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Curriculum for MBBS Professional Year - II

Preamble

The **National Medical Commission** visualized that the Indian Medical Graduate, at the end of the undergraduate training program, should be able to recognize "health for all" as a national goal and should be able to fulfill his/her societal obligations towards the realization of this goal. To fulfill the mandate of the undergraduate medical curriculum which is to produce a clinician, who understands and is able to provide preventive, promotive, curative, palliative and holistic care to his patients, the curriculum must enunciate clearly the competencies the student must be imparted and must have learnt, with clearly defined teaching-learning strategies and effective methods of assessment.

More than twenty years have passed since the existing Regulations on Graduate Medical Education, 1997 was notified, necessitating a relook at all aspects of the various components in the existing regulations and adapt them to the changing demography, socio-economic context, perceptions, values and expectations of stakeholders. Emerging health care issues particularly in the context of emerging diseases, impact of advances in science and technology and shorter distances on diseases and their management also need consideration. The strong and forward looking fundamentals enshrined in the Regulations on Graduate Medical Education, 1997 has made this job easier. A comparison between the 1997 Regulations and proposed Graduate Medical Education Regulations, 2018 will reveal that the 2018 Regulations have evolved from several key principles enshrined in the 1997 Regulations.

As per the NMC recommendations, the thrust in the new regulations is continuation and evolution of the thought in medical education making it more learner-centric, patient-centric, gender sensitive, outcome -oriented and environment appropriate. The result is an outcome driven curriculum which conforms to global trends.

The learners in the II Professional year will be learning more about the pathophysiological and microbiological basis of the disease with principles of diagnosis and pharmacological aspects in the management of the diseases. They will also be entering into Clinical postings. Hence, emphasis is made on alignment and integration of subjects both horizontally and vertically while respecting the strengths and necessity of subject-based instruction and assessment. Since the learners will be entering into Clinical postings, a significant attempt has been made in the outcome driven undergraduate curriculum to provide the orientation and the skills necessary for life-long learning to enable proper care of the patient.

Skill acquisition is an indispensable component of the learning process in medicine. Since the learners will be entering into Clinical postings, a significant attempt has been made in the curriculum with reinforcement on certification of certain essential skills, As per the recommendations in CBME booklet, various factors have been considered like, in patient availability, access, consent, number of students in a class etc. in suggesting skill acquisition and assessment methods; use of skills labs, simulated and guided environments are encouraged.

The importance of ethical values, responsiveness to the needs of the patient and acquisition of communication skills is underscored by providing dedicated curriculum time in the form of a longitudinal program based on Attitude, Ethics and Communication (AETCOM) competencies. Great emphasis has been placed on collaborative and inter-disciplinary teamwork, professionalism, altruism and respect in professional relationships with due sensitivity to differences in thought, social and economic position and gender. Apart from these, due importance is given to Sports and Extra-curricular activities as well for the overall development of students.

In addition to the above, Formative and internal assessments have been planned and aligned to achieve the objectives of the curriculum with minor tweaks to the summative assessment.

All the attempts have been made to make the curriculum student cantered, providing opportunities for learners to learn in a safe and conducive environment, including all the aspects of Integration, skill acquisition, AETCOM competencies and Assessment, for the effective implementation n of the new curriculum.

The syllabus/curriculum shall be effective for the students admitted to the MBBS degree course in the constituent college of the KAHER viz J. N. Medical College, Belagavi from academic session 2019-20 onwards, entering into Professional Year II, in academic session 2020-21 onwards

Salient features of GMER

Amendment Notification November 2019 (Ref No. MCI-34(41)/2019-Med./161726)

In exercise of the powers conferred by Section 33 of the Indian Medical Council Act, 1956 (102 of 1956), the Board of Governors in super-session of Medical Council of India with the previous sanction of the Central Government, made the following Regulations to further amend the "Regulations on Graduate Medical Education , 1997", namely:-

(i)These Regulations may be called the "Regulations on Graduate Medical Education (Amendment),2019.
(ii) They shall come into force from the date of their publication in the Official Gazette.

The provisions contained in Part II of these Regulations shall apply to the MBBS course Starting from academic year 2019-20 onwards

Indian Medical Graduate Training Programme

The undergraduate medical education programme is designed with a goal to create an "Indian Medical Graduate" (IMG) possessing requisite knowledge, skills, attitudes, values and responsiveness, so that she or he may function appropriately and effectively as a physician of first contact of the community while being globally relevant. To achieve this, the following national and institutional goals for the learner of the Indian Medical Graduate training programme are hereby prescribed:-

National Goals

At the end of undergraduate program, the Indian Medical Graduate should be able to:

(a) Recognize "health for all" as a national goal and health right of all citizens and by undergoing training for medical profession to fulfill his/her social obligations towards realization of this goal.
(b) Learn every aspect of National policies on health and devote her/him to its practical implementation.
(c) Achieve competence in practice of holistic medicine, encompassing promotive, preventive, curative and rehabilitative aspects of common diseases.
(d) Develop scientific temper, acquire educational experience for proficiency in profession and promote healthy living.
(e) Become exemplary citizen by observance of medical ethics and fulfilling social and professional obligations, so as to respond to national aspirations.

Institutional Goals

In consonance with the national goals each medical institution should evolve institutional goals to define the kind of trained manpower (or professionals) they intend to produce. The Indian Medical Graduates coming out of a medical institute should:

(a) be competent in diagnosis and management of common health problems of the individual and the community, commensurate with his/her position as a member of the health team at the primary, secondary or tertiary levels, using his/her clinical skills based on history, physical examination and relevant investigations.

(b) be competent to practice preventive, promotive, curative, palliative and rehabilitative medicine in respect to the commonly encountered health problems.

(c) appreciate rationale for different therapeutic modalities; be familiar with the administration of "essential medicines" and their common adverse effects.

(d) be able to appreciate the socio-psychological, cultural, economic and environmental factors affecting health and develop humane attitude towards the patients in discharging one's professional responsibilities.

(e) Possesstheattitudeforcontinuedselflearningandtoseekfurtherexpertise or to pursue research in any chosen area of medicine, action research and documentation skills.

(f) be familiar with the basic factors which are essential for the implementation of the National Health Programmes including practical aspects of the following:

- (i) Family Welfare and Maternal and Child Health(MCH)
- (ii) Sanitation and water supply
- (iii) Prevention and control of communicable and non-communicable diseases
- (iv) Immunization
- (v) Health Education
- (vi) Indian Public Health Standards (IPHS), at various levels of service delivery
- (vii) Bio-medical waste disposal
- (viii) Organizational and/or institutional arrangements.

(g) acquire basic management skills in the area of human resources, materials and resource management related to health care delivery, hospital management, inventory skills and counselling.

(h) be able to identify community health problems and learn to work to resolve these by designing, instituting corrective steps and evaluating outcome of such measures.

(i) be able to work as a leading partner in health care teams and acquire proficiency in communication skills.

(j) be competent to work in a variety of health care settings.

(k) have personal characteristics and attitudes required for professional life such as personal integrity, sense of responsibility and dependability and ability to relate to or show concern for other individuals.

All efforts must be made to equip the medical graduate to acquire the Certifiable procedural skills recommended as desirable for Bachelor of Medicine and Bachelor of Surgery (MBBS) – Indian Medical Graduate.

Goals and Roles for the Learner

In order to fulfil the goal of the IMG training programme, the medical graduate must be able to function in the following roles appropriately and effectively:-

1. Clinician who understands and provides preventive, promotive, curative, palliative and holistic care with compassion.
2. Leader and member of the health care team and system with capabilities to collect analyze, synthesize and communicate health data appropriately.

3. Communicator with patients, families, colleagues and community.
4. Lifelong learner committed to continuous improvement of skills and knowledge.
5. Professional, who is committed to excellence, is ethical, responsive and accountable to patients, community and profession.

Competency Based Training Programme of the Indian Medical Graduate

Competency based learning would include designing and implementing medical education curriculum that focuses on the desired and observable ability in real life situations. In order to effectively fulfil the roles ,the Indian Medical Graduate would have obtained the following set of competencies at the time of graduation:

***Clinician, who understands and provides preventive, promotive, curative, palliative and holistic care with* compassion**

- Demonstrate knowledge of normal human structure, function and development from a molecular,cellular, biologic, clinical, behavioural and social perspective.
- Demonstrate knowledge of abnormal human structure, function and development from a molecular, cellular, biological, clinical, behavioural and social perspective.
- Demonstrate knowledge of medico-legal, societal, ethical and humanitarian principles that influence health care.
- Demonstrate knowledge of national and regional health care policies including the National Health Mission that incorporates National Rural Health Mission (NRHM) and National Urban Health Mission (NUHM), frameworks, economics and systems that influence health promotion, health care delivery, disease prevention, effectiveness, responsiveness, quality and patient safety.
- Demonstrate ability to elicit and record from the patient, and other relevant sources including relatives and caregivers, a history that is complete and relevant to disease identification, disease prevention and health promotion.
- Demonstrate ability to elicit and record from the patient, and other relevant sources including relatives and caregivers, a history that is contextual to gender, age, vulnerability, social and economic status, patient preferences, beliefs and values.
- Demonstrate ability to perform a physical examination that is complete and relevant to disease identification, disease prevention and health promotion.
- Demonstrate ability to perform a physical examination that is contextual to gender, social and economic status, patient preferences and values.
- Demonstrate effective clinical problem solving, judgment and ability to interpret and integrate available data in order to address patient problems, generate differential diagnoses and develop individualized management plans that include preventive, promotive and therapeutic goals.
- Maintain accurate, clear and appropriate record of the patient in conformation with legal and administrative frameworks.
- Demonstrate ability to choose the appropriate diagnostic tests and interpret these tests based on scientific validity, cost effectiveness and clinical context.
- Demonstrate ability to prescribe and safely administer appropriate therapies including nutritional interventions, pharmacotherapy and interventions based on the principles of rational

drug therapy, scientific validity, evidence and cost that conform to established national and regional health programmes and policies for the following:

- Disease prevention,
- Health promotion and cure,
- Pain and distress alleviation, and
- Rehabilitation.

- Demonstrate ability to provide a continuum of care at the primary and/or secondary level that addresses chronicity, mental and physical disability.
- Demonstrate ability to appropriately identify and refer patients who may require specialized or advanced tertiary care.
- Demonstrate familiarity with basic, clinical and translational research as it applies to the care of the patient.

Leader and member of the health care team and system

- Work effectively and appropriately with colleagues in an inter-professional health care team respecting diversity of roles, responsibilities and competencies of other professionals.
- Recognize and function effectively, responsibly and appropriately as a health care team leader in primary and secondary health care settings.
- Educate and motivate other members of the team and work in a collaborative and collegial fashion that will help maximize the health care delivery potential of the team.
- Access and utilize components of the health care system and health delivery in a manner that is appropriate, cost effective, fair and in compliance with the national health care priorities and policies, as well as be able to collect, analyze and utilize health data.
- Participate appropriately and effectively in measures that will advance quality of health care and patient safety within the health care system.
- Recognize and advocate health promotion, disease prevention and health care quality improvement through prevention and early recognition: in a) life style diseases and b) cancers, in collaboration with other members of the health care team.

Communicator with patients, families, colleagues and community

- Demonstrate ability to communicate adequately, sensitively, effectively and respectfully with patients in a language that the patient understands and in a manner that will improve patient satisfaction and health care out comes.
- Demonstrate ability to establish professional relationships with patients and families that are positive, understanding, humane, ethical, empathetic, and trust worthy.
- Demonstrate ability to communicate with patients in a manner respectful of patient's preferences, values, prior experience, beliefs, confidentiality and privacy.
- Demonstrate ability to communicate with patients, colleagues and families in a manner that encourages participation and shared decision-making.

Lifelong learner committed to continuous improvement of skills and knowledge

- Demonstrate ability to perform an objective self-assessment of knowledge and skills,

continue learning, refine existing skills and acquire new skills.

- Demonstrate ability to apply newly gained knowledge or skills to the care of the patient.
- Demonstrate ability to introspect and utilize experiences, to enhance personal and professional growth and learning.
- Demonstrate ability to search (including through electronic means), and critically evaluate the medical literature and apply the information in the care of the patient.
- Be able to identify and select an appropriate career pathway that is professionally rewarding and personally fulfilling.

Professional who is committed to excellence, is ethical, responsive and accountable to patients, community and the profession

- Practice selflessness, integrity, responsibility, accountability and respect.
- Respect and maintain professional boundaries between patients, colleagues and society.
- Demonstrate ability to recognize and manage ethical and professional conflicts.
- Abide by prescribed ethical and legal codes of conduct and practice.
- Demonstrate a commitment to the growth of the medical profession as a whole

Broad Outline on training format

In order to ensure that training is in alignment with the goals and competencies

There shall be a "Foundation Course" to orient medical learners to MBBS programme, and provide them with requisite knowledge, communication (including electronic), technical and language skills.

The curricular contents shall be vertically and horizontally aligned and integrated to the maximum extent possible in order to enhance learner's interest and eliminate redundancy and overlap.

Teaching-learning methods shall be learner centric and shall predominantly include small group learning, interactive teaching methods and case based learning.

Clinical training shall emphasize early clinical exposure, skill acquisition, certification in essential skills; community/primary/secondary care-based learning experiences and emergencies.

Training shall primarily focus on preventive and community based approaches to health and disease, with specific emphasis on national health priorities such as family welfare, communicable and non- communicable diseases including cancer, epidemics and disaster management.

Acquisition and certification of skills shall be through experiences in patient care, diagnostic and skill laboratories.

The development of ethical values and overall professional growth as integral part of curriculum shall be emphasized through a structured longitudinal and dedicated programme on professional development including attitude, ethics and communication.

Progress of the medical learner shall be documented through structured periodic assessment that includes formative and summative assessments. Logs of skill-based training shall be also maintained.

Appropriate Faculty Development Programmes shall be conducted regularly by institutions to facilitate medical teachers at all levels to continuously update their professional and teaching skills, and align their teaching skills to curricular objectives.

Para-clinical phase [(Phase II) - Second Professional (12 months)]: will consist of Para-clinical subjects namely Pathology, Pharmacology, Microbiology, Community Medicine, Forensic Medicine and Toxicology, Professional development including Attitude, Ethics & Communication (AETCOM) module and introduction to clinical subjects ensuring both horizontal and vertical integration.

Dedicated teaching hours are prescribed for all subjects which includes lectures, **Small group learning (Tutorials / Seminars)/Integrated learning, Self Directed learning, Clinical postings.**

Didactic lectures shall not exceed one third of the schedule; two third of the schedule shall include interactive sessions, practicals, clinical or/and group discussions. The learning process should include clinical experiences, problem oriented approach, case studies and community health care activities.

The clinical exposure to learners will be in the form of learner-doctor method of clinical training in all phases. The emphasis will be on primary, preventive and comprehensive health care. A part of training during clinical postings should take place at the *primary level* of health care. It is desirable to provide learning experiences in secondary health care, wherever possible**.** This will involve:

- Experience in recognizing and managing common problems seen in outpatient, inpatient and emergency settings,
- Involvement in patient care as a team member,
- Involvement in patient management and performance of basic procedures.

Professional Development including Attitude, Ethics and Communication will be done through a modular approach(ATCOM Module) spread through out the year.

Assessment

Eligibility to appear for Professional examinations

The performance in essential components of training are to be assessed, based on:

1. Attendance

Attendance requirements are 75% in theory and 80% in practical /clinical for eligibility to appear for the examinations in that subject. In subjects that are taught in more than one phase – the learner must have 75% attendance in theory and 80% in practical in each phase of instruction in that subject.

2. **Internal Assessment**: Internal assessment shall be based on day-to-day assessment. It shall relate to different ways in which learners participate in learning process including assignments, preparation for seminar, clinical case presentation, preparation of clinical case for discussion, clinical case study/problem solving exercise, participation in project for health community, proficiency in carrying out a practical or a skill in small research project, a written test etc.

a) Regular periodic examinations shall be conducted throughout the course. There shall be no less than three internal assessment examinations in each Para-clinical subject .

b) Day to day records and log book (including required skill certifications) should be given importance in internal assessment. Internal assessment should be based on competencies and skills.

c) Learners must secure at least 50% marks of the total marks (combined in theory and practical / clinical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in a particular subject in order to be eligible for appearing at the final University examination of that subject. Internal assessment marks will reflect as separate head of passing at the summative examination.

d) The results of internal assessment should be displayed on the notice board within a 1-2 weeks of the test. Universities shall guide the colleges regarding formulating policies for remedial measures for students who are either not able to score qualifying marks or have missed on some assessments due to any reason.

e) Learners must have completed the required certifiable competencies for that phase of training and completed the log book appropriate for that phase of training to be eligible for appearing at the final university examination of that subject.

University Examinations for Second Professional year shall be held asunder:

The second Professional examination shall be held at the end of second professional training(11months),in the subjects of Pathology, Microbiology, and Pharmacology.

Supplementary examinations shall not be conducted later than 90 days from the date of declaration of the results of the main examination, so that the learners who pass can join the main batch for progression and the remainder would appear for the examination in the subsequent year.

A learner, who fails in the second Professional examination, shall not be allowed to appear in third Professional Part I examination unless he/she passes all subjects of second Professional examination.

Time allotted excludes time reserved for internal / University examinations, and vacation.

Second professional clinical postings shall commence before / after declaration of results of the first professional phase examinations, as decided by the institution/ University. Third Professional parts I and part II clinical postings shall start no later than two weeks after the completion of the previous professional examination.

25% of allotted time of third Professional shall be utilized for integrated learning with pre- and para- clinical subjects. This will be included in the assessment of clinical subjects.

One month is provided at the end of every professional year for completion of examination and declaration of results.

Criteria for passing in a subject: A candidate shall obtain 50% marks in University conducted examination separately in Theory and Practical (practical includes: practical/ clinical and viva voce) in order to be declared as passed in that subject.

In subjects that have two papers, the learner must secure at least 40% marks in each of the papers with minimum 50% of marks in aggregate (both papers together) to pass in the said subject.

PATHOLOGY

SYLLABUS FOR PATHOLOGY II Professional Year

GOAL: The broad goal of teaching of undergraduate students in Pathology is

- Comprehension of the causes, evolution, mechanisms and laboratory diagnosis of disease.
- Knowledge of alterations in gross and cellular morphology of organs in disease states
- Correlate the natural history, structural and functional changes with the clinical manifestations of diseases, their diagnosis and therapy

OBJECTIVES:

A. Knowledge:

At the end of the course the student of Professional year 2 should be able to

1. Explain the concepts of cell injury and correlate changes produced thereby in different tissues and organs and the body's capacity for healing
2. Explain the pathogenetic mechanism and pathology of common immunological disorders and their resultant effects on the human body.
3. Explain the etiopathogenesis, the pathological effects and clinico-pathological correlation of common infectious and non-infectious diseases
4. Explain the concept of neoplasia with reference to the etiology, gross and microscopic features, diagnosis and prognosis in different tissues and organs of the body
5. Describe and Correlate normal and altered morphology (Gross and Microscopic) of different organ systems in different diseases to the extent needed for understanding of disease processes and their clinical significance.
6. Discuss about the common hematological disorders and their investigations necessary to diagnose them and determine their prognosis.
7. Explain the principles of collections of samples, handling of samples and dispatch of clinical samples after tests in a proper manner.
8. Discuss about different types of Bio-medical waste, their potential risks and their management.

B. Skills:

At the end of the course the student of Professional year 2 should be able to

1. Perform and interpret the routine tests in a Pathology Laboratory including making smears and staining.
2. Able to identify characteristic morphologic changes in different organs in various disease states.

C. Attitudes/Communication:

At the end of the course the student of Professional year 2 should be able to:

1. Communicate effectively to a patient about the need of a laboratory investigation
2. Interpret and explain the investigations to a patient or his relatives in light of clinical presentation.
3. Work as a member of health care team in management of disease.

D. **Integration:**

The teaching will be aligned and integrated horizontally and vertically in organ systems and diseases recognizing deviations from normal structure and function and clinically correlated so as to provide an overall understanding of the etiology, mechanisms, laboratory diagnosis, and management of diseases most prevalent in India.

COURSE CONTENTS

The contents of the Pathology curriculum is based on the competencies enlisted in the Competency Based Undergraduate Curriculum for the Indian Medical Graduate (IMG) 2018 - Volume I, drafted in conjunction with the new Graduate Medical Education Regulations (GMR).

Teaching Hours

Subject	Theory	Practical/SGT/Tutorials/Integrated teaching	SDL	Total Hours
Pathology	**80**	**138**	**12**	**230**

I. GENERAL PATHOLOGY

1. Introduction to Pathology (PA 1.1 to PA 1.3) 1 Hrs

Core

Role of a pathologist in diagnosis and management of disease,
Common definitions and terms used in Pathology

Non-Core

History and evolution of Pathology

2. Cell Injury and Adaptation (PA2.1 to 2.8) 4 Hrs

Core

Causes, mechanisms, types and effects of cell injury and their clinical significance
Etiology of cell injury.
Reversible and irreversible injury: mechanisms; morphology of cell injury, differences
Intracellular accumulation of fats, proteins, carbohydrates, pigments
Cell death- types, mechanisms,
Necrosis, Apoptosis (basic as contrasted with necrosis), Autolysis
Pathologic calcifications, Gangrene
Cellular adaptations: atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia

Non-Core

Mechanisms of cellular aging and apoptosis

3.Inflammation (PA 4.1-4.3) 3 Hrs
Definition and General features of acute and chronic inflammation including stimuli, vascular and cellular events
Mediators of acute inflammation

Chronic inflammation including Definition causes, types, non-specific and granulomatous inflammation with examples

4.Healing and repair : **(PA 5.1) 1 Hrs**

Process of repair and regeneration including wound healing and its types

5. **Hemodynamic disorders: (PA 6.1-6.6) 3 Hrs**
Core

dema, its types, pathogenesis and clinical correlations, hyperemia, congestion, hemorrhage ,shock, its pathogenesis and its stages

Normal haemostasis and the etiopathogenesis and consequences of thrombosis, Embolism and its causes and common types, Ischaemia/infarction its types, etiology, morphologic changes and clinical effects

, 6. **: Neoplastic disorders: (PA 7.1-7.5) 5 Hrs**
Core

Definition, Classification ,Characteristics of neoplasia including gross, microscopy, biologic, behavior and spread,. Differences between benign from malignant neoplams ,molecular basis of cancer, Carcinogens and the process of carcinogenesis ,Effects of tumor on the host including paraneoplastic syndrome,

Non Core

Immunology and the immune response to cancer

7. **Basic diagnostic cytology (PA 8.1 – 8.2)** **1 Hr**

Core

Diagnostic role of cytology and its application in clinical care ,

Basis of exfoliative cytology including the technique & stains used

8.Immunopathology and AIDS : **(PA 9.1 – 9.7)** **2 Hrs**

Core

Principles and mechanisms involved in immunity,

Mechanism of hypersensitivity reactions

HLA system and the immune principles involved in transplant and mechanism of transplant rejection,

Autoimmunity definition including autoimmune disorders like systemic Lupus Erythematosus,

Non-Core

Pathogenesis of other common autoimmune diseases

9.Infections and Infestations (PA 10.1 –10.4) **3 Hrs**

Core

Define and describe the pathogenesis and pathology of malaria

Define and describe the pathogenesis and pathology of cysticercosis

Define and describe the pathogenesis and pathology of leprosy

Non-Core

Define and describe the pathogenesis and pathology of common bacterial, viral, protozoal and helminthic diseases

10. **Genetic and paediatric diseases (PA 11.1 – 11.3)** **2 Hrs**

Non-Core

Pathogenesis and features of common cytogenetic abnormalities and mutations in childhood

Pathogenesis and pathology of tumor and tumour- like conditions in infancy and childhood

Pathogenesis of common storage disorders in infancy and childhood

11. **Environmental and nutritional diseases (PA 12.1 – 12.3) 2 Hrs**

Core

Pathogenesis of Disorders caused by air pollution, tobacco and alcohol

Pathogenesis of disorders caused by protein calorie malnutrition and starvation

Pathogenesis of obesity and its consequences

II. HEMATOLOGY, BLOOD BANKING and CLINICAL PATHOLOGY

12.**Hematology**

a. **Microcytic anemia**: **(PA 14.1 – 14.2) 1 Hrs**

Core

Iron metabolism ,Etiology, investigations and differential diagnosis of microcytic hypochromic anemia,

b **.Hemolytic anemia**: **(PA 16.1 – 16.5) 2 Hrs**

Core

Definition, Classification ,Pathogenesis ,Clinical features ,Hematologic indices of hemolytic anemia,

Pathogenesis, features, hematologic indices and peripheral blood picture of sickle cell anemia and thalass

Etiology pathogenesis, hematologic indices and peripheral blood picture of Acquired hemolytic anemia

Peripheral blood picture in different hemolytic anaemias

c. **Leukocyte disorders (PA 18.1 – 18.2) 1 Hrs**

Core

Causes of leucocytosis leucopenia lymphocytosis and leukemoid reactions

d. **Lymph node and spleen (PA 19.1, 19.2, 19.4, 19.6) 1 Hrs**

Core

Causes and differentiating features of lymphadenopathy

Pathogenesis and pathology of tuberculous lymphadenitis

Pathogenesis, pathology and the differentiating features of Hodgkin's and non-Hodgkin's lymphoma

Enumerate and differentiate the causes of splenomegaly

13. Blood banking and transfusion (PA 22.1, 22.4 – 22.7) 1 Hr

Core

Blood group systems (ABO and RH

Blood components and their clinical uses

Infections transmitted by blood transfusion

Transfusion reactions and the steps in the investigation of a transfusion reaction

Indications and the principles and procedure of autologous transfusion

14.Clinical Pathology (PA 23.2) 1 Hr

Core

Abnormal findings in body fluids in various disease states

III SYSTEMIC PATHOLOGY

15. Gastrointestinal tract (PA 24.1, 24.2, 24.4 – 24.7) 4 Hrs

Core

Etiology, pathogenesis, pathology, microbiology, clinical and microscopic features of peptic ulcer disease

Etiology and pathogenesis and pathologic features of carcinoma of the stomach

Etiology and pathogenesis and pathologic and distinguishing features of Inflammatory bowel disease

Etiology, pathogenesis, pathology and distinguishing features of carcinoma of the colon

Non- Core

Etiology, pathogenesis, pathology and clinical features of oral cancers

Etiology and pathogenesis and pathologic features of Tuberculosis of the intestine

16**: Hepatobiliary system (PA 25.1 – 25.5) 3 Hrs**
Core

Bilirubin metabolism,

Jaundice: Etiology , pathogenesis, distinction between direct and indirect hyperbilirubinemia

Hepatic failure: Pathophysiology , pathologic changes , clincial manifestations, complications and consequences

Hepatitis: Etiology and pathogenesis of viral and toxic hepatitis: distinguish the causes

of hepatitis based on the clinical and laboratory features.

Pathology, complications and consequences of hepatitis

Alcoholic Liver Disease: Pathophysiology, pathology and progression of alcoholic liver

disease including cirrhosis

Portal hypertension Etiology, pathogenesis and complications

17. **Respiratory system (PA 26.1 – 26.7) 5 Hrs**

Core

Pneumonia: Definition, etiology, types, pathogenesis, stages, morphology and

complications

Lung abscess: Etiology, gross and microscopic appearance and complications

Definition ,etiology, types, pathogenesis, stages, morphology and complications and

evaluation of Obstructive airway disease (OAD) and bronchiectasis

Definition ,etiology, types, pathogenesis, stages, morphology microscopic appearance and

complications of tuberculosis

Definition , etiology, types, exposure, environmental influence, pathogenesis, stages,

morphology, microscopic appearance and complications of Occupational lung disease

Definition , etiology, types, exposure, genetics environmental influence, pathogenesis,

stages, morphology, microscopic appearance, metastases and complications of tumors

of the lung and pleura

Non-Core

Definition the etiology, types, exposure, genetics environmental influence,

pathogenesis, morphology, microscopic appearance and complications of

Mesothelioma

18. **Cardiovascular system (PA 27.1 – 27.7, 27.9- 27.10) 7 Hrs**

Core

Distinction between arteriosclerosis from atherosclerosis.

Pathogenesis and pathology of various causes and types of arteriosclerosis

Etiology, dynamics, pathology types and complications of aneurysms including aortic aneurysms

Etiology, types, stages pathophysiology, pathology and complications of heart failure

Etiology, pathophysiology, pathology, gross and microscopic features, criteria and complications of rheumatic fever

Epidemiology, risk factors, etiology, pathophysiology, pathology, presentations, gross and microscopic features, diagnostic tests and complications of ischemic heart disease

Etiology, pathophysiology, pathology, gross and microscopic features, diagnosis and complications of infective endocarditis

Etiology, pathophysiology, pathology, gross and microscopic features, diagnosis and complications of pericarditis and pericardial effusion

Non-Core

Classification, etiology, types, pathophysiology, pathology, gross and microscopic features, diagnosis and complications of cardiomyopathies

Etiology, pathophysiology, pathology features and complications of syphilis on CVS

19. **Urinary Tract (PA 28.1 – 28.14) 7 Hrs**

Core

Normal histology of the kidney

Definition, classification and distinguishing the clinical renal syndromes

Etiology, pathogenesis, pathology, morphology, clinical and laboratory and urinary findings and complications of renal failure

Definition, etiology, precipitating factors, pathogenesis, pathology, laboratory urinary findings, progression and complications of acute renal failure

Definition , etiology, precipitating factors, pathogenesis, pathology, laboratory urinary findings progression and complications of chronic renal failure

Definition and classification of glomerular diseases

Etiology, pathogenesis, mechanisms of glomerular injury, pathology, distinguishing features and clinical manifestations of glomerulonephritis

Etiology, pathogenesis, pathology, laboratory, urinary findings, progression and complications of IgA nephropathy

Glomerular manifestations of systemic disease

Diseases affecting the tubular interstitium

Etiology, pathogenesis, pathology, laboratory, urinary findings, progression and complications of acute tubular necrosis

Etiology, pathogenesis, pathology, laboratory findings, distinguishing features progression and complications of acute and chronic pyelonephritis and reflux nephropathy

Definition, classification, etiology, pathogenesis pathology, laboratory, urinary findings, distinguishing features progression and complications of vascular disease of the kidney

Definition, classification and describe the genetics, inheritance, etiology, pathogenesis, pathology, laboratory, urinary findings, distinguishing features, progression and complications of cystic disease of the kidney

Definition, classification ,etiology, pathogenesis, pathology, laboratory, urinary findings, distinguishing features progression and complications of renal stone disease and obstructive uropathy

classification ,etiology, genetics, pathogenesis, pathology, presenting features, progression and spread of renal tumors

Non-Core

Etiology, genetics, pathogenesis, pathology, presenting features and progression of thrombotic angiopathies

Etiology, genetics, pathogenesis, pathology, presenting features and progression of urothelial tumors

20. Male Genital Tract (PA 29.1 – 29.5) 2 Hrs

Core

Testicular tumors Classification, pathogenesis, pathology, presenting and distinguishing features, diagnostic tests, progression and spread

Carcinoma of the penis: Pathogenesis, pathology, presenting and distinguishing features, diagnostic tests, progression and spread

Benign prostatic hyperplasia Pathogenesis, pathology, hormonal dependency presenting and distinguishing features, urologic findings & diagnostic tests

Carcinoma of the prostate: Pathogenesis, pathology, hormonal dependency presenting and distinguishing features, diagnostic tests, progression and spread

Non- Core

Prostatitis : Etiology, pathogenesis, pathology and progression

21. Female Genital Tract (PA 30.1 – 30.9) 4 Hrs

Core

Carcinoma of the cervix :epidemiology, pathogenesis, etiology, pathology, screening, diagnosis and progression

Carcinoma of the endometrium: pathogenesis, etiology, pathology, diagnosis and progression and spread of

Leiomyomas and leiomyosarcomas: Pathogenesis, etiology, pathology, diagnosis and

progression and spread

Ovarian tumors : Classification ,etiology, pathogenesis, pathology, morphology, clinical course, spread and complications

Gestational trophoblastic neoplasms: Etiology, pathogenesis, pathology, morphology, clinical course, spread and complications

Non-Core

Cervicitis :etiology and morphologic features

Endometriosis :Etiology, hormonal dependence, features and morphology

Adenomyosis : Etiology and morphologic features

Endometrial hyperplasia: Etiology, hormonal dependence and morphology

22. Breast (PA 31.1, 31.2, 31.4) 2 Hrs

Core

Benign breast disease :Classification, etiology, pathogenesis, pathology and hormonal dependency

Carcinoma of the breast: Classification ,epidemiology, pathogenesis, classification, morphology, prognostic factors, hormonal dependency, staging and spread

Non-Core

Gynecomastia :Etiology, hormonal dependency and pathogenesis

23. Endocrine system (PA 32.1 –32.9) 4 Hrs

Core

Thyroid swellings: Enumerate, classification, etiology, pathogenesis, pathology and iodine dependency

Thyrotoxicosis: Etiology,, iodine dependency, pathogenesis, manifestations, laboratory and imaging features and course

Thyrotoxicosis and hypothyroidism : Etiology, pathogenesis, manifestations, laboratory and imaging features and course

Diabetes mellitus: Classification ,epidemiology, etiology, pathogenesis, pathology, clinical laboratory features, complications and progression

Non-Core

Hyperparathyroidism : Etiology, genetics, pathogenesis, manifestations, laboratory and morphologic features

Pancreatic cancer : Etiology, pathogenesis, manifestations, laboratory, morphologic features, complications and metastases

Adrenal insufficiency: Etiology, pathogenesis, manifestations, laboratory, morphologic features, complications

Cushing's syndrome : Etiology, pathogenesis, manifestations, laboratory, morphologic features, complications

Adrenal neoplasms : Etiology, pathogenesis, manifestations, laboratory and morphologic features

24. Bone and soft tissue (PA 33.1 – 33.5) 3 Hrs

Core

Osteomyelitis Classification,etiology, pathogenesis, manifestations, radiologic and morphologic features and complications

Bone tumors Classification,etiology, pathogenesis, manifestations, radiologic and morphologic features and complications and metastases

Soft tissue tumors Classification,etiology, pathogenesis, manifestations, radiologic and morphologic features and complications and metastases

Non-Core

Paget's disease of the bone: Classification, etiology, pathogenesis, manifestations, radiologic and morphologic features and complications

Rheumatoid arthritis: Classification,etiology, immunology, pathogenesis, manifestations, radiologic and laboratory features, diagnostic criteria and complications

26. Skin (PA 34.1 – 34.3) **1 Hrs**

Core

Squamous cell carcinoma of the skin : Risk factors pathogenesis, pathology and natural history

Basal cell carcinoma of the skin: Risk factors pathogenesis, pathology and natural history

Non-Core

Distinguishing features between a nevus and melanoma.

Melanoma:Etiology, pathogenesis, risk factors morphology clinical features and metastases

27 Central Nervous System (PA 35.1 – 35.2) **1 Hrs**

Core

Meningitis: Etiology, types and pathogenesis, differentiating factors, CSF findings

CNS tumors: Classification, etiology, genetics, pathogenesis, pathology, presentation sequelae and complications

29.Eye (PA 36.1 **1 Hrs**

Non-Core

Retinoblastoma : Etiology, genetics, pathogenesis, pathology, presentation, sequelae and complications

PRACTICALS / TUTORIALS/SMALL GROUP TEACHING/ INTEGRATED TEACHING

1. Role of a pathologist in diagnosis and management of disease, basis of cytology/ histopathology, technique & stains used **PA1.1, 8.1 ,PA8.3**
2. Gross and Microscopy of various forms of Cell Injury **PA 2.3,2.5, 2.8**
3. Amyloidosis- pathogenesis, pathology **PA 3.1, 3.2**
4. Gross and microscopic of Acute Inflammation **PA 4.4**
5. Gross and microscopic of Chronic Inflammation- **PA 4.4**
6. Gross and microscopic of Infarction **PA 6.7**
7. Pathology of Congestion- **PA 6.2**
8. Pathogenesis and pathology of HIV and AIDS **PA9.6**
9. Common Benign and Malignant Tumours- Gross and microscopy
10. Hematopoiesis and extramedullary hematopoiesis **PA 13.1**
11. Role of anticoagulants in hematology **PA 13.2**
12. Anemia- Definition ,classification, laboratory investigations **PA 13.3, PA 13.4**
13. macrocytic anemia - metabolism ,etiology, pathogenesis and laboratory investigations **PA15.1 ,PA15.2**
14. Perform, Identify and describe the peripheral smear anemia, microcytic anemia, Macrocytic A, Hemolytic **A PA 13.5, PA 14.3 PA 15.3 PA 16.6**
15. Aplastic anemia - etiology, pathogenesis , indications and findings in bone marrow aspiration and biopsy **PA 17.1 , 17.2**
16. Leukemia (acute and chronic)- classification, Etiology, genetics, pathogenesis, features, hematologic features **PA 18.2**
17. M myeloma **PA 20.1**
18. Lymphadenopathy- causes and describe the differentiating features **PA19.1**
19. Tuberculous lymphadenitis- gross and microscopic **PA19.3.**
20. Hodgkin's lymphoma - gross and microscopic specimen **PA19.5**
21. splenomegaly – causes, gross **PA 19.6, 19.7**
22. Normal hemostasis, vascular and platelet disorders (including ITP,Haemophilia and DIC) –Classification, etiology, pathogenesis and pathology **PA21.1 , PA21.2**
23. Differentiate platelet from clotting disorders based on the clinical and hematologic features **PA21.3** (ITP Charts, charts on coagulation disorders Hemophilia, DIC)
24. Abnormal urinary findings in disease states **PA23.1**
25. Renal function tests, **PA23.3**
26. peptic ulcer disease- etiology, pathogenesis, pathology, clinical and microscopic features **PA24.2,24.3**
27. liver function and viral hepatitis serology panel -Interpretation. Distinguish obstructive from non-obstructive jaundice based on clinical features and liver function tests **PA25.6**
28. Tuberculosis - Definition, etiology, types, pathogenesis, stages, morphology ,microscopic appearance and complications **PA26.4**
29. Abnormalities in cardiac function testing in acute coronary syndromes **PA27.8**

30. Carcinoma of the breast - morphologic and microscopy **PA 31.3**
31. Semen analysis
32. Thyroid non neoplastic -**32.1, 32.2,32.3**
33. meningitis - etiology, types and pathogenesis, differentiating factors, CSF findings **PA35.1, PA35.3**
34. Common tumors of the skin **PA 34.4**

Topics for Small group teaching(SGT)

1. Reversible versus Irreversible Cell Injury **PA 2.2**
2. Apoptosis versus Necrosis, Differences between metastatic and dystrophic calcification **PA 2.4, 2.5**
3. Steps of vascular & cellular events of Inflammation. Granulomatous inflammation with examples **PA 4.1, 4.3**
4. Types of embolism with consequences, Types of Infarction and gangrene **PA 6.5, 6.6**
5. Lab diagnosis of Neoplasia **PA 7.5**
6. Approach to case of anemia/ case based (histogram) **PA 13.3, 14.2, 15.2**
7. Case discussion/chart- Leukemia **PA 18.2**
8. Causes of LN enlargement, Differences between NHL and HL **PA 19.1, 19.4**
9. Cross matching **PA 22.2, 16.7**
10. Ulcerative and premalignant lesions of GIT **PA 24.2,24.4, 24.5, 24.6, 24.7**
11. Restrictive versus obstructive disease, Bronchopneumonia Versus Lobar pneumonia, Emphysema Versus Chronic Bronchitis **PA 26.3**
12. Case discussion on MI **PA 27.5**
13. Cadiac Vegetations **PA 27.4**
14. contracted Kidney differential diagnosis **PA 28.4, Pa 28.5**
15. Testis germ cell tumors **PA 29.1**
16. Premalignant lesions of FGT
17. Approach to nodular lesion of thyroid **PA 32.1, 32.2, 32.3**
18. **SDL TOPICS:-**

    1. Pigment Disorders
    2. Genetic Disorders
    3. Laboratory Diagnosis of Hemoglobinopathies
    4. Blood Components
    5. Alcoholic Liver Diseases
    6. Aterosclerosis and Hypertension- Pathological Changes
    7. Case Based Discussion on Diabetes Mellitus
    8. Opportunistic Infections in Immunocompromised States
    9. Arthritis Charts
    10. Common Effusions- Etiology, Analysis
    11. AUB
    12. Premalignant Lesions

Scheme of examination

Internal assessment :

A minimum of three theory and practical examinations shall be conducted in MBBS 2nd Professional Year at the end of Blocks 1,2 and 3 respectively. The 3rd IA (Preliminary) examination preceding the university examination will be similar to the pattern of university examination i.e two theory papers of 100 marks each and practical examinations of 100 marks (80 marks practical's +20 marks viva voce). Apart from this, a series of formative assessments in both theory and practicals will be conducted throughout the year, which will be taken into consideration for calculating the IA marks as described in the Table given below.

Internal Assessment (IA)		**Theory Max. marks**	**Marks Obtained**	**Practical Max. Marks**	**Marks Obtained**
IA –I		100		50	
IA-II		100		50	
IA-III		200		100	
Formative Assessment					
Part completion test	Integrated	40		--	
	SGT	25		--	
	SDL	15		--	
Certifiable skills		--		50	
Other than certifiable skills		--		30	
AETCOM Skills		10		10	
Participation in SGT		10		--	
Co-Curricular and other academic activities		--		05	
Practical record				05	
Total Reduced to 40%		500		300	
		100 (Min.40)		60 (Min.24)	
Grand Total (Aggregate of theory & Practicals) **(Min.50%)**			___ /160		
			Eligible	Not eligible	

ELIGIBILITY FOR EXAMINATION:

To be eligible to appear for university examination a candidate,

- Shall have undergone satisfactorily the approved course of study in the subject for the prescribed duration
- Shall have attended minimum **75%** of the total number of classes in theory and **80%** in practical separately to become eligible to appear for the examination in the subject

- Shall secure **40%** of total marks separately assigned for internal assessment in theory and practical in a particular subject
- Shall secure **50%** marks in aggregate of the total marks combined in theory and practical assigned for IA in the subject

Supplementary Examination:

- To be conducted within 90 days after the declaration of the results of the final examination

SUMMATIVE EXAMINATION

A. THEORY

WRITTEN PAPERS: 200 Marks

There shall be two theory papers of 100 marks each and duration of each paper shall be of 3 hours. (Duration of MCQ examination shall be 25 minutes and there will be no negative marking for wrong answers**.** The MCQ answer sheet shall be collected after 25 minutes).

Type of Questions	Number of questions	Marks for each question	Total Marks
MCQ Type questions	20	01	20
Essay type questions	02	10	20
Short Essay type questions	09	05	45
Short answer type questions	05	03	15
		GRAND TOTAL….	**100**

Distribution of topics for paper I and II for University Examination is given below:
(MCQ=20 marks + Theory= 80 marks: Total 100 Marks, Duration 3 Hrs)

Paper I **100 marks**

1. General Pathology
2. Hematology
3. Blood Banking
4. Clinical Pathology

Paper II: **100 marks**

1. Cardiovascular system
2. Respiratory system
3. Hepatobiliary, pancrease
4. Renal system
5. Reproductive system
6. Breast Pathology
7. Lymphoreticular system
8. Musculoskeletal system
9. Endocrine System
10. Dermatopathology
11. Ocular Pathology
12. Neuropathology

The topics assigned to the different papers will generally be evaluated under those sections. However, a strict division of the topics may not be possible and some overlapping of topics might be inevitable. Students should be prepared to answer overlapping topics.

PAPER I and Paper II: 100 MARKS each

Blue Print for the Assessment :Pathology Paper I
(Hematology, General Pathology, Clinical Pathology, Blood Banking)

	No. of MCQ's	**Total Marks**
Hematology Inflammation and Repair Neoplasia Cell Injury and Adaptations Immunopathology Homodynamic Disorders Genetics Diseases of Infancy and Childhood Clinical Pathology Environmental & Nutritional Disorders Blood Banking	20X1=20	20
	No. of Long Essays	

Hematology Inflammation and Repair Neoplasia Cell Injury and Adaptations Immunopathology Homodynamic Disorders	2 x 10 = 20	20
	No. of Short Essays	
Hematology Inflammation and Repair Neoplasia Cell Injury and Adaptations Immunopathology Homodynamic Disorders Genetics Diseases of Infancy and Childhood Clinical Pathology Environmental & Nutritional Disorders Blood Banking	9 x 5 = 45 Marks	45
	No. of Short Answers	
Hematology Inflammation and Repair Neoplasia Cell Injury and Adaptations Immunopathology Homodynamic Disorders Genetics Diseases of Infancy and Childhood Clinical Pathology Environmental & Nutritional Disorders Blood Banking	5 x 3 = 15 Marks	15
	Total	100

Blue Print for the Assessment Pathology Paper II: (Systemic Pathology)

	No. of MCQ's	**Total Marks**
Cardiovascular System Respiratory System Gastrointestinal System Renal System Hepatobiliary System Endocrine system Female reproductive Breast Pathology Musculoskeletal & Soft Ts Tumors Male reproductive LUT Central Nervous system Peripheral Nervous System Eye	20X1=20	20

skin Lymphoreticular System		
	No. of Long Essays	
Cardiovascular System Respiratory System Gastrointestinal System Renal System Hepatobiliary System Endocrine system Female reproductive Breast pathology	2 x 10 = 20	20
	No. of Short Essays	
Cardiovascular System Respiratory System Gastrointestinal System Renal System Hepatobiliary System System Endocrine system Female reproductive Breast pathology Musculoskeletal & Soft Tissue Tumors Male reproductive LUT Central Nervous system Peripheral Nervous System Eye skin Lymphoreticular System	9 x 5 = 45 Marks	45
	No. of Short Answers	
Cardiovascular System Respiratory System Gastrointestinal System Renal System Hepatobiliary System System Endocrine system Female reproductive Breast pathology Musculoskeletal & Soft Tissue Tumors Male reproductive LUT Central Nervous system Peripheral Nervous System Eye Skin Lymphoreticular System	5 x 3 = 15 Marks	15
	Total	100

NOTE : The weightage of questions in the college and university examination shall be distributed equally across all the topics.

B. PRACTICAL EXAMINATION **Max. Marks: 80**

Total Marks – 100 (Practical: 80 + Viva voce: 20)

Exercise 1- **Spotters (10 x 2marks each) – 20 marks**

Time allotted: 10mins
Specimens - 2
Histopathology Slides - 1
Haematology slides - 2
Clinical scenario/ charts- 3
Instrument -2

Note: Students need to identify the spotter and write two relevant points

Exercise 2: Urine Analysis – 20 Marks

Time allotted: 20mins
Physical examination + Chemical examination (Detection of 2 abnormal constituents) based on history provided

Exercise 3: Peripheral Smear – 20 Marks
Time allotted: 20mins
Peripheral smear reporting based on history provided + draw a neat labelled diagram

Exercise 4: **Histopathology slide – 10 Marks**
Time allotted: 20mins
Identify + draw a neat labelled diagram + write points in favour of identification

Exercise 5: **Chart** - 10 Marks,.
Time allotted: 10mins
Each student is given only one chart
Interpret the chart and answer the given questions.

NOTE: The evaluation of charts on certifiable competencies should be completed in formative and internal assessment and duly documented in the log book.

Exercise 7: Viva Voce (20 marks)
Time allotted: 20 to 30mins (5-6mins per candidate for each examiner)
Marks allotted for each examiner – 5 marks

Subject allotted for each examiner:
1. Clinical Pathology and hematology
2. General Pathology
3. Systemic Pathology – I (CVS, RS, GIT, Hepatobiliary, Lymphoreticular and Spleen)
4. Systemic Pathology - II (Urinary system, Male and Female genital tract, Endocrines, Bone and Soft tissue, Central Nervous System,Skin)

List of Specimen

1. TB lymph node
2. Myocardial infarction
3. Gangrene
4. Fatty liver
5. Acute appendicitis
6. Lobar pneumonia
7. Chronic cholecystitis with stones
8. CVC Liver
9. Leiomyoma uterus
10. Fibroadenoma
11. Breast CA
12. Peptic ulcer
13. Squamous cell carcinoma foot

List of slides

1. TB lymph node
2. Myocardial infarction
3. Fatty liver
4. Acute appendicitis
5. Lobar pneumonia
6. Chronic cholecystitis
7. CVC Liver
8. Microcytic Hypochromic Anaemia- PS
9. Dimorphic Anaemia- PS
10. Haemolytic anaemia- PS
11. Acute leukemia- PS & BM
12. Chronic leukemia- PS & BM
13. Leiomyoma
14. Fibroadenoma
15. Breast CA
16. Peptic ulcer
17. Squamous cell carcinoma

List of Charts:

1. Anaemia
2. Leukemia
3. ITP
4. Haemophilia
5. Viral hepatitis
6. Semen analysis
7. Diabetes mellitus
8. Renal calculi
9. Urinary tract infection
10. Multiple myeloma

11. Hyperthyroidism
12. Hypothyroidism
13. Alcoholic liver disease
14. CA cervix
15. Nephrotic
16. Nephritic syndrome
17. Pyogenic meningitis
18. Tuberculous meningitis
19. MI- Lab diagnosis
20. Carcinoma lung
21. Rheumatoid arthritis
22. Carcinoma stomach

List of Instruments:

1. Vacutainers [Anticoagulants]
2. Blood bag
3. Needles- Bone Marrow Aspiration
   Lumbar puncture
   Liver biopsy
4. Urine- Urinometer, Albuminometer, Strips

Practical's to be performed

1. Perform identify & describe PS
2. Urine analysis – Physical, chemical examination & microscopy

Examination components with distribution of marks

1	Written papers: No. of papers and maximum marks for each paper.	2 X 100 = 200
2	Practicals	80
3	Viva/orals	20
Total Theory		**300**

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- For declaration of pass in the subject in university examination, the candidate should pass both theory and practicals separately in the same examination securing an aggregate of **50%** marks individually in theory & practical shall be declared to pass.
- For a pass in theory examination, a student must secure minimum **40%** of marks in each of the two theory papers with minimum of **50%** marks in aggregate (both papers together)
- For a pass in practical examination in the subject, a student must secure minimum **50%** of marks in aggregate in practicals and viva-voce examination
- Candidate must secure **50%** aggregate in internal assessment examination (Combined in theory and practicals) in the subject

- Internal assessment shall be reflected as a separate head of passing at the final university examination.
- For a pass in the subject, a student shall secure **50%** marks in aggregate of the total marks combined in theory, practicals and viva-voce.

- Candidate securing an aggregate of **65-74. %** marks in (theory & practical) in first attempt shall be declared to pass with First class.
- Candidate securing an aggregate marks of **75 %** & above (theory & practical) in the first attempt shall be declared to pass with Distinction.

RECOMMENDED BOOKS (Latest Edition)

1. ROBBINS (Stanley L) et. aL, **Pathologic Basis of Diseases**. Prism Books Pvt Ltd., Bangalore.
2. MOHAN (Harsh), **Textbook of Pathology**, Jaypee Brothes, New Delhi.
3. FIRKIN (Frank) et al, **de Gruchy's Clinical Haematology in Medical practice** Oxford University Press, Delhi.
4. WALTER (JB) and Israel (MS), **General Pathology**, Churchill Livingstone, Edinburgh.
5. Govan (Alasdair) et al., **Pathology, Illustrated**, Churchill Livingstone, Edinburgh,
6. SOOD (Ramnik) **Medical Laboratory Technology,** Jaypee Brothers, New Delhi .
7. N. C. Dey & T. K. Dey **A Text Book of Pathology**, New Central Book Agency (P) Ltd, Calcutta.
8. V. Krishna **Text book of Pathology**, Ed 1 Orient Longman Pvt Ltd, Chennai.

REFERENCE BOOKS (Latest Edition)

1. Mc Gee (Jaures) et. al., **Oxford Textbook of Pathology**, Vol. I 2a and 2B, Oxford University Press, Oxford
2. KISSANE (John) **Anderson's Pathology**, Vol. I & II, The CV Mosby Company, St. Louis.
3. CURRAN (RC), **Colour Atlas of Histopathology**, Harvery Miller Publishers, Oxford University Press, New York.
4. DACIE (Sir John) and Lewis (SM), **Practical Haematology**, Churchhill Livingstone, London.
5. P. CHAKRABORTY GARGI CHAKRABORTY, **Practical Pathology**, New Central Book Agency, Calcutta.
6. DR. TEJINDER SINGH, **Textbook of Haematology,** Arya Publications, New Delhi.
7. LEE (Richard) et al, **Wintrobes Clinical, Hematology**, Vol. 1 & 2, Williams .
8. HENRY (John): **Clinical Diagnosis and Management by Laboratory Method**, WB Saunder's Company, London. A Prism Indian Edition.

   (Jaypee Publication)

PHARMACOLOGY

PHARMACOLOGY SYLLABUS SECOND PROFESSIONAL YEAR

GOAL:

The broad goal of the teaching of undergraduate students in Pharmacology is to inculcate a rational and scientific basis of therapeutics.

OBJECTIVES:

A. KNOWLEDGE

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

1. Describe the pharmacokinetics and pharmacodynamics of essential and commonly used drugs.
2. List the indications, contraindications, interactions and adverse reactions of commonly used drugs.
3. Indicate the use of appropriate drug in a particular disease with consideration to its cost, efficacy and safety for

i) Individual needs.

ii) Mass therapy under national health program.

4. Describe the pharmacokinetic basis, clinical presentation, diagnosis and management of common poisonings.
5. List the drugs of addiction and recommend the management.
6. Classify environmental and occupational pollutants and state the management issues.
7. Indicate causations in prescription of drugs in special medical situations such as pregnancy, lactation, infancy and old age.
8. Integrate the concept of rational drug therapy in clinical pharmacology.
9. State the principles underlying the concept of 'Essential Drugs'
10. Evaluate the ethics and modalities involved in the development and introduction of new drugs.

B. SKILLS

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

1. Prescribe drugs for common ailments.
2. Recognise adverse reactions and interactions of commonly used drugs.
3. Observe experiments designed for study of effects of drugs, bioassay and interpretation of the experimental data.
4. Scan information on common pharmaceutical preparations and critically evaluate drug formulations.

C. ATTITUDES/COMMUNICATION

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

1. Communicate effectively with a patient on all aspects of prescribed medication
2. Counsel the patients and family members regrading preventive and curative aspects of disease management

D. INTEGRATION

Practical knowledge of use of drugs in clinical practice will be acquired through integrated teaching with clinical departments and pre-clinical departments.

COURSE CONTENTS

The contents of the pharmacology curriculum is based on the competencies enlisted in the Competency Based Undergraduate Curriculum for the Indian Medical Graduate (IMG) 2018 - Volume I, drafted in conjunction with the new Graduate Medical Education Regulations (GMR).

Teaching Hours

Subject	Theory	Practical/SGT/Tutorials/Integrated teaching	SDL	Total Hours
Pharmacology	**80**	**138**	**12**	**230**

GENERAL PHARMACOLOGY

08 Hrs

Core

Introduction and Definitions, Routes of Drug Administration, Pharmacokinetics, Pharmacodynamics, Evidence Based Medicine and therapeutic drug monitoring , Adverse drug reactions **(PH 1.1 to 1.12)**

Describe overview of drug development, phases of clinical trials and good clinical Practices **PH 1.64**

Non Core

Dietary supplements and Nutraceuticals, **PH 1.61**

Pharmacogenomics and Pharmacoeconomics **PH 1.60**

SYSTEMIC PHARMACOLOGY

Classification, mechanism and pharmacological action, types, doses, therapeutic uses, adverse effects, contraindication & drug interactions of

DRUGS ACTING ON AUTONOMIC NERVOUS SYSTEM 05 Hrs

Core

Cholinergics and anti- cholinergics. **PH 1.14**

Adrenergics and anti- adrenergics. (Adrenergic receptor blockers) **PH 1.13**

Skeletal muscle relaxants **PH 1.15**

AUTACOIDS AND RELATED DRUGS **06 Hrs**

Core

Histamine, Antihistaminics, Serotonin –Antagonists, Drug therapy for migraine **PH 1.16**

NSAIDs **PH 1.16**

Drugs for rheumatoid arthritis and drugs for gout **PH 1.16**

Prostaglandins, Interleukins and antagonists of leukotrienes, Tumor Necrosis Factor- alpha, Platelet Activating Factor **PH 1.16**

CARDIO-VASCULAR SYSTEM **05 Hrs**

Core

Drugs modulating Renin Angiotensin Aldosterone System **PH 1.26**

Cardiac glycosides and drugs used in Congestive Heart Failure **PH 1.29**

Antianginal Drugs and Treatment of Ischemic Heart Disease, Peripheral Vascular Disease **PH 1.28**

Anti-Hypertensive agents **PH 1.27**

Non Core

Antiarrhythmic drugs **PH 1.30**

DRUGS ACTING ON RENAL SYSTEM **01 Hr**

Core

Diuretics **PH 1.24**

Anti- diuretics, vasopressin and analogues **PH 1.24**

BLOOD **05 Hrs**

Core

Haematinics and erythropoietin **PH 1.35**

Anti-coagulants and coagulants. **PH 1.25**

Drugs used in the management of dyslipidemias **PH 1.31**

Plasma expanders and management of shock **PH 1.29 and PH 1.27**

Antiplatelets, Fibrinolytics and anti- fibrinolytics **PH 1.25**

CENTRAL NERVOUS SYSTEM **09 Hrs**

Core

Local anaesthetics **PH 1.17**

Sedatives & hypnotics **PH 1.19**

Antiepileptics **PH 1.19**

Opioids and non-opioids **PH 1.19**

Antidepressants & Anxiolytics and Antimanic drugs **PH 1.19**

Ethyl alcohol **PH 1.20 to PH 1.21**

General Anaesthetics and preanaesthetic medication **PH 1.18**

Antipsychotics **PH 1.19**

Drugs used for neurodegenerative disorders including Parkinson's Disease. **PH 1.19**

CHEMOTHERAPY **18 Hrs**

Core

Definition, Sources, Mechanism of action, Spectrum of activity, General principle of chemotherapy and its limitations. **PH 1.42**

Classification, Mechanism of action, Therapeutic uses, adverse effects, and Drug Interactions and National Health Programs related to specific diseases : **PH 1.43 ,PH 1.55**
Antimicrobials-

1. Sulfonamides

2. Quinolones

3. Beta lactam antibiotics.

4. Aminoglycosides.

5. Macrolides

6. Broad spectrum antibiotics.

Antiviral and Antifungals. **PH 1.48**

Antiprotozoal and Anti helminthics and Ectoparasitocides. **PH 1.47**

Chemotherapy of Tuberculosis, Leprosy, Urinary Tract Infection, Enteric Fever, Bacillary Dysentery, **PH 1.44, PH 1.45, PH 1.46, PH 1.48,**

Malaria, **PH 1.47**

Severe Acute Respiratory Syndrome,Acute rheumatic fever and other common clinical infections. **PH 1.48**

Miscellaneous antibiotics**.** (Polymyxin-B, Clindamycin, Vancomycin, Linezolid, Quinupristin, Dalfopristin, Spectinomycin.) **PH 1.43**

Drugs used in malignancy (Anti Neoplastic agents) **PH 1.49**

ENDOCRINOLOGY **10 Hrs**

Core

Classification, mechanism of action, pharmacological action, therapeutic uses, adverse effects, interactions of various drugs used in hypo and hyper (hormone antagonists) functioning of various endocrines.

Anterior and posterior pituitary hormones **PH 1.37**

Thyroxin and Thyroid inhibitors **PH 1.36**

Corticosteroids **PH 1.38**

Insulin, oral hypoglycemic drugs and glucagon and their antagonists **PH 1.36**

Estrogens and progesterone, Selective Estrogen Receptor Modulators (SERMs) **PH 1.37**

Contraceptives and Drugs used in the treatment of infertility **PH 1.37 and PH 1.40**

Androgens and drugs used for erectile dysfunction **PH 1.40**

Para thyroid hormone and drugs affecting calcium balance. **PH 1.36**

Oxytocin and drugs acting on uterus **PH 1.41**

GIT **1hr**

Core

Drugs for peptic ulcer and GERD **PH 1.34**

Respiratory system

Core

Drugs used in cough, Bronchial asthma and Chronic Obstructive Pulmonary Disease **PH 1.32 to PH 1.33**

Ocular pharmacology **1hr**

Core

Drugs used in Ocular disorders **PH 1.58**

Skin and mucous membrane **1hr**

Core

Drugs used in skin disorders **PH 1.57**

Immunomodulators

Core

Immunostimulants and Immunodepressants PH1.50 **2hr**

PRACTICALS / TUTORIALS/SMALL GROUP TEACHING/ INTEGRATED TEACHING

General Pharmacology

Common Formulations– Identification and demonstration of understanding of the use of various drug formulations and drug delivery systems. **PH 1.3**

Administration of drugs through various routes in a simulated environment using mannequins- Demonstration of the appropriate setting up of an intravenous drip in a simulated environment **PH 1.11**

Dose Calculation- Calculation of dosage of drugs using appropriate formulae for an individual patient, including children, elderly and patient with renal dysfunction **PH 1.12, PH2.4, PH1.15**

Demonstrate understanding of the use of various dosage forms (Oral/local/parenteral: solid/liquid) **PH2.1**

ORS Preparation - Prepare oral rehydration solution from ORS packet and explain its use. **PH2.2**

Demonstrate the appropriate setting up of an intravenous drip in a simulated environment **PH2.3**

Essential drug concept- Preparation of list of essential medicines for a healthcare facility. **PH3.7**

OTC drugs- Demonstration of ability to educate public & patients about various aspects of drug use including drug dependence and OTC drugs. **PH5.6**

EXPERIMENTAL PHARMACOLOGY

Rabbit eye experiment- Demonstrate the effects of various drugs on Rabbit eye using computer aided learning **PH 1.13, PH 1.14**

Effect of drugs on Dog BP/Graphs- Demonstrate the effects of drugs on blood pressure (vasopressor and vaso-depressors with appropriate blockers) using computer aided learning **PH 4.2** -

CLINICAL PHARMACOLOGY

Prescriptions writing - Describe parts of a correct, complete and legible generic prescription.

Identify errors in prescription and correct appropriately. **PH 3.1, PH 1.9, PH 1.0**

Critical appraisal of given prescription- Performing and interpreting critical appraisal (audit) of a given prescription. **PH 3.2**

Drug promotional literature- Performing a critical evaluation of the drug promotional literature. **PH 3.3**

Reporting of an ADR- Recognizing and reporting an adverse drug reaction. **PH 3.4**

P-drug list- Preparing and explaining the list of P-drugs for a given case/condition. **PH 3.5**

Interaction with pharma representative- Demonstrating how to optimize interaction with pharmaceutical representative to get authentic information on drugs. **PH 3.6**

Communication with patient- Communicate effectively with a patient on the

- Proper use of prescribed medication **PH3.8**

Communicate with the patient with empathy and ethics on all aspects of drug use **PH 5.1**

Regarding optimal use of a) drug therapy, b) devices and c) storage of medicines **PH 5.2**

Motivating patients with chronic diseases to adhere to the prescribed management by the health care provider **PH 5.3**

Explain to the patient the relationship between cost of treatment and patient compliance **PH 5.4**

Topics for Small group teaching(SGT) / Integrated Teaching

- Glaucoma , Benign prostatic hypertrophy(BPH) **PH 1.13**
- Alzheimer's disease, Myasthenia gravis **PH 1.14**
- Poisoning – Ethanol and methanol, Insecticides, stings and bites. **PH 1.20, PH 1.21**
- Substance Abuse & De-addiction **PH 1.23**
- Management of Shock **PH 1.27**
- Dyslipidaemia & Management of MI. **PH 1.31**
- Bronchial asthma. **PH 1.32**
- Drugs used for cough **PH 1.33**
- Drugs for diarrhoea and constipation **PH 1.34**
- Antiemetic's & prokinetics **PH 1.34**
- IBD & Irritable bowel syndrome **PH 1.34**

- Anaemia **PH 1.35**
- PPH **PH 1.37**
- Contraceptives **PH 1.39**
- Typhoid **PH 1.43**
- Anti-malarial drugs **PH 1.47**
- UTI & STDs **PH 1.48**
- Occupational and environmental pesticides, food adulterants, pollutants and insect repellents **PH 1.51**
- Management of heavy metal poisoning-Chelating agents **PH 1.53**
- Vaccines and sera **PH 1.54**
- Describe basic aspects of geriatric and paediatrics pharmacology. **PH 1.56**
- Antiseptics and disinfectants **PH 1.62**

OSPE TRAINING

Non observational (Response) station shall consist of patient vignettes, MCQ's, dosages forms, dosage calculation.

Prescriptions writing for a given case, **PH 3.1**

Criticising and rewriting a given prescription, **PH 3.2**

Therapeutic problem, Fixed dose combination, Making an inventory for a given disease, Interpretation of graph, and Response station pertaining to pharmacology of drugs, package inserts of the pharmaceuticals products etc. to assess problem solving and critical evaluating skills.

Observational stations shall consist of Assessment of communication skill and Administration of drugs through various routes in simulated environment.

Scheme of examination

Internal assessment

Theory (60 marks)

A minimum of three theory examinations shall be conducted in 2nd phase at the end of Blocks 1,2 and 3 respectively. The 3rd IA (Preliminary) examination preceding the university examination will be similar to the pattern of university examination i.e two theory papers of 100 marks each. Average marks of the three internals will be considered for calculation of

final internal assessment marks, that will be reduced to 40 marks. Additional 20 marks derived from the formative assessment marks based on evaluation of assignments, seminars, SDL etc. shall be added to make a grand total of 60 marks of theory Internal assessment marks.

Practical and Viva-voce (40 marks)

A minimum of three practical examinations shall be conducted in 2nd phase at the end of Blocks 1,2 and 3 respectively. The 3rd IA (Preliminary) examination preceding the university examination will be similar to the pattern of university examination i.e 100 marks - 80 marks for practicals and 20 marks for viva voce . Average marks of the three internals will be considered for calculation of final internal assessment marks, that will be reduced to 20 marks. Additional 20 marks derived from the formative assessment marks based on day to day records (practicals records and log book) etc. shall be added to make a grand total of 40 marks of practical Internal assessment marks.

ELIGIBILITY FOR EXAMINATION:

To be eligible to appear for university examination a candidate,

- Shall have undergone satisfactorily the approved course of study in the subject for the prescribed duration
- Shall have attended minimum **75%** of the total number of classes in theory and **80%** in practical separately to become eligible to appear for the examination in the subject
- Shall secure **40%** of total marks separately assigned for internal assessment in theory and practical in a particular subject
- Shall secure **50%** marks in aggregate of the total marks combined in theory and practical assigned for IA in the subject

<u>Supplementary Examination:</u>

- To be conducted within 90 days after the declaration of the results of the final examination

Scheme of Examination:
Internal and Formative Assessment:

Internal assessment : A minimum of three theory and practical examinations shall be conducted in MBBS 2nd Professional Year at the end of Blocks 1,2 and 3 respectively. The 3rd IA (Preliminary) examination preceding the university examination will be similar to the pattern of university examination i.e two theory papers of 100 marks each and practical examinations of 100 marks (80 marks practical's +20 marks viva voce). Apart from this, a series of formative assessments in both theory and practicals will be conducted throughout the year, which will be taken into consideration for calculating the IA marks as described in the Table given below.

Internal Assessment (IA)	Theory Max. marks	Marks Obtained	Practical Max. Marks	Marks Obtained

IA –I		100		50	
IA-II		100		50	
IA-III		200		100	
Formative Assessment					
Part completion test	Integrated	40		--	
	SGT	25		--	
	SDL	15		--	
Certifiable skills		--		50	
Other than certifiable skills		--		30	
AETCOM Skills		10		10	
Participation in SGT		10		--	
Co-Curricular and other academic activities		--		05	
Practical record				05	
Total Reduced to 40%		500		300	
		100 (Min.40)		60 (Min.24)	
Grand Total (Aggregate of theory & Practicals) **(Min.50%)**			___ /160		

SCHEME FOR SUMMATIVE EXAMINATION

B. THEORY

WRITTEN PAPERS: 200 Marks

There shall be two theory papers of 100 marks each and duration of each paper shall be of 3 hours. (Duration of MCQ examination shall be 25 minutes and there will be no negative marking for wrong answers**.** The MCQ answer sheet shall be collected after 25 minutes).

Type of Questions	Number of questions	Marks for each question	Total Marks
MCQ Type questions	20	01	20
Essay type questions	02	10	20
Short Essay type questions	09	05	45
Short answer type questions	05	03	15

GRAND TOTAL….	**100**

Distribution of topics for paper I and II for University Examination is given below:
(MCQ=20 marks + Theory= 80 marks: Total 100 Marks, Duration 3 Hrs)

Paper I: **100 marks**

5. General Pharmacology
6. Drugs acting on Central Nervous System
7. Drugs acting on Autonomic Nervous System
8. Drug acting on Cardio Vascular System
9. Drugs acting on Blood
10. Drugs acting on Renal system

Paper II: **100 marks**

13. Chemotherapy
14. Endocrines
15. Autacoids related drugs
16. Drugs related to Gastro intestinal System,
17. Drugs related to Respiratory System
18. Immunomodulators
19. Chelating agents, Vitamins, Antiseptics and Disinfectants.
20. Drugs acting on skin and mucous membrane
21. Ocular Pharmacology

The topics assigned to the different papers will generally be evaluated under those sections. However, a strict division of the topics may not be possible and some overlapping of topics might be inevitable. Students should be prepared to answer overlapping topics.

Blue printing: The distribution of topics and weightage of marks for University examination is as under

PAPER I : 100 MARKS

	No. of MCQ's	**Total Marks**
General Pharmacology	4	20
Drugs acting on Central Nervous System	4	
Drugs acting on Autonomic Nervous System	4	
Drug acting on Cardio Vascular System	4	
Blood	2	
Drugs acting on Renal system	2	
	No. of Long Essays	

General Pharmacology Drugs acting on Central Nervous System Drugs acting on Autonomic Nervous System Drug acting on Cardio Vascular System	2 x 10 = 20	20
	No. of Short Essays	
General Pharmacology Drugs acting on Central Nervous System Drugs acting on Autonomic Nervous System Drug acting on Cardio Vascular System Drugs acting on Blood Drugs acting on Renal system	9 x 5 = 45 Marks	45
	No. of Short Answers	
General Pharmacology Drugs acting on Central Nervous System Drugs acting on Autonomic Nervous System Drug acting on Cardio Vascular System Drugs acting on Blood Drugs acting on Renal system	5 x 3 = 15 Marks	15
	Total	100

NOTE : The weightage of questions in the college and university examination shall be distributed equally across all the topics.

PAPER II : 100 MARKS

	No. of MCQ's	**Total Marks**
Chemotherapy	8	20
Endocrines	4	
Autacoids related drugs	2	
Drugs related to Gastro intestinal System,	2	
Drugs related to Respiratory System	**1**	
Immunomodulators	**1**	
Chelating agents, Antiseptics and Disinfectants.	**1**	
Drugs acting on skin and mucous membrane	**1**	
	No. of Long Essays	
Chemotherapy Endocrines Autacoids and related drugs Drugs related to Gastro intestinal System, Drugs related to Respiratory System	2 x 10 = 20 Marks	20
	No. of Short Essays	

Chemotherapy Endocrines Autacoids and related drugs Drugs related to Gastro intestinal System, Drugs related to Respiratory System Immunomodulators	9 x 5 = 45 Marks	45
	No. of Short Answers	
Chemotherapy Endocrines Autacoids related drugs Drugs related to Gastro intestinal System, Drugs related to Respiratory System Immunomodulators Chelating agents, Vitamins, Antiseptics and Disinfectants. Drugs acting on skin and mucous membrane Ocular Pharmacology	3 x 5 = 15 Marks	15
	Total	100

NOTE : The weightage of questions in the college and university examination shall be distributed equally across all the topics.

B. PRACTICAL EXAMINATION **Max. Marks: 80**

A combination of Objective structured practical examination (OSPE) and other assessment methods will be used to assess the following

1) Clinical pharmacology

   a) Prescriptions writing for a given case (2)

   b) Criticising and rewriting a given prescription

   c) Therapeutic problem

   d) Commenting on Fixed dose combination

   e) Other exercises selected from Extended R type of MCQs, Pharmacoeconomic problems, dose calculation, emergency drugs etc.

2) Interpretation of graph

3) Use of Dosage forms

4) Assessment of communication skills using standardised patients.

5) Administration of drugs through various routes

6) Experimental pharmacology: Rabbit Eye Experiment/ Guinea Pig Ileum – tabulation / Animal simulator

VIVA - VOCE EXAMINATION **Max. Marks 20**

- The candidate shall be examined by all the four examiners at 4 tables. The distribution of topics for each table are as shown below.

Viva – voce Table – I

- General Pharmacology
- Drugs acting on ANS
- Autocoids and their antagonists

Viva – voce Table – II

- Drugs acting on CVS
- Drugs acting on Blood
- Diuretics
- Drugs acting on GIT , Anti emetics, purgatives, drugs used for peptic ulcer

Viva – voce Table – III

- Drugs acting on CNS
- Endocrine
- Drugs used for Cough and bronchial asthma

Viva – voce Table – IV

- Chemotherapy
- Immunomodulators
- Antiseptic disinfectants
- Chelating agents , Vitamins
- Ocular Pharmacology
- Drugs acting on skin and mucous membrane

Examination components with distribution of marks

1	Written papers: No. of papers and maximum marks for each paper.	2 X 100 = 200
2	Practicals	80
3	Viva/orals	20
	Total Theory	**300** Marks

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- For declaration of pass in the subject in university examination, the candidate should pass both theory and practicals separately in the same examination securing an aggregate of **50%** marks individually in theory & practical shall be declared to pass.
- For a pass in theory examination, a student must secure minimum **40%** of marks in each of the two theory papers with minimum of **50%** marks in aggregate (both papers together)
- For a pass in practical examination in the subject, a student must secure minimum **50%** of marks in aggregate in practicals and viva-voce examination
- Candidate must secure **50%** aggregate in internal assessment examination (Combined in theory and practicals) in the subject
- Internal assessment shall be reflected as a separate head of passing at the final university examination.
- For a pass in the subject, a student shall secure **50%** marks in aggregate of the total marks combined in theory, practicals and viva-voce.
- Candidate securing an aggregate of **65-74. %** marks in (theory & practical) in first attempt shall be declared to pass with First class.
- Candidate securing an aggregate marks of **75 %** & above (theory & practical) in the first attempt shall be declared to pass with Distinction.

RECOMMENDED BOOKS (Latest Edition)

1. R.S. Satoskar, S.D. Bhandarkar, S.S. Ainapure; "Pharmacology and pharmacotherapeutics".
2. K.D. Tripathi, "Essentials of Medical Pharmacology".
3. Laurence and Bennet, "Clinical Pharmacology".
4. Katzung, "Basic and Clinical Pharmacology".

REFERENCE BOOKS (Latest Edition)

1. Goodman & Gillman- "The Pharmacological Basis of Therapeutics".

2. Rang H P & Dale M M- "Pharmacology".

MICROBIOLOGY

DEPARTMENT OF MICROBIOLOGY- II PROFESSIONAL YEAR

GOALS

A MBBS student at the end of the microbiology course will be able to**:**

1. Describe the mechanisms of host parasite relationship.
2. List normal flora of the human body.
3. Describe the etiology and pathogenesis of common infectious diseases.
4. List of the microbes that cause opportunistic infections in humans and describe their pathogenesis.
    a. Choose appropriate laboratory investigations required for a clinical diagnosis.
    b. Sample the right specimen, at the right time, by the right method.
    c. Analyze and interpret the results of laboratory tests.
    d. Perform some simple tests, which help to arrive at rapid diagnosis.
5. Apply the principles of immunology in the pathogenesis, diagnosis and prevention of infectious and non-infectious diseases.
6. Practice the techniques of asepsis, antisepsis and sterilization in day-to-day procedures and apply universal safety precautions in laboratory and clinical practice.
7. Organize the prevention and control of communicable diseases in the community hospital.
8. Understand the ecology (microbial) of specialized areas like hospital, water, food and prevent the possible spread of infections.

OBJECTIVES

A) Knowledge

The student should know to:

1. Describe the etiology and pathogenesis of common infectious diseases.
2. Describe the mechanisms of host-parasite relationship.
3. Be aware of salient features of uncommon infectious diseases.
4. Apply the principles of immunology in the pathogenesis, diagnosis and prevention of infectious and non-infectious diseases.

B) Skills- The student should acquire the following skills

1. To investigate common infectious diseases with particular emphasis to appropriate methods of specimen collection and laboratory diagnosis and proper interpretation of laboratory test results.

2. To practice the techniques of asepsis, antisepsis and sterilization in day to day procedures and apply universal precautions in laboratory and clinical practice.
3. To organize the prevention and control of communicable diseases in the community or hospital.
4. To practice different types of Bio-medical waste, their potential risks and their management.

C) Attitude/ communication

1. Demonstrate respect for patient samples sent to the laboratory for performance of laboratory tests in the detection of microbial agents causing Infectious diseases
2. Discuss confidentiality pertaining to patient identity in laboratory results

D) Integration

Integration will be done with concerned preclinical and clinical departments wherever needed

COURSE CONTENTS

Teaching Hours

Subject	Theory	Practical/SGT/Tutorials/Integrated teaching	SDL	Total Hours
Microbiology	**70**	**110**	**10**	**190**

I GENERAL MICROBIOLOGY AND IMMUNITY (MI 1.1 to 1.11)

Lecture/ SGT/tutorial sessions 23 hrs

Different causative agents of Infectious diseases, , the methods used in their detection, and the role of microbes in health and disease

Epidemiological basis of common infectious diseases

Different methods of sterilization and disinfection. Application of the different methods in the laboratory, in clinical and surgical practice

Mechanisms of drug resistance, and the methods of antimicrobial susceptibility testing and monitoring of antimicrobial therapy

Immunological mechanisms in health

Mechanisms of immunity and response of the host immune system to infections

Immunological mechanisms in immunological disorder (hypersensitivity, autoimmune disorders and immunodeficiency states) and the laboratory methods used in detection.

Immunological mechanisms of transplantation and tumor immunity

Immunological basis of vaccines and the Universal Immunization schedule

II.SYSTEMIC MICROBIOLOGY

1) **Topic: CVS and Blood (MI 2.1 TO 2.7)**
   Lecture/ SGT/tutorial sessions 13 hrs

   A) Morphology, mode of infection ,pathogenesis, clinical course, diagnosis ,prevention of the common microbial agents causing

   Rheumatic fever

   Infective endocarditis

   Anaemia (along with treatment)

   Kalaazar, Malaria , Filariasis and other common parasites prevalent in India

   B) Epidemiology, etio- pathogenesis, evolution , complications, opportunistic infections, diagnosis, prevention and the principles of management of HIV

2) **Topic : Gastrointestinal and hepatobiliary system (MI 3.1 TO 3.8)**
   Lecture/ SGT/tutorial sessions 15 hrs

   Etio-pathogenesis, Epidemiology, Morphology, Clinical features, Laboratory diagnosis, Prevention and Prophylaxis of microbial agents causing

   Diarrhoea and dysentery.-

   Enteric fever

   Food poisoning

   Acid Peptic Disease (APD)

   Viral hepatitis

3) **Topic : Musculoskeletal system skin and soft tissue infections (MI 4.1 TO 4.3)**
   Lecture/ SGT/tutorial sessions 8 hrs

Etio-pathogenesis, Epidemiology, Morphology, Clinical features, Laboratory diagnosis and Prevention of microbial agents causing

Anaerobic infections

Bone & joint infections

Skin and soft tissue infections

4) **Topic: Central Nervous System infections (MI 5.1 TO 5.3)**
Lecture/ SGT/tutorial sessions 05 hrs

Etio-pathogenesis, Epidemiology, Morphology, Clinical features, Laboratory diagnosis and Prevention of microbial agents causing

Meningitis

Encephalitis

5) **Topic: Respiratory tract infections (MI 6.1 TO 6.3)**
Lecture/ SGT/tutorial sessions 14 hrs

Etio-pathogenesis, Epidemiology, Morphology, Clinical features, Laboratory diagnosis and Prevention of microbial agents causing infections of

Upper Respiratory Tract

Lower Respiratory Tract

6) **Topic: Genitourinary & Sexually transmitted infections (MI 7.1 TO 7.3)**
Lecture/ SGT/tutorial sessions 11 hrs

Etio-pathogenesis, Epidemiology, Morphology, Clinical features, Laboratory diagnosis and Prevention of microbial agents causing

Urinary tract infections

Sexually transmitted infections.

Genitourinary infections

7) **Topic: .Clinical Microbiology and Miscellaneous Topics (MI 8.1 TO 8.16)**
Lecture/ SGT/tutorial sessions: 18hrs

7a). Clinical Microbiology and Health care Associated Infections

Types, Predisposing factors, Clinical course and Laboratory diagnosis, Prevention and Control of Healthcare Associated Infections (HAI)

Confidentiality pertaining to patient identity in laboratory results

Collection of clinical samples, Appropriate laboratory tests and Interpretation for diagnosis of the infectious diseases

National Health Programs in the prevention of common infectious diseases

7b). Zoonotic diseases

Etio-pathogenesis, Epidemiology, Morphology, Clinical features, Laboratory diagnosis and Prevention of microbial agents causing Zoonotic diseases.

7c). Ubiquity of microorganisms - Microbiology of food, water, milk and air

7d). Oncogenic viruses and their role in malignancy

7e). Etio-pathogenesis and laboratory diagnosis of Emerging and Re-emerging

Infectious diseases.

7f). Etio-pathogenesis and laboratory diagnosis of Opportunistic infections (OI)

INTEGRATED TEACHING

1. HIV & AIDS
2. Tuberculosis
3. Malaria

SMALL GROUP TEACHING

1) Normal flora and Pathogens (MI 1.1 To 1.11)

2) Case based scenario in Sterilisation and disinfection (MI 1.1 To 1.11)

3) Antimicrobial stewardship(MI 1.1 To 1.11)

4) Vaccines(MI 1.1 To 1.11)

5) Cold chain And Universal Immunization Programme(MI 1.1 To 1.11)

6) Biomedical Waste Management(MI 1.1 To 1.11)

7) Selection of samples in a given case (MI 1.1 To 1.11)

8) Laboratory diagnosis of Lower Respiratory Tract Infections –Bacterial (MI 6.1 To 6.3)

9) Case based discussion on Diarrhea (MI 3.1 to 3.8)

10) Case based discussion on Rheumatic heart disease and Infective endocarditis (MI 2.1 To 2.7)

11) Case based discussion on Viral Hepatitis (MI 3.1 To 3.8)

12) Case based discussion on Urinary Tract Infections (MI 7.1 To 7.3)

13) Opportunistic Infections (MI 8.1 To 8.6)

14) Case based discussion on Sexually Transmitted Infections (MI 7.1 To 7.3)

15) Case based discussion on Pyrexia of Unknown Origin MI 2.1 To 2.7

16) Case based discussion on Meningitis (MI 5.1 to 5.3)

17) Laboratory diagnosis of Lower Respiratory Tract Infections –Viral MI 6.1 To 6.3)

18) Skin and soft tissue infections – Fungal (MI 4.1 To 4.3)

PRACTICAL/DOAP SESSION

1) GENERAL MICROBIOLOGY AND IMMUNITY (MI 1.1 to 1.11)

DOAP Session

- Perform and identify the different causative agents of Infectious diseases by Gram Stain, ZN stain and stool routine microscopy

2)Topic: CVS and Blood (MI 2.1 TO 2.7)

DOAP session

- Identify the causative agent of malaria and filariasis
- Stool microscopy

3)Topic: Gastrointestinal and hepatobiliary system (MI 3.1 TO 3.8)

DOAP sessions

- Identify the common etiologic agents of diarrhea and dysentery
- Identify the different modalities and choose appropriate test for diagnosis of enteric fever.

4)Topic: Central Nervous System infections (MI 5.1 TO 5.3)

DOAP session

- Identify the microbial agents causing meningitis

5)Topic: Respiratory tract infections (MI 6.1 TO 6.3)

DOAP session

Identify the common etiologic agents of upper respiratory tract infections (Gram Stain)

- Identify the common etiologic agents of lower respiratory tract infections (Gram Stain & Acid fast stain)

6)Topic: Genitourinary & Sexually transmitted infections (MI 7.1 TO 7.3)

DOAP sessions:

- Identify the common etiological agents of UTI

7)Topic: Clinical Microbiology and Miscellaneous Topics (MI 8.1 TO 8.16)

DOAP sessions:

- Demonstrate Infection control practices and use of Personal Protective Equipment's (PPE)
- Demonstrate the appropriate method of collection of samples in the performance of
  laboratory tests in the detection of microbial agents causing Infectious diseases
- Demonstrate respect for patient samples sent to the laboratory for performance of
  laboratory tests in the detection of microbial agents
- Demonstrate confidentiality pertaining to patient identity in laboratory results causing Infectious diseases

Self-Directed Learning

1) Ubiquity of microbes Koch's Postulates (MI 1.1 To 1.11)

2) Morphology of Bacteria (MI 1.1 To 1.11)

3) Antimicrobial stewardship (MI 1.1 To 1.11)

4) Applied bacterial genetics (MI 1.1 To 1.11)

5) Transfusion associated infections (MI 2.1 To 2.7)

6) Toxin mediated Bacterial diseases (MI 1.1 To 1.11)

7) Bacteriology of Air, Water and Food (MI 1.1 To 1.11)

8) Microbiological accepts of Bioterrorism (MI 1.1 To 1.11)

9) Serological diagnostic tests in Hepatits(MI 3.1 To 3.8), Malaria & Filariasis (MI 1.1 To 1.11)

10) Diagnostics in STD-Application exercises (MI 7.1 To 7.3)

Scheme of examination:

Internal and Formative Assessment:

Internal assessment : A minimum of three theory and practical examinations shall be conducted in MBBS 2nd Professional Year at the end of Blocks 1,2 and 3 respectively. The 3rd IA (Preliminary) examination preceding the university examination will be similar to the pattern of university examination i.e two theory papers of 100 marks each and practical examinations of 100 marks (80 marks practical's +20 marks viva voce). Apart from this, a series of formative assessments in both theory and practicals will be conducted throughout the year, which will be taken into consideration for calculating the IA marks as described in the Table given below.

Internal Assessment (IA)		**Theory Max. marks**	**Marks Obtained**	**Practical Max. Marks**	**Marks Obtained**
IA –I		100		50	
IA-II		100		50	
IA-III		200		100	
Formative Assessment					
Part completion test	Integrated	40		--	
	SGT	25		--	
	SDL	15		--	
Certifiable skills		--		50	
Other than certifiable skills		--		30	
AETCOM Skills		10		10	
Participation in SGT		10		--	
Co-Curricular and other academic activities		--		05	
Practical record				05	
Total Reduced to 40%		500		300	
		100 (Min.40)		60 (Min.24)	
Grand Total (Aggregate of theory & Practicals) **(Min.50%)**		___ /160			

ELIGIBILITY FOR EXAMINATION:

To be eligible to appear for university examination a candidate,

- Shall have undergone satisfactorily the approved course of study in the subject for the prescribed duration
- Shall have attended minimum **75%** of the total number of classes in theory and

80% in practical separately to become eligible to appear for the examination in the subject

- Shall secure **40%** of total marks separately assigned for internal assessment in theory and practical in a particular subject
- Shall secure **50%** marks in aggregate of the total marks combined in theory and practical assigned for IA in the subject

Supplementary Examination:

- To be conducted within 90 days after the declaration of the results of the final examination

SCHEME FOR SUMMATIVE EXAMINATION

THEORY

WRITTEN PAPERS: 200 Marks

There shall be two theory papers of 100 marks each and duration of each paper shall be of 3 hours. (Duration of MCQ examination shall be 25 minutes and there will be no negative marking for wrong answers**.** The MCQ answer sheet shall be collected after 25 minutes.)

Type of Questions	Number of questions	Marks for each question	Total Marks
MCQ Type questions	20	01	20
Essay type questions	02	10	20
Short Essay type questions	09	05	45
Short answer type questions	05	03	15
		GRAND TOTAL….	**100**

Distribution of topics for paper I and II for University Examination is given below:
(MCQ=20 marks + Theory= 80 marks: Total 100 Marks, Duration 3 Hrs)

Paper I: **100 marks**

General microbiology and Immunity (11)

Cardiovascular System and Blood (07)

Gastrointestinal and Hepatobiliary System (08)

Musculoskeletal system Skin and Soft Tissue Infections (03)

Paper II: **100 marks**

Central Nervous System Infections (03)
Respiratory Tract Infections (03)
Genitourinary and Sexually Transmitted Infections (03)
Zoonotic diseases and Miscellaneous (16)

The topics assigned to the different papers will generally be evaluated under those sections. However, a strict division of the topics may not be possible and some overlapping of topics might be inevitable. Students should be prepared to answer overlapping topics.

Blue printing: The distribution of topics and weightage of marks for University examination is as under

PAPER I : 100 MARKS

	No. of MCQ's	Total
• General Microbiology and Immunity	5	20
• Cardio Vascular System and Blood	5	
• Gastrointestinal and Hepatobiliary System	5	
• Musculoskeletal system Skin and Soft Tissue Infections	5	
	No. of Long Essays	
• General Microbiology • Immunity • Cardio Vascular System and Blood • Gastrointestinal and Hepatobiliary System • Musculoskeletal system Skin and Soft Tissue Infections	2 x 10 = 20	20
	No. of Short Essays	
• General Microbiology • Immunity • Cardio Vascular System and Blood • Gastrointestinal and Hepatobiliary System • Musculoskeletal system Skin and Soft Tissue Infections	9 x 5 = 45 Marks	45
	No. of Short Answers	

• General Microbiology • Immunity • Cardio Vascular System and Blood • Gastrointestinal and Hepatobiliary System • Musculoskeletal system Skin and Soft Tissue Infections	5 x 3 = 15 Marks	15
	Total	100

NOTE : The weightage of questions in the college and university examination shall be distributed equally across all the topics.

PAPER II : 100 MARKS

	No. of MCQ's	**Total**
• Central Nervous System Infections	4	20
• Respiratory Tract Infections	4	
• Genitourinary and Sexually Transmitted Infections	4	
• Zoonotic diseases and Miscellaneous	8	
	No. of Long Essays	
• Central Nervous System Infections • Respiratory Tract Infections • Genitourinary and Sexually Transmitted Infections • Zoonotic diseases and Miscellaneous	2 x 10 = 20 Marks	20
	No. of Short Essays	
• Central Nervous System Infections • Respiratory Tract Infections • Genitourinary and Sexually Transmitted Infections • Zoonotic diseases and Miscellaneous	9 x 5 = 45 Marks	45
	No. of Short Answers	
• Central Nervous System Infections • Respiratory Tract Infections • Genitourinary and Sexually Transmitted Infections • Zoonotic diseases and Miscellaneous	3 x 5 = 15 Marks	15
	Total	100

NOTE : The weightage of questions in the college and university examination shall be distributed equally across all the topics.

C. PRACTICAL EXAMINATION **80** Marks

It shall carry 80 marks. The distribution of marks for different components are :

1. Spotters ** 10 Marks
2. Gram Stain 10 Marks
3. ZN Stain 10 Marks
4. Parasitology (Stool Examination) 10 Marks

Clinical Microbiology

a. Collection of appropriate samples / Choosing appropriate tests and Interpretation of reports - 20 Marks
b. Healthcare Associated Infections /Antibiotic Stewardship - 20 Marks

List of Spotters recommended and distribution of marks for each Spotter

Spotter**	**Marks**
Slides	2
Vaccines	2
Sterilizing agents	2
Instrument	2
Specimen/Models	2
Total Marks	10

C. VIVA - VOCE EXAMINATION **Max. Marks 20**

- The candidate shall be examined by all the four examiners.

Examination components with distribution of marks

1	Written papers: No. of papers and maximum marks for each paper.	2 X 100 = 200

2	Practicals	80
3	Viva/orals	20
Total Theory		**300**

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- For declaration of pass in the subject in university examination, the candidate should pass both theory and practicals separately in the same examination securing an aggregate of **50%** marks individually in theory & practical shall be declared to pass.
- For a pass in theory examination, a student must secure minimum **40%** of marks in each of the two theory papers with minimum of **50%** marks in aggregate (both papers together)
- For a pass in practical examination in the subject, a student must secure minimum **50%** of marks in aggregate in practicals and viva-voce examination
- Candidate must secure **50%** aggregate in internal assessment examination (Combined in theory and practicals) in the subject
- Internal assessment shall be reflected as a separate head of passing at the final university examination.
- For a pass in the subject, a student shall secure **50%** marks in aggregate of the total marks combined in theory, practicals and viva-voce.

- Candidate securing an aggregate of **65-74. %** marks in (theory & practical) in first attempt shall be declared to pass with First class.
- Candidate securing an aggregate marks of **75 %** & above (theory & practical) in the first attempt shall be declared to pass with Distinction.

RECOMMENDED BOOKS (Latest Edition)

1. Ananthanarayan : (Ananthanarayan and Jayaram Paniker's) Textbook of Microbiology, Et & Orient Longman Ltd. Chennai.
2. Apurba Sankar sastry, and Sandhya Bhat K. Essentials of Medical Microbiology-2016. Jaypee The health Sciences publisher New Delhi.
3. Jawetz (Melnick) et al, Medical Microbiology, ed. Z Appleton and Lange, USA.
4. Zinsser (Joklik and Willett) et. Al, Microbiology, Appleton and Lange, USA.
5. Chatterjee (KDC), Parasitology, Chatterjee Medical Publishers, Calcutta.
6. Paniker (C.K. Jayaram), Text Book of Medical Parasitology, Jaypee, New Delhi.
7. Bhatia and Ichhpujani, Essential of Medical Microbiology, Jaypee, New Delhi.

REFERENCE BOOKS

LEVEL – I

1. Green wood, Medical Microbiology, Ed-15, Churchill Livingstone.

1. Roitt (Ivan.M), Essential Immunology, Ed.6, ELBS, Hong Kong.
2. MIMS (Cedric, Playfair) et al, Pathogenesis of Infectious diseases, Academic Press, London.
3. Rippon, Medical Mycology, Ed.2, W.B. Saunder's and Co.
4. KONEMAN (Allen and Janda et al), Diagnostic Microbiology, J.B. Lippincott Co.
5. BELLANTI, Immunology, Ed.3, W.B. Saunder's and Company.

LEVEL – II

1. BARLOWS, Manual of clinical Microbiology, ASM, Washington DC.
2. STITES (Terr and Parslow), Medical Immunology, Appleton and Lange USA.
3. ROITT (Brostoff and Male), Immunology, Mosby, London.
4. EMMONS (Binford) et al, Medical Mycology, K.M. Varghese Co., Bombay.
5. MANSON – BARR (BELL), Manson's Tropical diseases, ELBS.
6. BEAVER, (Jung and Corpp), Clinical Parasitology.

LEVEL – III

1. TOPELY and WILSON – Principles of Bacteriology, Virology, Immunity, Edward Arnold.
2. BERGEY'S manual (Holt and Kreig) et al, Determinative bacteriology, Williams and Wilkins, Maryland, USA.
3. ROITT, Encyclopedia of Immunology, Academic Press Ltd., London.
4. HOEPRICH, Infectious diseases, Harper and Row Publishers, Philadelphia
5. MENDELL (Donerglas Aan Benett), Principles and Practice of Infectious diseases, Churchill Livingstone.

DIAGNOSTIC MICROBIOLOGY

1. BAILEY AND SCOTT, Diagnostic Microbiology, Mosby Publishers
2. MACKIE & Mac CARTNEY – Vol II (Collee & Duguid) et al, Churchill Livingstone.
3. Clinical Microbiology procedures Handbook, Henry D. et al, ASM.
4. COWAN & STEEL (Barrow & Feltham), Manual for the identification of medical bacteria, Cambridge University Press.
5. STOKES (Ridgeway & Wren), Clinical Microbiology, Edward Arnold, London.
6. Basic Laboratory Procedures in Clinical Bacteriology, WHO, Vandepitte et al, Jaypee.
7. Basic Laboratory Procedures in Medical Parasitology, WHO, Vandepitte et al, Jaypee.
8. COLLINS & Lyne, Microbiological Methods, Butterworth – Heinemann Ltd

Attitude, Ethics and Communication (AETCOM) Competencies for the Indian Medical Graduate

The overall goal of undergraduate medical education program as envisaged in the revised Graduate Medical Education Regulations - 2017 is to create an "Indian Medical Graduate" (IMG) possessing requisite knowledge, skills, attitudes, values and responsiveness, so that she or he may function appropriately and effectively as a physician of first contact of the community while being globally relevant. In order to fulfil this goal, the IMG must be able to function appropriately, ethically and effectively in her/his roles as clinician, leader and member of the health care team and system, communicator, lifelong learner and as a professional. In order to effectively fulfil the above mentioned roles, the IMG must obtain a set of competencies at the time of graduation. In order to ensure that training is in alignment with the goals and competencies, Medical Council of India has proposed new teaching learning approaches including a structured longitudinal programme on attitude, ethics and communication.

Role modelling and mentoring associated with classical approach to professional apprenticeship has long been a powerful tool. This approach alone is no longer sufficient for the development of a medical professional. The domains of attitude and communications with emphasis on ethics therefore need to be taught directly and explicitly throughout the undergraduate curriculum. The two major aspects of teaching professionalism include explicit teaching of cognitive base and stage appropriate opportunities for experiential learning and reflection throughout the curriculum.

MCI (National Medical Council/NMC) has provided the background concept, Competencies, session guidelines and other resources for these sessions. These will be useful for all faculty involved in conducting the sessions. At KAHER's Jawaharlal Nehru Medical College, Belagavi, the AETCOM Curriculum has been framed using these as conceptual frameworks and guidelines. With implementation of AETCOM modules in the curriculum, it is hoped that Indian Medical Graduate will have a holistic approach to the patient with humanitarian touch and such a change will significantly impact the quality of community health and patient care in our country.

There are many new key areas recommended in the AETCOM module that have been identified for implementation across the entire duration of the course. For the purpose of uniformity of implementation, the AETCOM Competencies have been divided into different modules for specific components.

Learning modules for Professional year I :

Number of modules: 05, Number of hours: 34

Module 1.1: What does it mean to be a doctor?

Module 1.2: What does it mean to be a patient?

Module 1.3: The doctor-patient relationship

Module 1.4: The foundations of communication – 1

Module 1.5: The cadaver as our first teacher

Learning modules for Professional Year II :

Number of modules: 08, Number of hours: 37

Module 2.1: The foundations of communication – 2

Module 2.2 The foundations of bioethics

Module 2.3: Health care as a right

Module 2.4: Working in a health care team

Module 2.5: Bioethics continued – Case studies on patient autonomy and decision making

Module 2.6: Bioethics continued: Case studies on autonomy and decision making

Module 2.7: Bioethics continued: Case studies on autonomy and decision making

Module 2.8: What does it mean to be family member of a sick patient?

Learning modules for Professional Year III:

Number of modules: 05, Number of hours: 25

Module 3.1: The foundations of communication – 3

Module 3.2: Case studies in bioethics - Disclosure of medical errors

Module 3.3: The foundations of communication – 4

Module 3.4: Case studies in bioethics – Confidentiality

Module 3.5: Case studies in bioethics - Fiduciary duty

Learning modules for Professional Year IV :

Number of modules: 09, Number of hours: 44

Module 4.1: The foundations of communication – 5

Module 4.2: Case studies in medico-legal and ethical situations

Module 4.3: Case studies in medico-legal and ethical situations

Module 4.4: Case studies in ethics empathy and the doctor-patient relationship

Module 4.5: Case studies in ethics: the doctor-industry relationship

Module 4.6: Case studies in ethics and the doctor - industry relationship

Module 4.7: Case studies in ethics and patient autonomy

Module 4.8: Dealing with death

Module 4.9: Medical Negligence

Professional Year II:

AETCOM Modules and Competencies.

The AETCOM Curriculum has been divided into 08 modules for the phase II each with predefined Competencies.

Module	Competency No	Competencies Addressed The student should be able to,	Level
2.1: The foundations of communication – 2	2.1.1	Demonstrate ability to communicate to patients in a patient, respectful, non-threatening, non- judgmental and empathetic manner	Knows How
2.2 The foundations of bioethics	2.2.1	Describe and discuss the role of non-maleficence as a guiding principle in patient care.	Knows How
	2.2.2	Describe and discuss the role of autonomy and shared responsibility as a guiding principle in patient care.	Knows How
	2.2.3	Describe and discuss the role of beneficence of a guiding principle in patient care	Knows How
	2.2.4	Describe and discuss the role of a physician in health care system	Knows How
	2.2.5	Describe and discuss the role of justice as a guiding principle in patient care.	Knows How
2.3: Health care as a right	2.3.1	Describe and discuss the role of justice as a guiding principle in patient care	Knows How
2.4: Working in a health care team	2.4.1	Demonstrate ability to work in a team of peers and superiors SH	Shows How
	2.4.2	Demonstrate respect in relationship with patients, fellow team members, superiors and other health care workers	Shows How
2.5: Bioethics continued – Case studies on patient	2.5.1	Identify, discuss and defend medico-legal, socio-cultural and ethical issues as it pertains	Knows How

autonomy and decision making		to patient autonomy, patient rights and shared responsibility in health care	
2.6: Bioethics continued: Case studies on autonomy and decision making	2.6.1	Identify, discuss and defend medico-legal, socio-cultural and ethical issues as they pertain to refusal of care including do not resuscitate and withdrawal of life support.	Know s How
2.7: Bioethics continued: Case studies on autonomy and decision making	2.7.1	Identify, discuss and defend, medico-legal, socio-cultural and ethical issues as they pertain to consent for surgical procedures	Know s How
2.8: What does it mean to be family member of a sick patient?	2.8.1	Demonstrate empathy in patient encounters	Shows How

Teaching Learning Methods:

- Case Scenarios Followed by discussions
- Demonstrations
- Role playing
- Role modelling
- Pre-recorded Videos as cases
- Videos for demonstrations
- Cinemeducation
- Reflective Writing
- Self-directed Learning sessions

Assessment Methods:

Formative Assessment:

- Short Essay/ Short Answer questions
- Multiple Choice Questions (MCQs)
- Demonstrations with Checklist
- Roleplay with checklist
- Participation in sessions
- Evaluation of Reflections
- OSCE (Objective Structured Clinical Examination): A skill station using a standardised patient.
- Observation with a checklist and Standardised patient

Summative Assessment:

- Short Answers
- MCQs
- Observation with a checklist and Standardised patient