy, Indications, Contra indications, Complication, Operation steps, Post op care								

Objectives	Strategy				Assessment			
Module 11: EAR								
Anatomy and physiology								
History and examination								
Tuning fork tests. Pure tone audiometery/impedance audio metery								
Pre auricular sinus								
Deafness, Pain in the ear								
External ear, Perichondritis, Trauma to pinna/haematoma, Wax ear, Foreign body ear, Hyper ostosis, Neoplasia, Boil ear, Fungus, Acute diffuse otitis externa, Malignant otitis externa, Myringitis bulliosa, Traumatic rupture								
Middle ear								
Acute otitis media								
Acute necrotising otitis media								
Serous otitis media								
Chronic otitis media (i Tubo tumpanic / ii Mucosal disease / iii Attico antral)								
Complications Of Otitis Media / Mastoiditis								
Oto toxicity								
Acustic trauma								
Trumatic perforation of tympanic membrane.								
Deaf child								
Speech therapy								
Oto sclerosis								
Vertigo, Meniere's disease								
Facial nerve paralysis								
Eustachean tube dysfunction								

Objectives	Strategy				Assessment			
Module 12: HEAD & NECK								
Cleft palate, Hare lip								
Thyroglossal cyst / sinus, Pre auricular cyst / sinus, D/D of mass neck								
Lesions of salivary glands								
Module 13: CLINICAL SKILLS								
Demonstrate the use of the head mirror for adequate illumination of the nasal cavity								
Examine the oropharynx and the neck								
Examine Larynx by indirect laryngoscopy								
Examination of postnasal space by posterior rhinoscopy.								
SPECIAL SKILLS:								
Use the tongue blade to aid inspection of the buccal/cavity.								
Use the finger palpation examination of the oral cavity and tongue								
Palpate the neck to assess the lymph-nodes and salivary glands in the neck.								
Examination of cranial nerves								
Identify structures (of the neck, sinuses and ear) on X-ray (MRI, CT Scan)								
Demonstrate the appropriate use of nasal speculum								
Demonstrate the use of otoscope to aid in examination of the external auditory canal and the tympanic membrane.								
Learn pneumatic otoscopy. (Use of Seigle's speculum)								
Demonstrate the use of tuning fork and interpret the findings								
Interpret pure tone and speech audiometry								
Syringing of ear.								
Removal of wax from ear								
Anterior nasal packing								

Objectives	Strategy				Assessment			
Module 14: INSTRUMENTS								
Ear instruments like myringotome and ear speculum								
Walsham's Forceps, Ashe's Forceps								
Trocar and Cannula								
Nasal Speculum								
Freer elevator								
Suction Tube								
Lucl's forceps								
Tilly Nasal Dressing Forceps								
Bayonet Nasal Forces								
Myle's Retrograde Perforator.								
Nasal Snare								
Balenger Swivel Knife								
Eustachean Catheter								
Sinus forceps								
Endotracheal tube, cuffed, non-cuffed								
Mcgill forceps								
Tracheostomy tubes								
Tracheal dilator								
Retractors								
Crecoid hook								
Endoscopes								
Laryngoscopes, Bronchoscopes, Oesophagoscopes, Nasopharyngoscope (Rigid/flexible)								
Adenoid curette								
Boyle Davis mouth gag								
Tonsil holding forceps								
Tonsilar artety forceps								
Tonsil snare								
Knot pusher								

Objectives	Strategy				Assessment			
Module 1: Anatomy								
Basic Anatomy of the Eyeball and Orbit								
Functions of the Eyeball and Orbit								
Module 2: Orbit								
Orbital Cellulitis								
Proptosis								
Module 3: Lids								
Blepharitis								
Stye								
Chalazion								
Trichiasis								
Entropion								
Ectropion								
Ptosis								
Common Tumors								
Module 4: Conjunctiva								
Infective and Allergic Conjunctivitis								
Pterygium.								
Module 5: Cornea								
Corneal Ulcers								
Risk factors								
Complications and its management								
Module 6: Sclera								
Episcleritis and Scleritis								
Module 7: Pupil								
Pupillary reflexes and their common abnormalities								
Module 8: Lacrimal Apparatus								
Composition and function of Tear film, Dry Eye,								
Excessive watering (Epiphora), Dacryocystitis (Acute & chronic).								

Objectives	Strategy				Assessment			
Module 9: Therapeutics								
Drugs used in common ophthalmic conditions								
Module 10: Vitamin "A"								
Ocular manifestation of vitamin A deficiency and its management.								
Module 11: Uveal Tract								
Uveitis, and its differential diagnosis from other causes of the Red Eye.								
Module 12: Lens								
Classification of cataract,								
Congenital Cataract (lamellar, signs and symptoms and management), Rubella syndrome, Acquired Cataract (senile, traumatic, drug induced), cataract due to systemic diseases (clinical picture and management including visual rehabilitation).								
Module 13: Glaucoma								
Physiology of Aqueous humor formation and its circulation.								
Measurement of IOP								
Definition & classification of glaucoma								
Primary open angle and closed angle glaucoma								
Secondary glaucoma due to hyper-mature cataract and uveitis. Principles of medical and surgical management of glaucoma.								
Module 14: Vitro-Retina								
Posterior vitreous detachment, primary retinal detachment (common presentation and principle of management)								
Diabetic Retinopathy, Hypertensive Retinopathy,								
Retinitis Pigmentonsa, Retinoblastoma.								
Module 15: Optic Nerve								
Papilloedema								
Optic Neuritis (Papillitis and Retrobulbar Neuritis)								
Optic Atrophy								

Objectives	Strategy				Assessment			
Module 16: Visual Pathway								
Introduction to Visual Field defects in the lesions of Chiasma and visual Pathway.								
Module 17: Injuries								
Extraocular Foreign Bodies, Closed globe injuries,Open globe injuries with or without retained Intra ocular foreign bodies								
Burns and Chemical Injuries								
Sympathetic Ophthalmitis.								
Module 18: Squint and Amblyopia								
Definition, Classification and Principle of Management.								
Module 19: Errors of Refraction								
Introduction to Optical System of Normal Eye								
Emetropia, Myopia, Hypermetropia, Astigmatism, Presbyopia, Aphakia,								
Pseudophakia, Anisometropia and Amblyopia.								
Module 20: Clinical Skills								
History Taking								
Examination								
Visual Acuity, for distance and near, Use of a pinhole								
Examination of Adnexa and anterior segment of the eye.								
Eversion of the upper Eye Lid and Lacrimal regurgitation Test								
Detection of the Deviated Eye, Ocular Movement, Pupillary Reflexes (Afferant Pupillary defects),								
Measurement of Intra ocular pressure, Palpation Assessment, Schiotz Tonometer,								
Distant Direct Ophthalmascopy for Identification of defects in Ocular Media								
Direct Ophthalmascopy with emphasis on disc and its abnormalities, Swollen disc, cup disc and pale disc.								
Confrontation test for field of vision, Familiarization with Retinoscopy, Indirect Ophthalmascopy, Slit Lamp and its Uses, Visual Fields and Use of Laser in Ophthalmology								
Procedures								
Irrigation of eye, Instillation of eye drops, Staining for corneal ulcer, Removal of superficial foreign bodies, Rational use of topical anaesthesia, Preparation for operation and post operative management								

Objectives	Strategy				Assessment			
Module-1: CARDIOLOGY								
Rheumatic fever and infective endocarditis								
Valvular heart diseases, Mitral valve, Aortic valve, Ischaemic heart disease. Angina, Myocardial infarction								
Cardiac arrhythmias, Atrial fibrillation, Ventricular tachycardia, Premature atrial and ventricular beats.								
Heart failure, Left ventricular failure, Congestive cardiac failure, Cor pulmonale.								
Congenital heart diseases (brief), Cyanotic/acyanotic heart diseases, Fallot's tetralogy, Atrial septal defect, Ventricular septal defect, Patent ductus arteriosus								
Cardiomyopathies, Pericardial diseases, Constrictive pericarditis, Pericardial diseases, Pericardial effusion, A therosclerosis/arteriosclerosis, Hypertension.								
Peripheral vascular disease, Symptoms and signs, ArteriosclerosiS, Acute & chronic ischaemia of the leg, Aneurysms, Buerger's disease, Raynaud's disease, Variocose veins, Venous thrombosis.								
Investigations, Electrocardiography, Xray chest, Echocardiography, Thallium Scan, Stress Testing, Holter And Angiography Etc.								
Understand the Symptomatology to reach the Differential Diagnosis of Palpitation.								
Understand the Symptomatology to reach the Differential Diagnosis of breathlessness.								
Understand the Symptomatology to reach the Differential Diagnosis of chest pain.								
Understand the Symptomatology to reach the Differential Diagnosis of raised JVP.								
Understand the Symptomatology to reach the Differential Diagnosis of jaundice etc.								
Can adequately take history of CVS patient.								
Can perform general physical examination.								
Can perform Inspection, palpation of precordium,								
Percussion, auscultation of precordium – mitral, tricuspid, aortic, pulmonary areas.								
Can interpret related radiological and laboratory investigations.								
Can prescribe general medication and medicine for CVS diseases.								
Has observed ECG, X-ray, Electroconversion therapy, Echocardiography.								
Observe pericardial effusion and has learned thrombolytic therapy, heparinisation/anticoagulation therapy and control, anti- platelet therapy, nitrates infusion, digitalization, treatment of acute pulmonary edema, o2 therapy.								
Understands Cardiac monitoring, Basics of ETT								

Objectives	Strategy				Assessment			
Module-2: PULMONOLOGY								
Asthma.								
Environmental lung diseases/occupational, Asbestosis, Silicosis, Bagassosis, Pneumoconiosis, Byssinosis, , Farmer's lung								
Pneumonia, Community acquired, Nosocomial, Lobar and bronchopneumonia.								
Adult respiratory distress syndrome.								
Acute respiratory failure.								
Mechanical ventilation.								
Bronchiectasis.								
Chronic obstructive airway diseases, Chronic bronchitis, Emphysema.								
Interstitial lung diseases.								
Pulmonary thromboembolism								
Acute corpulmonale.								
Type-I and type-II respiratory failure								
Pleural effusion.								
Pneumothorax.								
Tuberculosis								
Tumors of the lung								
Disorders of chest wall and pleura								
Chest trauma								
Deformities of the rib cage								
Dry pleurisy, pleural effusion, empyema, pneumothorax.								
Basics of pulmonary function tests.								
Imaging in pulmonary diseases/investigations								

Objectives	Strategy				Assessment			
Module-2: PULMONOLOGY								
Understand the Symptomatology to reach the Differential Diagnosis Breathlessness.								
Understand the Symptomatology to reach the Differential Diagnosis Wheezing.								
Understand the Symptomatology to reach the Differential Diagnosis Haemoptysis.								
Understand the Symptomatology to reach the Differential Diagnosis Orthopnoea.								
Understand the Symptomatology to reach the Differential Paroxysmal nocturnal dyspnoea (PND)								
Understand the Symptomatology to reach the Differential Pain in calf on walking.								
Understand the Symptomatology to reach the Differential Undue coldness, redness or blueness of extremities.								
Understand the Symptomatology to reach the Differential Chest pain.								
Understand the Symptomatology to reach the Differential Cough/expectoration/sputum.								
Can performe examiantion of chest.								
Can interpret of related radiological and laboratory investigations and pulmonary function test.								
Can expline O_2 therapy, indications,complications.								
Has observe pleural aspiration, Endotracheal suction, Pleural biopsy, FNA biopsy, Under water seas aspiration, bronchoscopy.								
Can manage respiratory failure.								
Module-3: DERMATOLOGY								
Anatomy, physiology of skin related to clinical dermatology								
Infestations: scabies, pediculosis.								
Bacterial and mycobacterial infections								
Fungal and viral diseases.								
Acne vulgaris, Eczemas, Psoriasis, Lichen planu, Bullous disorders, Pigmentary disorders, Disorders of nails, Disorders of hairs, Sexually transmitted diseases.								
Can take adequate clinical history in dermatology.								
Can perform clinical examination of various skin lesions.								
Can perform Interpretation of related radiological and laboratory investigations.								
Can perform General medication and prescription writing in Dermatology.								
Observe scraping for fungus, Use of magnifying glass, Observe skin biopsy, Use of Wood's lamp.								

Objectives	Strategy				Assessment			
Module-4: Neurology and Central Nervous System								
Infections and inflammatory lesions, Meningitis, Bacterial, Tuberculous, Viral etc.								
Brain abscess, Encephalitis, Hydrocephalus, Epilepsy and other convulsive disorders.								
Cerebrovascular diseases (stroke), Ischemic, Embolism, Infarction, Haemorrhage,								
Intra-cerebral, Subarachnoid, Dementia and Alzheimer's disease.								
Parkinson's disease and other movement disorders, Motor neuron disease, Multiple sclerosis, Cranial nerve disorders.								
Transient mono-ocular blindness (amaurosis fugax), Trigeminal neuralgia, Facial palsy (Bell's), Vertigo, nystagmus.								
Spinal cord disorders, Spinal cord compression, Hemiplegia, paraplegia, quadriplegia, Myelitis, Spondylosis, Syringomyelia and syringobulbia.								
Peripheral nerve disorders, Peripheral polyneuropathy, Gullian Barry syndrome, Mononeuritis multiplex.								
Space occupying lesions of brain and spinal cord, Muscular dystrophies, Myopathies, myasthenia gravis.								
Can take adequate clinical history in CNS dermatology.								
Can perform clinical examination of nervous system.								
Can perform Interpretation of related radiological and laboratory investigations.								
Can perform General medication and prescription writing in Neurology.								
Will observe Lumber puncture.								
Module-5: ALIMENTARY SYSTEM								
Oral cavity, Infections and inflammatory disorders, Benign and malignant diseases.								
Esophagus, Dysphagia with special reference to, Ca oesophagus, GERD, Achalasia								
Candiasis of oral cavity and oesophagus.								
Stomach, Gastritis, Peptic ulcer, Intestines, Malabsorption syndromes, Tropical sprue, Coeliac disease, Inflammatory bowel diseases, Ulcerative colitis, Crohn's disease.								
Irritable bowel syndrome (IBS), Liver, Ascites, Jaundice, Congenital hyperbilirubinaemia.								
Gilbert syndrome, Dubin Johnson syndrome, Rotor syndromes, Haemolytic, Obstructive.								
Hepatitis, Viral, acute and chronic, Toxic, Drugs, Auto immune hepatitis, Cirrhosis of liver.								
Hepatic encephalopathy, Carcinoma liver and transplant, Acute and chronic pancreatitis, Upper GI bleeding, Lower GI bleeding, Drugs contraindicated in liver diseases.								

Objectives	Strategy				Assessment			
Module-4: Neurology and Central Nervous System								
Can take adequate clinical history in vomiting, diarrhoea, pain abdomen, constipation, haematemesis, melena, dyspepsia, distension.								
Can perform clinical examination of GIT.								
Can perform Interpretation of related radiological and laboratory investigations.								
Can perform General medication and prescription writing in GIT diseases.								
Will observe N/G tube passing and feeding.								
Will observe aspiration of peritoneal fluids.								
Will observe endoscopies, upper and lower GIT.								
Can prepare a patient for GI endoscopies.								
Module-6: KIDNEYS AND URINARY SYSTEM								
Acute renal failure, Chronic renal failure, Nephrotic syndrome, Nephritic syndrome,								
Urinary tract infections, Infections of the kidneys, Infections of the lower urinary tract.								
Inflammatory lesions of the kidneys								
Introduction to dialysis & renal transplant								
Drugs causing renal disease (brief).								
Analgesic nephropathy, Lead, uric acid, hypercalcemia, radiation & hypersensitivity, Nephropathy, Drugs contra indicated in renal insufficiency, Drugs to be used with caution in renal disease, Polycystic kidneys, Renal vascular disorders, Renal artery stenosis,								
Renal vein thrombosis, Tumours, Hemolytic uremic syndrome, Prostatic diseases.								
Can take adequate clinical history in lumbar pain, anuria, oliguria, hematuria, dysuria, urgency/ frequency of micturition, pyuria, urinary retention, nocturia, urinary incontinence, pelvic pain.								
Can perform clinical examination of abdomen and lumber area.								
Can perform Interpretation of related radiological and laboratory investigations.								
Can perform General medication and prescription writing in Urinary trace diseases.								
Module-7: ENDOCRINOLOGY								
Anterior pituitary, Growth hormone disorders, Acromegaly, Gigantism, Short stature,								
Infertility, Diseases of hypothalamus and posterior pituitary, Empty sella syndrome, Diabetes insipidus, Syndrome of inappropriate ADH secretion (SIADH), Thyroid gland, Hyperthyroidism (thyrotoxicosis), Hypothyroidism (myxedema, cretinism), Inflammatory lesions, Benign and malignant tumors, Adrenal Gland.								

Objectives	Strategy				Assessment			
Module-7: ENDOCRINOLOGY								
Cushing Syndrome, Aldosteronism Primary/Secondary, Hirsutism, Addison's disease, Acute Addisonian crisis, Inflammatory lesions, Adrenocortical tumors including Pheochromocytoma, Endocrine Pancreas, Diabetes mellitus and hypoglycaemic states, Other associated endocrine disorders,								
Testes, Sexual precocity, Heterosexual precocity, Gynaecomastia, Inflammations, Tumours, Multiple endocrine neoplasia, Type I, Type II.								
Can take adequate clinical history and correlate with a specific diagnosis.								
Can perform clinical examination of thyroid gland, male and female genital organs etc.								
Can perform Interpretation of related radiological and laboratory investigations.								
Can perform General medication and prescription writing in endocrinology.								
Module 8: RHEUMATOLOGY								
Osteoarthritis, Osteoporosis, Rheumatoid arthiritis and related arthropathies.								
Paget's disease of the bone, Osteopetrosis (marble bone disease), Multiple myeloma.								
Multi-System Immunological Diseases.								
Systemic lupus erythematosis (SLE), Serum sickness, Systemic sclerosis (scleroderma).								
Mixed connective tissue diseases (brief), Sjogren's syndrome (brief). Ankylosing spondylitis.								
Bechet's syndrome (brief).								
Vasculitis syndromes (brief), Anaphylactoid purpura, Polyarteritis nodosa, Hpersensitivity vasculitis, Wegner's granulomatosis.								
Temporal arteritis, Takayasu's arteritis.								
Thromboangitis obliterans (Burger's disease)								
Sarcoidosis (brief).								
Can take adequate clinical history and correlate with a specific diagnosis.								
Can perform clinical examination of bones, joints, skin and other organs.								
Can perform Interpretation of related radiological and laboratory investigations.								
Can perform General medication and prescription writing in rheumatology.								

Objectives	Strategy				Assessment			
Module 9: METABOLIC DISORDERS								
Hyperlipidemia, Hemochromatosis, Porphyrias, Wilson's disease, Gout and hypercalcemia, Storage diseases, Lipid.								
Leukodystrophies, Niemann pick disease.								
Gaucher's disease, Glycogen, Fabry's disease, Hereditary connective tissue disorders, Osteogenesis imperfecta.								
Ehler's danlos syndrome, Chondrodysplasias.								
Marfan syndrome, Alport syndrome.								
Disorders of amino acid metabolism and storage, Homocystinuria, Alkaptonuria, Hartnup disease, Renal glycosuria								
Can take adequate clinical history and correlate with a specific diagnosis.								
Can perform clinical examination of bones, joints, skin and other organs.								
Can perform Interpretation of related radiological and laboratory investigations.								
Can perform General medication and prescription writing in metabolic diseases.								
Module-10: INFECTIOUS DISEASES								
Clinical syndromes, Sepsis and septic shock, Meningococcaemia.								
Acute infectious diarrhoeal diseases and bacterial food poisoning, Hospital acquired infections.								
Common disease syndromes caused by the following bacteria and their drug therapy,								
Pneumococci, Staphylococci, Streptococci, Hemophilis influenzae, Shigella, Gonococci, Pseudomonas. Following diseases in detail, Tetanus, Enteric fever/salmonellosis, Cholera, Tuberculosis, Leprosy, Amoebiasis/giardiasis/trichomoniasis, Malaria, AIDS, Rabies, Infectious mononucleosis. Helminthic infestations, Ascariasis, Hookworm, Whipworm (trichuriasis), Threadworm (entrobiasis), Taenia (tapeworm), Hydatid diseases.								
Can take adequate clinical history and correlate with a specific diagnosis.								
Can perform examination and assessment of the pattern of fever, involvement of organ systems and any positive findings.								
Can perform Interpretation of related radiological and laboratory investigations.								
Can perform General medication and prescription writing in infectious diseases.								

Objectives	Strategy				Assessment			
Module-11: HAEMATOLOGY								
Anaemias, Classification, Iron deficiency, Megaloblastic, B-12 deficiency, Folic acid deficiency, Anaemia of chronic disorder. Haemolytic anaemia, Hereditary, Acquired, Intra-corpuscular, Extra-corpuscular.								
Aplastic anemia Haemoglobinopathies.								
Sickle cell syndromes								
Thalassaemias Myeloproliferative diseases.								
Chronic myeloid leukemia (CML)								
Polycythemia vera, Myelofibrosis, Essential thrombocytosis, Leukemias, Acute, Chronic, Lymphomos, Non-Hodgkin's, Hodgkin's.								
Blood groups and blood transfusion. Bone marrow transplantation. Disorders of haemostasis.								
Thrombocytopenia								
Idiopathic thrombocytopenic purpura (ITP)								
Von Willebrand's disease, Vessel wall disorders, Disorders of coagulation, Haemophilia, Vitamin K deficiency.								
Disseminated intravascular coagulation (DIC). Anticoagulants Therapy								
Heparin, Oral (warfarin etc.), Vit. K infusion, Antiplatelet drugs.								
Can take adequate clinical history and correlate with a specific diagnosis.								
Can perform examination pallor, cyanosis, jaundice, clubbing, koilonychia, lymph nodes, edema, pulse, cyanosis, fever, headache, anorexia, weight loss, pain, facial swelling etc.								
Can perform Interpretation of related radiological and laboratory investigations.								
Can perform General medication and prescription writing in infectious Haematology.								
Can peform Injection I/V, I/M, S/C, intradermal.								
Can collect samples of blood/blood film preparation.								
Can perform I/V lines/fluids/blood/blood products, direct branula, cutdown, CVP etc.								
Will observe bone marrow aspiration/ trephine.								

Objectives	Strategy				Assessment			
Module-12: PSYCHIATRY								
Mood disorders, Major depressive episodes, Unipolar, Bipolar, Dysthymic, Atypical, Maniac episodes, Anxiety disorders, Acute anxiety states, Panic disorders.								
Generalized anxiety disorders.								
Psychic Traumatic disorders, Obsessive-compulsive disorders.								
Phobic disorders, Schizophrenia, Alcoholism, Addiction.								
Psychosexual disorders in men and women.								
Can take adequate clinical history and correlate with a specific diagnosis.								
Can do counseling and psychoanalysis especially in patients with suicidal and homicidal attitude. Can perform Interpretation of related radiological and laboratory investigations.								
Can perform General medication and prescription writing in psychiatry.								
Module-13: MISCELLANEOUS AND EMERGENCIES								
Heat stroke								
Snake bite								
Electric shock								
Poisoning etc.								

Modules	Objectives	Instructional strategy				Assessment			
		Lecture	Ward	SGD	skill	MCQ	SEQ	OSPE	SC & LC
Module 1 Wounds & Surgical Infections	To explain normal healing and factors affecting	••				••	••		
	To describe management of wounds		••	••		••	••		
	To identify types and classification of wounds		••			••	••		
	To discuss abnormalities of healing	••				••	••		
	To differentiate between acute and chronic wounds	••						••	••
	To perform clinical assessment of wound		••						••
	To describe surgical site infection and types	••				••	••		
	To explain the common surgical infections	••				••	••		
	To discuss the indications and choice of antibiotics	••		••		••	••		
	To appreciate the importance of asepsis and antisepsis	••		••		••	••		
	To define sepsis, SIRS and bacteremia					••	••		
	To describe the management of Surgical site infection		••	••		••	••	••	
Module 2 Surgical Physiology	To describe metabolic response to injury	••				••	••		
	To explain changes in physiology due to surgical trauma	••				••	••		
	To describe pathophysiology of shock	••				••	••		
	To identify different types of shock	••	••			••	••		
	To describe principles & priorities of resuscitation in shock	••				••	••		
	To describe use of blood and blood products	••				••	••	••	
	To discuss benefits and risks of blood transfusion	••				••	••	••	
	To describe fluid and electrolyte requirement and therapy	••				••	••		
	To explain nutritional assessment of surgical patient	••	••			••	••		
	To explain different methods of nutritional support	••		••		••	••		
	To perform IV access		••		••			••	
Module 3 Critical care anesthesia	To describe preoperative preparation of surgery	••				••	••		
	To explain techniques of anesthesia	••				••	••		
	To demonstrate techniques for airway maintenance				••			••	
	To explain methods of pain management	••				••	••		
	To discuss pharmacology of anesthetic drugs	••				••	••		
	To describe intraoperative and post-operative care			••		••	••		
	To describe spectrum of Day Surgery	••							
Module 4 Diagnostics and surgical technology	To describe principles of different imaging	••				••	••	••	
	To discuss merits and demerits of different imaging	••				••	••		
	To explain principles of radiation protection	••				••	••		
	To explain principles of microscopic diagnosis	••				••	••		
	To discuss merits and demerits of biopsy techniques	••		••	••	••	••		
	To explain tumor markers and their uses	••				••	••		
	To describe basics of endoscopy & MIS	••				••	••		

Modules	Objectives	Instructional strategy				Assessment			
		Lecture	Ward	SGD	Skill	MCQ	SEQ	OSPE	SC & LC
Module 5 Principles of Oncology	To explain biological nature and spread of cancer	••				••	••		
	To describe principles of staging and grading	••	••			••	••	••	
	To discuss the importance of tumor markers	••				••	••		
	To describe principles of surgical treatment	••		••		••	••		
	Explain principles of non-surgical treatment of cancer	••				••	••		
	To discuss palliative care and end of life care	••		••		••	••		
Module 6 Skin and soft Tissue (plastic Surgery)	Explain various benign skin and subcutaneous tumors	••				••	••		••
	To discuss management of malignant skin tumors	••				••	••	••	••
	To demonstrate how to assess burn patients		••	••		••	••		
	To describe calculation & quality of IV fluids in burns		••	••		••	••		
	Explain management of burn patient & complications	••				••	••		
	To examine lumps and ulcers		••		••			••	••
	describe pathophysiology of burn	••				••	••		
	To discuss various skin grafts and their use	••				••	••		
	To describe principles and uses of flaps	••				••	••	••	
	To explain steps of reconstruction ladder	••		••		••	••		
Module 7 Head & neck and thyroid diseases	Explain the triangles and zones of neck	••				••	••		
	Describe salivary gland diseases	••				••	••		
	Assess patients with thyroid swelling	••				••	••		••
	Plan management of thyroid diseases		••	••		••	••		••
	Discuss congenital swellings of neck					••	••		
	Examine neck and thyroid gland		••		••			••	••
	Investigate neck swelling		••	••	••	••			
	Interpret thyroid function tests	••		••		••		••	
	Discuss parathyroid gland pathologies	••				••			
	Describe MEN I and MEN II	••				••			
	Discuss Management of pheochromocytoma	••				••			
	Explain complications of thyroid surgery	••	••					••	••

Modules	Objectives	Instructional strategy				Assessment			
		Lecture	Ward	SGD	Skill	MCQ	SEQ	OSPE	SC & LC
Module 8 Breast Disease	Describe the anatomy of breast and axilla	••		••		••		••	
	Demonstrate physical examination of breast		••		••			••	••
	Explain triple assessment	••	••	••	••		••	••	••
	Outline management plan for diseases of breast	••	••	••		••	••	••	••
	Discuss pathology of carcinoma of breast	••		••		••	••	••	
	Explain management of carcinoma of breast	••	••	••		••	••	••	••
	Interpret mammography			••	••			••	
	Describe principles of breast screening	••				••	••		
	Explain principles of breast surgery		••	••				••	••
Module 9 Abdominal wall & hernias, peritoneum	Describe the anatomy of abdominal wall	••	••	••		••	••		
	Explain the causes of abdominal hernias	••	••	••		••			
	Demonstrate history and findings in hernia patients		••	••	••		••	••	••
	Outline management of hernias	••	••	••		••	••	••	••
	Enlist complications of hernia surgery	••	••	••		••	••		
	Explain causes and complications of peritonitis	••	••	••		••	••	••	
	Identify clinical features of peritonitis	••	••	••		••	••	••	••
	Describe the principles of management of peritonitis	••	••	••		••	••		
Module 10 Hepatobiliary, spleen and Pancreas	Explain basic anatomy of hepatobiliary system	••		••		••	••		
	Describe pathophysiology of gall stones	••		••		••	••		
	Perform Assessment of gall stone disease patient	••	••	••		••	••	••	••
	Outline management of gall stone disease	••	••	••		••	••	••	••
	Describe malignant diseases of biliary tract	••	••	••		••	••		••
	Describe assessment and management of pancreatitis	••	••	••		••	••	••	••
	Outline management of pancreatic carcinoma	••	••			••	••		••
	Describe common complications of splenectomy	••	••	••		••	••		
	Explain investigations of liver disease	••	••	••		••	••	••	••

Modules	Objectives	Instructional strategy				Assessment			
		Lecture	Ward	SGD	Skill	MCQ	SEQ	OSPE	SC & LC
Module 11 Gastrointestinal tract	Understands basic anatomy of Gastrointestinal tract	••		••		••	••		
	Explain management of diseases of esophagus	••	••	••		••	••	••	••
	Describe the investigations for upper GI diseases	••	••	••		••	••	••	••
	Outline management of GI bleed and gastric disorders	••	••	••		••	••	••	••
	Describe management of bowel obstruction	••	••	••	••	••	••	••	••
	Explain management of acute problems of GIT	••	••	••	••	••	••	••	••
	Describes management large bowel diseases	••	••	••		••	••	••	••
	Describes management of perianal and rectal diseases	••	••	••	••	••	••	••	••
	Describes management of appendicular diseases	••	••	••		••	••	••	••
Module 12 Vascular diseases	Describe the features of peripheral vascular disease	••	••	••		••	••		
	Demonstrate assessment of ischemic limb	••	••	••	••	••	••	••	••
	Outline management of limb ischemia	••	••	••		••	••	••	••
	Describe diagnosis and management of Aneurysms	••	••			••	••		
	Explain the assessment of varicose veins	••	••	••		••	••	••	••
	Outlines principles of management of venous diseases	••	••	••		••	••	••	
	Describe diagnosis and management of DVT	••	••			••	••		
	Describes management of carotid artery disease	••	••			••	••		
Module 13 Urological disease	Describe physiology of urinary tract stone disease.	••	••			••	••		
	Explain management of urinary tract stone disease.	••	••	••		••	••	••	••
	Describe management of bladder outlet obstruction.	••	••	••		••	••	••	••
	Outline principles of management of renal mass.	••	••	••		••	••	••	••
	Describe lower urinary tract symptoms.	••	••	••		••	••	••	••
	Explain evaluation of patient with hematuria.	••	••	••		••	••	••	••
	Describe management of patient with scrotal swelling.	••	••	••		••	••	••	••
	Identify steps of circumcission.	••	••			••	••		
	Interpret IVU, Renal scan & CT-Urogram.	••	••			••	••		

Modules	Objectives	Instructional strategy				Assessment			
		Lecture	Ward	SGD	Skill	MCQ	SEQ	OSPE	SC & LC
Module 14 Neurosurgery & Pediatric Surgery	Explain pathology of brain tumor & meningocele.	••		••		••	••		
	Describe physiology of intracranial pressure.	••	••	••		••	••	••	••
	Describe management of head injury.	••	••	••		••	••	••	••
	Assessment and management of nerve injury.	••	••	••		••	••	••	••
	Perform clinical examination of nervous system.	••	••	••	••	••	••	••	••
	Explain hypospadias & undescended.	••	••	••	••	••	••	••	••
	Outline management of testicular pain.	••	••	••		••	••	••	••
	Outline evaluation of rectal bleeding.	••	••	••	••	••	••	••	••
	Describe anorectal malformations.	••	••	••		••	••	••	••
	Describe types of cleft lip & palate	••		••		••	••	••	
	Discuss evaluation of abdominal pain in children.	••	••	••		••	••	••	
	Describe hypertrophic pyloric stenosis.	••		••		••	••	••	••
Module 15 Trauma & Orthopedics	Describe bone injury and healing.	••	••	••		••	••		
	Explain biomechanics of fracture.	••	••	••	••	••	••	••	••
	Describe principles of fracture management.	••	••	••		••	••	••	••
	Discuss soft tissue injury & fracture of upper limb.	••	••			••	••		
	Discuss soft tissue injury & fracture of lower limb.	••	••	••		••	••	••	••
	Describe principles of spinal injury.	••	••	••		••	••	••	
	Explain pathophysiology of trauma & shock.	••	••			••	••		
	Demonstrate principles of ATLS management.	••	••			••	••		
	Describe thoracic & abdominal trauma.	••	••			••	••		
	Discuss congenital and development diseases of bone.	••	••	••		••	••	••	••
	Explain benign & malignant bone tumour	••	••	••		••	••	••	••
	Describe infections of bone & joints.	••	••	••		••	••	••	••
	Discuss metabolic bone diseases.	••	••	••		••	••	••	••
	Discuss principles of management of osteoarthritis.	••	••	••		••	••	••	••
	Describe orthotics & appliances.	••	••	••		••	••	••	••
	Discuss principles of physiotherapy.	••	••			••	••		
	Discuss principles limb amputation.	••	••			••	••		
	Discuss neck pain, low back pain & sciatica.	••	••	••	••	••	••	••	••
	Perform examination of joints.			••	••			••	••

Objectives	Strategy				Assessment			
Module 11: Gastrointestinal Diseases								
Analyse patient with dysphagia								
Differentiate Motility disorders of esophagus								
Prepare management plan for UGI Bleed								
Discuss management of carcinoma esophagus								
Explain management of gastroesophageal reflux disease								
Interpret barium swallow								
Determine management plan for carcinoma stomach								
Discuss management of patient with right iliac fossa mass								
Perform abdominal examination								
Evaluate patient with intestinal obstruction								
Discuss pathology of intestinal obstruction								
Assessment of acute abdominal pain								
Interpretation of abdominal x-ray								
Assess patient with lower GI bleeding								
Explain management of colorectal carcinoma								
Describe diverticular disease								
Discuss management of rectal prolapse								
Describe colonoscopy , barium enema and its preparation								
Explain anatomy of colonic surgery								
Compare ulcerative colitis and chron's disease								
Outline management for hemorrhoids								
Describe anatomy of perianal fistula								
Explain management of perianal conditions								
Perform digital rectal examination								
Describe management of pilonidal sinus								

Objectives	Strategy				Assessment			
Module-12: Vascular diseases								
Arterial occlusive disorders								
Aneurysms								
Gangrene								
Varicose veins								
DVT								
Diabetic foot								
Discuss chronic limb ischemia								
Explain Raynaud's and Buerger's disease								
Demonstrate evaluation of diabetic foot								
Discuss various aneurysms								
Explain anatomical description of varicose veins								
Outline management of venous disorders								
Perform examination of vascular system								
Explain risks and complications of DVT								
Module 13: Urology								
Urinary tract stone disease								
Hydronephrosis and hydroureter								
Renal neoplasm								
Carcinoma baldder								
BPH and carcinoma prostate								
Stricture urethra								
Scrotal swelling								
Testicular tumour								
Renal tract investigation								
Describe Lower urinary tract sypmtoms								
Assess patient with hematuria								
Discuss prostatic disease and identify plan of management								

Objectives	Strategy				Assessment			
Module 13: Urology								
Evaluate patient with renal,mass								
Plan management of carcinoma bladder								
Interpret IVU and identify steps of IVU Explain steps of cricumcission								
Assess patient with scrotal swelling								
Manage renal colic patient								
Outline management of urinary retention								
Perform urethral catheterization								
Module-14: Neurosurgery & Pediatrics Surgery								
Brain tumor, Hydrocephalus, Meningocele								
Intracranial pressure								
Peripheral nerve injuries								
Introduction to intracranial tumours								
Explain anatomy of Peripheral nerve injuries								
Describe congenital anomalies of CNS								
Discuss pathophysiology of CSF								
Perform examination of peripheral nerves								
Perform Examination of CNS								
Undescended testis & Hypospadias Testicular torsion								
Cleft lip and palate								
Hirsch sprung disease and congenital malformations of anus								
Hypertrophic pyloric stenosis								
Rectal polyp and rectal bleeding								
Describe Testicular torsion								
Evaluate Acute abdominal pain in children								
Explain types of cleft lip & palate								
Outline ano rectal malformations								
Discuss causes of bleeding PR in children								
Explain management of UDT								

Objectives	Strategy				Assessment			
Module-15: Trauma & Orthopedics								
Trauma and Shock.								
Bone & soft tissue.								
Biomechanics of fracture.								
Healing & repair (bone & soft tissues).								
Principles of physiotherapy								
Orthotics – orthopaedic appliances to support and correct deformities								
Prosthesis – artificial substitute for missing body parts.								
Congenital & Development Diseases of bones and joints such as Bone dysplasia (defect intrinsic to bone) Dwarf- Achondroplasia.								
Bone and joint infections								
Acute osteomyelitis and septic arthritis, Chronic osteomyelitis, Tuberculous arthritis/Caries spine, Osteolysis/bone cyst, sequestrum, periosteal reaction.								
Metabolic Bone diseases.								
Bone Tumours, Benign & Malignant.								
Principles, indications, techniques and orthotics related to amputation.								
Neck Pain, Low Back Pain and Sciatica.								
Arthritis and Musculoskeletal Painful Disorders.								
Soft Tissue Injuries, Fractures.								
ATLS								
Priciples of fracture managements								
Clinical Examination								
Explain Pathophysiology of trauma and shock.								
Describe the Mechanical properties of bone & soft tissue.								
Explain the Biomechanics of fracture.								
Explain the steps of Healing & repair (bone & soft tissues).								
Define the Principles of physiotherapy								
Describe Orthotics – orthopaedic appliances to support and correct deformities								
Describe Prosthesis – artificial substitute for missing body parts.								

Objectives	Strategy				Assessment			
Module-15: Trauma & Orthopedics								
Discuss the Congenital & Development Diseases of bones and joints such as Bone dysplasia (defect intrinsic to bone) Dwarf- Achondroplasia.								
Explain the Bone and joint infections								
Describe Acute osteomyelitis and septic arthritis, Chronic osteomyelitis, Tuberculous arthritis/ Caries spine.								
Describe Osteolysis/bone cyst, sequestrum, periosteal reaction.								
Discuss Metabolic Bone diseases.								
Explain Bone Tumours, Benign & Malignant.								
Discuss Principles, indications, techniques and orthotics related to amputation.								
Discuss Neck Pain, Low Back Pain and Sciatica.								
Describe Arthritis and Musculoskeletal Painful Disorders.								
Explain the mechanism and treatment of Soft Tissue Injuries, Fractures.								
Demonstrate Basic and advanced trauma life support, Triage of injured patients in emergency room.								
Describe Principles of fracture classification, Principles of fracture treatment in children, Principles of fracture fixation, Management of common orthopaedic emergencies, Mal-united fractures; non-unions.								
Performs examination of Joints (Hip, Knee, Shoulder, Wrist, Ankle).								
Module-15: Trauma & Orthopedics								
Introduction to trauma and triage								
Primary survey and Secondary survey								
Burns and its types & Management of burns								
Spinal injury								
Abdominal trauma								
Chest trauma								
Discuss pathophysiology of Head Injury								
Recognize signs of Head injury								
Plan treatment of Head injury patient								
Perform CNS examination								

Objectives	Strategy				Assessment			
Module-15: Trauma & Orthopedics								
Explain anatomy of spinal injury								
Demonstrate Application of cervical collar								
Describe management of abdominal trauma								
Outline management chest injuries								
Interpret chest x-ray C								
Demonstrate airway management skills								
Perform clinical examination of Chest								
Carry out triage and pre hospital care								
Perform primary and secondary survey								
Clinical Skills								
Basic surgical skills								
Uretheral cathetrization								
IV cannulation								
Primary survey								
NG tube insertion								
Airway management								
Wound dressing								
Demonstrate suturing skills								
Demonstrate scrubbing technique								
Describe steps of urethral catheterization								
Describe steps of IV cannulation								
Demonstrate steps of primary survey								
Demonstrate skills for airway management								

Objectives	Strategy				Assessment			
Module-1: Growth and Development								
Common problems of children in Pakistan and statistics of Pakistani children.								
Growth and development.								
Expanded program of immunization (EPI) .newer vaccines.								
Genetics: patterns of inheritance, Down's syndrome.								
Module-2: Infectious diseases								
Common pediatric infections: measles, tetanus, polio, diphtheria, whooping cough, aids.								
Malaria, enteric fever, tuberculosis, chicken pox, common skin infections.								
Diarrheal diseases.								
Acute respiratory infections (ARI).								
IMCI (integrated management of childhood illness).								
Module-3: Neonatology								
Resuscitation of new born, Care of normal new born.								
Birth asphyxia, premature and low birth weight babies								
Neonatal jaundice,								
Neonatal sepsis,								
Neonatal fits,								
Respiratory distress of new born,								
Common skin conditions of neonates								
Pyloric stenosis,								
Myelomeningocele, Hydrocephalus								
Common congenital abnormalities and birth trauma.								
Module-4: Neurology								
Meningitis, Febrile, Convulsions								
Epilepsy, Cerebral palsy								
Mental handicap								
Cerebral malaria								
Encephalitis								

Objectives	Strategy				Assessment			
Module-5: Cardiology								
Congenital heart diseases [VSD, PDA, TOF, ASD],								
Rheumatic fever.								
Congestive cardiac failure,								
Clinical assessment of a cyanotic neonate/infant.								
Module-6: Haematology								
Anaemias								
Thalassemia								
Leukemias								
Bleeding disorders.								
Module-7: Nephrology								
Nephrotic syndrome								
Urinary tract infections								
Acute glomeulonephritis								
Module-8: Endocrinology								
Hypothyroidism								
Short stature								
Diabetes								
Module-9: Pulmonology								
Croup, asthma, tuberculosis, pneumonias,								
Pleural effusions.								

Objectives	Strategy				Assessment			
Module-10: Gastroenterology								
Abdominal pain								
Malabsorption								
Hepatitis								
Cirrhosis								
Acute liver failure								
Diarrhea[acut/echronic] dysentery								
Worm infestations								
Giardia								
Amoebiasis								
Rectal polyp								
Module-11: Clinical Skills								
Lumbar puncture								
Bone marrow aspiration								
Supra pubic puncture								
Subdural tap								
Thoracentesis								
Pericardiocentesis								
Liver biopsy								
Renal biopsy								
Observe passing of catheter								
Observe pericardial tap								

Objectives	Strategy				Assessment			
Module-1: Introduction of obstetrics								
Introduction.								
Obstetric history taking and examination.								
Conception, implantation and development of placenta, fetal circulation, abnormalities of placenta.								
Module-2: Physiology of pregnancy								
Foetal skull and bony pelvis.								
Diagnosis of pregnancy.								
Physiological changes associated with pregnancy.								
Module-3: Labour								
Physiology of labour.								
Mechanism of labour.								
Management of labour.								
Complications of 3rd stage of labour.								
Abnormal labour e.g. Prolonged labour/obstructed labour.								
Pre-term labour.								
Induction of labour.								
Module-4: Antipartum care								
Ante-natal care.								
Early pregnancy loss and its management (Abortions)								
Module-5: Medical disorders of pregnancy								
Pregnancy with anaemia								
Pregnancy with heart disease								
Pregnancy with diabetes								
Pregnancy with jaundice/hepatitis								
Renal problems during pregnancy								
Pyrexia in pregnancy								
Hypertensive disorder, PET, Eclampsia								

Objectives	Strategy				Assessment			
Module-6: Obstetrics complications								
Pre-maturity, Post-maturity.								
Ante-partum haemorrhage.								
Hydramnios.								
Hyperemisis gravidarum.								
Obstetric shock.								
Intra uterine growth retardation and its management.								
Fetal distress and its management.								
Obstetric injuries/ruptured uterus.								
Haematological disorder of pregnancy e.g.								
Rh incompatibility, Thalassemia major/minor								
Module-7: Multifetal Gestation and Malpresentation								
Fetal Monitoring.								
Fetal presentations.								
Breech presentation.								
Occipito posterior position.								
Brow presentation.								
Face presentation.								
Cord prolapse/compound presentation.								
Transvese lie/unstable lie.								
Multiple pregnancy.								
Module-8: Postpartum care								
Puerperium (normal and abnormal).								
Examination of the new-born baby.								
Resuscitation of new-born.								
Minor problems of the new-born.								
Foetal congenital abnormalities.								

Objectives	Strategy				Assessment			
Module-9: Obstetrics Procedures								
Operation delivery, Forceps delivery.								
Vacuum delivery, Caesarean section.								
Examination of the new-born baby.								
Resuscitation of new-born.								
Vital statistics								
Module-10: Anatomy and physiology of female genetal tract								
Introduction.								
Anatomy of female								
Genital organs, Development of female genital organs.								
Puberty and adolescence.								
Ovulation and its clinical importance.								
Normal menstruation.								
Module-11: Menstrual Disorders								
Menstrual abnormalities.								
Gynaecological history taking and examination								
Menopause, Hormone replacement therapy.								
Module-12: Infertility and Contraception								
Infertility.								
Contraception.								
Ectopic pregnancy.								
Module-13: Neoplastic disorders of genetal tract								
Trophoblastic tumours.								
Vulval lesions								
Tumours of vagina.								
Tumours of cervix.								
Tumours of uterus.								
Tumours of ovaries.								
Tumours of fallopian tubes.								

Objectives	Strategy				Assessment			
Module-14: Pelvic floor disorders and urogyneocology								
Genital prolapse.								
Pelvic floor injuries.								
Urogynaecology.								
Problems of marriage and sex.								
Module-15: Infectious disorders of female genetal tract								
Vaginal discharges.								
Infections of female genital tract								
Infections of upper genital tract								
Infections of lower genital tract								
Module 16: Gynaecological surgery								
Minor gynaecological operative procedures.								
Major gynaecological operative procedures.								
Pre-operative preparations.								
Post-operative complications and its management.								
Role of USG in gynaecology.								
Module 17: Clinical Skills								

Objectives	Strategy				Assessment			
Module 1: INTRODUCTORY MODULE								
Introduction to behavioral sciences and its importance in health.								
Bio-Psycho-Social Model								
Desirable attitudes								
Link of Health with Behavioural Sciences (Psychology, Sociology, Anthropology)								
Importance of Behavioural Sciences in health								
Correlation of brain, mind and Behavioural Sciences								
Roles of a doctor/dentist								
Desirable Attitudes in Medical/Dental professionals								
Understanding Behaviour								
Sensation and sense organs								
Perception								
Attention and concentration								
Memory								
Thinking								
Communication								
Describe sensation, sense organs/special organs								
Define perception, what factors affect perception?								
Define attention and concentration. What factors affect them?								
Define memory and describe its stages, types and methods to improve it Define thinking; describe its types and theories								
What is cognition and levels of cognition?								
Discuss problem solving and decision making strategies								
Define communication. What are types, modes and factors affecting it? Describe ways to recognize non-verbal cues. Characteristics of a good communicator								

Objectives	Strategy				Assessment			
Module 1: INTRODUCTORY MODULE								
Individual differences								
Personality								
Intelligence								
What are the stages and characteristics of psychological growth and development?								
Define personality. What are developmental theories of personality? What factors affect personality development?								
How personality can be assessed? Influence of personality in determining reactions during health, disease, hospitalization, stress								
Define intelligence and the various types of intelligence. Relevance of IQ and EQ. Methods of enhancing EQ and effectively using IQ								
What factors affect it and how it can be assessed?								
Module								
Stress and stressors								
Stress management								
Define and classify stress and stressors Relationship of stress and stressors with illness								
Stress management								
Stress & Health								
Anxiety								
What are coping skills?								
What are psychological defense mechanisms?								
What is conflict and frustration?								
What is concept of adjustment and maladjustment?								
Understand patient anxiety / stress								
Outline psychological theories of pain perception and patients experiences of pain.								
Treatment adherence and compliance								
Psychological Techniques including Hypnosis								

Objectives	Strategy				Assessment			
Module								
Interviewing /								
Psychosocial History								
Taking								
Collecting data on psychosocial factors in Medicine/Surgery/Dentistry/Reproductive Health / Paediatrics and other general health conditions								
Define, types of interview and listening								
Skills of interviewing and listening								
Doctor/Dentist-Patient relationship								
Discuss the doctor/dentist-patient relationship.								
What is the concept of boundaries and psychological reactions in doctor/dentist¬patient relationship (such as transference and counter transference)								
Medical Ethics								
Introduction to Ethics in Health Professionals Hippocratic oath- Do's and Don'ts								
Responsibilities of health professionals: Core values What is the concept of medical ethics?								
Interaction with patients & colleagues								
Standards of Ethical Medical Practice								
Common ethical dilemmas in dentist/doctor-patient relations, interaction with families, teachers, colleagues, pharmaceutical industry								
Rights of patients and doctor (in international law, constitution of Pakistan, PM&DC, Islam)								
Informed consent								
Patient confidentiality, Disclosure of information								
Decision making in dental/medical practice								
Code regarding advertisement of services & publicity								
Pain, Sleep, Consciousness								
Concept of pain.								
Physiology of pain, Psychosocial assessment and management of chronic/intractable								
atypical facial pain. Stages of Sleep, Physiology of consciousness, Altered states of consciousness. Psychological influences on sleep and consciousness, Non-pharmacological methods of inducing sleep, changes in consciousness								

Objectives	Strategy				Assessment			
Module								
Communication skills, Counseling, Crisis Intervention, Conflict Resolution								
Informational Care								
Principles of effective communication, active listening, the art of questioning, the art of listening.								
Good and bad listener. Counseling: Scope, Indications and Contraindications, Steps, Do's and Don'ts, How to deal with real life crisis and conflict situations in health settings? .								
Informational Care: A practical method of communication between the dentist/doctor and patient about diseases, drugs, prognosis etc								
Health Psychology								
Illustrate the importance of psychological consideration in clinical management of patients.								
Understand memory and learning and judge the effectiveness of psychological therapies.								
Understand key concepts in child's social and cognitive development. Describe psychological changes during adolescence and old age and recognize consideration in their clinical management.								
Understand the concept of stress and personality, describe the association between stress and immune change, evaluate the role of stress, personality and work in etiology of illness.								
Understand the impact of illness on a patients psychological wellbeing including the ability to cope and understand the association between psychological stress and physical well being.								
Understand the role of dentist/doctor in patient reassurance and allaying anxiety and fear.								
Social and Community Perspective								
Describe inequalities of health care and the relationship of social class and the experience of health and illness.								
Explain the term ethnicity, culture and racism and how disease pattern and medical/dental care vary by culture and ethnicity?								
Understand difference of health experience as explained by gender. Understand the influence of health and illness on behaviour and explain how people behave when they are ill and why lay health beliefs are important in medical and dental practice?								
Application of Behavioural Principles in Health and Disease								
Mentally/emotionally handicapped Physically handicapped								
Chronically ill								
Homebound								
Dentally/medically compromised								

WEEKLY TIME TABLE (2019-20)

1ST YEAR MBBS INDEPENDENT MEDICAL COLLEGE, FAISALABAD.

Date: 20-11-2019 File No. 22-Edn/ 1536-41 / IMC

Time	SGD / Dissection 08:00-10:00	Lecture 10:00-11:00	Lecture 11:00-12:00	BREAK 12:00 TO 12:15	SGD / Practical 12:15-02:00	
Mon	Dissection / SGD/ Clinical	Anatomy	Physiology		Practical & SGD	
Tue	Dissection / SGD	Anatomy / Clinical	Physiology		Practical & SGD	
Wed	Dissection / SGD	Anatomy	Biochemistry/Clinical		Practical & SGD	
Thu	Dissection / SGD	Anatomy	Biochemistry		Practical & SGD	
Fri	08:00-09:00 Islamiyat / Pak Studies 09:00-10:00 Behavioral Sciences	Biochemistry	Physiology/Clinical		12:00-01:00 Self directed learning / Learning Resources Center	Off
Sat	Dissection / SGD / Clinical	Biochemistry	Physiology / Clinical		Practical & SGD	

1st Year MBBS		
Session:	02-12-19 to 31-07-20	
	Duration	Test
First Term:	02-12-19 to 17-02-20	18-02-20 to 29-02-20
Second Term:	26-02-20 to 07-05-20	08-05-20 to 19-05-20
Third Term:	20-05-20 to 22-07-20	23-07-20 to 31-07-20
Send Up:		

Prof. Dr. Muhammad Yusaf Shah
MBBS, LRCP, MRCS, FRCS
Principal

INDEPENDENT MEDICAL COLLEGE

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3rd Year

WEEKLY TIME TABLE 20-21

Time	Lecture 08:00-08:45	Lecture 08:45-09:30	Ward 09:30-11:00	Practical 11:00-12:15	Lecture 12:15-01:00	NAHAZ BREAK	Lecture 01:15 to 02:00	Evening Duty 05:00 to 06:30
Mon	Behavioral Sciences	Pharmacology	Ward Rotation	A1 / A2 Pathology B1 / B2 Pharma C1 / C2 Forensic	Pathology		Forensic Medicine	Ward Duty
Tue	Pathology	Pharmacology	Ward Rotation	A1 / A2 Pharma B1 / B2 Forensic C1 / C2 Pathology	Behavioral Sciences		Medicine	
Wed	Forensic Medicine	Pathology	Ward Rotation	A1 / A2 Forensic B1 / B2 Pathology C1 / C2 Pharma	Eye		Pharmacology	Ward Duty
Thu	Forensic Medicine	Pharmacology	Ward Rotation	A1 / A2 Pathology B1 / B2 Pharma C1 / C2 Forensic Med	Surgery		Pathology	
Fri	Pathology	Forensic Medicine	09:30-10:15 Pharmacology 10:15-11:00 Community Med	A1 / A2 Pharma B1 / B2 Forensic Med C1 / C2 Pathology			Self Directed Learning	
Sat	ENT	Forensic Medicine	Ward Rotation	A1 / A2 Forensic Med B1 / B2 Pathology C1 / C2 Pharma	Pathology		Pharmacology	

3rd Year MBBS		
Session:	29-03-2021 to 06-11-2021	
	Duration	Test
1st Term:	29-03-21 to 05-06-21	07-06-21 to 12-06-21
2nd Term:	14-06-21 to 21-08-21	23-08-21 to 28-08-21
3rd Term:	30-08-21 to 23-10-21	25-10-21 to 30-10-21
Send Up:	22-11-2021 to 27-11-2021	

Date: _____ File No. 22-Edn/ / IMC

Prof. Abdul Hafeez Chaudhary
MBBS, FCPS (Med), FCPS (Cardio)
Principal

INDEPENDENT MEDICAL COLLEGE

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4th Year
WEEKLY TIME TABLE 20-21

Time	Practical 08:00-09:30	Ward 09:30-11:30	Lecture 11:30-12:15	Lecture 12:15-01:00	NAMAZ BREAK	Lecture 01:15 to 02:00	Evening Duty 05:00 to 06:30
Mon	A1 - B1 Pathology C1 - D1 Pathology A2 - B2 Community Medicine C2 - D2 Community Medicine	Ward Rotation	EYE	Obs & Gynae.		Surgery	
Tue	A2 - B2 Pathology C2 - D2 Pathology A1 - B1 Community Medicine C1 - D1 Community Medicine	Ward Rotation	ENT	Pathology		Community Medicine	Ward Duty
Wed	A1 - B1 Pathology C1 - D1 Pathology A2 - B2 Community Medicine C2 - D2 Community Medicine	Ward Rotation	Community Medicine	ENT		Pathology	
Thu	A2 - B2 Pathology C2 - D2 Pathology A1 - B1 Community Medicine C1 - D1 Community Medicine	Ward Rotation	Community Medicine	Pathology		EYE	Ward Duty
Fri	**08:00-08:45** / Lecture Medicine **08:45-09:30** / Lecture Obs & Gynae.	**09:30-10:30** / Ward Rotation	**10:30-11:15** / ENT	**11:15-12:00** / Pediatrics			Ward Duty
Sat	09:00-10:00 (Online) / Pathology Lecture 10:00-11:00 (Online) / Community Medicine		11:00-12:00 (Online) / ENT	12:00-01:00 (Online) / EYE			

4th Year MBBS		
Session:	15-03-2021 to 04-12-2021	
	Duration	Test
1st Term:	15-03-21 to 22-05-21	24-05-21 to 29-05-21
2nd Term:	31-05-21 to 07-08-21	09-08-21 to 14-08-21
3rd Term:	16-08-21 to 09-10-21	11-10-21 to 16-10-21
Send Up:	18-12-2021 to 24-12-2021	

Date: _____ File No. 22-Edn/ / IMC

Prof. Abdul Hafeez Chaudhary
MBBS, FCPS (Med), FCPS (Cardio)
Principal

INDEPENDENT MEDICAL COLLEGE

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5th Year
WEEKLY TIME TABLE 20-21

Time	Lecture 08:00-08:45	Clinical Training 08:45-12:00		SGD 12:00-01:00		NAMAZ BREAK	Lecture 01:15-02:00	Evening Duty 05:00-08:00
Mon	Surgery	Clinical Training		Clinical SGD			Medicine	Clinical Training
Tue	Medicine	Clinical Training		A Batch Clinical Skills Lab			Surgery	Clinical Training
Wed	Gynae & Obs.	Clinical Training		B Batch Clinical Skills Lab			Pediatrics	Clinical Training
Thu	Pediatrics	Clinical Training		C Batch Clinical Skills Lab				Clinical Training
Fri	Gynae & Obs.	Clinical Training						
Sat		09:00-10:00 Online	10:00-11:00 Online	11:00-12:00 Online	12:00-01:00 Online			
		Medicine & Allied	Surgery & Allied	Pediatrics	Gynae & Obs.			

Final Year MBBS		
Session:	29-03-2021 to 20-11-2021	
	Duration	Test
Send Up:	13-12-2021 to 24-12-2021	

Date: _____ File No. 22-Edn/ / IMC

Prof. Abdul Hafeez Chaudhary
MBBS, FCPS (Med), FCPS (Cardio)
Principal

INDEPENDENT MEDICAL COLLEGE

Guiding your passion to profession

3rd Year

WEEKLY TIME TABLE 20-21

WARD	01-06-21 to 19-06-21	21-06-21 to 10-07-21	12-07-21 to 07-08-21	09-08-21 to 04-09-21	06-09-21 to 02-10-21	04-10-21 to 06-11-21
Medical-I	A1	A2	C1	C2	B1	B2
Medical-II	A2	A1	C2	C1	B2	B1
Surgical-I	B1	B2	A1	A2	C1	C2
Surgical-II	B2	B1	A2	A1	C2	C1
ENT	C1	C2	B1	B2	A1	A2
EYE	C2	C1	B2	B1	A2	A1

A1		A2		B1		B2		C1		C2	
Roll No.	Name	Roll No.	Name	Roll No.	Name	Roll No.	Name	Roll No.	Name	Roll No.	Name
1	Anzar Usman	23	Muhammad Usman	45	Maham Nadeem	68	Areeba Arshad	88	Anwar Ul Hassan	114	Numair Mahmood
2	Areej Fatima	24	Nimra Manan	46	Mahnoor Faheem	69	Asad Iqbal	89	Usama Majeed	115	Samra Shahzadi
3	Bakhtawar Javed	25	Rameen Tariq	47	Maryam Naz	70	Aun Muhammad	90	Jawaria Jabbar	116	Rizwan Abbas
4	Fatima Aslam	26	Saqib Rehman	48	Misbah Zahra	71	Fatima Afzal	91	Waleed ur Rehman	117	Usaid Akbar
5	Laiba brar	27	Talha Ather	49	Muhammad Adil Nazir	72	Kaneez Fatima	92	M. Shoaib Tahir	118	Tehreem Mumtaz
6	M. Awais Afzal	28	Umer Aslam	50	M. Ahnan Imran	73	M. Bilawal Razzaq	93	M. Sohail Aslam	119	Mehak Khalid
7	M. Samraiz Khan	29	Zaka Ullah	51	M. Asad Nazir	74	M. Kashif Akhtar	94	Noman Shabbir	120	Ahsan Rabnawaz
8	Nayyab Younas	30	M. Mahad Zahid	52	M. Hassan Ashraf	75	Muhammad Usman	98	Shabana Hussain	121	Behram Ahmad
9	Shaza Mubarak	31	Shehriyar Akram	53	M. Junaid Anwar	76	M. Sohaib Iqbal	99	Monisa Asif	122	Ghulam Muhammad
10	Urwah Ehsan	32	Abdullah	54	M. Shair Khan	78	Komal Mansha	100	Tehreem Asif	123	Mafeen Arshad
13	Bareera Mujahid	33	Abdullah hassan	55	M. Shoaz Anish	79	Khurram Shahzad	101	Ali Khalid	124	Mubashir Hussain
14	Gul Rubaz	34	Aleena Nawaz	56	Muhammad Umaar	80	M. Sultan Umar	103	M. Hussnain Haider	125	M. Ahmad Mujtaba
15	Hussnain Munir	35	Ali Hamza	57	Muhammad Umair	81	M. Abu Bakar	105	M. Zain Babar	126	Muhammad Hussnain
16	Ibtital	36	Ali Hamza	58	Safia Nadeem	82	Rimsha Ghafoor	107	Ahmad Hamza	127	M. Mohsin Shafique
17	Junaid Zahid Majeed	38	Asad Mehmood	59	Saima Yameen	83	Ayesha Asif	109	Ayesha Naeem	128	M. Nauman Siddique
18	M.saiyan Abdul Khair	39	Asfihma Aslam	62	Shahid Nawaz	84	Sumaina Mazhar	110	Faiza Amjad	129	M. Saim Siddique
19	Mubashar Madad Ali	40	Ch Rayan Ahmad	64	Talha Mehmood	85	M. Umar Majeed	111	Hamza Rehan	130	M. Usama Asif
20	Mubashra Ajmal	41	Faisal Hayat	66	Zunaira Ali	86	M. Bilal Tariq	112	Hassan Gul Ishfaque	131	Sutha Tariq
22	M. Basam Mahmood	44	Mariam Asghar	67	Abdullah Asif	87	Maham Afzal	113	M. Zaid Rabbani	132	Sumbal Shahzadi

INDEPENDENT MEDICAL COLLEGE

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4th Year
WARD ROTATION 2020-21

WARD	01-06-21 to 26-06-21	28-06-21 to 17-07-21	19-07-21 to 07-08-21	16-08-21 to 04-09-21	06-09-21 to 25-09-21	27-09-21 to 23-10-21	25-10-21 to 13-11-21	15-11-21 to 04-12-21
Medical-I	A1	A2	D1	D2	B1	B2	C1	C2
Medical-II	A2	A1	D2	D1	B2	B1	C2	C1
Surgical-I	B1	B2	C1	C2	A1	A2	D1	D2
Surgical-II	B2	B1	C2	C1	A2	A1	D2	D1
Peads	C1	C2	B1	B2	D1	D2	A1	A2
O & G	C2	C1	B2	B1	D2	D1	A2	A1
ENT	D1	D2	A1	A2	C1	C2	B1	B2
EYE	D2	D1	A2	A1	C2	C1	B2	B1

A1		A2		B1		B2		C1		C2		D1		D2	
R. No.	Name	R. No.	Name	R. No.	Name	R. No.	Name	R. No.	Name	R. No.	Name	R. No.	Name	R. No.	Name
1	Ahmad Raza Khan	20	Awais Muzammil Munir	39	Mubeen Ahmad	57	M. Omer Anwar	76	Muzmmal Ashfaq	96	Sidra Nazeer	125	Hira Kohani	154	Usama Imran
2	Ahmed Talha Irfan	21	Bilal Ghauri	40	Muhammad Aman	58	M. Saad Javed	78	Saad-ur-Rehman Chohan	98	Tooba Naz	127	Mahnoor	156	Ali Haider
4	Ali Murad Sipra	22	Rehan Shoukat	41	M. Bilal Arshad	59	Muhammad Awais	79	Ramisha Tariq	99	Uswa Amir	132	M. Numan Hassan	157	Hassan Mahmood
5	Ameer Hamza	23	Hafiz M. Rehan Nadeem	42	M. Faraz Tariq	60	M. Umer Aleem	80	Rimsha Zahid	100	Uswa Maqsood	133	Mahnoor Shah	158	Waqas Ali
6	Amir Imtiaz	26	Hussain Abdullah	43	M. Fayyaz Tayyab	61	M. Umair Shakoor	81	Samia Shafiq	103	Ahmad Ali Khan	135	Maryam Ishtiaq	159	Muhammad Nooh
7	Asad Iqbal	27	Iman Saeed	44	Rohan Farrood Khan	62	Maria	83	Sara Javed	106	Ahmad Rizwan	137	M. Samad Fayyaz	160	Muhammad Arslan
8	Asad-ur-Rehman	28	Hafiza Irum Malik	45	Imreen Arooj	63	Mamoona Anwar	84	Seemab Gull	108	Ali Imran Afzal	138	M. Umair Yaseen	162	Nayer Azam
9	Aseer Wali	29	Haja Azmat	46	Jawaria h	64	Mariam Ehsan	85	Seerat Sarfraz	109	Ali Raza	142	Saleem Ullah	163	Ahmad Ashraf
10	Atif Imtiaz	30	Hira Ilyas	47	Khadija Khurram	66	Maryyam Saeed	87	Shah Zaib	110	Areej Nisar	146	Ujala Tanveer	164	S. Sabreen Zara
11	Amna Akbar	31	Hira Javaid	48	Khadija Mansoor	67	Mithan Azwa	88	Shargeel Ahmad	112	Fayyaz Khalid	148	Abdullah	165	Zarnain
12	Aqsa Kajal	32	Hunza Muzaffar	49	Khadija Rao	68	Nadia Akram	89	Sheikh Sohaib Raza	116	Hania Sharfique	149	Hafiz M. Rehan Asghar	166	Muhammad Waqas
14	Bariha Shoaib	33	Iqra Mehmood	50	Kinza Alam	69	M. Usama Sardar	91	Usama Ahmad	117	Javeria Zahid	150	Mohsin Saleem	167	Muhammad Waqas
15	Bushra Maryam	34	Iqra Usman	51	Komal Iqbal	70	M. Usman Anwar	92	Usman Arshad	118	Haseeb Farooq Khan	151	M. Adeel Arshad	168	Rana M Rizwan Tahir
17	Fatima Naz	36	Mirza Waseem Akram	54	Muhammad Muzamil	71	M. Usman Zafar	93	Usman Tariq	121	Muhammad Abdullah	152	Muhammad Salem	169	Muhammad Asif
18	Awais Amjad	37	Muhammad Moaiz	56	M. Naeem Ullah	72	M. Wasif Ali	94	Sehar Tariq	123	M. Abeer Arshad	153	Shamaila Sarfraz	170	Sadia Eman
19	Awais Mahmood	38	M. Sohail Ismail	65	Mariam	73	Muhammad Zaid	95	Shumaila Farooq						

Prof. Abdul Hafeez Chaudhary
MBBS, FCPS (Med), FCPS (Cardio)
Principal

INDEPENDENT MEDICAL COLLEGE

Guiding your passion to profession

5th Year

WEEKLY TIME TABLE 20-21

WARD	01-06-21 to 26-06-21	28-06-21 to 31-07-21	02-08-21 to 28-08-21	30-08-21 to 25-09-21	27-09-21 to 23-10-21	25-10-21 to 20-11-21
Medical-I	A1	A2	C1	C2	B1	B2
Medical-II	A2	A1	C2	C1	B2	B1
Surgical-I	B1	B2	A1	A2	C1	C2
Surgical-II	B2	B1	A2	A1	C2	C1
O & G	C1	C2	B1	B2	A1	A2
Pediatrics	C2	C1	B2	B1	A2	A1

A1		A2		B1		B2		C1		C2	
Roll No.	Name	Roll No.	Name	Roll No.	Name	Roll No.	Name	Roll No.	Name	Roll No.	Name
2	Abd-ur-Rehman	30	Haroon Attique	56	M. Hamza Subhani	82	Sahar Shafique	111	Haniyah Ishfaq	138	Rao Umer Javed
4	Afifa Taqdees	31	Hasan Abdul Rehman	57	M. Hassaan Siddiqi	84	Shaban Afi	114	M Mazhar Aziz	140	Sabreen Fiaz
11	Afi Faheem Haider	32	Iqra Murtaza	60	M. Humair Rafiq Gill	85	Afsah Shabi	118	Rimsha Tasaddiq	146	Muhammad Rashid
14	Aqsa Zahid	34	Humaira Hassan	63	M. Saad Uzair Saqib	91	Talha Farrukh Awan	124	Zunaira Batool	147	M. Waqas Ahmad
16	Fatima Aslam	37	Mian M. Mubashir Shah	65	Marfa Gul	92	Tasmia Younas	125	Arslan Ahmad Cheema	148	Zubair Ahmad Malik
17	Fouzia Munawar	38	M. Shershah Tiwana	66	Maria Naeem	95	Umer Bin Saeed	126	Hafiza Maham Ashraf	149	Hira Shoukat
18	Anosh Ijaz	40	Mamina Khawar	67	Mahnoor Fatima	96	M. Yousaf Masood	127	M. Awais Anwar	151	Afi Nasir Khan
19	Sibgha Ejaz	45	M. Abu Talha Dar	72	M. Sami Ullah	99	Zain Rasheed	129	M. Junaid Shakoor	152	M Shahzad Noor
21	Bilal Aftab	50	Maham Faryal	76	Muhammad Usman	100	Zoha Jamil	131	Muhammad Talha	153	Khadija Saif
26	M. Sajid-ur-Rahman	52	M. Asfar Waseem	77	Muneeb Mumtaz	101	Abdul Qayyum	135	Rafay Rehman	154	Haroon Yaseen
29	Haroon Arif	53	Muhammad Azeem	78	Noman Ijaz Khan	104	M. Umar Iftikhar	137	Rana M Talha Saleem	155	Shireen Sukhan
		55	M. Hamza Khalid	80	Rimsha Abdullah	105	Azaifa Fatima				