



SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)

(Established under section 3 of the UGC Act 1956)

Re - accredited by NAAC with 'A' Grade

Founder: Prof. Dr. S. B. Mujumdar, M.Sc.,Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

Course Name: Dentistry

Course Code: Medical - DE

Faculty: Health Sciences

Programme Type: UG

Sub-Committee (Specialization): Medical

GOAL (PREAMBLE):

Aim of the dental education for MBBS undergraduates are to develop a primary care physician with appropriate knowledge, skill and attitude to treat and diagnose common disease of the oral cavity at the primary care level. Emphasis will be laid on diagnosis of the oral lesion and conditions, Orofacial structures, the Dentition, Maxillary and Mandibular jaws and the Diagnosis, Treatment, Prevention, Restoration and Rehabilitation of the common dental problems and proper referral to specialist dental surgeons.

OBJECTIVES:

1. KNOWLEDGE:

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

- Enumerate the parts of the tooth and supporting structures.
- Discuss the role of causative microorganisms in the aetiopathogenesis of dental caries.
- Discuss the role of dental caries as a focus of sepsis.
- Discuss the various causes for partial /complete loss of teeth and associated structures.

- Discuss the local and systemic sequelae of loss of teeth.
- Enumerate common ways of restoring the edentulous state.
- Aware of malocclusion and the tissues that cause it.
- Enumerate the impact of malocclusion on aesthetics, health.
- Discuss the prevalence of oral cancer and enumerate the common types of cancer that can affect tissues of the oral cavity.
- Discuss the role of etiological factors in the formation of precancerous /cancerous lesions.
- Enumerate the common diseases that affect the periodontium and identify local and systemic causative factors.
- Discuss the role of Periodontal disease as a focus of sepsis.

2. SKILLS:

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

- Identify Dental caries.
- Identify complete complement of teeth and identify missing teeth.
- Identify malocclusion.
- Identify potential pre-cancerous /cancerous lesions.
- Identify Periodontal disease.

3. ATTITUDE, ETHICS AND COMMUNICATION:

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

- Counsel patients with respect to oral hygiene, diet and the direct bearing on systemic health.
- Counsel patients on the importance of restoring missing teeth/tissues with respect to the benefits on oral and systemic health.
- Counsel patients with respect to correction of malocclusion and the role it might have on oral health specifically on the TMJ.
- Counsel patients to risks of oral cancer with respect to tobacco, smoking, alcohol and other causative factors.
- Counsel patients with respect to oral hygiene, diet and the direct bearing on systemic health and vice versa.

SYLLABUS:

THEORY

1. Scope of Dentistry
 - Introduction of various branches of Dentistry.
 - Basic Understanding of Dental Epidemiology
 - Effects of deleterious Habits on Dentition and Orofacial structures.
2. Development and Growth of Jaws & Orofacial structures.
 - Development & Eruption of teeth, Deciduous & Permanent.
 - Occlusion.
 - Preventive Care in Paediatric patients.
3. Dental Caries Gingival & Periodontal Diseases.
 - Developmental Anomalies.
 - Cysts & Tumours of Oral cavity.
 - Neoplasms of Oral cavity.
 - Oral Microbiology.
4. Orofacial Pain & its Management
5. Maxillofacial Trauma and Management of patient.
6. Oral Medicine and Systemic diseases
 - The relevance of medications prescribed & their Oral Manifestations.
 - Infections of Orofacial structures esp. periodontal diseases & their Manifestations in Systemic conditions.
 - Relationship between Oral and systemic health.
 - Women's Oral health care in Reproductive phase.
7. Interdisciplinary team approach in the management of a patient in Dentistry involving Paediatrics, Plastic surgery, ENT Surgery, Neurosurgery, Ophthalmic surgery, Gen. Surgery, Medicine, Orthopaedics, Dermatology, Endocrinology and OB-GY
8. Rehabilitation of lost Oral structures.
 - Implantology.
9. Dentofacial Deformities and Surgical corrections.
10. Biomaterials used in Dentistry.
 - Emerging technologies in Contemporary Dentistry.
 - Molecular Dentistry.
 - Integration with anatomy, surgery, pathology radiology and Forensic Medicine

PRACTICAL

1. L.A. Administration, Techniques for different Blocks.
2. Exodontia

3. Preliminary Management of Maxillofacial Trauma
4. Pathological conditions of Oral cavity.
5. Oral and Maxillofacial Radiography & Imaging
6. Maxillo Facial Prosthodontics.

BOOKS TO BE REFERRED:

1. Phillips' science of dental materials,12th
2. Monheim's local anesthesia and pain control in dental practice,7th
3. Clinical periodontology and implant dentistry (2-vols),6th by Lindhe
4. Carranza's clinical periodontology for south asia : a supplement,11th
5. Essentials of complete denture prosthodontics,3rd by Winkler
6. The clinical management of temporomandibular disorders and occlusion, j p okeson
7. BD chaurasia's human anatomy : vol. 3: head-neck brain
8. Shafer's textbook of oral pathology by r rajendran b sivapathasundharam



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Course Name: Dermatology, Venereology and Leprosy

Course Code: Medical - DR

Faculty: Health Sciences

Programme Type: UG

Sub-Committee (Specialization): Medical

Goal:

Skin diseases are quite prevalent in the general population. Most skin diseases can be easily diagnosed and managed with adequate amount of training at the MBBS level. The aim of teaching the undergraduate student in Dermatology, S.T.D. and Leprosy is to impart such knowledge and skills that may enable him to diagnose and treat common ailments and to refer rare diseases or complication/unusual manifestations of common diseases, to the specialist.

Objectives:

- 1. Knowledge:** At the end of the course of Dermatology, S.T.D. and Leprosy, the student shall be able to:
 - a) Demonstrate sound knowledge of common diseases, their clinical manifestations, including emergent situations and of investigative procedures to confirm their diagnosis;
 - b) Demonstrate comprehensive knowledge of various modes of therapy used in treatment of dermatological diseases;
 - c) Describe the mode of action of commonly used drugs, their doses, side effects / toxicity, indications and contra-indications and interactions;
 - d) Describe commonly used modes of management including the medical and surgical procedures available for the treatment of various diseases and to offer a comprehensive plan of management for a given disorder;

- e) Demonstrate sound knowledge of preventive measures at individual and community levels against communicable skin diseases including sexually transmitted diseases and leprosy.
- f) Develop a compassionate attitude towards the patients and their attendants.

2. Skills:

- a) Interview the patient, elicit relevant and correct information and describe the history in a chronological order.
- b) Conduct clinical examination, elicit and interpret physical findings and diagnose common disorders and emergencies;
- c) Perform simple, routine investigative and office procedures required for making the bed-side diagnosis, especially the examination of scrapings for fungus, preparation of slit smears and staining for AFB for leprosy patients and for STD cases;
- d) Take a skin biopsy for diagnostic purposes;
- e) Manage common diseases recognizing the need for referral for specialized care, in case of inappropriateness of therapeutic response;
- f) Systematic examination in relation to dermatologic diseases in Dermatology, Venereology and Leprosy.

3. Attitude, Communication and Ethics:

- a) Training to effectively communicate with patients and their relatives in a manner respectful of the patient's preferences, values, beliefs, confidentiality, and privacy.
- b) Training on how to handle sensitive situations and to maintain the confidentiality with patients.
- c) Training students how to counsel people for organ donations, we are encouraging awareness about the same.

DERMATOLOGY, VENERELOGY AND LEPROSY SYLLABUS

1. Structure & function of skin with its appendages

- Modifications of deep fascia with its functions

2. Principles of skin incisions

3. Skin cancers

- Squamous cell carcinoma
- Basal cell carcinoma
- Distinguishing features between a nevus and melanoma
- Melanoma

4. Infections of skin and soft tissues

- Pyoderma

5. Cutaneous Signs of Nutritional Deficiencies

- Vitamin A, B complex, C
- Zinc deficiency

6. Cutaneous Viral infections and Management

7. Scabies and Pediculosis

8. Leprosy

- Classification, epidemiology, etiology, microbiology, pathogenesis, clinical presentations and diagnostic features
- Neurologic examination
- National Guidelines and WHO guidelines
- Lepa Reactions
- Complications of leprosy and its management

9. Syphilis

10. Nonsyphilitic sexually transmitted diseases

- Chancroid
- Donovanosis
- LGV

11. HIV

12. Urticaria and angioedema

13. Dermatophytic Infections and antifungal therapy

14. Vitiligo

15. Exfoliative Dermatitis and Psoriasis

16. Eczema and atopic Dermatitis

17. Vesiculobullous diseases

18. Laboratory Skills :

- KOH scrapings
- Tzanck Smear
- Slit skin smear
- Gram stain

BOOKS RECOMMENDED:

1. A text book of Dermatology, Venereology & Leprosy by – Dr. UdayKhopkar
2. Treatment of skin diseases – J.S. Pasricha
3. Illustrated Text Book of Dermatology - J.S. Pasricha
4. Text Book of Dermatology and Venereology – Neena Khanna
5. Atlas of Dermatology – L.K. Bhutani
6. Atlas of Sexually Transmitted Disease - L.K. Bhutani



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Course Name: Otorhinolaryngology (ENT)

Course Code: Medical - EN

Faculty: Health Sciences

Programme Type: UG

Sub-Committee (Specialization): Medical

Preamble: The idea is to give essential knowledge of otorhinolaryngology and head and neck surgery to undergraduate in concise manner and make them aware of The 21st century ENT, which is much more advanced and ever expanding branch. A graduate must be knowledgeable in the diagnosis and treatment of common presentations and competent in first aid of ENT emergencies.

Goal: The goal behind teaching and training of undergraduate students in otolaryngology is that he /she should acquire adequate knowledge and skills for optimally dealing with common disorders, emergencies in otorhinolaryngology, be able to understand principles of impaired hearing and its rehabilitation, he/she should also be able to identify and refer the complicated cases whenever required to appropriate centre.

Objectives:

1. Knowledge: At the end of the course the student shall be able to
 - a) Describe the basic pathophysiology and common Ear, Nose, Throat diseases and emergencies.
 - b) Adopt the rationale use of commonly used drugs, keeping in mind their side effects.
 - c) Suggest common investigative methods and their interpretation.
2. Skills: At the end of the course the student shall be able to
 - a) Examine and diagnose common ear, nose, throat problems including premalignant and malignant diseases of head and neck.
 - b) Manage ear, nose, throat (E.N.T) problems at the first level of care and be able to

refer whenever and wherever necessary. Assist/do independently basic E.N.T. procedures like ear syringing, Ear dressings, nasal packing removal of foreign bodies from nose, ear, throat.

- c) Assist in certain procedures like tracheostomy, endoscopies.
 - d) Be able to use otoscope (auroscope), nasal speculum, tongue depressor, tuning fork and head mirror.
3. Attitude, Ethics, and Communication (AETCOM): At the end of training learner must demonstrate ability to
- a) Understand and apply ethics, clinical reasoning in patient care.
 - b) communicate effectively with patient, relatives, colleagues and other health care professionals.
 - c) Respond to events and issues in a professional, considerate and humane fashion.

SYLLABUS (OTORHININOLARYNGOLOGY)

The topics will be covered as per GMER guidelines

THEORY

1. Anatomy and Physiology of Ear, Nose, Throat.

- Anatomy and Physiology of Ear,
- Anatomy and Physiology of nose.
- Anatomy and Physiology of larynx and pharynx.

2. Pathophysiology and Management of common Diseases of Ear

- Otagia
- Diseases of the external ear
- Acute otitis media
- Otitis media with effusion
- Mucosal Chronic otitis media
- Squamosal Chronic otitis media and its complications
- Hearing loss
- Indications for and steps involved in myringotomy, tympanoplasty, mastoidectomy.
- Otosclerosis
- Sudden sensorineural hearing loss
- Noise induced hearing loss
- Facial nerve palsy

- Vertigo
- Meniere's disease
- Tinnitus
- Traumatic conditions – temporal bone fracture, Cerebrospinal fluid (CSF) otorrhoea
- Tumors of ear and the mastoid-glomus tumors, acoustic neuroma

3. Pathophysiology and management of common diseases of nose

- Nasal obstruction
- Epistaxis
- Disease of external nose with congenital conditions
- Diseases of nasal septum –Deviated nasal septum+ steps in a septoplasty
- Nasal polyposis
- Allergic rhinitis
- Vasomotor rhinitis, atrophic rhinitis
- Acute & chronic rhinitis
- Acute and chronic sinusitis and its complications
- Trauma to nose, Paranasal sinuses/foreign body nose/ rhinolith
- Juvenile angiofibroma
- Neoplastic conditions of nose and paranasal sinuses
- Tumors of nasopharynx

4. Pathophysiology and management of common diseases of throat and neck

- Diseases of the salivary glands
- Type of dysphagia and Oesophagoscopy
- Acute & chronic tonsillitis, adenoid hypertrophy steps involved in a tonsillectomy and adenoidectomy
- Acute & chronic abscesses in relation to pharynx -Ludwig's angina, quinsy, retropharyngeal abscess, parapharyngeal abscess.
- Hoarseness of voice
- Acute & chronic laryngitis
- Benign lesions of the vocal cord
- Vocal cord palsy
- Malignancy of the larynx & hypopharynx
- Midline and lateral neck swellings- ex. brachial cyst, tubercular lymphadenitis
- Stridor and Direct laryngoscopy
- Tracheostomy
- Foreign body in bronchus and bronchoscopy
- Human Immunodeficiency virus (HIV) manifestations in ear- nose- throat(ENT).
- Snoring and sleep apnoea syndrome

5. Recent Advances

- Laser in ear- nose- throat.

- Coblation
- Bone Anchored Hearing Aids (BAHA)
- Cochlear implant

PRACTICALS

1. History taking and examination of ear nose and throat and investigations

- History taking in a patient presenting with an ear- nose- throat (ENT) complaint
- Examination of the ear, nose and throat
- Examination of the ear, including otoscopy
- Performance and interpreting tuning fork tests
- Examination of the nose & paranasal sinuses including the use of nasal speculum.
- Examining the throat including the use of a tongue depressor.
- Examination of neck including elicitation of laryngeal crepitus
- Observe and interpret pure tone audiogram & impedance audiogram
- Choose correctly and interpret radiological, microbiological & histological investigations relevant to the ear- nose- throat(ENT) disorders
- Introduction to commonly used instruments ear- nose- throat ((ENT)surgery,
- Counsel and administer informed consent to patients and their families in a simulated environment

2. Diagnostic and Therapeutic Procedures in otorhinolaryngology

- Removal of foreign bodies from ear, nose & throat in simulated environment.
- Learning routine outdoor patient department(OPD) procedures in ear, nose & throat-like ear syringing, dry mopping.
- Skills of management of emergency procedures in ear, nose & throat -like nasal packing in simulated environment.

INTERNAL ASSESSMENT OF OTORHINOLARYNGOLOGY

	Phase	EXAM	Total marks
Internal Assessment -1	Phase II MBBS	Practical's (A) End of 1st Postings	50
Internal Assessment -2	III MBBS	Theory (middle of session) (B)	50
		Practical's (C) End of 2 nd Postings	50
Internal Assessment -3	III MBBS Prelims	Theory (D)	100
		Practical's (E)	100

Calculation :

Theory 150 (B+D) to be converted out of 20 = $150/7.5$

Practical 200 (A+C+E) to be converted out of 20 = $200/10 = 10$

Second MBBS Practical Marks Structure

Internal Assessment Examinations

Seat No.	Long case	OSCE	OPD instruments	Operative instruments	Viva	Log book viva	Journal viva	Practical Total
Max. Marks	20	10 (4 stations)	2.5	2.5	5	5	5	50

Internal Assessment Examinations (Theory)

III (PART 1) MBBS

Theory paper will be from topics covered.	MCQ	LAQ Any 2 out Of 3 Questions 10 marks each	SAQ 4 questions (1 question AETCOM) 5 marks each	Theory Total
	10*1	2*10	4*5	
Max. marks Marks	10	20	20	50

Prelim/Final Examination (Theory)

III (PART 1) MBBS

Paper 1	(A)	(B)		(C)		Theory Total
	MCQs on all topics of the paper I	EAR		NOSE AND THROAT		
		LAQ Any 2 out of 3	SAQ ALL 4 Compulsory (1 question of AETCOM)	LAQ Any 2 out of 3	SAQ ALL 4 Compulsory	
Max. Marks	10*2	2*10	4*5	2*10	4*5	100

Second/III-I MBBS Practical Mark's Structure (Prelim/Final)

Practical						Oral/Viva			
Seat No.	Long case	OSCE (4 stations)	Log book viva	Journal viva	Total	OPD instruments	Operative instruments	Total	Practical & Oral
Max. Marks	40	20	10	10	80	10	10	20	100

There will be 2 internal assessment examinations in otorhinolaryngology.

It is mandatory for students to appear for all of the internal assessment examinations in respective phases.

Conversion formula for calculation of marks in internal assessment examinations

Formula for theory (out of 150/7.5) = Total marks-----/20

Formula for practical's (out of 200/10) = Total marks-----/20

	Theory	Practical
Phase II	-	50
Phase III/1	50	50
Prelim	100	100
Total	150	200
Conversion	20	20

Theory Paper /Oral /Practical /Internal Assessment	Maximum Marks in each of The Subject
Theory (final)	Paper – I - 80 Marks
Oral	20 Marks
Practical (final)	60 Marks
Internal Assessment	Theory - 20 Marks
	Practical- 20 Marks

Students must secure at least 50% marks of the total marks (combined in theory and practical and not less than 40% marks in theory and practical separately) assigned for internal assessment in order to be eligible for appearing at the final university examination.

BOOKS RECOMMENDED:

1. Textbooks:
 - a) Logan Turner; Text Book of ENT
 - b) P.L Dhingra ; Text Book of ENT
2. Reference Book
 - o Scott Brown’s Otolaryngology - 5 Volumes



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Course Name: Forensic Medicine and Toxicology

Course Code: Medical - FM

Faculty: Health Sciences

Programme Type: UG

Sub-Committee (Specialization): Medical

Preamble:

The subject of Forensic Medicine Including Toxicology is divided in two parts i.e. Forensic Medicine & Toxicology. Forensic Medicine deals with application of medical and paramedical knowledge to aid in administration of justice. It deals with crime against human being in which medical examination and evidence are required, aiming to administration of justice in both civil and criminal cases. It is incumbent upon doctors (Indian Medical Graduates) to have good knowledge of law governing their profession, in order not to transgress the law. Toxicology deals with the medical and legal aspects of the harmful effects of various poisons on human beings. It includes study of different poisons with respect to their properties, actions, diagnosis, toxicity, fatal dose, detection and estimation, interpretation of results of toxicological analysis and treatment and post-mortem appearance which will help doctors (Indian Medical Graduates) to deal with medical and legal duties in case of suspected poisoning.

As per Competency Based Undergraduate Curriculum for The Indian Medical Graduate, Forensic Medicine Including Toxicology (FMT) is included in two phases of medical education i.e. Para-clinical phase (phase II) of duration 12 months & Clinical phase (Phase III Part I) of duration 13 months. Subject of Forensic Medicine Including Toxicology (FMT) is studied under two headings –Forensic Medicine and Toxicology & aligned and integrated horizontally and vertically with subject of Human Anatomy, Pharmacology, Radio diagnosis, Psychiatry, General Medicine, Obstetrics & Gynaecology

and General Surgery by recognizing the importance of medico-legal, ethical and toxicological issues as they relate to the practice of medicine. The Emphasis is given on Indian Medical Graduates to understand the medical and legal duties in medical practice, and to perform medico-legal autopsy in an ethical manner by providing reasonable coverage of the subject as a whole with use of foundation course, AETCOM module, early clinical exposure, self-directed learning, competencies learning, skills training, as suggested by MCI in the Competency Based Undergraduate Curriculum for the Indian Medical Graduate.

Educational Goal:

The goal of the teaching of undergraduate students in Forensic Medicine Including Toxicology is to produce a Indian Medical Graduates who are well informed about medico-legal responsibilities in practice of Medicine. He/she will also be capable of making observations and inferring conclusions by logical deductions to set enquiries on the right track in criminal matters and connected medico-legal problems. He/she acquires knowledge of law in relation to medical practice, medical negligence and respect for codes of medical ethics.

Educational Objectives:

The educational objectives of the teaching of undergraduate students in Forensic Medicine are classified according to domain (Knowledge, Skills, Attitude & Communication) in Competency Based Undergraduate Curriculum as per proposed GMER guidelines to produce Indian Medical Graduates who at the end of the course in the Forensic Medicine & Toxicology are well informed and able to demonstrate knowledge, skills, attitude, ethics & communication.

Knowledge:

At the end of the course in the Forensic Medicine & Toxicology, the Indian Medical Graduate student will be:

1. Able to understand the basic concept of the subject and its importance.
2. Aware of inquest, legal and court procedures applicable to medico-legal and medical practice.
3. Able to understand the physician's responsibilities in criminal matters by rational approach to the investigation of crime based on scientific and legal principles,
4. Able to understand medico-legal responsibilities of physicians in primary and secondary care settings,
5. Able to understand codes of conduct and medical ethics,

6. Able to understand medico-legal aspects and findings of post-mortem examination in cases of death due to common unnatural conditions
7. Able to diagnose and manage the cases of acute and chronic poisoning / overdose and related medico-legal issues.
8. Able to understand medico-legal issues and findings of post-mortem examination in cases of death due to poisonings / overdose.
9. Able to understand general principles of analytical, environmental, occupational toxicology including toxic vigilance, predictive toxicology
10. Able to understand the medico-legal framework of medical practice and medical negligence,
11. Able to understand the importance of medico-legal, ethical and toxicological issues as they relate to the practice of medicine.
12. Aware of latest advances in Forensic Medicine & Toxicology and their medico-legal importance.
13. Aware of latest decisions/notifications/ resolutions/circulars/standing orders, acts related to medico-legal practice issued by Courts/Government authorities etc.

Skills:

At the end of the course in the Forensic Medicine & Toxicology, the Indian Medical Graduate student will be:

1. Able to identify the medico-legal cases, carryout medical examination in such cases and prepare medico-legal report as per the law of the land.
2. Able to identify, examine, draw medico-legal inference and opinion from various biological and non-biological exhibits, histopathological slides etc. in respect to various medico-legal cases.
3. Able to preserve and despatch relevant various articles, trace evidences, biological samples including viscera in poisoning cases, in medico-legal cases/ autopsy examination and handing over the same to appropriate agencies.
4. Able to identify & interpret autopsy findings and results of other relevant investigations for logical conclusion and framing the opinion on cause, manner and time since death in medico-legal post-mortem/autopsy.
5. Able to identify & draw medico-legal inference from common poisons and carry out medico-legal duties in suspected cases of poisoning

6. Able to record and certify medico-legal cases like age estimation, sexual assault, dying declaration, various medical certificates etc.
 7. Able to diagnose and certify death,
 8. Able to document and certify trauma.
-
9. Able to do legal documentation related to emergency cases
 10. Able to give medical/medico-legal evidence in court of law.

Attitude, Ethics & Communication:

At the end of the course in the Forensic Medicine & Toxicology, the Indian Medical Graduate student will be:

1. Able to respect to the directions of courts, code of conduct while appearing as witness to depose medical/medico-legal evidence in court of law.
2. Able to work in a team for conduction of medico-legal autopsies in cases of death following alleged medical negligence, dowry death, death in custody or following violation of human rights as per National Human Rights Commission Guidelines on exhumation
3. Able to demonstrate the professionalism while dealing with victims of torture and human right violations, sexual assaults psychological consultation, rehabilitation
4. Able to demonstrate respect to laws relating to medical practice and Ethical code of conduct prescribed by Medical Council of India and rules and regulations prescribed by it from time to time
5. Able to conduct research in pursuance to guidelines or research ethics, bioethics
6. Able to communicate appropriately by exchanging information by verbal, or nonverbal communication to the doctors, peers, family members, law enforcing agency and judiciary, government officials & public health authority, public and media.
7. Able to use local resources whenever required like in mass disaster situations

8. Able to counsel family members of a patient with suspected poisoning about the clinical and medico legal aspects with empathy
9. Able to administer informed consent to a person wishing to undergo medical procedure.

10. Able to demonstrate Professionalism and empathy to the patient undergoing surgery
11. Able to discuss various medico-legal issues in surgical practice

Syllabus:

The topics will be covered as per proposed GMER guidelines.

Phase II

A – Forensic Medicine

1. Basics of Forensic Medicine (General Information)

- Definition of Forensic Medicine, Clinical Forensic Medicine, Forensic pathology, State Medicine, Legal Medicine and Medical Jurisprudence, Medical Ethics, Medical Etiquettes.
- History of Forensic Medicine.

2. Legal procedure

- Criminal procedure code, Indian penal Code, Indian evidence Act,
- Civil & Criminal cases, Civil Law (Case Law), Criminal Law, Common Law.
- Definition of Inquest, Different types of inquest procedures - police inquest, Magistrate's inquest, Coroner's inquest, Medical Examiner System, Jury.
- Cognizable and non-cognizable offences, Punishments authorised by law.
- Different types of courts in India and their powers – Supreme court, High Court, Session Court, Magistrate's court, Labour court, Family court, Executive Magistrate Court and Juvenile Justice Board, Juvenile Court.
- Court procedures: Summons, conduct money, recording of evidence in court of law - oath, affirmation, Types of examination in court - Examination in chief, Cross examination, Re-examination, court questions, definition and types of witnesses, hostile witness, Types of Evidence – Oral, Documentary, Medical evidence, Medical Certificate, dying declaration, dying deposition, chain of custody of evidence, Recording of evidence in court, Conduct and duties of a doctor in witness box, conduct and duties of doctor in crime scene investigations. Giving expert medical/ medico-legal opinion in Court of Law
- Offenses in the court – Perjury, Court strictures vis-à-vis Medical Officer
- Latest decisions/notifications/resolutions/circular/standing orders related to medico-legal practice issued by courts/Government authorities etc.
- Cause of death & ICD 10 Code document
- Documentation in medical practice in regard to medico-legal examinations, Medical Certificates and medico-legal reports especially-
 - Maintenance of patient case records, discharge summary, prescribed registers to be maintained in Health Centres.
 - Maintenance of medico-legal register like accident register.
 - Documents of issuance of wound certificate
 - Documents of issuance of drunkenness certificate
 - Documents of issuance of sickness and fitness certificate.

- Documents for issuance of death certificate.
- Documents of Medical Certification of Cause of Death - Form Number 4 and 4A
- Documents for estimation of age by physical, dental and radiological examination and issuance of certificate.
- Recording and certification of dying declaration

3. Forensic Pathology

- Thanatology- Definition of death, Types of Death - Somatic/Clinical/Cellular, Molecular and Brain death including cortical death and Brainstem death, Natural and Unnatural death, Suspended animation, Moment of death, Modes of death – Coma, Asphyxia & Syncope, Presumption of death and Survivorship and Sudden death.
- Organ transplantation & The Human Organ Transplant (Amendment) Act 2011, Ethical issues in Organ Donation.

4. Clinical Forensic Medicine

- Establishment of identity of living persons –definition and types, importance of Identification, Corpus Delicti, Race, sex, religion, complexion, stature, age determination using morphology, teeth-eruption, decay, bite marks including forensic odontology, bones-ossification centres, medicolegal aspects of age. Foetal age determination, Identification of criminals, unknown persons, dead bodies from the remains- hairs, fibers, teeth, anthropometry, dactylography, foot prints, palate-prints, lip-prints, ear-prints, nose-prints, retina scan, iris scan, scars, tattoos, deformities, moles, poroscopy and Superimposition, clothes and ornaments, handwriting, speech and voice, gait, tricks of manner and habit, memory and education, use of X-rays in identification.
- Examination and preparation of report of estimation of age of a person for medico-legal and other purposes.
- Examination, interpretation and medico-legal aspects from examination of hair (human & animal), fibre.

5. Medical Jurisprudence

- Medical Ethics & its historical emergence, Oath- Hippocrates, Charaka and Sushruta and procedure for administration of oath, the Modified Declaration of Geneva and its relevance.
- The Code of Medical Ethics 2002 conduct, Etiquette and Ethics in medical practice and rules & regulations prescribed by MCI from time to time, unethical practices & the dichotomy
- Indian Medical Council Act 1956, Medical Council of India, State Medical Councils- Their functions and disciplinary control, Role. Indian Medical Register, infamous conduct, disciplinary procedures, warning notice & penal erasure,.
- Rights, privileges and duties of a Registered Medical Practitioner towards the patients and society, Doctor – Patient relationship: professional secrecy and privileged communication, duties, privileges and rights of patients, physician –patient relationship

- Prenatal diagnostic techniques Act, Human organ transplantation Act, ESI Act, medico-legal issues in relation to family violence, Violation of human rights, NHRC and Doctors, Doctors, public and media, ethics related to HIV patients, Bioethics, Ethical Principles: Respect, for autonomy, non-maleficence, beneficence & justice, constitution and functions of ethical committee, Ethical guidelines for Biomedical Research on Human Subjects & Animals, Clinical research & ethics, Human experimentation including clinical trials, Legal & Ethical issues in stem cell research.
- Social aspects of Medico-legal cases with respect to victims of assault, rape, attempted suicide, homicide, domestic violence, dowry- related cases
- The challenges in managing medico-legal cases including development of skills in relationship management– Human behaviour, communication skills, conflict resolution techniques.
- The principles of handling pressure – definition, types, causes, sources and skills for managing the pressure while dealing with medico-legal cases by the doctor.
- Negligence - Professional (Medical) Negligence/Medical Malpraxis/Malpractice- Civil, Criminal and ethical (Infamous conduct) Negligence, Contributory Negligence, Corporate Negligence, vicarious liability, the doctrine of Res Ipsa Loquitur, Novus Actus Interveniens, Prevention and precautions of medical negligence and defences in medical negligence litigations, Supreme court of India guidelines on medical negligence, Medical records, Consumer Protection Act – 1986 (Medical Indemnity Insurance, civil litigations and compensations), Medical Indemnity Insurance, Workman's Compensation Act & ESI Act, Therapeutic Privilege, Malingering, Therapeutic Misadventure, Products liability, Professional Secrecy, Human Experimentation, Laws in relation to medical practice - IPC related to medical Practice,.
- Consent, Types of consent, informed consent and its ingredients, Rules of Consent and importance of consent in relation to age, emergency situation, mental illness and alcohol intoxication, euthanasia and its types.

B. Toxicology

1. General Toxicology

- History of Toxicology, Definition of Toxicology, Forensic Toxicology, Clinical toxicology and Poison. Laws in relation to poisons including NDPS Act, Medico-legal aspects of poisons, Nature of poisoning, Classification of poisons, Toxicokinetics and Toxicodynamics, types of poisoning, diagnosis of poisoning in living and dead, General symptoms, principles of diagnosis of common poisons encountered in India, and treatment & management of common poisons encountered in India- decontamination, supportive therapy, Antidotes and its types, procedures of enhanced elimination. Duties of medical practitioner in a case of suspected poisoning. The procedure of intimation of suspicious cases or actual cases of foul play to the police, maintenance of records, despatch of viscera and relevant samples for chemical analysis and laboratory analysis. Medico-legal autopsy in cases of poisoning, preservation and despatch of viscera and relevant samples for chemical analysis and laboratory analysis, Simple bedside clinical tests to detect poison/drugs in a patient's body fluids.
- The correct technique of clinical examination in a suspected case of poisoning & preparation of medico-legal report in a simulated/ supervised environment & the technique in collecting, preserving and dispatch of the exhibits in a suspected case of poisoning.

Distribution of teaching hours in Forensic Medicine Including Toxicology:

	Second Professional MBBS Teaching Hours (Phase II)	Third Professional MBBS Part –I (Phase III Part-I)	Total
Theory Lectures	15	25	40
Small group learning (Practical, Tutorials, Seminars)/ Integrated learning	30	45	75
Self-directed learning	05	05	10
Total	50	75	125

Paper wise distribution of syllabus:

Forensic Medicine & Toxicology – 1 Paper – All Syllabus

Text-Books to be referred:

1. Dr. K.S.N. Reddy- The essential of Forensic Medicine & Toxicology 34th Edition 2002.
Published by-Jaypee Brothers Medical Publishers
2. Dr. C.K. Parikh- A text book of Medical Jurisprudence, Forensic Medicine & Toxicology,8th Edition 2019, CBS Publishers, Delhi.
3. Dr. Apurba Nandy- Principles of Forensic Medicine, 3rd Edition 2010(reprint 2019), New Central Book Agency(P) ltd. Kolkata
4. Text Book of Forensic Medicine – J.B. Mukherjee,5th edition,2018, edited by R. N. Karmakar, published by Academic Publishers, Kolkata
5. Toxicology at a Glance by Dr S.K. Singhal,9th edition 2017, published by National book house
6. Textbook of Forensic Medicine & Toxicology by V V Pillay, 19th edition 2019 published by EDUCA books
7. Modern Medical Toxicology-V V Pillay,4th edition 2013, Jaypee Brothers Medical Publishers
8. Principles of Forensic Medicine and Toxicology-Rajesh Bardale,2nd edition 2017, Jaypee Brothers Medical Publishers
9. Dr. Krishnan Vij- Text book of Forensic Medicine & Toxicology- Principles and Practice, 6th edition, 2014, Elsevier BI Churchill Livingstone, New Delhi, 6th edition, 2014
10. Modi 's Textbook of Medical Jurisprudence and toxicology- Edited by K Kannan 26th edition 2019, LexisNexis

Reference books:

1. Russell S. Fisher & Charles S. Petty: Forensic Pathology
2. Keith Simpson: Forensic Medicine
3. Jurgen Ludwig: Current Methods of autopsy practice.
4. Gradwohl – Legal Medicine
5. A Doctors Guide to Court – Simpson
6. Polson C.J.: The essentials of Forensic Medicine
7. Adelson, L.: The Pathology of Homicide.
8. Atlas of Legal Medicine (Tomro Watonbe)
9. Sptiz, W.U. & Fisher, R.S.: Medico-legal Investigation of Death.

10. A Hand Book of Legal Pathology (Director of Publicity)
11. Taylor's Principles & Practice of Medical Jurisprudence. Edited by A. Keith Mant, Churchill Livingstone.
12. Ratanlal & Dhirajlal, The Indian Penal Code; Justice Hidayatullah & V.R. Manohar Ratanlal & Dhirajlal, The Code of Criminal procedure; Justice Hidayatullah & S.P. Sathe
13. Ratanlal & Dhirajlal, The Law of Evidence; Justice Hidayatullah & V.R. Manohar
14. Medical Law & Ethic in India – H.S. Mehta
15. Bernard Knight: Forensic Pathology
16. Code of medical ethics: Medical Council of India, approved by Central Government, U/S 33 (m) of IMC Act, 1956 (Oct 1970)
17. Krugman, W.M.: The human skeleton in legal medicine.
- 18. FE Camps, JM Cameron, David Lanham: Practical Forensic Medicine**

The topics will be covered as per proposed GMER guidelines.

Phase III Part I

A – Forensic Medicine

1. FORENSIC PATHOLOGY

- Signs of death- Immediate, early & late, changes in skin, eyes, Post-mortem changes after death – cooling of dead body(Algor Mortis), post-mortem lividity(Post-mortem Hypostasis), Muscular changes – Primary relaxation or flaccidity, rigor mortis (Cadveric rigidity), cadaveric spasm, heat and cold stiffening, secondary flaccidity, autolysis and putrefaction, maggots, mummification, adipocere formation, maceration and preservation of dead bodies.
- Estimation of time since death on post-mortem examination.
- Examination of mutilated bodies or fragments, Charred bones, bundle of bones and exhumation.
- Definition of post-mortem examination, Different types of autopsies, aims and objectives of post-mortem examination, autopsy instruments, Autopsy Procedure including post-mortem examination - Legal requirements and rules to conduct post-mortem examination, Procedure to conduct medicolegal postmortem examination, Autopsy room photography, obscure autopsy, virtual autopsy (Virtopsy), negative autopsy, autopsy in cases of HIV and Infections & universal work precautions, autopsy and disposal of radioactive corps, psychological autopsy, examination of clothing, collection & preservation and despatch of viscera, laboratory procedure for collection and preservation of biological or trace evidences on post-mortem examination for chemical analysis and other medico-legal purposes, post-mortem artefacts, opinion on cause of death- cause of death, manner of death, classification of the cause of death, second autopsy.
- Protocols or recommendation for conduction of medico-legal autopsies as per National Human Rights Commission Guidelines in case of death in custody or following violation of human rights, exhumation.
- Medico-legal autopsies in cases of death following alleged medical negligence, dowry death.
- Anaesthetic and operative deaths investigation – protocol for conduction of autopsy and for collection, preservation and dispatch of related material evidences.
- Examination of dead body at the scene of crime – Objectives, duties & responsibilities of doctor on crime scene and the reconstruction of sequence of events after crime scene investigations.
- Mass disaster – definition, classification, Use of local resources, objectives of medico-legal autopsy in mass disaster, Autopsy protocol in mass disaster, Role of forensic expert.
- Exchanging information by verbal, or non-verbal communication to peers, family members, law enforcing agencies and judiciary.

- Definition and classification of asphyxia, Description of mechanical asphyxia, medico-legal interpretation of post-mortem findings in asphyxial deaths.
- Definition and types of hanging, strangulation and throttling. Description of clinical findings, causes of death, post-mortem findings and medico-legal aspects of death due to hanging and strangulation. Examination, preservation and despatch of ligature material.
- Definition, pathophysiology, clinical features, post-mortem findings and medico-legal aspects of obstruction of nose & mouth, smothering, gaging, overlaying, choking, burking, suffocation, traumatic asphyxia, postural or positional asphyxia, sexual asphyxia.
- Definition, types, pathophysiology, clinical features, causes of death, postmortem findings and medico-legal aspects of drowning, diatom test, Gettler test.
- Clinical features, post-mortem finding and medico legal aspects of injuries due to physical agents-heat (heat-hyper-pyrexia or heat stroke, sun stroke, Heat exhaustion (Prostration), heat cramps (miner's cramp), cold (hypothermia, Frostbite, trench foot, Immersion foot).
- Types of injuries, clinical features, patho-physiology, post-mortem findings, cause of death and medico-legal aspects in cases of burns, scalds, lightning, electrocution and radiations. Degree of burns and scald.
- Clinical features, post-mortem findings and medico-legal aspects of death due to starvation and neglect.
- Definition of infanticide, foeticide, stillbirth, deadbirth and livebirth. Signs of intrauterine death, viability of foetus, Signs of live birth, age determination of foetus, demonstration of ossification centres, precipitate labour & its medico-legal aspects, Haase's rule, Hydrostatic test, maceration, Sudden infant death syndrome, Munchausen's syndrome by proxy.
- Artefacts- Artefacts introduced between death & autopsy, artefacts introduced during autopsy.
- Conduct & prepare post-mortem examination report in case of death due to varied etiologies (violence of any nature - road accident, fall from height, assault, factory accident, electrocution, burns & accident due to any other cause, fire arm injury, asphyxia, natural death & medical negligence) including preserving & dispatching of viscera for chemical analysis in cases of suspected poisoning in a simulated/ supervised environment. (At least 15 post-mortem reports should have been written by the student.)
- Examination of skeletal remains & drawing opinion.
- Estimation of age of foetus by post-mortem examination.
- Identification & drawing of medico-legal inference from histopathological slides of Myocardial infarction, pneumonitis, tuberculosis, brain infarct, liver cirrhosis, brain haemorrhage, bone fracture, pulmonary oedema, brain oedema, soot particles, diatoms & wound healing.

2. CLINICAL FORENSIC MEDICINE

- Definition and classification of injuries. Factors governing the nature and extent of wounds, various types of injuries. Abrasion, bruise, laceration, incised wound, chop wound, stab wound, defence wound, self-inflicted/fabricated wounds and their medicolegal aspects.
- Description of regional injuries to - head (injuries to –eye, nose, ears, face. Scalp wounds, fracture skull- mechanism and its types, complications, age of skull injury. Injuries of brain & meninges- Intracranial haemorrhages, cerebral injury, contusion of brain, laceration of brain, Coup and countercoup injuries, concussion of the brain, cause of death in head injuries), Neck, Chest, Abdomen, Limbs, Genital organs, Spinal cord and skeleton, Injuries due to fall from height, Vehicular injuries- pedestrians (Traffic accidents) – Primary and Secondary impact, Secondary injuries, crush syndrome, rolling and run over injuries, injuries to occupants of the vehicle, cyclist and motor cyclist injuries, railway spine, reconstruction of scene of crime, injuries in mass disaster.
- Definition of Injuries, Assault and Hurt. IPC pertaining to injuries. Accidental, Suicidal and Homicidal Injuries. Homicide and its types, culpable homicide & murder. Types of Injuries – Simple, Grievous and Dangerous. Different types of weapons, Dangerous weapons and their examination. Ante mortem and Post-mortem Injuries, Factors influencing infliction of Injuries, Healing of injuries, fracture of bones and age of the injury, Medico-legal aspects of injuries. Different legal questions, examination and certification of wounds, Wound as a cause of death: Primary (Immediate) and Secondary (Delayed). Workman’s Compensation Act. Dowry death, torture, death in custody.
- Examination and preparation of a Medico-legal report of an injured person with different etiologies in a simulated/ supervised environment. Preparation of a Medico-legal report of an injured person due to mechanical violence.
- Identification & drawing medico-legal inference from various specimen of injuries e.g. contusion, abrasion, laceration, firearm wounds, burns, head injury and fracture of a bone.
- Identification & description of commonly used weapons of medico-legal importance e.g. lathi, knife, kripa, axe, gadda, gupta, farsha, dagger, bhalla, razor & stick. Identification, examination and preparation of report of weapon brought by police to give opinion regarding injuries present on the person as described in injury report or PM report so as to connect the weapon to injuries. (Injury report or PM report must be provided to connect weapons with injuries.)
- Examination & preparation of a medico-legal report of a person brought for medical examination in cases pertaining to police, judicial custody or referred by court of law and violation of human rights as requirement of NHRC.
- Forensic Ballistics- Firearm injuries. Definition & classification of fire-arms. Structure and components of various firearms, description of ammunition propellant charge and mechanism of fire-arms, various terminology in relation of firearm – calibre, range, choking. Description of different types of cartridges and bullets.

- Description of wound ballistic, Types of fire arm injuries- wounds from shotgun, wounds from revolver and automatic pistols, wounds from rifle, X ray examination of Gunshot wound victims, blast injuries and their interpretation. Medico-legal post-mortem examination in firearm cases, Preservation, marking, packing and dispatch of trace evidences and exhibits in cases of firearm and blast injuries. Various test related to confirmation of use of firearms.
- Description of the contents and structure of bullet & cartridges used & medico-legal interpretation drawn from these.
- Definition and types (Classification) of sexual offences, Definition of rape (IPC Section 375). Various sections of IPC regarding rape, Punishment for rape (Section 376 IPC), recent amendments notified till date. Examination of the victim of an alleged case of rape, Examination of the accused of an alleged case of rape, preparation of report and framing the opinion in rape cases, collection, preservation and despatch of trace evidences from victim and accused in cases of rape, medicolegal questions in cases of rape. Indecent assault, incest, adultery, unnatural sexual offences, sodomy. Examination of accused and victim, preparation of report and framing of opinion, collection, preservation and despatch of trace evidences in cases of sodomy, incest, lesbianism, buccal coitus, bestiality, indecent assault. Sexual perversions- Uranism, Fetichism, transvestism, voyeurism, sadism and lust murder, necrophilia, necrophagia, masochism, exhibitionism, frotteurism, sexual oralism, masturbation, troilism, mixoscopia, Oedipus complex, Bobbit syndrome, zoophilia, undinism, pyromania.
- Examination & preparation of report of an alleged accused in a rape/unnatural sexual offence.
- Examination & preparation medico-legal report of a victim of sexual offence/unnatural sexual offence.
- Definitions of impotence, sterility, frigidity, sexual dysfunction, premature ejaculation, legal issues in impotence and sterility, causes of impotence and sterility in male and female, examination of case of impotency/potency, sterilization of male and female. Artificial insemination, test tube baby, surrogate mother, hormonal replacement therapy, assisted reproductive technique, Delhi Artificial Insemination Act 1995 and respective national and state laws.
- Importance of surgical methods of contraception (Vasectomy & Tubectomy) in National Family Planning Programme. Major results of National Family Health Survey. ART Clinics in India – National guidelines for Accreditation, Supervision and Regulation.
- Anatomy of male and female genitalia, Hymen and its types, causes of rupture of hymen, Medico-legal importance of hymen, definition and signs of virginity, definition of defloration and its medico-legal importance.
- Medico-legal aspects of pregnancy, signs of pregnancy, precipitate labour superfoetation, superfecundation, legitimacy and its medico-legal importance, supposititious children, disputed

paternity and maternity, medico-legal aspects of delivery, signs of delivery, signs of recent and remote delivery in living and dead.

- Definition, classification, complication and legal aspects of abortion, MTP Act 1971, Methods of procuring MTP & criminal abortion, evidences of abortion- in living and dead, investigation of death due to criminal abortion, duties of doctor in cases of abortion.
- Preconception and Pre Natal Diagnostic Techniques (PC&PNDT) – Prohibition of Sex Selection Act 2003 and Domestic Violence act 2005.
- Child abuse & Battered Baby Syndrome.
- Torture- definition, methods of torture, identification of injuries caused by torture, and its sequel, management of torture survivors, guidelines and protocols of National Human Rights Commission regarding torture.

3. FORENSIC PSYCHIATRY

- Definition, Classification of mental illnesses including post-traumatic stress disorder, Delirium, Delusions, Hallucinations, illusion, impulse, obsessions, phobia, psychopath, Lucid interval with exemplification, Delirium tremens, mental subnormality, Diagnosis of Insanity, Differentiation between True insanity from Feigned insanity, Restraint, admission, care and discharge of mentally ill person in accordance to Mental Health act 1987, Mental disorder and Responsibility- Civil and Criminal responsibility, Testamentary Capacity, Mc Naughten's 's rule, Section 84 IPC, Doctrine of diminished responsibility, automatism, somnambulism, somnolentia, .

4. FORENSIC SCIENCES & FORENSIC LABORATORY INVESTIGATION IN MEDICOLEGAL PRACTICE

- Locard's exchange principle, Types of specimen and tissues to be collected both in living and dead – Body fluids (blood, urine, semen, faeces, saliva), Skin, Nails, tooth pulp, vaginal smear, viscera, skull, specimen for histo-pathological examination, blood grouping, HLA Typing, Definition of DNA fingerprinting, Techniques of DNA Fingerprinting, Application of DNA profiling in forensic Medicine.
- The methods of sample collection, preservation, labelling, dispatch, examination and interpretation of reports
- Identification of blood, Seminal stains, vaginal fluid, faecal and urinary stain, sample collection, preservation, labelling, dispatch, examination (Physical, microscopic, chemical and serological test, blood grouping) & interpretation of reports and its medico-legal aspects, examination of skin, nail, tooth pulp and other body fluids, hazards of blood transfusion.
- Dispatching the biological or trace evidences specifying the required tests to be carried out, to Forensic Science laboratory, objectives of preservation of evidences sent for examination, interpretation of findings.

- Examination, interpretation and medico-legal aspects from examination of semen & other biological fluids.
- Examination & identification of a particular stain is a blood and identification of its species origin.
- Technique to perform & Identification ABO & RH blood groups of a person.

5. Recent Advances- Emerging Technologies in Forensic Medicine

- Indications, principles and uses of – DNA Profiling, Facial Reconstruction, Lie Detector Test - Polygraph, Narcoanalysis, Brain Mapping. Digital Autopsy, Virtual Autopsy, Imaging Technologies.
- Collection, preservation, sealing and dispatching exhibits for DNA-Finger printing using various formats of different laboratories.
- Common instrument used in analysis DNA profile

B. Toxicology

1. ANALYTICAL TOXICOLOGY

- General principles of analytical toxicology and its application in management, prevention and control of poisoning.
- Basic principles and analytical methods for toxicological analysis - Thin Layer Chromatography, Gas Chromatography, Liquid Chromatography, Atomic Absorption Spectroscopy, Spectrophotometer, Neutron Activation Analysis, Mass spectrometry, Alco meter.
- Common instrument used in analysis of poison & DNA profile – TLC, GLC, AAS.

2. CLINICAL TOXICOLOGY (Chemical Toxicology)

- Classification and description, types of poison, active principal, mechanism of action, clinical signs and symptoms, diagnosis, fatal dose & fatal period, general principles and basic methodologies in treatment & management, cause of death, Post-mortem findings, and Medico-legal aspects of following poisoning:
- **Corrosive poisons** – Inorganic -sulphuric acid, nitric acid, hydrochloric acid; Organic- Carboic acid (phenol), oxalic acid, acetylsalicylic acid. Formic acid, Boric acid, organic acids and caustic alkalis.
- **Inorganic & non-metallic irritant poisons-** Phosphorus, Iodine, Barium, Halogens, , miscellaneous preparation & mechanical irritants like powdered glass etc.

- **Agricultural poisons**- Organophosphorus, Carbamates, Organochlorine, Endrin, Paraquat, Pyrethrines & Pyrethroids, Aluminium & Zinc phosphide. Common insecticides and pesticides used in India.
- **Metallic poison** - Arsenic, Lead, Mercury, Copper, Iron, Cadmium, Zinc, Thallium.
- **Deliriant poisons** – Datura Fastuosa, Cannabis Sativa or Indica, Cocaine, LSD, muscaline.
- **Spinal & peripheral nerve poisons** – Strychnine, curare, hemlock.
- **Domestic poisons** – Kerosene, cleansing agents, disinfectants, household medicines.
- **Organic irritant poisons -Vegetable poisons** – Ricinus communis, Abrus precatorius, Croton tiglium, Ergot, Capsicum annum, Semicars anacardium, Calotropis gigantea.
- **CNS depressants**- Ethanol & Drunkenness, Methanol, Ethylene Glycol, Isopropanol, Chloroform, Ether. Describe and examine Alcohol poisoning (ethyl & methyl alcohol) and drunkenness, its medico-legal aspects & benzodiazepine poisoning. Opium, Barbiturates, Chloral hydrate, Paraldehyde, Hydrocarbons.
- Examination and preparation of medico-legal report of a drunk person in a simulated/supervised environment.
- Identification & drawing of medico-legal inference from common poisons e.g. Dhatura, castor, cannabis, opium, aconite copper sulphate, pesticides compounds, marking nut, oleander, Nux vomica, abrus seeds, snakes, capsium, calotropis, lead compounds & tobacco.
- Asphyxiants poisons – Carbon monoxide, carbon dioxide, hydrogen sulphide, Hydrogen cyanide & derivatives, Methyl Isocyanate, War gases, phosgene and phosphine, Ammonia, Chemical warfare, Biological warfare, tear (riot control) gases.
- Definition of food adulteration. Names of common adulterants and general methods of detection for food adulterants, Definition of food poisoning, Common food poisonings- Botulism, Bacterial. Poisonous food- Lathyrus sativus, Poisonous Mushrooms, Argemone mexicana and epidemic dropsy, poisonous fish.

3. Pharmaceutical Toxicology

- Classification and description, Types of poison, active principal, mechanism of action, Clinical signs and Symptoms, Diagnosis, fatal dose & fatal period, General principles and basic methodologies in treatment & management, Cause of death, Post-mortem findings, and Medico-legal aspects of following poisoning:
- Analgesics & Antipyretics – Paracetamol, Salicylates
- Anti-Infectives (Common antibiotics – an overview)

- Neuropsychotoxicology - Psychotropic Drugs, Methamphetamine, Tricyclic antidepressant, Monoamine Oxidase Inhibitor, Benzodiazepines, phenytoin, lithium, haloperidol, neuroleptics, hallucinogens.
- Narcotic Analgesics, Anaesthetics, and Muscle Relaxants, Nitrates & Nitrites.
- Cardiac Poisons – Nicotiana Tabacum, Digitalis purpurea, Nerium odoratum, Cerbera thevetia (Yellow oleander), Cerbera odollam, Aconite.
- Gastrointestinal and Endocrinal Drugs – Insulin
- Somniferous poisons – opium & its derivatives, synthetic preparations, pethidine & codeine.
- Barbiturate poisoning, drug abuse & common drug overdoses.

4. Biotoxicology

- Classification of snakes. Clinical features (signs & symptoms), fatal dose, fatal period, diagnosis, treatment, management, post-mortem findings and medico-legal aspects of Animal poisons –snake bite, scorpion sting, bee and wasp sting, Spider bite, cantharides.

5. Sociomedical Toxicology

- Definition of Drug addiction, Drug habituation, types of dependence, Body package syndrome, Body stuffer syndrome. Frequently abused drugs, signs & symptoms, withdrawal symptoms, features, treatment, management and rehabilitation, cause of death and post-mortem appearance of abuse/poisoning with following chemicals:
- Tobacco, cannabis, amphetamines, cocaine, hallucinogens, designer drugs & solvent.

6. ENVIRONMENTAL TOXICOLOGY

- Description of toxic pollution of environment, its medico-legal aspects & toxic hazards of occupation and industry.
- Description and medico-legal aspects of poisoning in Workman's Compensation Act.

Paper wise distribution of syllabus:

Forensic Medicine & Toxicology – 1 Paper – All Syllabus

Assessment:

At the end of completion of teaching hours, assessment will be in the form of theory and Practicals carrying 100 marks each.

MBBS
Phase II & Phase III Part -I
Internal Assessment
Subject: Forensic Medicine Including Toxicology

Phase	I Internal Assessment Exam (At the end of III term of Phase II)			II Internal Assessment Exam (At the end of IV term of Phase II)		
	Theory	Practical (Including 10 Marks for Journal & Log Book)	Total Marks	Theory	Practical Including 10 Marks for Journal & Log Book	Total Marks
II MBBS	50	40+10	100	50	40+10	100

Phase	I- Internal Assessment Exam (At the end of Vth term of Phase III Part I)			II- Internal Assessment Exam (At the end of VI term of Phase III Part I: Preliminary Exam)		
	Theory	Practical (Including 10 Marks for Journal & Log Book)	Total Marks	Theory	Practical	Total Marks
III/I MBBS	50	40+10	100	100	100	200

- There will be **4** internal assessment examinations in Forensic Medicine Including Toxicology.
 - 1st Internal Assessment of theory and practical should be conducted at the end of 3rd term of Phase II MBBS.
 - 2nd Internal Assessment of theory and practical should be conducted at the end of 4th term of Phase II MBBS.
 - 3rd Internal Assessment of theory and practical should be conducted at the end of 5th term of Phase III Part I MBBS.
 - 4th Internal Assessment (Preliminary Exam) of theory and practical should be conducted at the end of 6th term of Phase III Part I MBBS.
 - The structure of the Preliminary internal assessment theory and practical examinations should be similar to the structure of University Examination.
- It is mandatory for the students to appear for all the internal assessment Examinations in the respective phases. A student who has not taken minimum required number of tests for Internal Assessment each in theory and practical will not be eligible for University examinations.
- There will be only one additional examination for absent students (due to genuine reasons) after approval by the Institutional Grievances Committee. It should be taken

after preliminary examination and before submission of internal assessment marks to the University.

4. Internal assessment marks for theory will be out of 250 and practical will be out of 250.
5. Students must secure at least 50% marks of the total marks (combined in theory and practical; not less than 40 % marks in theory and practical separately) to be eligible for appearing University examination

Calculation of marks in internal assessment examinations

	First IA II Phase (III Term)	Second IA II Phase (IV Term)	Third IA III Phase Part –I (V Term)	Fourth IA (Prelim) III Phase Part –I (VI term)	Total	Eligibility to appear for Final University Examination (40% separately in Theory & Practical, 50% Combined) To be converted into out of 25 (250/10) for both theory and practical's.	
Theory	50	50	50	100	250	10/25 (40% Minimum)	Total of Theory + Practical Must be 25/50. (50% Minimum)
Practical	50	50	50	100	250	10/25 (40% Minimum)	

6. While preparing Final Marks of Internal Assessment, the rounding-off marks shall be done as illustrated in following table

Internal Assessment Marks	Final rounded marks
99.01 to 99.99	100

7. Students 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 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.
8. Internal assessment marks will not to be added to marks of the University examinations and will be shown separately in mark list.

MBBS Phase II (1st & 2nd) Internal Assessment
Subject: Forensic Medicine Including Toxicology
Theory

Date:

Total Marks: 50

Total Time: 2 Hours

Instructions: (1) All sections are compulsory.

(2) Figures to the right indicate the marks.

(3) Draw diagrams & flowcharts wherever necessary.

(4) Write in legible handwriting.

Section 'A'

Q. No. 1. Multiple Choice Questions

(10x1= 10 Marks)

Section 'B'

Q. No. 2. Short Answer Questions (5 out of 6) -

(5x4= 20 Marks)

Q. No. 3. Structured Long Answer Question (2 out of 3)

(2x 10 = 20 Marks)

MBBS Phase II (1 & 2) Internal Assessment
Subject: Forensic Medicine Including Toxicology
Practical Examination

Date:

Total Marks: 50

Q. No. 1. Spots

(5x2= 10 Marks)

Q. No. 2. Medical/Medicolegal Reports (2)

(2x10= 20 Marks)

Q. No. 3. Viva/Oral

(10 Marks)

Q. No. 4. Practical manual (Journal) / Logbook

(10 Marks)

MBBS Phase III Part I (3rd) Internal Assessment
Subject: Forensic Medicine Including Toxicology
Theory

Date:

Total Marks: 50

Total Time: 2 Hours

Instructions: (1) All sections are compulsory.

(2) Figures to the right indicate the marks.

(3) Draw diagrams & flowcharts wherever necessary.

(4) Write in legible handwriting.

Section 'A'

Q. No. 1. Multiple Choice Questions

(10x1= 10 Marks)

Section 'B'

Q. No. 2. Short Answer Questions (5 out of 6)

(5x4= 20 Marks)

Q. No. 3. Structured Long Answer Question (2 out of 3)

(2x10 = 20 Marks)

MBBS Phase III Part I (3rd) Internal Assessment
Subject: Forensic Medicine Including Toxicology
Practical Examination

Date:

Total Marks: 50

Q. No. 1. Spots

(5x2= 10 Marks)

Q. No. 2. Medical/Medicolegal Reports

(2x10= 20 Marks)

Q. No. 3. Viva/Oral

(10 Marks)

Q. No. 4. Practical manual (Journal) / Logbook

(10 Marks)

**Phase III Part I (4th) Internal Assessment (Preliminary & Univ
Exam)
Subject: Forensic Medicine Including Toxicology
Theory**

Date:

Total Marks: 100

Total Time: 3 Hours

Instructions: (1) All sections are compulsory.
(2) Figures to the right indicate the marks.
(3) Draw diagrams & flowcharts wherever necessary.
(4) Write in legible handwriting.

Section 'A' (20 Marks)

Q. No. 1. Multiple Choice Questions (All MCQs are compulsory) (20x1= 20 Marks)

Section 'B' (40 Marks)

Q. No. 2. Short Answer Questions (4 out of 5) - (4x6=24 Marks)

Q. No. 3. Structured Long Answer Question (1 out of 2) (1x16=16 Marks)

Section 'C' (40 Marks)

Q. No. 4. Short Answer Questions (4 out of 5) - (4x6= 24 Marks)

Q. No. 5. Structured Long Answer Question (1 out of 2) (1x16=16 Marks)

**Phase III Part I (4th) Internal Assessment (Preliminary & Univ Exam)
Practical Examination structure**

Subject: Forensic Medicine Including Toxicology													
Practical										Oral/ Viva			Total
Seat No.	Medical Certificate of Cause of Death (MCCD)	Injury report	Survivor/ Accused of Sexual Assault report	Alcohol Intoxication Drunkenness report	Sickness/ Fitness certificate	Age/ Potency/ Foetus Report	Weapon Report	Spots- • Bone-1 • Specimen-1 • Poison-1 • X-ray-1 • Photograph/ Instrument/ Document-1	Total	Forensic Pathology, Clinical Forensic Medicine	Medical Jurisprudence and Toxicology	Total	Practical & Oral (I + L)
	A	B	C	D	E	F	G	H	I	J	K	L	M
Max. Marks	10	10	10	10	10	10	5	3 X 5= 15	80	10	10	20	100

MBBS Phase III Part I
University Examination
Subject: Forensic Medicine Including Toxicology
Theory

Date:

Total Marks: 100

Total Time: 3 Hours

Instructions: (1) All sections are compulsory.

(2) Figures to the right indicate the marks.

(3) Draw diagrams & flowcharts wherever necessary.

(4) Write in legible handwriting.

Section 'A' (20 Marks)

Q. No. 1. Multiple Choice Questions (All MCQs are compulsory) (20x1= 20 Marks)

Section 'B' (40 Marks)

Q. No. 2. Short Answer Questions (4 out of 5) - (4x6=24 Marks)

Q. No. 3. Structured Long Answer Question (1 out of 2) (1x16=16 Marks)

Section 'C' (40 Marks)

Q. No. 4. Short Answer Questions (4 out of 5) (4x6= 24 Marks)

Q. No. 5. Structured Long Answer Question (1 out of 2) (1x16=16 Marks)

**Phase III Part I MBBS
University Examination
Practical Examination Structure**

Subject: Forensic Medicine Including Toxicology													
Practical										Oral/ Viva			Total
Seat No.	Medical Certificate of Cause of Death (MCCD)	Injury report	Survivor/ Accused of Sexual Assault report	Alcohol Intoxication Drunkenness report	Sickness/ Fitness certificate	Age/ Potency/ Foetus Report	Weapon Report	Spots- • Bone-1 • Specimen-1 • Poison-1 • X-ray-1 • Photograph/ Instrument/ Document-1	Total	Forensic Pathology, Clinical Forensic Medicine	Medical Jurisprudence and Toxicology	Total	Practical & Oral (I + L)
	A	B	C	D	E	F	G	H	I	J	K	L	M
Max Marks	10	10	10	10	10	10	5	3 X 5= 15	80	10	10	20	100

Text-Books to be referred:

1. Dr. K.S.N. Reddy- The essential of Forensic Medicine & Toxicology 34th Edition 2002.
Published by-Jaypee Brothers Medical Publishers
2. Dr. C.K. Parikh- A text book of Medical Jurisprudence, Forensic Medicine & Toxicology,8th Edition 2019, CBS Publishers, Delhi.
3. Dr. Apurba Nandy- Principles of Forensic Medicine, 3rd Edition 2010(reprint 2019), New Central Book Agency(P) ltd. Kolkata
4. Text Book of Forensic Medicine – J.B. Mukherjee,5th edition,2018, edited by R. N. Karmakar, published by Academic Publishers, Kolkata
5. Toxicology at a Glance by Dr S.K. Singhal,9th edition 2017, published by National book house
6. Textbook of Forensic Medicine & Toxicology by V V Pillay, 19th edition 2019 published by EDUCA books
7. Modern Medical Toxicology-V V Pillay,4th edition 2013, Jaypee Brothers Medical Publishers

8. Principles of Forensic Medicine and Toxicology-Rajesh Bardale,2nd edition 2017, Jaypee Brothers Medical Publishers
9. Dr. Krishnan Vij- Text book of Forensic Medicine & Toxicology- Principles and Practice, 6th edition, 2014, Elsevier BI Churchill Livingston, New Delhi, 6th edition, 2014
10. Modi 's Textbook of Medical Jurisprudence and toxicology- Edited by K Kannan 26th edition 2019, LexisNexis

Reference books

1. Russell S. Fisher & Charles S. Petty: Forensic Pathology
2. Keith Simpson: Forensic Medicine
3. Jurgen Ludwig: Current Methods of autopsy practice.
4. Gradwohl – Legal Medicine
5. A Doctors Guide to Court – Simpson
6. Polson C.J.: The essentials of Forensic Medicine
7. Adelson, L.: The Pathology of Homicide.
8. Atlas of Legal Medicine (Tomro Watonbe)
9. Sptiz, W.U. & Fisher, R.S.: Medico-legal Investigation of Death.
10. A Hand Book of Legal Pathology (Director of Publicity)
11. Taylor's Principles & Practice of Medical Jurisprudence. Edited by A. Keith Mant, Churchill Livingstone.
12. Ratanlal & Dhirajlal, The Indian Penal Code; Justice Hidayatullah & V.R. Manohar
13. Ratanlal & Dhirajlal, The Code of Criminal procedure; Justice Hidayatullah & S.P. Sathe
14. Ratanlal & Dhirajlal, The Law of Evidence; Justice Hidayatullah & V.R. Manohar
15. Medical Law & Ethic in India – H.S. Mehta
16. Bernard Knight: Forensic Pathology
17. Code of medical ethics: Medical Council of India, approved by Central Government, U/S 33 (m) of IMC Act, 1956 (Oct 1970)
18. Krugman, W.M.: The human skeleton in legal medicine.
- 19. FE Camps, JM Cameron, David Lanham: Practical Forensic Medicine**



SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)

(Established under section 3 of the UGC Act 1956)

Re - accredited by NAAC with 'A' Grade

Founder: Prof. Dr. S. B. Mujumdar, M.Sc.,Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

Course Name: General Medicine

Course Code: Medical - IM

Faculty: Health Sciences

Programme Type: UG

Sub-Committee (Specialization): Medical

Second MBBS (Clinical posting)

(Based on Medical Council of India, Competency based Undergraduate curriculum for the Indian Medical Graduate, 2018. Vol. 2)

1. Total Teaching hours: **25+ 60**
2. A. Lectures(hours) : **25**
B. Self-directed learning (hours) : **NIL**
C. Clinical Postings (hours): **60**
D. Small group teachings/tutorials/Integrated teaching/Practical (hours): **NIL**

Week / Day	Competency Nos.	Topics & Subtopics (Suggested)	Duration	TL Method
1/ 1	1.10	Orientation to History Taking	3 hours	Bed side clinic
1/2	9.3	History taking and causes of anemia	1 hour	Bed side clinic
	8.9	Evaluation of all risk factors and comorbidities for patient with hypertension	1 hour	Bed side clinic
	11.7	Elicit document and present a medical history that will differentiate the etiologies of diabetes including risk factors, precipitating factors, lifestyle, nutritional history, family history, medication history, co-morbidities and target organ disease	1 hour	Bed side clinic

1/3	16.4	Elicit and document and present an appropriate history that includes the natural history, dietary history, travel , sexual history and other concomitant illnesses	1 hour	Bed side clinic
	25.4	Elicit document and present a medical history that helps delineate the aetiology of zoonotic diseases that includes the evolution and pattern of symptoms, risk factors, exposure through occupation and travel	2 hours	Bed side clinic
1/4	26.20	Demonstrate ability to communicate to patients in a patient, respectful, nonthreatening, non-judgmental and empathetic manner	2 hours	Bed side clinic
	26.21 & 26.22	Demonstrate respect to patient privacy		Bed side

Week / Day	Competency Nos.	Topics & Subtopics	Duration	TL Method
		-Demonstrate ability to maintain confidentiality in patient care	1 hour	clinic
1/5	26.35	Demonstrate empathy in patient encounters	1 hour	Bed side clinic
	26.7	Elicit document and present a medical history that helps delineate the aetiology of the current presentation and includes risk factors for HIV, mode of infection, other sexually transmitted diseases, risks for opportunistic infections and nutritional status	1 hour	Bed side clinic
	26.19, 26.24 & 26.25	Demonstrate ability to work in a team of peers and superiors Demonstrate respect in relationship with patients, fellow team members, superiors and other health care workers Demonstrate responsibility and work ethics while working in the health care team	1 hour	Bed side clinic
2/1	1.11, part 1.29	Orientation to General Exam	3 hours	Bed side clinic
2/2	1.12	Pulse examination with demonstration	3 hours	Bed side clinic /DOAP

2/3	1.13	Measure BP accurately	2 hours	Bed side clinic /DOAP
	1.14	JVP	1 Hour	Bed side clinic /DOAP
2/4	4.9	Evaluation of fever	1.5 hours	Bed side clinic/DOAP
	4.10	Examination of skin ,lymph node, chest and abdominal examination	1.5 hours	Bed side clinic/DOAP
2/5	9.4	Perform a systematic examination that includes : general examination for pallor, oral examination	1 hour	Bed side clinic
	4.21	Orientation to Clinical decision making	2 hours	Bed side clinic
3/1	7.11 and 7.12	Orientation to medical history and examination of joints, muscle and skin rheumatological diseases	1hour	Bed side clinic
	11.8	Perform a systematic examination that establishes the diagnosis and severity that includes skin, peripheral pulses, blood pressure measurement, fundus examination, detailed examination of the foot (pulses, nervous and deformities and injuries) in a patient with diabetes	1 hour	Bed side clinic

Week / Day	Competency Nos.	Topics & Subtopics	Duration	TL Method
		Practice session for clinical skills including BP measurement / ward rounds	1 hour	Bed side clinic
3/2	1.30	Skill Acquisition IM injection	3 hour	Skills lab
3/3	5.9	Elicit document and present a medical history that helps delineate the aetiology of the current presentation and includes clinical presentation, risk factors, drug use, sexual history, vaccination and family history in patient with liver disease.	1 hour	Bed side clinic
	16.5	Perform, document and demonstrate a physical examination based on the history that includes general examination, including an appropriate abdominal examination	1 hour	Bed side clinic
	5.14	Outline a diagnostic approach to liver disease based on hyperbilirubinemia, liver function changes and hepatitis serology	1 hours	Bed side clinic

3/4	2.7	CVS Examination with demonstration	3 hour	Bed side clinic/DOAP
3/5	3.4 & 3.5	Orientation to history taking, general examination & systemic examination of Respiratory system	3 hours	Bed side clinic/DOAP
4/1	18.3	Elicit and document and present an appropriate history including onset, progression, precipitating and aggravating relieving factors, associated symptoms that help identify the cause of the cerebrovascular accident	2 hours	Bed side clinic
	Practice rounds session for clinical and other skills/ ward		1 hour	Bed side clinic / skills lab
4/2	18.5	Perform, demonstrate & document physical examination that includes general and a detailed neurologic examination as appropriate based on the history	2 hours	Bed Side clinic
	Practice rounds session for clinical and other skills/ ward		1 hour	Bed side clinic / skills lab
4/3	20.4 & 20.5	Medical emergencies - - Elicit and document and present an appropriate history, the circumstance, time, kind of snake, evolution of symptoms in a patient with snake bite	2 hours	Bed side clinic
Week /Day	Competency Nos.	Topics & Subtopics	Duration	TL Method
		Perform a systematic examination, document and present a physical examination that includes general examination, local examination, appropriate cardiac and neurologic examination in a case of snake bite		
	Practice session for clinical and other skills/ward rounds		1 hour	Bed side clinic /skills lab
4/4	Practical Assessment + Theory Assessment		3 hours	Case presentation
4/5	Skills Assessment – Certifiable skills and soft skills Logbook Certification		3 hours	OSCE stations/ skills stations

* Day of week is only suggestive, considering the posting is started on Monday. If posting is commenced on any other day, day of week can be modified accordingly.

General Medicine

Second MBBS

Subject: GENERAL MEDICINE Theory

(Based on Medical Council of India, Competency based Undergraduate curriculum for the Indian Medical Graduate, 2018. Vol. 2; page nos. 60-142)

1. Total Teaching hours: **25h + 60h**
2. A. Lectures(hours): **25h**
B. Self directed learning (hours) :**NIL**
C. Clinical Postings (hours): **(4 Weeks, 60 h)**
D. Small group teachings/tutorials/Integrated teaching/Practical (hours):
NIL

5	IM 25.1; 25.2; 25.3; 25.7, 25.8; 25.10, 25.11	Infections	Describe and discuss the response and the influence of host immune status, risk factors and comorbidities on zoonotic diseases, pathophysiology and manifestations, appropriate diagnostic plan, newer techniques in the diagnosis, empiric treatment plan OF - Leptospirosis & Dengue
6		Infections	Rabies & Tetanus
7		Infections	Scrub Typhus, Typhoid
8		Infections	Acute encephalitis syndromes including JE
9	IM 6.1 to 6.3	HIV	Describe and discuss the symptoms and signs of acute HIV Seroconversion, Define and classify HIV AIDS based on the CDC criteria, Describe and discuss the relationship between CDC count and the risk of opportunistic infections

Lecture	Competency Nos.	Topic	Subtopics
1	IM 4.1 to 4.5	Fever & Febrile Syndromes	Introduction to Fever, Pathophysiology, Causes- Describe and discuss the febrile response and the influence of host immune status, risk factors and comorbidities on the febrile Response, Describe and discuss the influence of special populations on the febrile response including: the elderly, immune suppression, malignancy and neutropenia, HIV and travel, Discuss and describe the common causes, pathophysiology and manifestations of fever in various regions in India including bacterial, parasitic and viral causes (e.g. Dengue, Chikungunya, Typhus), inflammatory causes of fever, malignant causes of fever including hematologic and lymph node malignancies
2	IM 4.6; 4.15; 4.22 to 4.26	Fever & Febrile Syndromes	Malaria - Discuss and describe the pathophysiology and manifestations of malaria, interpret a malarial smear, Describe and discuss the pharmacology, indications, adverse reactions, interactions of antimalarial drugs and basis of resistance, malarial prevention
3	IM 4.7	Fever & Febrile Syndromes	Sepsis Syndrome - Discuss and describe the pathophysiology and manifestations of the sepsis syndrome
4	IM 4.8; 4.16; 4.18	Fever & Febrile Syndromes	FUO- Discuss and describe the pathophysiology, etiology and clinical manifestations of fever of unknown origin (FUO) including in a normal host, neutropenic host, nosocomial host and a host with HIV disease, Enumerate the indications and describe the findings in tests of inflammation and specific rheumatologic tests, serologic testing for pathogens including HIV, bone marrow aspiration and biopsy, Enumerate the indications for use of imaging in the diagnosis of febrile syndromes.

10	IM 6.4 to 6.6; 6.9	HIV	Describe and discuss the pathogenesis, evolution and clinical features of common HIV related opportunistic infections, malignancies, skin and oral lesions , Choose and interpret appropriate diagnostic tests to diagnose and classify the severity of HIV-AIDS including specific tests of HIV, CDC
11	IM 6.16 to 6.18	HIV	Discuss and describe the principles of HAART , the classes of antiretroviral used, adverse reactions and interactions, Discuss and describe the principles and regimens used in post exposure prophylaxis, Enumerate the indications and discuss prophylactic drugs used to prevent HIV related opportunistic infections
12	IM 16.1; 16.13; 16.14; 16.6	Diarrheal Diseases	Describe and discuss the etiology of acute and chronic diarrhea including infectious and noninfectious causes, distinguish between diarrhea and dysentery based on clinical features, Describe and enumerate the indications, pharmacology and side effects of pharmacotherapy for parasitic, bacterial and viral causes of diarrhea
13	IM 16.11; 16.12	Diarrheal Diseases	Diagnosis of acute diarrhea (Stool culture & Blood culture); Diagnosis of chronic diarrhea (Antibodies, colonoscopy, imaging & biopsy)
14	IM 16.2; 16.3	Diarrheal Diseases	Describe and discuss the acute systemic consequences of diarrhea including its impact on fluid balance, Describe and discuss the chronic effects of diarrhea including malabsorption
15	IM 16.15- 16.17	Diarrheal Diseases	Distinguish based on the clinical presentation Crohn's disease from Ulcerative Colitis , Describe and enumerate the indications, pharmacology and side effects of pharmacotherapy including immunotherapy, the indications for surgery in inflammatory bowel disease
16	IM 3.2,3.3	Pneumonia	Discuss and describe the etiologies of various kinds of pneumonia and their microbiology depending on the setting and immune status of the host, Discuss and describe the pathogenesis, presentation, natural history and complications of pneumonia
17	IM 3.1	Pneumonia	Define, discuss, describe and distinguish community acquired pneumonia, nosocomial pneumonia and aspiration pneumonia
18	IM 3.15; 3.16	Pneumonia	Describe and enumerate the indications for hospitalization in patients with pneumonia, Describe and enumerate the indications for isolation and barrier nursing in patients with pneumonia
19	IM 3.17; 3.19	Pneumonia	Describe and discuss the supportive therapy in patients with pneumonia including oxygen use and indications for ventilation, Discuss, describe, enumerate the indications and communicate to patients on pneumococcal and influenza vaccines

20	IM 20.1; 20.3; 20.7	Envenomation	Enumerate the local poisonous snakes and describe the distinguishing marks of each, Describe the initial approach to the stabilization of the patient who presents with snake bite , Enumerate the indications and describe the pharmacology, dose, adverse reactions, hypersensitivity reactions of anti-snake venom .
21	IM 20.8; 20.9	Envenomation	Describe the diagnosis, initial approach stabilization and therapy of scorpion envenomation and bee sting allergy
22	IM 21.1 to 21.3	Poisoning	Describe the initial approach to the stabilization of the patient who presents with poisoning, Enumerate the common plant poisons seen in your area and describe their toxicology, clinical features, prognosis and specific approach to detoxification, common corrosives poisoning .
23	IM 21.4	Poisoning	Enumerate the commonly observed drug overdose in your area and describe their toxicology, clinical features, prognosis and approach to therapy
24	IM 23.1, 23.4	Nutrition & Vitamin Deficiencies	Discuss and describe the methods of nutritional assessment in an adult and calculation of caloric requirements during illnesses, Enumerate the indications for enteral and parenteral nutrition in critically ill patients
25	IM 23.2; 23.3	Nutrition & Vitamin Deficiencies	Discuss and describe the causes and consequences of protein caloric malnutrition in the hospital, Discuss and describe the etiology, causes, clinical manifestations, complications, diagnosis and management of common vitamin deficiencies

Third professional Part I MBBS Subject: General Medicine Theory - Lectures + SDL + Tutorials, Seminars, Integrated

(Based on Medical Council of India, Competency based Undergraduate curriculum for the Indian Medical Graduate, 2018. Vol. 2)

1. Total Teaching hours : **25+ 35+ 5+72**
2. A. Lectures(hours): **25**
 B. Self-directed learning (hours) : **05**
 C. Clinical Postings (hours): **72**
 D. Small group teachings/tutorials/Integrated teaching/Practicals (hours):
35

Lecture / SDL	Competency Nos.	Topic	Subtopics
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1	IM 9.1; 9.2	Anaemia	Classification of anemia; Etiology & Prevalence
2	IM 9.7; 9.8,9.21	Anaemia	Components of hemogram; Tests for Iron deficiency & Vit. B12 Deficiency. Determine the need for specialist consultation.
3	IM 9.11; 9.12	Anaemia	Diagnostic plan for evaluation of anemia including BMA & Biopsy
4	IM 9.17; 15.12,9.18,	Anaemia	Indication for Blood transfusion & components; Precautions during transfusion including mismatch transfusion.
SDL-1	IM 9.14	Anaemia	National programs for prevention of anemia
5	IM 14.1 to 14.4	Obesity	Definition, prevalence, etiology, risk factors including monogenic forms, environmental factors of obesity
6	IM 14.5; 14.9, 14.10,14.13; 14.14;14.15	Obesity	Natural history, complications, laboratory tests , pharmacotherapy and bariatric surgery of obesity and prevention of obesity
7	IM 15.1; 15.6	GI Bleed	Etiology and distinguishing features of UGI and LGI Bleed
8	IM 15.2 ; 15.3; 15.11	GI Bleed	Physiological effects, Evaluation and steps in stabilizing a patient with acute volume loss due to GI bleed; including blood and component transfusion
9	15.14; 15.10; 15.15,15.16, 15.17	GI Bleed	Investigation (endoscopy, colonoscopy, imaging) and treatment of GI bleed including pharmacotherapy of acid peptic disease (including H.pylori), pressors, endoscopic interventions and surgery and appropriate level of specialist consultation
10	IM 5.1; 5.2; 5.3, 5.5; 5.7	Liver Diseases	Etiology, Pathophysiology of hyperbilirubinemia and various forms of liver disease including alcoholic liver disease and drug induced liver injury.
11	IM 5.4,5.16, 5.17	Liver Diseases	Epidemiology, microbiology, immunology, clinical evolution of infective (viral) hepatitis and it' management including vaccination.
12	IM 5.12, 13, 14	Liver Diseases	Outline a diagnostic approach to liver disease based on CBS, hyperbilirubinemia, Ascitic fluid examination, liver function changes and hepatitis serology. Enumerate the indications for ultrasound and other imaging studies including MRCP and ERCP and describe the findings in liver disease.
13	IM 5.6,5.18	Liver Diseases	Pathophysiology, evolution, management and Complication of cirrhosis and portal hypertension, indications for hepatic transplantation.

SDL-2	IM 5.8	Liver Diseases	Cholelithiasis and cholecystitis
14	IM 11.1 to 11.4	Diabetes	Definition, classification of Diabetes; Epidemiology, Pathogenesis, Genetics, Risk factors and Clinical evolution of Type-1 & -2 DM
15	IM 11.6; 11.9; 11.11, 11.14; 11.15; 11.22 to 11.24	Diabetes	Pathogenesis, C/F, Precipitating factors, Stabilization, Principle of therapy & Management (Investigations & treatment) of diabetic emergencies (Hypoglycemia, DKA, HONK)
16	IM 11.16; 11.17	Diabetes	Pharmacological therapies for DM, indications, CI, ADR and Interaction- based on presentation, severity, complication in a cost effective therapy
17	IM 11.5	Diabetes	Pathogenesis, temporal evolution of microvascular and macrovascular complications of diabetes (Neuropathy, Nephropathy, Retinopathy, HTN,
SDL 3	IM 11.18	Diabetes	Pharmacology, indications, ADR and interactions of drugs used in treatment and prevention of target organ damage and chronic complications of diabetes

18	IM 7.1; 7.2, 7.27	Rheumatologic Problems	Pathophysiology and genetic basis of autoimmune disease and determine the need for specialist consultation
19	IM 7.3 to 7.6; 7.8	Rheumatologic Problems	Pathophysiology, classification, presenting features, approach, and etiology of joint pain; differentiate arthritis from arthralgia
20	IM 7.10, 7.14,7.15,7.17 ,7.19	Rheumatologic Problems	Describe appropriate diagnostic workup and treatment plan for rheumatologically diseases. Enumerate Systemic manifestations of rheumatologically diseases,
SDL 4	IM 7.7; 7.9; 7.16	Rheumatologic Problems	Articular from periarticular symptoms; Signs and symptoms of articular and periarticular diseases, Indications for Arthrocentesis.
21	IM 12.3; 12.4	Thyroid Dysfunction	Principles of Thyroid function tests, Principles of RAI uptake, alteration of physiological function along with physiology of HPT axis
22	IM 12.1; 12.2; 12.11,12.12; 12.13, 12.14	Thyroid Dysfunction	Epidemiology, pathogenesis, genetic basis of Hypothyroidism, interpretation of TFT, Pharmacotherapy, indication, ADR of Thyroxine. Iodination programs of Govt of India

23	IM 12.1; 12.2; 12.11,12.13, 12.4; 12.14	Thyroid Dysfunction	Epidemiology, pathogenesis, genetic basis of Hyperthyroidism; interpretation of TFT, Pharmacotherapy, indication, ADR of Anti-thyroid drugs
24	IM 13.1 to 13.3	Common Malignancies	Epidemiology, Genetic Basis, Risk factors for common malignancies in India; Infections causing cancer
25	IM 13.4	Common Malignancies	Natural history, presentation, course, complication and cause of death for common cancers
SDL 5	IM 13.5,13.6, 13.18, 13.19	Common Malignancies	Describe the common issues encountered in patients at the end of life and principles of management, Describe and distinguish the difference between curative and palliative care in patients with cancer, Describe and discuss the ethical and the medico legal issues involved in end of life care, Describe the therapies used in alleviating suffering in patients at the end of life

Tutorials/Seminars/Integrated teachings- 35 hours

Tutorials- Total 10 hours

S. No.	Topics	Hours
1.	Medical emergencies – Common poisonings	1 hr
2.	Medical emergencies - related to Pharmacological agents	1 hr
3.	Drugs – IV fluids and pain killers including Narcotics	1 hr
4.	Drugs – used in CPR	1 hr
5.	Instruments – for various injections and IV access	1 hr
6.	Instruments - for routine invasive procedures	1 hr
7.	X rays – Format of reading X-ray chest, skeletal and pleural involvement in Xray Chest	1 hr
8.	X rays – Parenchymal involvement in X-ray chest	1 hr
9.	ECG – Basics of reporting ECG ,with abnormal rate	1 hr
10	ECG – Rhythm disturbances	1 hr

Seminars- Total 16 hours

S. No.	Topics	Hours
1.	Clinical approach to Ascites	1 hr
2.	Clinical approach to Anemia	1 hr
3.	Clinical approach to lymphadenopathy	1 hr
4.	Clinical approach to Jaundice	1 hr
5.	Clinical approach to chest pain	1 hr
6.	Clinical approach to headache	1 hr
7.	Clinical approach to bleeding diathesis	1 hr
8.	Clinical approach to Comatose patient	1 hr
9.	Portal hypertension and its complications	1 hr
10	Pulmonary arterial hypertension	1 hr
11	Pulmonary function tests	1 hr
12	Thyroid function tests	1 hr
13	Grave's disease	1 hr
14	Micro-vascular complications of DM	1 hr
15	Macro-vascular complications of DM	1 hr
16	Insulin and analogues	1 hr

Integration – Total 9 hours			
S.No.	Subject	Topics for integration	Hours
1.	Clinical Pharmacology	Clinical pharmacokinetics	01
		Drug-Drug interaction	01
		Adverse drug reaction	01
2.	Clinical Pathology	Anaemia and haemoglobinopathies	01
		Platelet disorder	01
		Hematological malignancies	01
3.	Clinical Microbiology	Biologicals and disease modifying agents	01
		Antimicrobial resistance	01
		Viral haemorrhagic fever	01

General Medicine

Third professional Part I MBBS Subject: General Medicine

Clinical Posting (4 weeks, 6 days a week, 3 hours per day)

(Based on Medical Council of India, Competency based Undergraduate curriculum for the Indian Medical Graduate, 2018. Vol. 2)

1. Total Teaching hours : $25 + 35 + 5 = 65$

2. A. Lectures(hours): **25**

B. Self-directed learning (hours) : **05**

C. Clinical Postings (hours): **72**

D. Small group teachings/tutorials/Integrated teaching/Practicals (hours): **35**

Clinical skills hours	Procedural Skills hours	Assessment hours	Total
54	12	06	72

General Medicine

Fourth professional Year III/II MBBS Subject: General Medicine

Theory - Lectures + SDL + Tutorials, Seminars, Integrated

(Based on Medical Council of India, Competency based Undergraduate curriculum for the Indian Medical Graduate, 2018. Vol. 2)

1. Total Teaching hours :70+ 125+15 + 144+ 72 = 426
2. A. Lectures (hours): **70**
 B. Self-directed learning (hours) :**15**
 C. Clinical Postings (hours): 144 + 72= **216**
 D. Small group teachings/tutorials/Integrated teaching/Practicals (hours): **125**

Lecture / SDL	Competency Nos.	Topic	Subtopics
1	IM 8.1 to 8.5	Hypertension	Define and classify hypertension, Describe and discuss the epidemiology, etiology, prevalence, pathophysiology and genetic basis of essential hypertension, Describe and discuss the differences between primary and secondary hypertension
2	IM8.7,8.1	Hypertension	Describe and discuss epidemiology, aetiology and the prevalence of secondary HT and the clinical manifestations of the various aetiologies of secondary causes of hypertension
3	IM8.6	Hypertension	Define, describe and discuss and recognize hypertensive urgency and emergency
4	IM 8.8, 8.20	Hypertension	Describe, discuss and identify target organ damage due To hypertension , Determine the need for specialist consultation
SDL 1	IM 8.12,8.13	Hypertension	Describe the appropriate diagnostic work up based on the presumed aetiology, Enumerate the indications for and interpret the results of : CBC, Urine routine, BUN, Cr, Electrolytes, Uric acid, ECG
SDL 2	IM 8.14	Hypertension	Develop an appropriate treatment plan for patient with hypertension
5	IM 1.1, 1.2	Heart Failure	Describe and discuss the epidemiology, pathogenesis clinical evolution and course of common causes of heart

			disease including: rheumatic/valvular, ischemic, hypertrophic, inflammatory. Describe and discuss the genetic basis of some forms of heart failure.
6	IM 1.3 (part)	Heart Failure	Describe and discuss the aetiology, microbiology pathogenesis and clinical evolution of rheumatic fever, criteria, degree of rheumatic activity and Rheumatic valvular heart disease.
7	IM1.9	Heart Failure	Describe and discuss the clinical presentation and features, diagnosis, recognition and management of acute rheumatic fever
8	IM 1.3 (part) IM 1.27	Heart Failure	Describe Complications of Rheumatic valvular heart disease. (Other than Infective Endocarditis), Describe and discuss the role of penicillin prophylaxis in the prevention of rheumatic heart disease
SDL 3	IM 1.25	Heart Failure	Enumerate the indications for valvuloplasty, valvotomy, coronary revascularization and cardiac transplantation
9	IM1.3 (part), 1.21	Heart Failure	Describe and discuss and identify the clinical features of acute and sub-acute endocarditis, echocardiographic findings, blood culture and sensitivity and therapy
10	IM1.4,1.5,1.6	Heart Failure	Staging of heart failure, Describe, discuss and differentiate the processes involved in R Vs L heart failure, systolic vs diastolic failure, Describe and discuss the compensatory mechanisms involved in heart failure including cardiac remodeling and neuro-hormonal adaptations
11	IM1.7	Heart Failure	Enumerate, describe and discuss the factors that exacerbate heart failure including ischemia, arrhythmias, anemia, thyrotoxicosis, dietary factors drugs etc.
12	IM 1.8	Heart Failure	Describe and discuss the pathogenesis and development of common arrhythmias involved in failure particularly atrial fibrillation
13	IM 1.19	Heart Failure	Enumerate the indications for and describe the findings of heart failure with the following : 2D echocardiography, brain natriuretic peptide, exercise testing, nuclear medicine testing and coronary angiogram
14	IM 1.24	Heart Failure	Describe and discuss the pharmacology of drugs including indications, contraindications in the management of heart failure including diuretics ACE inhibitors, Beta blockers, aldosterone antagonists and cardiac glycosides.

15	IM 1.28	Heart Failure	Enumerate the causes of adult presentations of congenital heart disease and describe the distinguishing features between cyanotic and acyanotic heart disease
16	IM 2.1 ,2.2, 2.4	AMI/IHD	Discuss and describe the epidemiology, antecedents and risk factors both modifiable and non-modifiable, the pathogenesis, natural history, evolution and complications of atherosclerosis and IHD .
SDL 4	IM 2.3	AMI/IHD	Discuss and describe the lipid cycle and the role of dyslipidemia in the pathogenesis of atherosclerosis
17	IM 2.5	AMI/IHD	Define the various acute coronary syndromes and describe their evolution, natural history and outcomes
18	IM 2.13	AMI/IHD	Discuss and enumerate the indications for and findings on echocardiogram, stress testing and coronary angiogram
19	IM 2.14,2.15, 2.16	AMI/IHD	Discuss and describe the indications for admission to a coronary care unit and supportive therapy for a patient with acute coronary syndrome. Discuss and describe the medications used in patients with an acute coronary syndrome based on the clinical presentation. Discuss and describe the indications for acute thrombolysis, PTCA and CABG.
SDL 5	IM 2.17	AMI/IHD	Discuss and describe the indications and methods of cardiac rehabilitation.
20	IM 2.18	AMI/IHD	Discuss and describe the indications, formulations, doses, side effects and monitoring for drugs used in the management of dyslipidemia
21	IM 2.19	AMI/IHD	Discuss and describe the pathogenesis, recognition and management of complications of acute coronary syndromes including arrhythmias, shock, LV dysfunction, papillary muscle and pericarditis
22	IM ,2.20	AMI/IHD	Discuss and describe the assessment and relief of pain in acute coronary syndromes
23	IM 2.23	AMI/IHD	Describe and discuss the indications for nitrates, anti platelet agents, GP IIb IIIa inhibitors, beta blockers, ACE inhibitors etc in the management of coronary syndromes

24	IM 17.1,17.6, 17.10	Headache	Define and classify headache and describe the Presenting features, precipitating factors, aggravating and relieving factors of various kinds of headache. Choose and interpret diagnostic testing based on the clinical diagnosis including imaging. Enumerate the indications for emergency care admission and immediate supportive care in patients with headache.
25	IM 17.3,17.11, 17.12	Headache	Classify migraine and describe the distinguishing features between classical and non-classical forms of migraine. Describe the indications, pharmacology, dose, side effects of abortive therapy and prophylactic therapy in migraine.
26	IM 17.13	Headache	Describe the pharmacology, dose, adverse reactions and regimens of drugs used in the treatment of bacterial, tubercular and viral meningitis .
SDL 6	IM 18.1	Cerebrovascular accident	Describe the functional and the vascular anatomy of the brain
27	IM 18.2	Cerebrovascular accident	Classify cerebrovascular accidents and describe the aetiology, predisposing genetic and risk factors pathogenesis of hemorrhagic and non-hemorrhagic stroke
28	IM 18.10	Cerebrovascular accident	Choose and interpret the appropriate diagnostic testing in young patients with a cerebrovascular accident (CVA)
29	IM 18.11	Cerebrovascular accident	Describe the initial supportive management of a patient presenting with a cerebrovascular accident (CVA)
30	IM 18.12,18.13	Cerebrovascular accident	Enumerate the indications for and describe acute therapy of non-hemorrhagic stroke including the use of thrombolytic agents and anti-platelet agents
31	IM18.14, 18.15	Cerebrovascular accident	Describe the initial management of a hemorrhagic stroke. Enumerate the indications for surgery in a hemorrhagic stroke.
SDL 7	IM 18.16	Cerebrovascular accident	Enumerate the indications describe and observe the multidisciplinary rehabilitation of patients with a CVA
SDL 8	IM 19.1	Movement disorders	Describe the functional anatomy of the locomotor system of the brain
32	IM 19.2, 19.3, IM 19.7	Movement disorders	Classify movement disorders of the brain based on distribution, rhythm, repetition, exacerbating and relieving factors, clinical approach to movement disorders.

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33	IM 19.8	Movement disorders	Discuss and describe the pharmacology, dose, side effects and interactions used in therapy of the drug Parkinson's syndrome
34	IM19.7,19.9	Movement disorders	Choose and interpret diagnostic and imaging tests in the diagnosis of movement disorders, Enumerate the indications for use of surgery and botulinum toxin in the treatment of movement disorders
35	IM 10.1,10.2	AKI and CRF	Define, describe and differentiate between acute and chronic renal failure, Classify, describe and differentiate the pathophysiologic causes of acute renal failure
36	IM 10.3, 10.4	AKI and CRF	Describe the pathophysiology and causes of pre renal ARF, renal and post renal ARF, Describe the evolution, natural history and treatment of ARF
37	IM 10.5,10.6, 10.7	AKI and CRF	Describe and discuss the aetiology of CRF, Stage Chronic Kidney Disease, Describe and discuss the pathophysiology and clinical findings of uremia
38	IM 10.15,10.16, 10.17,10.19	AKI and CRF	Describe the appropriate diagnostic work up based on the presumed aetiology, Enumerate the indications for and interpret the results of : renal function tests, calcium, phosphorus, PTH, urine electrolytes, osmolality, Anion gap, Describe and calculate indices of renal function based on available laboratories including FENa (Fractional Excretion of Sodium) and CrCl (Creatinine Clearance), Enumerate the indications and describe the findings in renal ultrasound
39	IM10.8 , 10.9 10.10 ,10.11	AKI and CRF	Classify, describe and discuss the significance of proteinuria in CKD, Describe and discuss the pathophysiology of anemia and hyperparathyroidism, Describe and discuss the association between CKD

			glycaemia and hypertension, Describe and discuss the relationship between CAD risk factors and CKD.
40	IM 10.25	AKI and CRF	Identify and describe the priorities in the management of ARF including diet, volume management, alteration in doses of drugs, monitoring and indications for dialysis
41	IM 10.26	AKI and CRF	Describe and discuss supportive therapy in CKD including diet, anti hypertensives, glycemic therapy, dyslipidemia, anemia, hyperkalemia, hypophosphatemia and secondary hyperparathyroidism

42	IM 10.27,10.28	AKI and CRF	Describe and discuss the indications for renal dialysis, Describe and discuss the indications for renal replacement therapy
SDL 9	IM 10.29, 10.30,10.31	AKI and CRF	Describe discuss and communicate the ethical and legal issues involved in renal replacement therapy, Recognize the impact of CKD on patient's quality of life, wellbeing , work and family, Incorporate patient preferences in to the care of CKD
43	IM 22.1,22.2, 22.3	Fluid Electrolyte & Acid base Disorder	Enumerate the causes of hypercalcemia and distinguish the features of PTH vs non PTH mediated hypercalcemia, Describe the aetiology, clinical manifestations, diagnosis and clinical approach to primary hyperparathyroidism, Describe the approach to the management of hypercalcemia
44	IM 22.4	Fluid Electrolyte & Acid base Disorder	Enumerate the components and describe the genetic basis of the multiple endocrine neoplasia syndrome
45	IM 22.5,22.6	Fluid Electrolyte & Acid base Disorder	Enumerate the causes and describe the clinical features and the correct approach to the diagnosis and management of the patient with Hyponatremia and hypernatremia
46	IM 22.7,22.8	Fluid Electrolyte & Acid base Disorder	Enumerate the causes and describe the clinical and laboratory features and the correct approach to the diagnosis and management of the patient with hypokalemia and hyperkalemia
47	IM 22.9,22.10, 22.11, 22.12	Fluid Electrolyte & Acid base Disorder	Enumerate the causes and describe the clinical and laboratory features of metabolic acidosis, metabolic alkalosis, respiratory acidosis, respiratory alkalosis
SDL 10	IM 24.18,24.19, 24.21	Geriatrics	Describe the impact of the demographic changes in ageing on the population, Enumerate and describe the social problems in the elderly including isolation, abuse, change in family structure and their impact on health and discuss ethical issues in care of elderly.
48	IM 24.1, 24.3, 24.5 to 25.7	Geriatrics	Describe and discuss the epidemiology, pathogenesis, clinical evolution, presentation and course of common diseases in the elderly, Describe and discuss the etiopathogenesis, clinical presentation, identification, functional changes, acute care, stabilization,

			management and rehabilitation of acute confusional states, depression, dementia and personality changes in elderly.
49	IM 24.10	Geriatrics	Describe and discuss the etiopathogenesis causes, clinical presentation, difference in clinical presentation identification, functional changes, acute care, stabilization, management and rehabilitation of COPD in the elderly.
50	IM 24.4,24.9	Geriatrics	Describe and discuss the etiopathogenesis, clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of, vascular events and CVA in the elderly
51	IM 24.11	Geriatrics	Describe and discuss the aetiopathogenesis, clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of the elderly undergoing surgery
52	IM 24.8,24.12, 24.13,24.14	Geriatrics	Describe and discuss the aetiopathogenesis, clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of osteoporosis, degenerative joint disease, falls, and common fractures in elderly
53	IM 24.15 to 25.17	Geriatrics	Describe and discuss the aetiopathogenesis, clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of vision and visual loss, hearing loss and disabilities in the elderly
54	IM 24.22	Geriatrics	Describe and discuss the aetiopathogenesis, clinical presentation, complications, assessment and management of nutritional disorders in the elderly
SDL 11	IM 24.20	Geriatrics	Enumerate and describe social interventions in the care of elderly including domiciliary discussion services, rehabilitation facilities, old age homes and state interventions
55	IM 26.2, 26.23,26.27, 26.38, 26.39,26.42	The role of the physician in the community	Professional Development – Describe and discuss the commitment to lifelong learning as an important part of physician growth, Demonstrate a commitment to continued learning, Demonstrate personal grooming that is adequate and appropriate for health care responsibilities, Demonstrate ability to form and

			function in appropriate professional networks, Demonstrate ability to pursue and seek career advancement, Demonstrate commitment to learning and scholarship.
56	IM 26.3,26.4, 26.5,26.11	The role of the physician in the community	Bioethics in Clinical Practice - Describe and discuss the role of beneficence, non-maleficence, autonomy and shared responsibility as guiding principles in patient care
57	IM 26.37,26.36	The role of the physician in the community	Time management - Demonstrate ability to manage time appropriately, Demonstrate ability to balance personal and professional priorities
58	IM 26.12, 26.13, 26.25	The role of the physician in the community	Decision making in health care - Identify, discuss and defend medico legal, socio-cultural and ethical issues as it pertains to decision making in health care including advanced directives and surrogate decision making, decision making in emergency care including situations where patients do not have the capability or capacity to give consent, Identify, discuss and defend, medico legal, socio-cultural and ethical issues as they pertain to consent for surgical procedures
59	Module 4.1	Pandemic module	Lessons learnt from Covid 19 pandemic – a Narrative.
60	Module 4.1	Pandemic module	Individual responsibilities in Pandemic Situation.
SDL 12	26.47	The role of the physician in the community	Euthanasia, current position in India - 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
SDL 13	26.8	The role of the physician in the community	Organ Donation in India - Identify discuss medico legal, socioeconomic and ethical issues as it pertains to organ donation
SDL 14	Integrated SDL	Community Medicine	National programs relevant to physicians
SDL 15	Integrated SDL	Community Medicine	Adult Immunization and newer vaccines
61	1	Revision Lecture	Febrile illness
62	2	Revision Lecture	Infections
63	3	Revision Lecture	HIV
64	4	Revision Lecture	Diarrheal Diseases

65	5	Revision Lecture	Pneumonia
66	6	Revision Lecture	Anemia
67	7	Revision Lecture	GI Bleed
68	8	Revision Lecture	Liver Diseases
69	9	Revision Lecture	Diabetes
70	10	Revision Lecture	Thyroid disorders

**MBBS Third part - 2
Tutorials/Seminars/Integrated teachings- 125
hours**

Tutorials- ECG- Total 10 hours

S. No.	Topics	Hours
1.	Approach to basics of ECG	1 hr
2.	Reading Normal ECG	1 hr
3.	ECG: Chamber enlargement	1 hr
4.	Myocardial Infarction	1 hr
5.	Electrolyte abnormalities on ECG	1 hr
6.	Narrow Complex tachyarrhythmia's	1 hr
7.	Bradycardias	1 hr
8.	Valvular Heart diseases	1 hr
9.	Bundle branch blocks	1 hr
10	Miscellaneous	1 hr

X Rays- Total 11 hours

S. No.	Topics	Hours
1.	Basics of Chest X Ray	1 hr
2.	Reading Normal X Ray Chest	1 hr
3.	Abnormalities on Chest X Ray – Cardiovascular system	1 hr
4.	Pulmonary venous hypertension vs pulmonary arterial hypertension	1 hr
5.	Chest X ray – Respiratory system	1 hr
6.	Abdominal system(Chest & Abdomen X Ray)	1 hr
7.	Miscellaneous X ray	1 hr

8.	Basics of CT Scan	1 hr
9.	Basics of MRI	2 hr
10.	Basics of PET scan	1 hr
Drugs- Total 21 hours		
S. No.	Topics	Hours
1.	Anti epileptics	1 hr
2.	Cardiovascular Drugs	1 hr
3.	Anti Tubercular Therapy	1 hr
4.	Anti Retroviral Therapy	1 hr
5.	Emergency Drugs	2 hr
6.	Antiviral Drugs	1 hr
7.	Drugs in respiratory system	1 hr
8.	Glucocorticoids	1 hr
9.	Drugs in Rheumatology	1 hr
10.	Anticoagulants	1 hr
11.	Inotropes and inodilators	2 hr
12.	Anti hypertensives	2 hr
13.	Antidiabetic drugs	2 hr

Interpretation of Lab Charts- Total 14 hours		
S. No.	Topics	Hours
1.	Interpretation of Ascitic fluid analysis	1 hr
2.	Interpretation of Pleural fluid analysis	1 hr
3.	Interpretation of Cerebrospinal fluid analysis	1 hr
4.	Interpretation of Abnormal LFT	1 hr
5.	Interpretation of Hb, CBC, RBC indices	1 hr
6.	Interpretation of thyroid function test	1 hr
7.	Interpretation of Peripheral blood smear	1 hr
8.	Interpretation of urine analysis	1 hr
9.	Interpretation of Fundus examination	1 hr
10.	Interpretation of renal function tests	1 hr
11.	Interpretation of Bone marrow studies	1 hr
12.	Interpretation of ABG	2 hr
Seminars- Total 50 hours		
S. No.	Topics	Hours
1.	Clinical approach to Hypertensive emergencies	1 hr
2.	Clinical approach to Acute myocardial infarction	1 hr
3.	Clinical approach to solitary Seizure	1 hr
4.	Clinical approach to ischemic stroke	1 hr
5.	Clinical approach to intracranial bleed	1 hr
6.	Clinical approach to Heart Failure	1 hr
7.	Clinical approach to Acute renal failure	1 hr
8.	Clinical approach to Chronic kidney disease	1 hr
9.	Clinical approach to hyponatremia	1 hr
10	Clinical approach to potassium imbalance disorders	1 hr
11	Clinical approach to disorders of calcium metabolism	1 hr
12	Interpretation of ABG	1 hr
13	Mixed Acid Base disorders	1 hr
14	Emerging Viral Infections	1 hr
15	Clinical approach to Geriatric Syndromes	1 hr
16	Clinical approach to a case of Pulmonary Tuberculosis	1 hr
17	Clinical approach to a case of Extra Pulmonary Tuberculosis	1 hr
18	Clinical Approach to a case of PLHIV	1 hr
19	Clinical approach to opportunistic infections in a case of PLHIV	1 hr
20	Clinical approach to prescription of ART	1 hr
21	Clinical approach to a case of Dengue	1 hr
22	Clinical approach to a case of Complicated malaria	1 hr
23	Recent advances in the diagnosis of tuberculosis	1 hr
24	Vaccines for tuberculosis	1 hr
25	Recent advances in anti retroviral drugs	1 hr
26	Clinical approach to a case of Interstitial lung disease	1 hr
27	Clinical approach to a case of snake bite	1 hr
28	Clinical approach to a case of electric injury	1 hr

29	Clinical approach to a case of acute meningitis	1 hr
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30	Clinical approach to a case of Chronic meningitis	1 hr
31	Ageing	1 hr
32	Human Microbiome	1 hr
33	Clinical approach to oncological emergencies	1 hr
34	Clinical approach to a case of Acute Leukemia	1 hr
35	Clinical approach to a case of Chronic leukemia	1 hr
36	Medicolegal, socioeconomic and ethical issues as it pertains to organ donation	1 hr
37	Role of physician in community	1 hr
38	Medicolegal, sociocultural, economic and ethical issues as it pertains to rights, equity and justice in access to health care	1 hr
39	Medicolegal, socio-cultural and ethical issues as it pertains to confidentiality in patient care	1 hr
40	Medicolegal, socio-cultural and ethical issues as it pertains to research in human subjects	1 hr
41	Medicolegal, socio-cultural, professional and ethical issues as it pertains to the physician patient relationship (including fiduciary duty)	1 hr
42	Documentation in health care (including correct use of medical records)	1 hr
43	Use of information technology that permits appropriate patient care and continued learning	1 hr
44	Understanding of the implications and the appropriate procedures and response to be followed in the event of medical errors	1 hr
45	Conflicts of interest in patient care and professional relationships and describe the correct response to these conflicts	1 hr
46	Clinical approach to a case of DIC	1 hr
47	Clinical approach to a case of arthritis	1 hr
48	Clinical approach to a case of multisystem involvement	1 hr
49	Clinical approach to a case of peripheral neuropathy	1 hr
50	Clinical approach to a case of flaccid quadriplegia	1 hr

Integrated teachings -MBBS Third part 2 (Total 19 hours)

S.No.	Subject	Hours	Topics for integration
1.	Care of patients during Pandemics	6 hours	Interactive Discussion- 2 hours Triage practices to be followed Primary care to be given to a patient on reaching hospital Steps t be taken to reduce transmission of infections in emergency area Role Play- 1 hour Visit to hospital with discussion with staff- 2 hour Debriefing and feedback- 1 hour
2.	Emergency Procedures during Pandemics	8 hours	Interactive Discussion – 2 hours 1. Indications for invasive procedures in Pandemics 2. Points to be verified before emergency procedures 3. Steps to be taken to reduce transmission of infections 4. Attitude and Communication Issues related to complicated procedures II. Skill development program – with mannequins e.g. intubation, CPR, ALS, PALS etc - 4 hours (This may be linked with the routine Skill training component as well) III. Role Plays for communication skills and documentation 1 hour Debriefing and Feedback -1hour
3.	Managing Death during Pandemics	2 hours	Interactive discussion – 1 hour a. Confirmation and documentation of death b. Steps to be taken to reduce transmission of infections c. Attitude and Communication Issues related to handling of dead bodies d. Responding to media ii. Role Play for communication skills and documentation with debriefing and feedback - 1 hour
4.	Geriatrics	3 hr	Polypharmacy Falls Incontinence

Fourth professional Part II MBBS**Subject: General Medicine****Clinical Posting (8+4 weeks, 6 days a week, 3 hours per day)**

(Based on Medical Council of India, Competency based Undergraduate curriculum for the Indian Medical Graduate, 2018. Vol. 2)

1. Total Teaching hours : $70+ 125+15 + 144+ 72 = 426$

2. A. Lectures(hours): **70**

B. Self-directed learning (hours) : **15**

C. Clinical Postings (hours): $144+72 = 216$

D. Small group teachings/tutorials/Integrated teaching/Practicals (hours): **125**

Term I/II

Posting	Clinical skills hours	Procedural Skills hours	Assessment hours	Total hours
Third clinical posting of 8 weeks	118	20	06	144
Revision posting of 4 weeks	72			

Note - The details of day to day schedule of 144+ 72 hours as per clinical, procedural and attitudinal internal medicine competencies to be taught will be submitted later (please see second professional year clinical posting)

**Internal Assessment
General Medicine**

Phase	IA – 1 -Exam			IA – 2 -Exam		
	Theory (Gen Med only) (January)	Practical EOP	Total Marks	Theory (Gen Med only) (May)	Practical of Allied	Total Marks
Second MBBS	50	50	100	50	50 (divided into three allied subjects as follows)	100
					DVL = 15 marks	
					Psychiatry = 15 marks	
					Respiratory Medicine = 20 marks	

- The marks for internal assessment – 2 shall be communicated by DVL, Psychiatry and Respiratory Medicine departments to General Medicine department immediately after completion of examination and assessment.
- The marks for internal assessment – 4 shall be communicated by DVL and Psychiatry departments to General Medicine department immediately after completion of examination and assessment.

Phase	IA – 3 -Exam			IA – 4 -Exam		
	Theory (Gen Med and Allied) (January)	Practical EOP (Including 10 marks for Journal / Log Book)	Total Marks	Theory (Gen Med and Allied) (April)	Practical of Allied	Total Marks
Third MBBS Part I	50	40+10=50	100	50	50 (divided into two allied subjects as follows)	100
					DVL = 25 marks	
					Psychiatry = 25 marks	

Phase	IA – 5 -Exam			Prelim Exam		
	Theory (General Medicine and Allied) (May)	Practical (Including marks for Journal / Log Book)	EOP 10 Total Marks	Theory General Medicine and Allied) (November)	Practical	Total Marks
Third MBBS Part II	100	90+10=100	200	100 x 2 papers = 200	200	400

**There will be End of Postings Exam at each end of posting.
(There will be FORMATIVE ASSESSMENT at the end of four weeks
of Clinical Posting of General Medicine NOT to be added to
INTERNAL ASSESSMENT).**

Assessment in CBME is ONGOING PRCESS,

No Preparatory leave is permitted.

- 1. There shall be 6 internal assessment examinations in General Medicine including allied.**
- 2. The suggested pattern of question paper for internal assessment, except prelim examination is attached at the end. Pattern of the prelims examinations should be similar to the University examinations.**
- 3. Internal assessment marks for theory and practical will be converted to out of 50 (theory) +50 (practical). Internal assessment marks, after conversion, should be submitted to university within the stipulated time as per directives from the University. Conversion Formula for calculation of marks in internal assessment examinations.**

	Theory	Practical
Phase II	100	100
Phase III/I	100	100
Phase III/II	300	300
Total	500	500
Conversion out of	50	50
Conversion formula	Total marks in 6 IA theory examinations /10	Total marks in 6 IA Practical examinations /10
Eligibility criteria after conversion	20	20
	Combined theory + Practical = 50	

4. While preparing Final Marks of Internal Assessment, the rounding-off marks shall done as illustrated in following table.

Total Internal Assessment Marks	Final rounded marks
33.01 to 33.99	34

5. Students 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 order to be eligible for appearing at the final University examination of that subject.
6. Internal assessment marks will not to be added to marks of the University examinations and will be shown separately in mark list.

7. Remedial measures

A. Remedial measures for non-eligible students

- i) At the end of each internal assessment examination, students securing less than 50% marks shall be identified. Such students should be counseled at the earliest and periodically.
- ii) Extra classes for such students may be arranged. If majority of the students found to be weak in a particular area then extra classes must be scheduled for all such students. Even after these measures, if a student is failed to secure 50% marks combined in theory and practical (40% separately in theory and practical) after prelim examination, the student shall not be eligible for final examination.
- iii) Non eligible candidates are offered to reappear for repeat internal assessment examination/s, which must be conducted 2 months before next University examination. The pattern for this repeat internal assessment examination shall be similar to the final University examination. Only the marks in this examination shall be considered for deciding the

eligibility criteria. Following conversion formula shall be used for converting the marks.

	Theory	Practical
Remedial examination (as per final examination pattern)	200	200
Conversion out of	50	50
Conversion formula	Marks in remedial theory examinations /4	Marks in remedial Practical examinations /4
Eligibility criteria after conversion	20	20
	Combined theory + Practical = 50	

Subject: General Medicine Practical (I A – 1)					
Case	OSCE 1	OSCE 2	Viva	Journal & log book	Practical Total
10	10	10	10	10	50

B. Remedial measures for absent students:

- i. If any of the students is absent for any of the 6 IA examinations due to any reasons, following measures shall be taken.
- ii. The student is asked to apply to the academic committee of the college for reexamination, through HOD, to ascertain the genuineness of the reason for absenteeism.
- iii. If permitted by academic committee, an additional examination for such students is to be conducted after prelims examination. Marks for such additional examination shall be equal to the missed examination.
- iv. Even if a student has missed more than one IA examination, he/she can appear for only one additional IA examination. In such scenario, eligibility should be determined by marks obtained in internal assessment examinations for which the candidate has appeared, without changing the denominator.

Internal Assessment Practical Examinations

II MBBS Internal Assessment - 1

General Medicine

OSCE Stations to include Signs of General examinations, Local examinations, Psychomotor skills and Communication skills.

OSCE DETAILS: 1. History taking of a particular symptom;
2. Demonstration of signs- Pulse/BP/JVP;
3. Identification of General examination findings etc.
4. Communication Skills with patient or relative etc.

Viva on Drugs: Drugs Indication/Contraindication/ Adverse Effects etc.

Viva on emergency : eg. Snake bite, OP poisoning, Status asthmatics etc.

Internal Assessment - 2

DVL, Psychiatry and Respiratory Medicine (to be conducted at the end of respective clinical postings)

Subject: General Medicine Allied Practical (IA – 2) Examination in DVL		
Case	Viva	Practical Total
10	5	15
Subject: General Medicine Allied Practical (IA – 2) Examination in Psychiatry		
Case	Viva	Practical Total
10	5	15
Subject: General Medicine Allied Practical (IA – 2) Examination in Respiratory Medicine		
Case	Viva	Practical Total
15	5	20

* The marks for internal assessment – 2 shall be communicated by DVL, Psychiatry and Respiratory Medicine department to General Medicine department immediately after completion of examination and assessment.

III MBBS Part I Internal Assessment – 3

Subject: General Medicine Practical (IA – 3)					
Case	OSCE 1	OSCE 2	Viva	Journal & log book	Practical Total
20	5	5	10	10	50

OSCE Stations to include Signs of General examinations, Local examinations, Psychomotor skills and Communication skills.

- OSCE DETAILS:**
1. History taking of a particular symptom;
 2. Demonstration of General examination findings;
 3. Demonstration of systemic findings
 4. AETCOM or Communication Skills with patient or relative.

Internal Assessment - 4

Subject: General Medicine Allied Practical (IA – 4) Examination in DVL			
Case	OSCE 1	Viva	Practical Total
10	5	10	25
Subject: General Medicine Allied Practical (IA – 4) Examination in Psychiatry			
Case	OSCE 1	Viva	Practical Total
10	5	10	25

DVL and Psychiatry

- * The marks for internal assessment – 4 shall be communicated by DVL / Psychiatry department to General Medicine department immediately after completion of examination and assessment.

III MBBS Part II Internal Assessment – 5

Subject: General Medicine Practical (IA – 5)							
Long Case	OSCE1	OSCE2	OSCE3	OSCE 4	Viva	Journal & log book	Practical Total
50	5	5	5	5	20	10	100

OSCE Stations to include Signs of General examinations, Local examinations, Psychomotor skills and Communication skills.

OSCE DETAILS-

1. Demonstration of signs – (Deep Tendon Reflex, Tone, Power of Muscle, Palpation of spleen and liver);
2. Demonstration of systemic findings
3. Certifiable procedural skills
4. AETCOM or Communication Skills with patient or relative etc.

Viva – X-ray, ECG, Instruments, Drugs

Prelim and University practical examination

General Medicine

Subject: General Medicine Practical					
Long Case	Short Case – 1	Short Case -2	OSCE * 4 Stations (15 x 4)	Viva (Table 1 – Instruments, Drugs, Emergencies Table 2- X-rays, ECGs, Laboratory reports) (2 tables of 20 marks each)	Practical Total
50	25	25	60	40	200

OSCE Stations may include General examinations, Local examinations, psychomotor skills, Communication skills, AETCOM etc.

OSCE 1 – Clinical Skills

OSCE 2 – Certifiable procedural skills

OSCE 3 – Certifiable procedural skills

OSCE 4 – AETCOM related skills

FORMAT / SKELETON OF QUESTION PAPER FOR 1ST & 2ND INTERNAL ASSESSMENT THEORY EXAMINATIONS.

Instructions:

SECTION "A" MCQ

- 1) Put in the appropriate box below the question number once only.
- 2) Use blue ball point pen only.
- 3) Each question carries **One mark**.
- 4) Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.

1. SECTION "A" MCQ (10Marks)

(1x1=10)

Multiple Choice Questions (Total -10 MCQ of One mark each from General Medicine)

a) b) c) d) e) f) g) h) i) j)

- 1) **Use blue/black ball point pen only.**
- 2) **Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.**
- 3) **All questions are compulsory.**
- 4) **The number to the right indicates full marks.**

Instructions: 5) **Draw diagrams wherever necessary.**

2. Long Answer Question (Any 2 out of 3) (General Medicine)

(2x10 = 20)

a) b) c)

3. Short answer questions (Any 4 out of 5) (At least 2 Clinical reasoning question) (General Medicine)

(4 x5 = 20)

a) b) c) d) e)

Topics for 1st & 2nd internal assessment are according to the syllabus covered till date of respective Internal Assessment examination.

**FORMAT / SKELETON OF QUESTION PAPER FOR 3RD AND 4TH
INTERNAL ASSESSMENT THEORY EXAMINATIONS (III MBBS
PART I)**

Instructions:	SECTION "A" MCQ
5) Put <input type="checkbox"/> in the appropriate box below the question number once only.	
6) Use blue ball point pen only.	
7) Each question carries One mark .	
8) Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.	
1. SECTION "A" MCQ (10Marks)	(1x1=10)
Multiple Choice Questions (Total -10 MCQ of One mark each from General Medicine) a) b) c) d) e) f) g) h) i) j)	
Instructions:	
1) Use blue/black ball point pen only.	
2) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.	
3) All questions are compulsory.	
4) The number to the right indicates full marks.	
5) Draw diagrams wherever necessary.	
2. Long Answer Question (Any 2 out of 3) (General Medicine)	(2 x 10 = 20)
a) b) c)	
3. Short answer questions (1 from AETCOM) (General Medicine)	(2 x 5 = 10)
a) b)	
4. Short answer questions (Any 2 out of 3) (At least 2 Clinical reasoning question) (DVL, Psychiatry & Respiratory Medicine)	(2 x 5 = 10)
a) b) c)	

Separate answer sheets for question 4 (SAQ from DVL, Psychiatry & Respiratory Medicine) may be used for the ease of evaluation.

**FORMAT / SKELETON OF QUESTION PAPER 5TH INTERNAL ASSESSMENT
THEORY EXAMINATIONS (III MBBS PART II)**

Instructions:

SECTION "A" MCQ

- 9) Put in the appropriate box below the question number once only.
- 10) Use blue ball point pen only.
- 11) Each question carries **one mark**.
- 12) Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.

1. SECTION "A" MCQ (20Marks)

(1 x20=20)

Multiple Choice Questions (Total-20 MCQ)

- a) b) c) d) e) f) g) h) i) j)
k) l) m) n) o) p) q) r) s) t)

SECTION "B" & "C"

Instructions:

- 1) Use blue/black ball point pen only.
- 2) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.
- 3) All questions are compulsory.
- 4) The number to the right indicates full marks.
- 5) Draw diagrams wherever necessary.

SECTION "B" (60Marks)

(2x15=30)

2 . Long Answer Questions (Any 2 out of 3) (Structured Case Based) (General Medicine) a) b) c)

(2x5=10)

3.Short Answer Questions (Any 2 out of 3) (Any one should be Clinical reasoning), 1 from AETCOM (General Medicine) a) b) c)

(4 x 5 =20)

4.Short Answer Questions (Any 4 out of 5) (General Medicine) a) b) c) d) e)

SECTION "C" –

(4 x 5=20)

Allied (20Marks) 5. Short Answer Questions (allied DVL, Psychiatry & Respiratory Medicine)

- a) b) c) d)

.Separate answer sheets for question 4 (SAQ from DVL, Psychiatry & Respiratory Medicine) may be used for the ease of evaluation

**QUESTION PAPER FORMAT FOR UNIVERSITY THEORY EXAMINATIONS (III MBBS
PART II) Paper 1**

Instructions:

SECTION "A" MCQ

- 13) Put in the appropriate box below the question number once only.
- 14) Use blue ball point pen only.
- 15) Each question carries **One mark**.
- 16) Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.

- 1. SECTION "A" MCQ (20Marks) (1 x20=20)**
Multiple Choice Questions (Total-20MCQ of One mark each) – (General Medicine)
- a) b) c) d) e) f) g) h) i) j)
k) l) m) n) o) p) q) r) s) t)

Instructions:

SECTION "B" & "C"

- 1) Use blue/black ball point pen only.
- 2) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.
- 3) All questions are compulsory.
- 4) The number to the right indicates full marks.
- 5) Draw diagrams wherever necessary.

(2x15=30)

(3x5=15)

SECTION "B"

2 . Long Answer Questions (Structured Case Based) (General Medicine)

a) b)

3.Short Answer Questions (Any one should be Clinical reasoning, 1 from AETCOM) (General Medicine) a) b) c)

SECTION "C"

(1 x15=15)

4. Long Answer Question (Structured Case Based)

(General Medicine) (a)

(4 x5=20)

3.Short Answer Questions (General Medicine) (Any 4 out of 5)

a) b) c) d) e)

**FORMAT / SKELETON OF QUESTION PAPER
FOR UNIVERSITY THEORY EXAMINATIONS (III
MBBS PART II) PAPER II**

Instructions:

SECTION "A" MCQ

- 17) Put in the appropriate box below the question number once only.
- 18) Use blue ball point pen only.
- 19) Each question carries **One mark**.
- 20) Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.

- 1. SECTION "A" MCQ (20Marks) (1 x20=20)**
**Multiple Choice Questions (Total-20MCQ of One mark each - 15 General
Medicine, 2 DVL, 2 Respiratory Medicine, 1 Psychiatry)**
a) b) c) d) e) f) g) h) i) j)
k) l) m) n) o) p) q) r) s) t)

Instructions:

SECTION "B" & "C"

- 1) *Use blue/black ball point pen only.*
- 2) *Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.*
- 3) *All questions are compulsory.*
- 4) *The number to the right indicates full marks.*
- 5) *Draw diagrams wherever necessary.*

SECTION

(2x15=30)

"B" 2 . Long Answer Questions (Structured Case Based) (General Medicine) a) b)

SECTION "C"

(4x5=20)

3. Short Answer Questions (any 4 out of 5) (DVL)

(3 x5=15)

a) b) c) d) e)

4.Short Answer Questions (Any 3 out of 4) (Psychiatry)

(3 x5=15)

a) b) c) d)

5.Short Answer Questions (Any 3 out of 4) (Respiratory Medicine)

a) b) c) d)

FORMAT / SKELETON OF QUESTION PAPER FOR 1ST & 2ND INTERNAL

ASSESSMENT THEORY EXAMINATIONS DURING PHASE-II.

Instructions:

SECTION "A" MCQ

- 5) Put in the appropriate box below the question number once only.
- 6) Use blue ball point pen only.
- 7) Each question carries **One mark**.
- 8) Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.

1. SECTION "A" MCQ (10Marks) (1x10=10)

Multiple Choice Questions (Total -10 MCQ of One mark each from General Medicine)

- a) b) c) d) e) f) g) h) i) j)

- 6) Use blue/black ball point pen only.
- 7) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.
- 8) All questions are compulsory.
- 9) The number to the right indicates full marks.
- 10) Draw diagrams wherever necessary.

Instructions:

2. Long Answer Question (Any 2 out of 3) (General Medicine) (2 x 10 = 20)

- a) b) c)

3. Short answer questions (Any 4 out of 5) (At least 2 Clinical reasoning question) (General Medicine) a) b) c) d) e) (4 x 5 = 20)

Topics for 1st & 2nd internal assessment are according to the syllabus covered till date of respective Internal Assessment examination.

**FORMAT / SKELETON OF QUESTION PAPER FOR 3RD AND
4TH INTERNAL ASSESSMENT THEORY EXAMINATIONS
(III MBBS PART I)**

- Instructions:** 6) *Use blue/black ball point pen only.*
7) *Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.*
8) *All questions are compulsory.*
9) *The number to the right indicates full marks.*
10) *Draw diagrams wherever necessary.*

5. Long Answer Question (Any 2 out of 3) (General Medicine) (2 x 10 = 20)

- a) b) c)

6. Short answer questions (1 from AETCOM) (General Medicine) (2 x 5 = 10)

- a) b)

7. Short answer questions (Any 2 out of 3) (At least 2 Clinical reasoning question) (DVL, Psychiatry & Respiratory Medicine) (2 x 5 = 10)

- a) b) c)

.Separate answer sheets for question 4 (SAQ from DVL, Psychiatry & Respiratory Medicine) may be used for the ease of evaluation.

**Format / Skeleton of question paper 5th internal assessment Theory Examinations
(III MBBS Part II)**

Instructions:

SECTION "A" MCQ

- 13) Put in the appropriate box below the question number once only.
- 14) Use blue ball point pen only.
- 15) Each question carries **one mark**.
- 16) Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.

1.

(1 x20=20)

SECTION "A" MCQ (20Marks)

Multiple Choice Questions (Total-20 MCQ)

- a) b) c) d) e) f) g) h) i) j)
k) l) m) n) o) p) q) r) s) t)

Instructions:

SECTION "B" & "C"

- 6) Use blue/black ball point pen only.
- 7) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.
- 8) All questions are compulsory.
- 9) The number to the right indicates full marks.
- 10) Draw diagrams wherever necessary.

SECTION "B" (60Marks)

2. Long Answer Questions (Any 2 out of 3) (Structured Case Based)

(General Medicine)

(2x15=30)

- a) b) c)

3.Short Answer Questions (Any 2 out of 3) (Any one should be Clinical reasoning), 1 from AETCOM

(2x5=10)

(General Medicine)

- a) b) c)

4.Short Answer Questions (Any 4 out of 5)

(4 x 5 =20)

(General Medicine)

- a) b) c) d) e)

SECTION "C" –

(4 x 5=20)

**Allied (20Marks) 5. Short Answer Questions (allied DVL,
Psychiatry & Respiratory Medicine)**

- a) b) c) d)

Separate answer sheets for question 4 (SAQ from DVL, Psychiatry & Respiratory Medicine) may be used for the ease of evaluation

FORMAT OF QUESTION PAPER FOR UNIVERSITY THEORY EXAMINATIONS (III MBBS PART II)
PAPER– I

Instructions	SECTION "A" MCQ 17) Put <input type="checkbox"/> in the appropriate box below the question number once only. 18) Use blue ball point pen only. 19) Each question carries One mark . 20) Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.
1.	(1 x20=20)
	SECTION "A" MCQ (20Marks) Multiple Choice Questions (Total-20MCQ of One mark each) – (General Medicine) a) b) c) d) e) f) g) h) i) j) k) l) m) n) o) p) q) r) s) t)
Instructions:	SECTION "B" & "C" 6) Use blue/black ball point pen only. 7) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means. 8) All questions are compulsory. 9) The number to the right indicates full marks. 10) Draw diagrams wherever necessary.
	(2x15=30)
	SECTION "B" 2. Long Answer Questions (Structured Case Based) (General Medicine) a) b) (3x5=15)
	3. Short Answer Questions (Any one should be Clinical reasoning, 1 from AETCOM) (General Medicine) a) b) c)
	(1 x15=15)
	SECTION "C" 4. Long Answer Question (Structured Case Based) (General Medicine) a) (4 x5=20)
	5. Short Answer Questions (General Medicine) (Any 4 out of 5) a) b) c) d) e)

**FORMAT / SKELETON OF QUESTION PAPER
FOR UNIVERSITY THEORY EXAMINATIONS
(III MBBS PART II) PAPER II**

Instructions:

SECTION "A" MCQ

- 21) Put in the appropriate box below the question number once only.
- 22) Use blue ball point pen only.
- 23) Each question carries **One mark**.
- 24) Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.

1.

**(1 x20=20
)**

SECTION "A" MCQ (20Marks)

**Multiple Choice Questions (Total-20MCQ of One mark each - 15 General Medicine , 2 DVL,
2 Respiratory Medicine, 1 Psychiatry)**

- a) b) c) d) e) f) g) h) i) j)
k) l) m) n) o) p) q) r) s) t)

Instructions:

SECTION "B" & "C"

- 6) Use blue/black ball point pen only.
- 7) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.
- 8) All questions are compulsory.
- 9) The number to the right indicates full marks.
- 10) Draw diagrams wherever necessary.

SECTION "B"

(2x15=30)

2. Long Answer Questions (Structured Case Based)

(General Medicine)

- a) b)

SECTION "C"

(4x5=20)

3. Short Answer Questions (any 4 out of 5) (DVL)

- a) b) c) d) e)

(3 x5=15)

4. Short Answer Questions (Any 3 out of 4) (Psychiatry)

- a) b) c) d)

5. Short Answer Questions (Any 3 out of 4) (Respiratory Medicine)

- a) b) c) d)

(3 x5=15)

BOOKS RECOMMENDED:

1. Davidsion's Principles and Practice of Medicine – 23rd edition
2. Kumar & Clark' Clinical Medicine – A textbook for medical students and doctors - 9th edition
3. Harrison's Principles of Internal Medicine – 20th Edition
4. Oxford Textbook of Medicine – 3rd Edition
5. Hutchison's Clinical Methods – 20th Edition
6. Macleod's Clinical Examination – 11th Edition
7. API textbook of Medicine – 11th Edition



SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)

(Established under section 3 of the UGC Act 1956)

Re - accredited by NAAC with 'A' Grade

Founder: Prof. Dr. S. B. Mujumdar, M.Sc., Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

Course Name: Microbiology

Course Code: Medical - MI

Faculty: Health Sciences

Programme Type: UG

Sub-Committee (Specialization): Medical

Preamble

Medical Microbiology is a branch of medical science which deals with the study of organisms too small to be seen with naked eye. It is concerned with the diagnosis, prevention and treatment of infectious diseases.

Goal

The goal of teaching Microbiology is to provide understanding of the natural history of infectious diseases & microorganisms causing infectious diseases, in order to deal with the etiopathogenesis, pathogenicity, laboratory diagnosis, treatment, control and prevention of these infections and infectious diseases & also to provide knowledge about Infection Control in the healthcare setting & inculcate practices of infection control in day to day.

Objectives:

At the end of one year of training in Microbiology the MBBS student is expected to demonstrate:

Knowledge:

At the end of one year, the student should be able to: -

1. Understand commensal, opportunistic and pathogenic organisms of human body and describe host parasite relationship.
2. List pathogenic micro-organisms and understand & describe the etiology& pathogenesis of the diseases produced by them
3. State or indicate the modes of transmission of pathogenic and opportunistic organisms and their sources, including insect vectors & their role in transmission of infection
4. Choose appropriate laboratory investigations required for clinical diagnosis and apply that knowledge in the diagnosis, treatment, prevention and control of communicable diseases caused by microorganisms
5. Describe the mechanisms of immunity to infection
6. Acquire knowledge on suitable antimicrobial agents for treatment of infection and scope of immunotherapy and different vaccine available for prevention of communicable diseases
7. Apply methods of disinfection and sterilization to control and prevent hospital and community acquired infections
8. Recommend laboratory investigations regarding bacteriological examination of foodwater, milk and air.

Skills:

1. Plan and interpret laboratory investigations for diagnosis of infectious diseases
2. correlate the clinical manifestations with the etiological agent.
3. Identify common infectious agents with the help of laboratory procedure
4. acquire knowledge of antimicrobial agents, use of antimicrobial sensitivity tests to select suitable antimicrobial agents for treatment.
5. Perform simple laboratory tests, which help to arrive at rapid diagnosis.
6. Know proper methods of collection, storage & transport of clinical material for microbiological investigations.
7. Understand the principles of immunology and its application in the diagnosis and prevention of infectious diseases including immunization schedule
8. Acquire knowledge of the scope of immunotherapy and different vaccines available for the prevention of communicable diseases.
9. Learn methods of disinfection and sterilization and their application to control and prevent hospital and community acquired infections including standard precautions

and waste disposal.

10. Know laboratory investigations regarding bacteriological examination of food, water, milk and air.

11. Acquire the knowledge of prevalent communicable diseases of national importance and of the newer emerging pathogens for the same.

Attitude, Ethics & Communication:

1. The student will be regular, sincere, punctual and courteous and regular in studies.
2. The student will follow all the rules laid down by the department and participate in maximum possible activities.
3. The student will understand the importance of standard precautions and practice hand hygiene, asepsis, waste segregation and appropriate disposal.
4. The student will understand the importance of, and practice the best methods to prevent the development of infection in self and patient. (E.g. hand washing, using aprons for hospitals in hospitals only, regularly washing the aprons, wearing gloves (as and when required / handling specimens etc.).
5. The student will understand the judicious & rational use of the different antimicrobial agents including antibiotics & will have prescribing attitude to prevent misuse
6. The student will understand the significance of vaccinations and will receive appropriate vaccines (e.g. TT, Hepatitis B and any other as per needs).
7. The student will wash his/her hands with soap after each practical class.
8. The student will leave the area allotted for his practical neat and tidy.
9. The student will discard the slides in the appropriate container provided for the same.
10. The student will report any injury sustained in class, immediately.
11. The student will report any breakage occurring during class times immediately.
12. Understand and apply principles of bioethics and law as they apply to medical practice and research understands and apply the principles of clinical reasoning as they apply to the care of the patients,
13. Understand and apply the principles of system based care as they relate to the care of the patient,
14. Understand and apply empathy and other human values to the care of the patient,
15. Communicate effectively with patients, families, colleagues and other health care professionals.
16. Understand the strengths and limitations of alternative systems of medicine,

17. Respond to events and issues in a professional, considerate and humane fashion,
18. Translate learning from the humanities in order to further his / her professional and personal growth

MICROBIOLOGY SYLLABUS:

The topics will be covered as per proposed GMER guidelines.

Theory Topics-

1. General Microbiology

- Introduction and History
- Microscopy Sterilization and Disinfection
- Overview of bacterial infections and Bacterial Taxonomy
- Morphology of Bacteria
- Bacterial Genetics
- Antimicrobials: Antimicrobial Agents, Antimicrobial Resistance, Antimicrobial Susceptibility Testing, Monitoring of antimicrobial therapy, Antimicrobial stewardship
- Overview of Viral infections and General Virology
- Overview of parasitic infections and General Parasitology
- Overview of fungal infections and General Mycology
- Epidemiology of infectious diseases

2. Immunology

- Immunity (Innate and Acquired)- Immunological mechanisms in health
- Components of Immune System-Organs, cells and products 2
- Antibody
- Antigen-Antibody Reaction
- Complement
- Immune Responses: Cell-mediated and Antibody-mediated
- Hypersensitivity
- Autoimmunity
- Immunodeficiency Disorders

- Transplant and Cancer Immunology
- Immunoprophylaxis and Immunohematology

3. Systemic Microbiology (Infectious Diseases)

3.a. Blood Stream and Cardiovascular System Infections

- Blood stream infections, sepsis, septic shock, CRBSI
- Infections of CVS (in detail)-Rheumatic fever and Infective endocarditis (including HACEK group)
- Other infections of CVS (in brief) - myocarditis and pericarditis, suppurative
- thrombophlebitis, infective endarteritis, mycotic aneurysm, mediastinitis
- Major etiological agents of blood stream and CVS infections
- Enteric (typhoid) fever
- Rickettsial infections
- HIV
- Dengue, chikungunya, and Zikavirus
- Malaria (in detail)
- Babesiosis (in brief)
- Leishmaniasis
- Lymphatic filariasis

3.b. Gastrointestinal and Hepatobiliary System Infections

- Normal commensals
- Gastrointestinal infective syndromes (in brief)
- Diarrheal diseases- Diarrhoea, gastroenteritis, dysentery, food poisoning, traveller's diarrhoea
- Acute vomiting
- Peritonitis and Intra-peritoneal Abscesses
- Infections of the liver and biliary system (liver abscess, cholangitis, cholecystitis)
- Pancreatic infection, splenic abscess, appendicitis, diverticulitis and typhlitis
- Cholera and halophilic Vibrio infections
- Intestinal amoebiasis
- Balantidiasis

- Intestinal nematodes- Ascaris, hookworm, Trichuris,
- Enterobius and Strongyloides
- Agents of Viral Hepatitis
Hepatitis viruses Yellow fever, Cytomegalovirus
Epstein-Barr virus

3.c. Skin, Soft Tissue Infections and Musculoskeletal System Infections

- Infective syndromes of skin, soft tissue, musculoskeletal systems (in brief)
- Primary skin lesions: Macule, papule, plaque, nodule, vesicle, bulla, pustule, abscess
- Secondary skin lesions: Scale, ulcer, erysipelas, impetigo, cellulitis, hidradenitis
- Ecthyma
- Warts
- Hair follicle infections: Folliculitis, furuncle, carbuncle
- Subcutaneous tissue infections
- Infection of fascia and muscles: Necrotizing fasciitis, pyomyositis, myonecrosis
- Lymphadenitis and lymphangitis
- Skeletal system infections: Osteomyelitis and septic arthritis, orthopaedic implant–associated infections
- Miscellaneous: Burn Infections, bite infections, injection site abscesses, factitial disease (Self-induced abscesses)
- Staphylococcal infections (detail)
- Gas gangrene (Clostridium perfringens)
- Tetanus (Clostridium tetani)
- Infections due to non-spring anaerobes
- Viral exanthemas (in detail)- Measles, rubella, parvovirus,
- HHV-6, Pox viruses, Varicella zoster (chickenpox and zoster) Herpes simplex virus (in detail)
- Superficial fungal infections
- Subcutaneous fungal infections
- Cutaneous and mucosal Candidiasis
- Penicilliummarneffeii

3.d. Central Nervous System Infections

- Infective syndromes of CNS (in brief)
- Meningitis- Acute (pyogenic, aseptic-viral, spirochetal, parasitic) and chronic
- Encephalitis
- Focal CNS lesions (e.g., brain abscess, subdural empyema, and epidural abscess)
- Suppurative Intracranial Thrombophlebitis
- CSF Shunt and Drain Infections
- Agents of pyogenic meningitis: Neisseria meningitidis,
- Streptococcus pneumoniae, Streptococcus agalactiae,
- Haemophilus influenzae, Listeria
- Viral agents of encephalitis-: Rabies and HSV encephalitis, Arboviral encephalitis (JE and West Nile), Nipah virus infection, Slow viral infections
- Tetanus, botulism
- Neurocysticercosis

3.e. Respiratory Tract Infections

- Normal commensals and defense mechanisms
- Infective syndrome of respiratory system (in brief)
- URTI- Rhinitis (common cold), sinusitis, pharyngitis (sore throat), tonsillitis, laryngitis, laryngotracheobronchitis (croup), epiglottitis
- LRTI- Bronchitis, bronchiolitis, pneumonia (CAP, HAP), pleural effusion, empyema
- Viral URTI-1: Influenza-like illness and orthomyxovirus
- Tuberculosis including non-tuberculous mycobacteria

3.f. Genitourinary Tract Infections and Sexually Transmitted Infections

- Normal commensals of genitourinary tract
- Urinary tract infections
- Upper UTI: Pyelonephritis, ureteritis
- Lower UTI: Cystitis, urethritis
- Agents of genital ulcers-1- Syphilis
- Agents of vaginal discharge- Bacterial vaginosis,
- Trichomonas vaginalis, Candida
- Agents of genital warts- HPV (Human papilloma virus)

4. Hospital Infection Control

Hospital acquired infections (surveillance and prevention including care bundle) – CAUTI, CRBSI, VAP, SSI

Antimicrobial stewardship and Rational use of antimicrobial agents

1. National Health Program

Practical Topics

- Microscopy
- Sterilization and Disinfection
- Physiology of Bacteria
- Gram staining
- Morphology of common bacteria, Bacterial growth curve
- Culture Media and Culture Methods
- Specimen collection and transport
- Identification of Bacteria (Conventional methods)
- Identification of Bacteria (Automations and Molecular methods)
- Antimicrobial Susceptibility Testing¹
- Laboratory diagnosis of viral infections- microscopy, cultivation, serology, molecular tests
- Laboratory diagnosis of parasitic infections
- Laboratory diagnosis of fungal infections--KOH mount, Gram stain (yeast), India ink, LPCB mount
- Normal Microbial Flora of Human Body
- Microbial Pathogenesis
- Acid fast staining
- Antigen
- Antigen-Antibody Reaction (conventional)- agglutination and precipitation
- Antigen-Antibody Reaction (newer)- ELISA, ELFA, CLIA, IFA, western blot, rapid methods
- Stool microscopy
- Hospital acquired infection (definition, risk factors, hand hygiene and PPE)
Biomedical waste, Needle stick injury, Hand hygiene and PPE

- Infections causing anaemia
- Sepsis, CRBSI, Rheumatic fever, Infective endocarditis
- Brucellosis, Leptospirosis and Borreliosis
- Enteric (typhoid) fever, Brucellosis, Leptospirosis
- Plague
- Other viral hemorrhagic fever- Kyasanuar forest disease,
- Ebola and Marburg virus, Hantaviruses
- HIV and Dengue
- Trypanosomiasis and Schistosomiasis
- Malaria, Leishmaniasis, Lymphatic filariasis
- Systemic mycosis and Candidiasis
- Shigellosis
- Nontyphoidal salmonellosis
- Diarrheogenic E. coli
- Dysentery(Shigellosis)
- Diarrhea (cholera)
- Helicobacter infection (acid peptic disease)
- Campylobacter infections
- Yersiniosis
- Food poisoning- Bacillus cereus, Clostridium botulinum,
- mycotoxins
- Antibiotic associated diarrhea- Clostridiodes difficile
- Viral gastroenteritis
- Giardiasis
- Intestinal coccidian parasites and microsporidia infections
- Intestinal amoebiasis, Giardiasis, Intestinal coccidian parasite
- Intestinal cestode infections - Diphylobothriumlatum ,
- Taenia, Hymenolepis
- Intestinal trematodes infections – Fasciolopsisbuski
- Intestinal cestode and nematode infection
- Echinococcosis (hydatid disease)
- Other parasitic infections of liver- amoebic liver abscess,

- Fasciola hepatica infection
- Parasitic infections infecting bile duct- Clonorchis, Opisthorchis
- Viral Hepatitis, parasites causing liver infection
- Streptococcal infections pertaining to SSTI
- Anthrax (Bacillus anthracis)
- Staphylococcal, Streptococcal infections and Anaerobic infections
- Leprosy
- Infection due to non-fermenters (Pseudomonas,
- Acinetobacter, Stenotrophomonas, Burkholderia including Melioidosis)
- Infection due to Actinomycetes and Nocardia
- Anthrax, Leprosy, Pseudomonas, Melioidosis, Actinomycetes and Nocardia
- Tissue nematode infections of skin and soft-tissue-
- Onchocerca, Loa loa, Mansonella and Dracunculus,
- Trichinella, cysticercosis, Larva migrans and other parasitic infections of lower animals infecting man
- SSTI due to Superficial and Subcutaneous fungal infections,
- Cutaneous and mucosal Candidiasis
- Agents of pyogenic meningitis (N. meningitidis,
- Streptococcus pneumoniae, S. agalactiae, Haemophilus
- Agents of aseptic meningitis- Viral agents (including polio, coxsackie virus, mumps), Other agents (Spirochaetal meningitis, tubercular meningitis, cryptococcal meningitis and other fungi affecting CNS)
- Parasites causing encephalitis: Primary amoebic meningoencephalitis (Naegleria), granulomatous amoebic encephalitis (Acanthamoeba and Balamuthia), toxoplasmosis (in detail)
- Neurocysticercosis
- Aseptic meningitis (tubercular meningitis, cryptococcal meningitis) and Encephalitis
- Bacterial URTI: Diphtheria, Group A Streptococcus
- Viral URTI-: Rhinovirus, adenovirus and infectious mononucleosis (EBV)
Fungal URTI: Zygomycosis
- URTI (beta haemolytic streptococci, diphtheria, influenza)
- Pneumococcal pneumonia

- Haemophilus influenza
- Bordetella infections
- Laboratory diagnosis of tuberculosis and Acid fast stainin
- Agents of atypical pneumonia(Bacterial):Mycoplasma, Chlamydia and Legionella
- Viral agents of LRTIParamyxovirus infections- Parainfluenza, RSV, Coronaviruses including SARS-CoV and MERS CoV
- LRTI (Pneumococcal pneumonia, Haemophilus influenza, agents of atypical pneumonia)
- Fungal agents causing respiratory tract infection: Zygomycosis, aspergillosis, pneumocystis
- Parasitic agents causing respiratory tract infection: Paragonimiasis
- Agents of UTI Uropathogenic E. coli, Klebsiella, Proteus,Enterococcus (in detail), Staphylococcus saprophyticus, Streptococcusagalactiae
- UTI(Uropathogenic E. coli, Klebsiella, Proteus, Enterococcus,
- Staphylococcus saprophyticus, Streptococcusagalactiae)
- Sexually transmitted infections (in brief)
- Infections of the female reproductive organs: Urethritis, Vulvovaginitis, cervicitis, endometritis, oophoritis, salpingitis, tubo-ovarian abscess, pelvic inflammatory disease
- Infections of the male reproductive organs: Urethritis, Prostatitis, epididymitis, and orchitis
- Agents of urethritis- Gonorrhoea and non-gonococcal urethritis (including Chlamydia, Ureaplasma, HSV, Candida
- Agents of genital ulcers-- LGV, Granuloma inguinale, soft chancre, HSV
- STI (Gonorrhoea, Syphilis, Trichomonas, Candida)
- Environmental surveillance (bacteriology of water, air, milk and surface)
- Infective syndrmes of eye (in brief) Conjunctivitis, keratitis, uveitis, endophthalmitis
- Periocular/ periorbital Infections:Eye lid infections (hordeolum, chalazion and marginal blepharitis),Lacrimal gland infection (dacryoadenitis, canaliculitis and dacryocystitis),Preseptal infection and orbital infections
- Fusarium and Penicillium (in detail)
- Infective syndromes of ear, nose and oral cavity (in brief)
- Ear infections:

- Otitis externa, otitis media, and mastoiditis • Nasal cavity infections: Rhinitis (common cold), sinusitis, turbinate hypertrophy
- Oral cavity infections
- Orofacial Odontogenic Infections: Dentoalveolar infections, gingivitis and periodontal infections, deep fascial space infections, suprahyoid space infections and infrahyoid space infections
- Orofacial Nonodontogenic Infections: Infections of the oral mucosa (stomatitis and oral thrush), infections of the salivary gland,
- Miscellaneous:
 - Suppurative cervical adenitis, infected embryologic cysts, suppurative thyroiditis
 - Zoonotic infections
 - Congenital infections (TORCH)
 - Opportunistic infections (immunocompromised patients) including Transplant infections
 - Organisms of oncogenic potential
 - Emerging and Re-emerging Infections
 - Microbial agents of Bioterrorism
 - Vector-borne infections
 - Laboratory acquired infections
 - Choose appropriate laboratory test in diagnosis of infectious disease (Rational use of microbiological investigations)

PAPER WISE DISTRIBUTION OF TOPICS:

Assessment of the student will be done through theory & practical exams. The distribution of the syllabus for theory is as follows:

Sr.No.	Paper	Topic
1	I [100 marks]	General Microbiology Immunology Infections of Blood stream and Cardiovascular System Gastrointestinal tract Hepatobiliary system
2	II [100 marks]	Infections of Skin, Soft tissue and Musculoskeletal System Central Nervous System Respiratory System Genitourinary System and Sexually-transmitted infections Hospital infections and control Zoonotic and miscellaneous

Second MBBS Internal Assessment Subject: Microbiology

Phase	III-Term Exam (After 3 months)			IV- Term Exam (After 7 months)			Prelims (1 month before Final Exam)		
	Theory	Practical (Including 10 Marks for Journal & Log Book)	Total Marks	Theory	Practical Including 10 Marks for Journal & Log Book	Total Marks	Theory	Practical	Total Marks
Second MBBS	100	50	150	100	50	150	Paper 1 -100 Paper 2 -100	100	300

1. There will be 3 internal assessment examinations in Microbiology. The structure of the internal assessment theory examinations should be similar to the structure of University examinations.
2. It is mandatory for the students to appear for all the internal assessment examinations.
3. First internal assessment examination will be held after 3 months of joining second year, second internal assessment examination will be held after 7 months of joining second year and third internal assessment examination will be held one month before the final exams
4. A student who has not taken minimum required number of tests for Internal Assessment each in theory and practical will not be eligible for University examinations.
5. There will be only one additional examination for absent students (due to genuine reason) after approval by the Institutional Grievances Committee. It should be taken after preliminary examination and before submission of internal assessment marks to the University.
6. Internal assessment marks for theory will be out of 400 and practical will be out of 200.
7. Students must secure at least 50% marks of the total marks (combined in theory and practical; not less than 40% marks in theory and practical separately) to be eligible for appearing University examination
8. **Conversion Formula for calculation of marks in internal assessment**

9. examinations

	First IA (III Term)	Second IA (IV Term)	Third IA (Prelim)	Total	Internal assessment marks: Conversion formula (out of 40)	Eligibility to appear for final University examination (after conversion out of 40) (40% separately in Theory & Practical, 50% Combined)	
Theory	100	100	200	400	<u>Total marks obtained</u> 10	16 (Minimum)	Total of Theory + Practical must be 40.
Practical	50	50	100	200	<u>Total marks obtained</u> 05	16 (Minimum)	

While preparing final marks of internal assessment, the rounding-off marks shall done as illustrated in following table:

Internal Assessment Marks	Final rounded marks
15.01 to 15.99	16

10. Internal assessment marks will reflect as separate head of passing at the summative examination.
11. Internal assessment marks will not to be added to marks of the University examinations and will be shown separately in mark list.

Second MBBS Practical Marks Structure

Applicable w.e.f October 2020 onwards examination for batches admitted from June 2019 onwards

Subject: Microbiology

Second MBBS Practical Mark's Structure of Internal Assessment Examinations

Subject : Microbiology Practical—I Term					
Seat No.	GramStain	OSPE	Journal/Log book	Viva	Total
Maximum marks	10	10	10	20	50

Subject : Microbiology Practical—II Term					
Seat No.	Z-N stain	Stool - Routine Microscopy/Serology /OSPE	Journal/Logbook	Viva	Total
Maximum marks	10	10	10	20	50

FORMAT / SKELETON OF QUESTION PAPER (For All Exams)

1. Course and Year	: Second MBBS (applicable w.e.f. September 2021 & onwards examinations)	2. Subject Code	:		
3. Subject	: MICROBIOLOGY				
4. Paper	: I/II	5. Total Marks	: 100	6. Total Time	: 3 Hrs.

Instructions:

SECTION "A" MCQ

- 1) Put in the appropriate box below the question number once only.
- 2) Use blue ball point pen only.
- 3) Each question carries **One mark**.
- 4) Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.

SECTION "A" MCQ (20 Marks)

1. Multiple Choice Questions (Total 20 MCQ of One mark each). (At least 5 should be scenario-based MCQ) (20 x1=20)
a) b) c) d) e) f) g) h) i) j)
k) l) m) n) o) p) q) r) s) t)

SECTION "B" & "C"

- Instruction**
- 1) Use **blue/black** ball point pen only.
 - 2) **Do not** write anything on the **blank portion of the question paper**. If written anything, such type of act will be considered as an attempt to resort to unfair means.
 - 3) **All** questions are **compulsory**.
 - 4) The number to the **right** indicates **full** marks.
 - 5) Draw diagrams **wherever** necessary.
 - 6) Distribution of syllabus in Question Paper is only meant to cover entire syllabus within the stipulated frame. The Question paper pattern is a mere guideline. Questions can be asked from any paper's syllabus into any question paper. Students cannot claim that the Question is out of syllabus. As It is only for the placement sake, the distribution has been done.
 - 7) Use a common answer book for all sections.

SECTION "B" (40 Marks)

- 2 Short Answer Questions (Any 4 out of 5) (One question on AETCOM Module (2.5, 2.6 and 2.7)) (6x4=24)
a) b) c) d) e)
- 3 Long Answer Questions (Any 1 out of 2) (At least one LAQ should be structured) (16x1=16)
a) b)

SECTION "C" (40 Marks)

- 4 Short answer questions (Any 4 out of 5) (6x4=24)
a) b) c) d) e)
- 5 Long Answer Questions (Any 1 out of 2) (At least one LAQ should be scenario-based) (16x1=16)
a) b)

TEXT BOOKS RECOMMENDED:

1. Textbook of Microbiology- ApurbaSastry
2. Textbook of Microbiology - R. Ananthanarayan C. K. JayaramPanikar
1. A Textbook of Microbiology - P. Chakraborty
2. Textbook of Medical Microbiology - Rajesh Bhatia &Itchpujani
3. Textbook of Medical Microbiology - Arora and Arora
4. Parasitology (Protozoology and Helminthology) K.D. Chatterjee
5. Textbook of Medical Parasitology - S.C.Parija
6. Textbook of Medical Parasitology - C. K. JayaramPanikar
7. Textbook of Medical Parasitology - Arora and Arora
8. A Textbook of Parasitology - Dr. R.P. Karyakarte and Dr. A.S. Damle
9. Microbiology in clinical practice - D. C. Shanson

REFERENCE BOOKS:

1. Mackie McCartney practical Medical Microbiology- Colle JG, Fraser AG
2. Principles of Bacteriology, Virology & Immunology vol. 1,2,3,4,5- Topley Wilsons
3. Medical Mycology (Emmons)- Kwon – Chung
4. Review of Medical Microbiology (Lange)- Jawetz, Melnick and Adelberg's Medical Microbiology Geo F. Brooks, Stephen A. Morse, Janet S. Butel
5. Immunology- Weir DM
6. Medical Microbiology- David Greenwood, Richard Stack, John Pentherer
7. Medical virology- Timbury MC
8. Microbial infections- Marmion BP, Swain RHA
9. Hospital Infection Control – ApurbaSastry



SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)

(Established under section 3 of the UGC Act 1956)

Re - accredited by NAAC with 'A' Grade

Founder: Prof. Dr. S. B. Mujumdar, M.Sc.,Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

Course Name: Obstetrics and Gynaecology

Course Code: Medical - OG

Faculty: Health Sciences

Programme Type: UG

Sub-Committee (Specialization): Medical

Course Content

Subject: Obstetrics and Gynaecology Lectures

(Based on Medical Council of India, Competency based Undergraduate curriculum for the Indian Medical Graduate, 2018. Vol. 3; page nos. 102-129)

Integration: Up to 20% of the topics are to be taken in integration with other subjects as per directives.

Second MBBS phase II

Total Teaching

hours: A.

Lectures: 25

hours

Serial number	Lecture topics & Subtopics
1.	Anatomy of the female reproductive tract,
2.	Physiology of menstruation
3.	Physiology of gametogenesis, Ovulation, conception, implantation, & Reproductive endocrinology

4.	Early development of embryo and foetus, development of Placenta, amniotic fluid, cord
5.	Embryology and developmental defects of female genital tract
6.	Diagnosis of pregnancy
7.	Physiological changes in pregnancy
8.	Maternal and perinatal mortality
9.	Periconceptional counselling
10.	Antenatal Care, birth planning, and Obstetric examination
11.	Antenatal screening, genetic counselling and antenatal monitoring of foetal well being
12.	Vaccines and medications in pregnancy, Teratology
13.	Foetal skull, pelvis
14.	Labour physiology
15.	Labour mechanism
16.	Management of labour 1 st stage with, Partogram, intrapartum monitoring of foetal wellbeing and labour analgesia
17.	Management of labour 2 nd and third stage
18.	Physiological changes in puerperium, Management of puerperium
19.	Lactation - physiology and management
20.	Hyperemesis, vomiting in pregnancy management
21.	Haemorrhage in early pregnancy (Abortions)
22.	Haemorrhage in early pregnancy (Ectopic pregnancy)
23.	Haemorrhage in early pregnancy (Molar pregnancy)
24.	Recurrent pregnancy loss
25.	Multifetal pregnancy

Third MBBS phase III Part I**Total Teaching hours: A. Lectures: 25 hours**

Serial number	Topics & Subtopics
1.	Hypertensive disorders in pregnancy
2.	Hypertensive disorders in pregnancy
3.	Preterm and PROM
4.	Prolonged pregnancy
5.	Intrauterine growth restriction
6.	Disorders of amniotic fluid
7.	Abnormalities of placenta & cord
8.	Intrauterine foetal death
9.	Antepartum haemorrhage 1 Placenta previa
10.	Antepartum haemorrhage 2 Abruptio+ vasa previa
11.	Rh negative pregnancy
12.	Anaemia (Iron deficiency + Megaloblastic)
13.	Anaemia (Others)
14.	Heart disease in pregnancy
15.	Diabetes in pregnancy
16.	Infections in pregnancy UTI, (Inc. Malaria etc)
17.	Hepatic disorders in pregnancy
18.	Thyroid disorders in pregnancy
19.	Respiratory disorders in pregnancy including TB, COVID, Flu
20.	Viral infections in pregnancy (Viral)
21.	HIV in Obstetrics and Gynaecology
22.	Gynaecological disorders in pregnancy
23.	Surgical disorders in pregnancy
Serial number	Topics & Subtopics
24.	National Health programs-I safe motherhood, reproductive and child health
25.	National Health programs-II Respectful maternity care, LAQSHYA guidelines

Third MBBS part II

Total Teaching hours:

A. Lectures: 70 hours

Serial number	Topics & Subtopics
1.	Malposition: Occipito posterior presentation + DTA
2.	Face, Brow Mechanism of labour in each
3.	Malpresentations Breech
4.	Unstable lie (Transverse/ oblique)
5.	Congenital anomalies of foetus
6.	Shoulder dystocia
7.	Abnormal labour, classification, diagnosis and management.
8.	Types of pelvis, Contracted pelvis, cephalopelvic disproportion
9.	Obstructed labour, Rupture uterus causes, diagnosis and management.
10.	Instrumental vaginal deliveries+ Ref to destructive operations
11.	Caesarean section
12.	Pregnancy with previous caesarean section.
13.	Third stage complications PPH
14.	Third stage complications- inversion of uterus, Injuries to birth canal
15.	Disorders of puerperium
16.	Induction of labour,
17.	Obstetric analgesia
18.	Physiology of Puberty and Abnormal puberty
19.	Delayed puberty, precocious puberty
20.	Disorders of sexual development
21.	Menstruation and common complaints (Dysmenorrhea+ PMDD)
22.	Abnormal uterine Bleeding Endometrial polyps, hyperplasia
23.	Amenorrhea: Primary/ secondary

24.	Menopause & management, premature ovarian failure
25.	Leukorrhoea, cervical erosion, Cervicitis, vaginitis syndromic management
26.	PID, Chronic pelvic pain
27.	Genital tuberculosis
28.	PCOS
29.	Infertility-Cervical & Uterine & Tubal Factors
30.	Infertility- Ovulation Factors, Endocrine Factors, Galactorrhoea, Hirsutism
31.	ART in infertility
32.	Infertility- Male & Unexplained
33.	Benign tumours: Leiomyoma and polyps
34.	Endometriosis and adenomyosis
35.	Displacements of uterus
36.	Urinary incontinence
37.	Genitourinary fistulae

38.	Old healed perineal tear and rectovaginal fistula
39.	Premalignant lesions of the female genital tract, Cervical intraepithelial neoplasia
40.	Screening and early detection of women's cancers including breast cancer
41.	Invasive cervical cancer
42.	Approach to a patient of post-menopausal bleeding,
43.	Uterine cancers
44.	Benign and malignant Lesions of vulva and vagina
45.	Gestational trophoblastic neoplasia
46.	Benign ovarian tumours+ including non-neoplastic enlargements of ovary
47.	Malignant ovarian tumours
48.	Principles of Chemotherapy and Radiotherapy in Gynaecology
49.	Contraception: male and female barrier methods
50.	Hormonal contraception
51.	IUDs, PPIUCD program
52.	Female sterilization, postpartum sterilization
53.	Reversal of sterilization male and female
54.	Contraception in special populations
55.	MTP: Act, first trimester procedures
56.	MTP second trimester procedures
57.	Neonatal Asphyxia, convulsions in the new-born

58.	Neonatal resuscitation
59.	Neonatal Jaundice + Birth injuries
60.	Imaging in Obstetrics
61.	Imaging in gynaecology
62.	Pharmacotherapeutics in obstetrics
63.	Principles of gyn-surgical care- pre op care

64.	Principles of gyn surgical care-post op care
65.	Critical care in Obstetrics, appropriate use of blood and blood products, their complication and management
66.	PC PNDT act
67.	Examination of the sexual assault survivor
68.	Domestic Violence act and role of gynaecologist Gender
69.	Medicolegal issues related to Obstetrics and gynaecology
70.	Adoption acts

Course Content

**Subject: Obstetrics and Gynaecology
Gyn skills**

Clinical Postings: phase II 4 weeks – (Mon-Fri) phase III-1- 4 weeks – (Mon-sat) phase III-2 -12 weeks – (Mon-sat)

Phase II Skill	Topic	Suggested Teaching learning method	Hours	Student should complete this skill by end of mentioned phase
Obtain a logical sequence of history, and perform a humane and thorough clinical examination, excluding internal examinations (per rectal and per-vaginal) K/S SH	History taking in obstetrics	Bed side clinics	15 hours (1 week)	II
Determine gestational age, EDD and obstetric formula K/S SH	Informed consent for examination			
Obtain informed consent for any examination / procedure S SH	obstetric examination and provisional diagnosis	Mannequin/ demonstration on patient		
Arrive at a logical provisional diagnosis after examination K/S SH				

Assess and counsel a patient in a simulated environment regarding appropriate nutrition in pregnancy K/S SH	Nutritional counselling in pregnancy	Case based learning.	3 hrs	II
History taking in gynaecology, demonstrate P/S, P/V examination		Bed side clinic /OPD demonstration, skill lab for PS PV practice	3 hrs	II
Describe and demonstrate pelvic assessment in a model K/S SH	Maternal pelvis Pelvic assessment Foetal skull	Model,	3 hrs	II
Describe and demonstrate clinical monitoring of maternal and foetal well-being K/S SH	Antepartum monitoring of foetal wellbeing- screening, USG doppler, NST, BPP,	Demonstration	3 hrs	II
Demonstrate the stages of normal labour in a simulated environment / mannequin	Mechanism of labour Management of Labour stage 1 Intrapartum monitoring of foetal wellbeing- Partogram, CTG	Skill lab Models and mannequins Labour room demonstrations	15 hrs	II
Demonstrate the correct technique to perform artificial rupture of membranes in a simulated / supervised environment S SH	ARM			
Demonstrate the correct technique to perform and suture episiotomies in a simulated/ supervised environment S SH	Management of labour stage 2- Episiotomy			
Organise antenatal clinics K/S KH	Antenatal clinic, (set up of OPD) Routine antenatal investigations, Antenatal care	OPD tour, Demonstration of the set up and how OPD functioning is carried out	3 hrs	II

Diagnose and provide emergency management postpartum haemorrhage in a simulated / guided environment K/S SH	Management of labour stage 3 Emergency management of PPH oxytocics			
Conduction of 2 exams and feedback			15 hours	
		Phase 2 clinical posting Total	60 hours (4 weeks Mon - Fri)	

Observe and assist in the performance of outlet forceps application of vacuum and breech delivery K/S/A/C SH	Forceps and vacuum, breech delivery	Mannequins and models skill lab	3 hrs 3 hrs	III-1
Organise postnatal and well-baby clinics K/S KH	Post-natal clinic and well-baby clinic. PNC case Normal and abnormal Puerperium,	OPD visit Bed side clinics, case-based learning	3 hrs 3 hrs 3 hrs	III-1
Counsel in a simulated environment, care of the breast, importance and the technique of breast-feeding S/A/C SH	Breast care, technique of breast feeding	Bed side clinic	3 hrs	III-1
Demonstrate the correct technique of urinary catheterisation in a simulated/ supervised environment S SH	Female urinary catheterization	Mannequin/ demonstration, Video demonstration	1 hr	III-1
Observe and assist in the performance of Dilatation & Curettage (D&C) K/S/A/C SH	Dilatation and curettage	OT procedure, video	2 hrs	III-1

		demonstration		
Observe and assist in the performance of Endometrial aspiration - endocervical curettage (EA-ECC) K/S/A/C SH	Endometrial and endocervical curettage	OT procedure, video demonstration	3 hrs	III-1

Plan and institute a line of treatment, which is need based, cost effective and appropriate for common conditions taking into consideration (a) Patient (b) Disease (c) Socio-economic status (d) Institution/ Governmental guidelines. K/S SH	Cost effective approach	Case based learning	3 hrs	III-1
Demonstrate interpersonal and communication skills befitting a physician in order to discuss illness and its outcome with patient and family A/C SH	Doctor patient communication	Role play, OPD visit	3 hrs	III-1
Demonstrate ethical behaviour in all aspects of medical practice. A/C SH	Ethics in medical practise	Case based learning	3 hrs	III-1
Write a proper referral note to secondary or tertiary centres or to other physicians with all necessary details. S SH	Referral note	Case based learning	3 hrs	III-1
Assess the need for and issue proper medical certificates to patients for various purposes K/S/A/C KH	Issue Medical certificates	Case based learning	3 hrs	III-1
	Cover 6 cases mentioned in III-2		18 hrs	
Conduction of 2 exams and feedback			15 hours	
		Phase III-1 clinical posting Total	72 hours (4 weeks -Mon - Sat)	
Revision of all topics in phase II			45 hrs	
Revision of topic 14, 15 from phase III-1			15 hrs	
Obtain history and on basis of examination findings (internal examination excluded) arrive at a logical provisional diagnosis for type of abortion	Abortions	Case based learning	3 hrs	

Write a complete case record with all necessary details S SH	Case record-....10 cases over 3 phases,	Bed side clinics/ case-based learning		III-1, III-2
	Anaemia. Drugs used in anaemia		3 hrs	
	Preeclampsia, Antihypertensives in pregnancy		3 hrs	
	Eclampsia anticonvulsants in pregnancy		3 hrs	
	IUGR, foetal wellbeing tests		3 hrs	
	Multifetal gestation, Breech,		3 hrs 3 hrs	
	Previous caesarean,		3 hrs	
Preterm, tocolytics	3 hrs 6 hrs			
Prolonged labour induction of labour and drugs used in induction				
Diagnose and provide emergency management of antepartum in a simulated / guided environment K/S	placenta previa case	Bed side clinics/ case	6 hrs	III-1/2

SH	abruptio placentae case Emergency management of APH with placenta previa case	based learning		
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Demonstrate the correct use of appropriate universal precautions for self-protection against HIV and hepatitis and counsel patients S SH	HIV in pregnancy Universal precaution, PPTCT, counselling in HIV	Case based learning Demonstration on PPTCT centre visit	3 hrs 3hrs	III-2
Recognize situations, which call for urgent or early treatment at secondary and tertiary centres and make a prompt referral of such patients after giving first aid or emergency treatment. K/S SH	Identifying a high-risk pregnancy	Case based learning	3 hrs	III-2
Observe and assist the conduct of a normal vaginal delivery S P	Normal vaginal delivery-2 cases in log book	Labour room	6 hrs	III-2
Observe and assist in the performance of a Caesarean section K/S/A/C SH	Caesarean section	OT procedure/ video demonstration	3 hrs	III-2
Write a proper discharge summary with all relevant information S SH	Discharge summary. VD, CS, Gynae case	Case based learning	3 hrs	III-2
Obtain a PAP smear in a simulated environment S SH	PAP smear	Cancer detection OPD/ video demonstration	3 hrs	III-2
Demonstrate the correct technique of punch biopsy of uterus in a simulated/ supervised environment S SH	Cervical biopsy			III-2
Describe and demonstrate the screening for cervical cancer in a simulated environment K/S SH	Cervical cancer screening, VIA, VILI, Colposcopy			III-2
Demonstrate the correct technique to insert and remove	Contraception	Mannequin/	6 hrs	III-2

an IUD in a simulated/ supervised environment S SH	methods, Intrauterine contraceptive device insertion and removal	video demonstration / demonstration small group		
counsel on methods of safe abortion.	Counselling for safe abortion		3 hrs	III-2
In a simulated environment administer informed consent to a person wishing to undergo Medical Termination of Pregnancy S/A/C SH	Informed consent for MTP, MTP act, forms	Demonstration OT	3 hrs	III-2

	to be filled	procedure		
Observe and assist in the performance of MTP in the first trimester and evacuation in incomplete abortion K/S/A/C SH	Suction and evacuation (spontaneous abortion, first trimester MTP)			III-2
Lap sterilization K/S/A/C KH	Lap sterilization-1 case of sterilization	OT procedure/ video demonstration	3 hrs	III-2
Counsel in a simulated environment, contraception and puerperal sterilisation S/A/C SH	Counselling for contraception sterilization. Puerperal sterilization (case-based learning)	Case based learning Family welfare clinic	3 hrs	III-2
Organise family welfare clinics K/S KH	Family welfare clinic			III-2
History taking in gynaecology, Reaching a provisional diagnosis	Gynaecology case Vaginitis Fibroid uterus Genital prolapse Infertility	Case based learning	3 hrs 3 hrs 3 hrs 3 hrs	II

	Adnexal mass		3 hrs	
	Abnormal uterine bleeding(O)		3 hrs	
	Post-menopausal bleeding		3 hrs	
	Cancer cervix		3 hrs	

Observe and assist in the performance of Laparotomy K/S/A/C SH	Exploratory laparotomy	OT procedure/ video demonstration	3 hrs	III-2
Observe and assist in the performance of Hysterectomy – abdominal/vaginal K/S/A/C SH	Vaginal hysterectomy, abdominal hysterectomy	OT procedure/ video demonstration	6 hrs	III-2
Laparoscopy K/S/A/C KH	laparoscopy	OT procedure/ video demonstration	3 hrs	III-2
Hysteroscopy K/S/A/C KH	hysteroscopy	OT procedure/ video demonstration	3 hrs	III-2
	Revision drugs in obstetrics and gynaecology		3 hrs	

	Revision instruments		3 hrs	
	Revision contraception		3 hrs	
	specimen		3hrs	
Demonstrate the steps of neonatal resuscitation in a simulated environment S SH	Neonatal resuscitation			Paediatrics
	Conduction of exams and feedback and miscellaneous		24 hrs	
	Phase III-2 clinical posting Total		216 hrs (12 weeks Mon-Sat)	

Course Content

Subject: Obstetrics and Gynaecology

(Based on Indian Gazette on CBME and Medical Council of India, Competency based Undergraduate curriculum for the Indian Medical Graduate, 2018. Vol. 3; page nos. 102-129)

Self-directed learning (SDL)

Medical council directs to dedicate 5 hrs in third phase part 1 and 15 hrs in third phase part2 for self-directed learning in OBGY.

The record of these SDL sessions should be included in Logbook as reflections of the session

Small group teaching/tutorials

Medical council directs to dedicate 35 hrs in third phase part 1 and 125 hrs in third phase part2 for small group teaching/tutorials/ integrated teaching/ seminars in OBGY.

Suggested topics:

Dummy Pelvis 4
Obstetrics specimens 4
Gynae specimens 4
X-rays & HSG 2
NST/ CTG 2
Obstetrics Instruments 3
Gynae Instruments 4
Forceps 1
Vacuum 1
Partograph 2
NST, CTG 2
Drugs in obstetrics 3
Gynae drug 2
Contraception 4
Sterilization 2
Minor procedures 2

Apart from this SGT, can comprise of MCQ solving, group seminars, poster making, skit making,

AETCOM

Medical council directs to dedicate 28 hrs + 16 hrs SDL in third phase part 2 for AETCOM. Out of these each subject gets 7 hours + 4 hrs SDL

As decided by university OBGY department will cover module 4.2 and 4.7 out of 9 modules mentioned in AETCOM booklet for phase III part 2.

Internal Assessment

Phase II	IA – 1 -Exam			IA – 2 -Exam		
	Theory	Practical EOP	Total Marks	Theory	Practical	Total Marks
Second MBBS	50	50	100	50	50	100
Phase III Part I	IA – 3 Exam			IA – 4 - Exam		
	Theory (January)	Practical EOP	Total Marks	Theory (April)	Practical	Total Marks
Third MBBS Part I	50	50	100	50	50	100
Phase III Part II	IA – 5 - Exam			Prelim Examination		
	Theory (May)	Practical EOP (after 8 weeks posting)	Total Marks	Theory (November)	Practical	Total Marks
Third MBBS Part I	100	100	200	100 x 2 papers = 200	200	400

**Internal Assessment Practical Examinations
II MBBS**

Internal Assessment - 1

OBGY

Subject: OBGY Practical (IA – 1)					
Spotting	OSCE 1	OSCE 2	Viva	Journal & log book	Practical Total
10	10	10	10	10	50

OSCE Stations to include Signs of General examinations, Local examinations, Psychomotor skills and Communication skills.

Subject: OBGY Practical (IA – 2)					
Long Case					
History	Examination	Investigation	Treatment	AETCOM	Practical Total
10	10	10	10	10	50

Subject: OBGY Practical (IA – 3)					
Spotting	OSCE 1	OSCE 2	Viva	Journal & log book	Practical Total
10	10	10	10	10	50

OSCE Stations to include Signs of General examinations, Local examinations, Psychomotor skills and Communication skills.

Subject: OBGY Practical (IA – 4)									
Long Case									
History	Examination		Investigation	Treatment			AETCOM	Practical Total	
10	10		10	10			10	50	
Subject: OBGY Practical (IA –5)									
Long Case (Obstetrics)		Gynaecology Case	Family Planning	Journal & log book			Practical Total		
50		20	20	10			100		
Subject: OBGY Practical (Prelim)									
ANC Case	Gynaecology Case		PNC / Post – Op Case	Family Planning Viva	Obstetrics Table Viva	Gynae Table Viva	Spotting (2 x 10 spots)	Journal & log book	Practical Total
50	25		20	25	20	20	20	20	200
Subject: OBGY Practical (Final)									
ANC Case	Gynaecology Case (Diagnosis and discussion)		PNC / Post – Op Case (Diagnosis and discussion)	Family Planning Viva	Obstetrics Table Viva	Gynae Table Viva	Spotting (4 x 10 spots)	Practical Total	
50 *	25		20	25	20	20	40	200	

* 10 marks each for history, examination, AETCOM, investigation & treatment.

1. There shall be 6 internal assessment examinations in OBGY.
2. The pattern of question paper for internal assessment, except prelim examination is attached at the end. Pattern of the preliminary examination shall be similar to the University examination.

3. Internal assessment marks for theory and practical will be converted to out of 50 (theory) +50 (practical). Internal assessment marks, after conversion, should be submitted to university within the stipulated time as per directives from the University. **Conversion Formula for calculation of marks in internal assessment examinations.**

	Theory	Practical
Phase II	100	100
Phase III/I	100	100
Phase III/II	300	300
Total	500	500
Conversion out of	50	50
Conversion formula	Total marks in 6 IA theory examinations /10	Total marks in 6 IA Practical examinations /10
Eligibility criteria after conversion	20	20
	Combined theory + Practical = 50	

4. While preparing Final Marks of Internal Assessment, the rounding-off marks shall be done as illustrated in following table.

Total Internal Assessment Marks	Final rounded marks
33.01 to 34.00	34

5. Students 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 order to be eligible for appearing at the final University examination.
6. Internal assessment marks will not to be added to marks of the University examinations and will be shown separately in mark list.

7. Remedial measures

A. Remedial measures for non-eligible students

- i) At the end of each internal assessment examination, students securing less than 50% marks shall be identified. Such students should be counselled at the earliest and periodically.
- ii) Extra classes for such students may be arranged. If majority of the students are found to be weak in a particular area, then extra classes will be scheduled for all such students. Even after these measures, if a student is failed to secure 50% marks combined in theory and practical (40% separately in theory and practical) after prelim examination, the student shall not be eligible for final examination.
- iii) Non eligible candidates are offered to reappear for repeat internal assessment examination/s, which shall be conducted 2 months before next University examination. The pattern for this repeat internal assessment examination shall be similar to the final University examination. Only the marks in this examination shall be considered for deciding the eligibility criteria. Following conversion formula shall be used for converting the marks.

	Theory	Practical
Remedial examination (as per final examination pattern)	200	200
Conversion out of	50	50
Conversion formula	Marks in remedial theory examinations /4	Marks in remedial Practical examinations /4
Eligibility criteria after conversion	20	20
	Combined theory + Practical = 50	

B. Remedial measures for absent students:

- i. If any of the students is absent for any of the 6 IA examinations due to any reasons, following measures shall be taken.
- ii. The student is asked to apply to the academic committee of the college for re-examination, through HOD, to ascertain the genuineness of the reason for absentee.

- iii. If permitted by academic committee, an additional examination for such students is to be conducted after prelims examination. Marks for such additional examination shall be equal to the missed examination.
- iv. Even if a student has missed more than one IA examination, he/she can appear for only one additional IA examination. In such scenario, eligibility should be determined by marks obtained in internal assessment examinations for which the candidate has appeared, without changing the denominator.

**Format for Internal Assessment
Theory Examination**

IA – 1, IA – 2, IA – 3 & IA - 4

Question No.	Type of Question	No. of Questions (no. To be solved)	Max. Marks
1.	MCQ	10	10 (1 marks each)
2.	SAQ	6 (Any 5 out of 6)	25 (5 marks for each question x 5 questions)
3.	LAQ	1 (Compulsory)	15
		Total	50

**Format for Internal Assessment
Theory Examination IA - 5**

Question No.	Section	Type of Question	No. of Questions	Max. Marks
1.	A	MCQ	20	20 (1 marks each)
2.	B	LAQ	4 (Any 3 out of 4)	45 (15 marks for each question x 3 LAQ)
3.	C	SAQ	7 (Any 6 out of 7)	30 (5 marks for each question x 6 SAQ)
4.	C	SAQ	1 question from AETCOM	5
			Total	100

Format for Prelim & Final Theory Examination Paper I & II

Question No.	Section	Type of Question	No. of Questions	Max. Marks
1.	A	MCQ	20	20 (1 marks each)
2.	B	LAQ	4 (Any 3 out of 4)	45 (15 marks for each question x 3 LAQ)
3.	C	SAQ	7 (Any 6 out of 7)	30 (5 marks for each question x 6 SAQ)
4.	C	SAQ	1 question from AETCOM	5
			Total	100

I. BOOKS TO BE REFERRED.

a) Obstetrics

1. Holland & Brews Manual of Obstetrics
2. Oxorn-Foote Human Labor & Birth
3. DC Dutta's Textbook of Obstetrics

b) Gynecology

1. Shaw's Textbook of Gynaecology
2. Bhaskar Rao & Roy Choudhary's Clinical Gynecology
3. DC Dutta's Textbook of Gynecology

c) Contraception & Family planning

1. Practice of Fertility control by Chaudhuri S.K.



SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)

(Established under section 3 of the UGC Act 1956)

Re - accredited by NAAC with 'A' Grade

Founder: Prof. Dr. S. B. Mujumdar, M.Sc.,Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

Course Name: Ophthalmology

Course Code: Medical - OP

Faculty: Health Sciences

Programme Type: UG

Sub-Committee (Specialization): Medical

Goal:

The broad goal of undergraduate teaching in ophthalmology is to provide such knowledge and skills to the student that shall enable him/her to practice as an internist and as a primary eye care physician, and also to function effectively as a community health leader to assist in the implementation of National Programme for the Prevention of blindness'

Objectives:

1. **Knowledge:** At the end of the course, the student will have knowledge of :
 - a) Common problems affecting the eye
 - b) Magnitude of blindness in India and its main causes
 - c) Principles of management of major ophthalmic emergencies
 - d) Major systemic diseases affecting the eye
 - e) Effect of local and systemic diseases on the patient's vision and the necessary action required to minimise the sequelae of such diseases
 - f) Adverse drug reactions with special reference to ophthalmic manifestations

- g) National programme for prevention of blindness and its implementation at various level
- h) Eye care education for prevention of eye problems
- i) Role of Primary Health Centres
- j) Organisation of primary health care and the functioning of the Ophthalmic assistant
- k) Integration of the National programme for control of blindness with the other National health programmes
- l) Eye bank organization

2. **Skills:** At the end of the course, the student will be able to:

- a) Elicit a history pertinent to general health and ocular status.
- b) Perform diagnostic procedures such as visual acuity testing, examination of the eye, tonometry staining for corneal pathology, confrontation perimetry, subjective refraction including correction for presbyopia and aphakia, direct ophthalmoscopy, conjunctival smear examination and cover test.
- c) Diagnose and treat common problems affecting the eye
- d) Interpret ophthalmic signs in relation to common systemic disorders
- e) Perform therapeutic procedures such as subconjunctival injection, corneal/conjunctival foreign body removal, carbolic cautery for corneal ulcers, nasolacrimal duct syringing and tarsorrhaphy.
- f) Provide first aid in major ophthalmic emergencies
- g) Organise community surveys for visual health
- h) Organise primary eye care services through Primary Health Centres
- i) Use effective means of communication with the public and individuals to motivate them for Surgery for cataract, glaucoma etc and for eye donation.
- j) Establish rapport with his seniors, colleagues and paramedical workers, so as to effectively function as a member of the eye care team.

OPHTHALMOLOGY SYLLABUS

The topics will be covered as per GMER guidelines.

1. Visual acuity

- Refractive Errors & Method of correction

- Refractive surgeries, its principles and indications.
- Amblyopia, its types and mechanism of strabismic amblyopia.

2. Disorders of Lids

- Inflammations of Glands, Blepharitis.
- Entropion. Ectropion.
- Symblepharon.
- Ptosis
- Lid lag, Lagophthalmos
- Preseptal cellulitis
- Hemangioma, dermoid

3. Disorders of Orbit

- Proptosis , causes and management
- Orbital cellulitis
- Ocular tumour ; types , investigations, referral.
- Cavernous sinus thrombosis

4. Disorders of the Lacrimal Apparatus

- Dry Eye
- Naso Lacrimal Duct Obstruction
- Dacryocystitis

5. Disorders of Conjunctiva

- Conjunctivitis , Ophthalmia Neonatorum, Trachoma, Vernal catarrh
- Degenerations :- Pinguecula and Pterygium
- Symblepharon

6. Cornea

- Infective keratitis: Bacterial, Fungal, Viral
- Corneal edema
- Causes of corneal blindness, keratoconus, corneal opacities

- Keratoplasty
- Tarsoraphy, indications and methods
- Eye banking and eye donation , protocols

7. Sclera

- Episcleritis.
- Scleritis.
- Staphyloma.

8. Uvea

- Classification of Uveities: Acute and chronic, Granulomatous and non Granulomatous, Anterior and posterior uveitis
- Gen. Etiology, Investigation and Principles Management of Anterior Uveitis.
- Gen. Etiology, Investigation and Principles Management of Posterior Uveitis.
- Panophthalmitis and Endophthalmitis.
- Common conditions affecting anterior chamber and their management.

9. Lens

- Surgical anatomy and the metabolism of lens.
- Classification & surgical management of cataract, its complications
- Congenital cataract
- Senile cataract
- Metabolic & complicated cataract

10. Glaucoma

- Angle of anterior chamber, its clinical correlates and aqueous Humour, Dynamics and IOP
- Difference between hyphaema and hypopyon
- Classifications of Glaucoma: Congenital, primary and secondary
- Management of Angle closure Glaucoma
- Management of Open Angle Glaucoma

11. Vitreous

- Vitreous opacities and Vitreous Haemorrhage
- Vitreous detachments

12. Intraocular Tumours

- Retinoblastoma
- Malignant melanoma

13. Retina

- Vascular occlusions of retina
- Retinopathies : Diabetic, Hypertensive Toxaemia of Pregnancy
- Retinitis Pigmentosa
- Retinal detachment
- Lasers in retina

14. Optic Nerve

- Optic Neuritis
- Papilloedema
- Optic Atrophy

15. Ocular Mobility:

- Extrinsic Muscles & Movement of Eye Ball.
- Squint : Gen Aetiology, Diagnosis and principles of Management.
- Paralytic and Non Paralytic Squint
- Heterophoria & Diplopia

16. Ocular Trauma

- Blunt Trauma
- Perforating Trauma
- Chemical Burns
- Sympathetic Ophthalmitis

Integrated Lectures:

1. Physiology of vision (Physiology)
2. Enumerate, Describe and Discuss types of corneal ulceration. (Anatomy)
3. Role of refractive error in headache patients, indications for referral. (Medicine)
 - a. Enumerate, Describe and Discuss the cause of avoidable blindness and the National Programs for control of blindness including vision 2020 (PSM)

Clinical ward teaching:

1. Demonstrate assessment of visual acuity for distance, near vision, colour vision, pin hole test, menace and blink reflexes.
2. Demonstrate symptoms and clinical signs of chalazion, internal hordeolum, blepharitis, preseptal cellulitis, dacryocystitis, hemangioma, dermoid, ptosis, entropion, lid lag, lag ophthalmos.
3. Demonstrate procedures of, Bell phenomenon, assessment of entropion and ectropion, regurgitation test, massage for congenital dacryocystitis, epilation.
4. Case of red eye
5. Demonstrate technique of corneal foreign body removal.
6. Demonstrate technique of eye drop instillation, Digital Tonometry
7. Demonstrate and perform technique of eye irrigation and Ocular bandaging.
8. Counseling of eye donation in simulated environment.
9. Identify and demonstrate the clinical features and distinguish and diagnose common clinical conditions affecting the anterior chamber
10. Demonstrate the correct technique of ocular examination in a patient with cataract.
11. To participate in the team for cataract surgery Administer informed consent and counsel patients for cataract surgery in a simulated environment (AETCOM)
12. Demonstrate the correct technique of a fundus examination and describe and distinguish the fundoscopic features in a normal condition and in condition Causing an abnormal retinal exam with a cataract

LIST OF BOOKS

TEXTBOOKS

Clinical Ophthalmology - A K Khurana.

Parson's diseases of the Eye - 19th Edition

REFERENCE BOOKS

Clinical Ophthalmology - Kanski

Clinical Ophthalmology - Yanoff and Duker

INTERNAL ASSESSMENT OF OPHTHALMOLOGY

	Phase	EXAM	Total marks
Internal Assessment -1	Phase II MBBS	Practical's End of 1st Postings	50
Internal Assessment -2	III MBBS Part I	Theory (middle of session)	50
		Practical's End of 2 nd Postings	50
Internal Assessment -3	III MBBS Part I Prelims	Theory	100
		Practical's	100

Calculation :

Theory 150 (B+D) to be converted out of 20 = $150/7.5$

Practical 200 (A+C+E) to be converted out of 20 = $200/10 = 10$

Second MBBS Practical Marks Structure Internal Assessment Examinations

Seat No.	Long case	OSCE	Dark room instruments	Operative instruments	Viva	Log book viva	Journal viva	Practical Total
Max. Marks	20	10(4 stations)	2.5	2.5	5	5	5	50

Internal Assessment Examinations (Theory)
III (PART 1) MBBS

Theory paper will be from topics covered.	MCQ	LAQ Any 2 out of 3 Questions 10 marks each	SAQ 4 questions (1 question AETCOM) 5 marks each	Theory Total
	10*1	2*10	4*5	
Max. marks Marks	10	20	20	50

Prelim & University Examination (Theory)
III (PART 1) MBBS

Paper 1	(A)	(B)		(C)		Theory Total
	MCQs on all topics of the paper I	Lids, Orbit, Conjunctiva, Cornea, Refraction, Lens	Glaucoma, Retina, Squint, Optic nerve, Trauma, Uvea			
		LAQ Any 2 out of 3	SAQ ALL 4 Compulsory (1 question of AETCOM)	LAQ Any 2 out of 3	SAQ ALL 4 Compulsory	
	10*2	2*10	4*5	2*10	4*5	
Max. Marks	20	20	20	20	20	100

Phase III-I MBBS Practical Mark's Structure (Prelim & University)

Practical						Oral/Viva			
Seat No.	Long case	OSCE (4 stations)	Log book viva	Journal viva	Total	Dark room instruments	Operative instruments	Total	Practical & Oral
Max Marks	40	20	10	10	80	10	10	20	100

There will be 2 internal assessment examinations in ophthalmology.

It is mandatory for students to appear for all of the internal assessment examinations in respective phases.

Conversion formula for calculation of marks in internal assessment examinations

Formula for theory (out of 150/7.5) = Total marks-----/20

Formula for practical's (out of 200/10) = Total marks-----/20

	Theory	Practical
Phase II	-	50
Phase III/1	50	50
Prelim	100	100
Total	150	200
Conversion	20	20

Students must secure at least 50% marks of the total marks (combined in theory and practical and not less than 40% marks in theory and practical separately) assigned for internal assessment in order to be eligible for appearing at the final university examination.

Clinical assessment will be done at the end of postings.

Note: - At least one question in each paper of the clinical specialties should test knowledge - competencies acquired during the professional development programme (AETCOM module); Skills competencies acquired during the Professional Development programme (AETCOM module) must be tested during clinical, practical and viva.

It is compulsory to obtain 50% marks in theory.

It is mandatory to obtain 50% marks in theory + viva/oral.

Eligibility to appear for Professional examination

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

a) Attendance:

1. Attendance requirement are 75% in the theory and 80% in practical /clinical for eligibility to appear for the examination In that subject. In subject 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.



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Founder: Prof. Dr. S. B. Mujumdar, M.Sc.,Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

Course Name: Orthopaedics

Course Code: Medical - OR

Faculty: Health Sciences

Programme Type: UG

Sub-Committee (Specialization): Medical

GOAL:

The goal of teaching orthopaedics to undergraduate students is to provide them with the knowledge and skill in orthopaedic surgery that will enable them to diagnose and manage common orthopaedic conditions

The students should have the ability to diagnose presence of fracture, dislocation, osteomyelitis, acute poliomyelitis and common congenital deformities such as congenital talipes equinovarus (CTEV) and dislocation of hip (CDH).

1. OBJECTIVES:

A. KNOWLEDGE: The student should be able to:

1. Diagnose presence of fracture and dislocation.
2. To detect and manage common infections of bones and joints.
3. Identify congenital skeletal anomalies and to refer them for appropriate correction or rehabilitation.
4. Recognize metabolic bone diseases
5. Explain etiogenesis, clinical fractures, diagnosis of neoplasm affecting bones
6. Have knowledge of the medico-legal aspect of trauma

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

1. Give first aid measures for common fractures and sprains and manage uncomplicated fractures of clavicle, Colles's, forearm, phallanges.
2. Perform techniques of splinting, plaster, immobilization.
3. Manage common bone infections, learn indications for sequestration, amputations and corrective measures for bone deformities.
4. Manage rehabilitation for Polio, Cerebral Palsy and Amputation.

C. APPLICATION:

1. Be able to perform certain orthopaedic skills like application of plaster, splints, tractions, reduction of fractures.
2. Give advise of skeletal and related conditions.

D.INTEGRATION:

1. Integration with Anatomy, Surgery, Pathology, Radiology, Forensic Medicine and General Medicine.

E. PATIENT DOCTOR RELATION:

Undergraduates should learn the skills to communicate with the patient and his/her relatives regarding the disease condition, its severity and treatment

2. TEACHING LEARNING ACTIVITIES

Lectures:

Orthopaedic Traumatology:

1. Fracture: Definition, Classification, Principles of Management
2. Complications of fracture
3. Management of polytrauma
4. Fracture healing, delayed union, Non-union
5. Classification & Management of open fractures.
6. Management of fracture clavicle, dislocation of shoulder & Fracture shaft humerus
7. Classification and management of fracture proximal humerus
8. Classification of injuries around elbow & management of Superacondylar fracture & dislocation of elbow
9. Monteggia fracture dislocation and Gallaezzi fracture
10. Fracture radius and ulna
11. Volkamann's Ischaemic Contracture
12. Fracture of lower end of radius, fracture scaphoid and metacarpals
13. Fracture pelvis & dislocation of hip
14. Fracture neck of femur and intertrochanter fracture femur
15. Fracture shaft of femur and tibia
16. Management of fracture patella
17. Management of ankle dislocation and ankle fractures
18. Fracture calcaneum, fracture metatarsal and phalange

Orthopaedic Diseases:

1. Internal Derangements of Knee
2. Ligament injuries of ankle & foot
2. Amputations
3. Congenital malformations:CTEV,Torticollis,CDH,Pseudoarthrosis tibia
4. Disorders of the hip : coxa vara, perthes diseases
5. Deformities of the spine

6. Acute Pyogenic Osteomyelitis
7. Chronic Osteomyelitis
8. Septic Arthritis
9. Management of Rheumatoid arthritis, Ankylosing spondylitis
10. Cerebral palsy- Diagnosis and Rehabilitation
11. Management of Osteo-articular tuberculosis
12. Etiology, clinical features & principles of management of Tuberculosis of Spine
13. Poliomyelitis
14. Bone Tumours-Benign tumors
15. Bone Tumours-Malignant tumors
16. Osteoarthritis knee joint
17. Peripheral nerve injuries
18. Metabolic bone diseases-Rickets, osteomalacia, osteoporosis, Paget's disease
19. Diagnosis and management of spinal cord injury
20. Management of cervical spondylosis, lumbar spondylosis and PID
21. Scoliosis and spina bifida

Integrated Seminars:

Combined interdisciplinary seminars on subjects like Arthritis, Tuberculosis, Osteoporosis, Bone tumors, Polytrauma

ACQUISITION OF BASIC ORTHOPAEDIC SKILLS -PRACTICAL-

The undergraduate learns:

1. Application of splints and tractions
2. Application of plaster, Slabs and casts
3. Manipulative reduction of common fractures and dislocations.
4. Aseptic techniques of joint fluid aspiration.

3. TEACHING HOURS:

Clinical postings- **TEN** weeks.

II MBBS (5th semester) – 4 WEEKS

PREFINAL (6th semester)- 4 WEEKS

FINAL (9th semester)- 2 WEEKS

THEORY TEACHING HOURS – 100 HOURS

TEACHING METHODOLOGY

40 hours

1. Opd Clinics
2. Bed Side Teaching.
3. Operative room learnings.
4. Demonstrating clinical skills.

30 hours

1. Symposium and seminars
2. Group discussion
3. Ward rounds

30 hours

1. Theory classes using audio video visual aids.

Assessment - Refer Assessment of General Surgery.

1. Conducting theory and clinical tests,
2. Internal assessment tests including practicals

5. Books Recommended**A. Text books**

1. Maheshwari – Essential Orthopaedics
2. Ebnesar – Textbook of Orthopaedics
3. Das- Clinical methods in Surgery and Orthopaedics
4. Apleys- Testbook of Orthopaedics
5. Adams- Part 1 fractures and Part 2 Orthopaedics

B. Reference Books

1. Campbell Operative Orthopaedics
2. Rock wood & Greens- Trauma
3. Tureks Orthopaedics
4. Macray Clinical examination.



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Founder: Prof. Dr. S. B. Mujumdar, M.Sc., Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

Course Name: Pathology

Course Code: Medical - PA

Faculty: Health Sciences

Programme Type: UG

Sub-Committee (Specialization): Medical

Pathology is a branch of medical science that involves the study and diagnosis of disease. Students with comprehensive knowledge of mechanisms and causes of disease in order to achieve complete understanding of the natural history and manifestations of disease.

Objectives:

At the end of one year of training in Pathology, the MBBS student is expected to demonstrate:

Knowledge:

1. Understand the concepts of cell injury and changes produced thereby in different tissues and organs and the body's capacity for healing.
2. Understand the etiopathogenesis, the pathological effects and the clinico-pathological correlation of common infectious and non-infectious diseases.
3. Understand the concept of neoplasia with reference to the etiology, gross and microscopic features, diagnosis and prognosis in different tissues and organs of the body
4. Have a knowledge of common immunological disorders and their resultant effects on the human body

5. Have an understanding of the common haematological disorders and the investigations necessary to diagnose them and determine their prognosis

Skills:

1. Correlate normal and altered morphology (gross and microscopic) of different organ systems in different diseases and extent needed for understanding of disease processes and
and
2. Their clinical significance.
Perform and interpret in a proper manner the basic clinico-pathological procedures.
3. Know the principles of collection, handling and dispatch of clinical samples from patients in a proper manner

Attitude, Ethics and communication:

1. To bring about holistic development of students in terms of learning basic sciences in order to provide excellent and prompt patient care.
2. To blend the passionate medical expertise with compassionate and personalised patient care.

PATHOLOGY SYLLABUS:

The topics will be covered as per proposed GMER guidelines.

1. Introduction to Pathology**2. Cell Injury:**

- Cell injury: Causes and Mechanism: Ischemic, Toxic.
- Reversible cell injury: Types, morphology: Swelling, vacuolation, hyaline, fatty change.
- Irreversible cell injury: Types of Necrosis

3. Amyloidosis and Calcification:

- Calcification: Dystrophic and Metastatic
- Amyloidosis: classification, Pathogenesis, Morphology

4. Inflammation and Repair:

- Acute inflammation: Features, causes, vascular and cellular events.
- Morphologic variants of acute inflammation
- Inflammatory cells and Mediators
- Chronic inflammation: Causes, types, nonspecific and Granulomatous with examples
- Wound healing by primary and secondary union, factors promoting and delaying the process
- Healing at specific sites including bone healing

5. Circulatory Disturbances:

- Oedema: Pathogenesis and types
- Chronic venous congestion: Pathogenesis and changes in Lung, Liver, Spleen
- Thrombosis and Embolism: Formation, Fate and Effects
- Infarction: Types, common sites, Gangrene
- Shock: Pathogenesis, Types, Morphologic changes
- Derangements of Fluid and electrolyte imbalance

6. Growth Disturbances and Neoplasia:

- Atrophy, Hypertrophy, Hyperplasia, Hypoplasia, Metaplasia, Malformation, Agenesis, Dysplasia
- Neoplasia: Classification, Histogenesis, Biologic Behaviour: Benign and Malignant; Carcinoma and Sarcoma
- Malignant Neoplasia: Grades and Stages, Local and distant spread
- Carcinogenesis: Environmental carcinogens, chemical, viral, occupational, Heredity and cellular oncogenes
- Tumour and Host Interactions: Systemic effects including paraneoplastic syndromes, Tumor immunology
- Laboratory diagnosis: Cytology, Biopsy, Tumor markers

7. Immunopathology:

- Immune system: organisation, cells, antibodies and regulation of immune responses.
- Hypersensitivity: types and examples, Antibody and cell mediated tissue injury with examples.
- Primary immunodeficiency
- Secondary Immunodeficiency including HIV Infection
- Auto-immune disorders like systemic lupus erythematosus; organ specific and non-organ specific such as polyarteritis nodosa, Hashimoto's disease.
- Tumor Immunity g) Organ transplantation: Immunologic basis of Rejection and Graft versus host reaction

8. Infectious Diseases:

- Mycobacterial Diseases: Tuberculosis and Leprosy
- Bacterial diseases: Pyogenic, Typhoid, Diphtheria, Gram negative infection, Bacillary dysentery, Syphilis
- Viral: Polio, Herpes, Rabies, Measles; Rickettsial, Chlamydial infection
- Fungal diseases and opportunistic infections
- Parasitic Diseases: Malaria, Filaria, Amoebiasis, Kala-azar, Cysticercosis, Hydatid disease
- AIDS: Aetiology, modes of transmission, diagnostic procedures and handling of infected material and health education

9. Miscellaneous Disorders:

- Autosomal and sex-linked disorders with examples
- Metabolic disorders
- Protein energy malnutrition and vitamin deficiency disorders
- Radiation Injury
- Disorders of Pigment and Mineral metabolism such as bilirubin, melanin, hemosiderin

10. Hematopathology:

- Constituents of blood and bone marrow, Regulation of hematopoiesis
- Anaemia: classification and clinical features; clinical and laboratory approach to diagnosis
- Nutritional anaemias: Iron deficiency anaemia, Folic Acid/Vit B 12 deficiency anaemia including pernicious anaemia
- Hemolytic Anaemias: Classification and investigation
- Hereditary hemolytic anaemias: Thalassemia, sickle cell anaemia
- Hereditary hemolytic anaemias: hereditary spherocytosis, G-6-PD deficiency
- Acquired hemolytic anaemias
- Hemolytic Anaemias: Autoimmune, Alloimmune, Drug induced Microangiopathic and Malaria
- Aplastic Anaemia, PNH and Myelodysplastic syndrome
- Hemostatic disorders: Platelet deficiency; ITP, Drug induced, secondary
- Coagulopathies: Coagulation factor deficiency; hemophilia, DIC and anticoagulant control
- Leukocytic disorders: Leukocytosis, leukopenia, leukemoid reaction
- Acute and chronic Leukemia: Classification, Diagnosis
- Myeloproliferative disorders: Polycythemia, Myelofibrosis
- Multiple myeloma and dysproteinemias
- Blood transfusion: grouping and cross matching, untoward reactions, transmissible infections including HIV and hepatitis

11. Cardiovascular Pathology:

- Rheumatic fever and Rheumatic Heart Disease: Pathogenesis, Morphology and effects
- Infective Endocarditis: Causes, Pathogenesis and Morphology
- Atherosclerosis and Ischemic Heart Disease; Myocardial Infarction

- Diseases of blood vessels other than atherosclerosis
- Hypertension and Hypertensive Heart Disease
- Congenital Heart Disease: ASD, VSD, Fallot's tetralogy, Bicuspid aortic valve, PDA
- Pericarditis and other pericardial diseases
- Cardiomyopathy

12. Respiratory Pathology:

- Structure of Bronchial tree and alveolar walls, normal and altered lung function; concept of obstructive and restrictive lung disorders
- Inflammatory diseases of bronchi: chronic bronchitis, bronchial asthma, bronchiectasis, chronic obstructive lung disease
- Pneumonias: Lobar, Broncho, Interstitial
- Pulmonary suppuration including lung abscess: Etiopathogenesis and Morphology
- Pulmonary Tuberculosis: Primary and Secondary, Morphologic types including pleuritic
- Emphysema: Types, pathogenesis
- Atelectasis and Hyaline Membrane Disease
- Tumors: Benign; Carcinoid, Malignant; Squamous cell, Oat cell, Adeno, etiopathogenesis.
- Occupational lung disorders: anthracosis, silicosis, asbestosis, mesothelioma

13. Urinary Tract Pathology:

- Renal structure, basis of impaired function, urine analysis
- Glomerulonephritis: Classification, Primary Proliferative and Non Proliferative
- Secondary Glomerulonephritis: SLE, Purpura, Polyarteritis, Amyloidosis, Diabetes
- Nephrotic Syndrome
- Acute Renal Failure: Acute tubular and cortical necrosis

- Progressive renal failure and end stage renal disease
- Pyelonephritis, Reflux Nephropathy, Interstitial Nephritis
- Renal tumors: Renal cell carcinoma, Nephroblastoma
- Renal vascular disorders, kidney changes in Hypertension
- Urinary bladder: cystitis, carcinoma
- Urinary Tract Tuberculosis
- Urolithiasis and Obstructive Uropathy
- Renal Malformations: Polycystic kidneys

14. Pathology of the Gastro-Intestinal Tract:

- Oral Pathology: Leukoplakia; Carcinoma oral Cavity and Esophagus
- Salivary gland tumors: Mixed, Adenoid cystic, warthin's
- Peptic ulcer: etiopathogenesis and complications; gastritis: types
- Tumors of stomach: Benign; Polyp, Leiomyoma, Malignant; Adenocarcinoma, Lymphoma
- Inflammatory diseases of small intestine: Typhoid, Tuberculosis, Crohn's, Appendicitis
- Inflammatory diseases of appendix and large intestine: Amoebic colitis, Bacillary dysentery, Ulcerative Colitis
- Ischemic and Pseudomembranous enterocolitis, diverticulosis
- Malabsorption: Celiac disease, Tropical sprue and other causes
- Tumours and Tumor like condition of the large and small intestine: Polyps, Carcinoid, Carcinoma, Lymphoma
- Pancreatitis
- Pancreatic tumors: Endocrine, Exocrine and periampullary

15. Liver and Biliary Tract Pathology:

- Jaundice: Types, Pathogenesis and Differentiation
- Hepatitis: Acute and Chronic, Etiology, Pathogenesis and Pathology
- Cirrhosis: Etiology, Postnecrotic, Alcoholic, Metabolic, Pathology, Morphology (Macronodular, Micronodular, Mixed), complications
- Portal Hypertension: Types including non-cirrhotic portal fibrosis and Manifestations
- Tumors of Liver: hepatocellular and metastatic carcinoma, tumor markers
- Concept of hepatocellular failure
- Diseases of the gall bladder: Cholecystitis, Cholelithiasis, Carcinoma

16. Lymphoreticular System:

- Lymphadenitis: nonspecific, Granulomatous
- Hodgkin's and Non-Hodgkin's Lymphomas: Classification, Morphology
- Diseases of the spleen: Splenomegaly-causes and effects
- Thymus: Dysgenesis, Atrophy, Hyperplasia, Neoplasia

17. Reproductive System:

- Diseases of cervix: cervicitis, cervical carcinoma, etiology, types and cytologic diagnosis
- Hormonal influences and histological appearances of different phases of menstrual cycle and the abnormalities associated with it
- Diseases of uterus: endometritis, endometrial hyperplasia and carcinoma, adenomyosis, smooth muscle tumors
- Trophoblastic disease: Hydatidiform mole, Choriocarcinoma
- Diseases of the breast: Mastitis, abscess, Fibrocystic disease, Neoplastic lesions: Fibroadenoma, Carcinoma, Phyllodes tumor
- Prostate: Nodular Hyperplasia and Carcinoma
- Ovarian and testicular tumors

- Carcinoma of penis
- Pelvic inflammatory diseases including salpingitis
- Genital Tuberculosis

18. Osteopathology:

- Bone – general considerations, reactions to injury and healing of fractures
- Osteomyelitis: Acute, Chronic, Tuberculous, Mycetoma
- Metabolic diseases: Rickets/Osteomalacia, Osteoporosis, Hyperparathyroidism
- Tumors: Primary, Osteosarcoma, Osteoclastoma, Ewing's Sarcoma, Chondrosarcoma; Metastatic
- Arthritis: Rheumatoid, Osteo and tuberculous

19. Endocrine Pathology:

- Scope of endocrine control and investigations
- Diabetes Mellitus: Types, Pathogenesis, pathology
- Nonneoplastic lesions of thyroid: Iodine deficiency goiter, autoimmune thyroiditis, thyrotoxicosis, myxedema
- Tumors of thyroid – adenoma, carcinoma: Papillary, Follicular, Medullary, Anaplastic
- Adrenal diseases: Cortical hyperplasia, atrophy, tuberculosis, tumors of cortex and medulla
- Parathyroid hyperplasia and tumors and Hyperparathyroidism
- Pituitary tumors
- Multiple endocrine neoplasia

20. Neuropathology:

- Structural Organization, specific cell types, and reaction patterns
- Inflammatory disorders: Pyogenic and tuberculous meningitis, brain abscess, tuberculoma
- CNS tumors – primary: glioma and meningioma (excluding histopathology) and metastatic
- CSF and its disturbances: cerebral edema, raised intracranial pressure

- Cerebrovascular diseases: Atherosclerosis, thrombosis, embolism, aneurysm, Hypoxia, Infarction and Hemorrhage
- Peripheral neuropathies and demyelinating disorders
- Diseases of muscles
- Traumatic lesions of CNS

PAPER WISE DISTRIBUTION OF TOPICS:

Assessment of the student will be done through theory & practical exams. The distribution of the syllabus for theory is as follows:

Paper wise distribution of topics

For Prelim & SIU Annual Examination
Year: Second MBBS Subject: Pathology

Paper	Section	Topics
I (100 marks)	A	Topics of Paper I
		General Pathology: <ol style="list-style-type: none"> 1. Cell injury and adaptation 2. Amyloidosis 3. Inflammation and repair 4. Tuberculosis and leprosy 5. Hemodynamic disturbances 6. Immunopathology 7. Neoplasia 8. Infections and infestations 9. Basic diagnostic cytology 10. Histological techniques, tissue processing 11. Genetic and pediatric diseases 12. Environmental and nutritional diseases
		Hematology <ol style="list-style-type: none"> 1. Introduction to hematology 2. Microcytic anemia 3. Macrocytic anemia 4. Hemolytic anemia 5. Aplastic anemia 6. Leukocyte disorder 7. Lymph node and spleen 8. Plasma cell disorders 9. Hemorrhagic disorders

Second MBBS
Internal Assessment
Subject: Pathology
Applicable w.e.f October 2020 onwards examination for batches
admitted from June 2019 onwards

Phase	III-Term Exam (After 3 months, Jan)			IV-Term Exam (After 7 months, May)			Prelims (July) and University Exams		
	Theory	Practical (Including 10 Marks for Journal & Log Book)	Total Marks	Theory	Practical (Including 10 Marks for Journal & Log Book)	Total Marks	Theory	Practical	Total Marks
Second MBBS	100	50	150	100	50	150	Paper 1 - 100 Paper 2 - 100	100	300

1. There will be 3 internal assessment examinations in Pathology. The structure of the internal assessment theory examinations should be similar to the structure of University examinations.
2. It is mandatory for the students to appear for all the internal assessment examinations.
3. First internal assessment examination will be held in January, second internal assessment examination will be held in May and third internal assessment examination will be held in July.
4. A student who has not taken minimum required number of tests for internal assessment each in theory and practical will not be eligible for University examinations.
5. There will be only one additional examination for absent students (due to genuine reason) after approval by the Institutional Grievances Committee. It should be taken after preliminary examination and before submission of internal assessment marks to the University.
6. Internal assessment marks for theory will be out of 400 and practical will be out of 200.

7. Reduce total theory internal assessment to 40 marks and total practical internal assessment to 40 marks. Students must secure at least 50% marks of the total marks (combined in theory and practical; not less than 40% marks in theory and practical separately) to be eligible for appearing University examination.
8. **Conversion formula for calculation of marks in internal assessment examinations**

	First IA	Second IA	Third IA (Prelim)	Total	Internal assessment marks: Conversion formula (out of 40)	Eligibility to appear for final University examination (after conversion out of 40) (40% separately in Theory Practical, 50% Combined)	
Theory	100	100	200	400	$\frac{\text{Total marks obtained}}{10}$	16 (Minimum)	Total of Theory + Practical must be 40.
Practical	50	50	100	200	$\frac{\text{Total marks obtained}}{05}$	16 (Minimum)	

While preparing final marks of internal assessment, the rounding-off marks shall done as illustrated in following table:

Internal Assessment Marks	Final rounded marks
15.1 to 15.99	16

9. Internal assessment marks will reflect as separate head of passing at the summative examination.
10. Internal assessment marks will not to be added to marks of the University examinations and will be shown separately in mark list.

Students are not expected to perform urine examination, but to interpret results. Clinical cases with urinary findings may be given to them for interpretation. **(Interpretation of multistix from given sample A/B/C) and single test performance for higher level evaluation**

Suggested OSPE stations

1. Clinical chart interpretation (Clinical Pathology) - 5 marks
2. Clinical chart interpretation (Clinical Pathology) - 5 marks
3. Clinical chart interpretation (CSF) - 5 marks
4. Clinical chart interpretation (Hematology)- 5 marks
5. Slides (3)- Hematology, benign, inflammatory- 6 marks
6. Specimens (3)- 6 marks

Redistribution of OSPE stations and marks-

1. **Clinical chart interpretation (Clinical Pathology) - 2 marks**
2. **Clinical chart interpretation (Clinical Pathology) - 2 marks**
3. **Clinical chart interpretation (Hematology)- 2 marks**
4. **Instruments- Identification, use- 2 marks**
5. **Slides (3)- Inflammatory (acute & chronic), neoplastic (benign & malignant), haematology- 6 marks**
6. **Specimens (3)- Non neoplastic & neoplastic6 -marks**

Text Books Recommended:

1. Robbin's Pathologic Basis of Diseases
2. Text-Book of Pathology by Harsh Mohan
3. Walter and Israel's General Pathology

SYMBIOSIS INTERNATIONAL UNIVERSITY, LAVALE PUNE
**FORMAT / SKELETON OF QUESTION PAPER FOR
INTERNAL , PRELIM AND UNIVERSITY
EXAMINATIONS**

1. Course and Year : Second MBBS (applicable w.e.f. September 2021 & onwards examinations)	2. Subject Code :	
3. Subject (PSP) : PATHOLOGY (TT) :		
4. Paper : I	5. Total Marks : 100	6. Total Time : 3 Hrs.

Instructions:

- SECTION "A" MCQ**
- Put in the appropriate box below the question number once only.
 - Use blue ball point pen only.
 - Each question carries **One mark**.
 - Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.

SECTION "A" MCQ (20 Marks)

- Multiple Choice Questions (Total 20 MCQ of One mark each). (At least 5 should be scenario-based MCQ) (20 x1=20)
a) b) c) d) e) f) g) h) i) j)
k) l) m) n) o) p) q) r) s) t)

SECTION "B" & "C"

- Instructions**
- Use blue/black ball point pen only.
 - Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.
 - All questions are compulsory.
 - The number to the right indicates full marks.
 - Draw diagrams wherever necessary.
 - Distribution of syllabus in Question Paper is only meant to cover entire syllabus within the stipulated frame. The Question paper pattern is a mere guideline. Questions can be asked from any paper's syllabus into any question paper. Students cannot claim that the Question is out of syllabus. As It is only for the placement sake, the distribution has been done.
 - Use a common answerbook for all sections.

SECTION "B" (40 Marks)

- Short Answer Questions (Any 4 out of 5) One question on AETCOM Module (2.4 and 2.8) (7x4=28)
a) b) c) d) e)
- Long Answer Questions (Any 1 out of 2) At least one LAQ should be structured (12x1=12)
a) b)

SECTION "C" (40 Marks)

- Short answer questions (Any 4 out of 5) (7x4=28)
a) b) c) d) e)
- Long Answer Questions (Any 1 out of 2) (At least one LAQ should be scenario-based) (12x1=12)
a) b)

**SYMBIOSIS INTERNATIONAL UNIVERSITY LAVALE PUNE
FORMAT / SKELETON OF QUESTION PAPER FOR
PRELIM AND UNIVERSITY EXAMINATION**

7. Course and Year : Second MBBS (applicable w.e.f. September 2021 & onwards examinations)	8. Subject Code :
9. Subject (PSP) : PATHOLOGY t (TT) :	
10. Paper : II	11. Total Marks : 100
	12. Total Time : 3 Hrs.

SECTION "A" MCQ

Instructions:

- 5) Put in the appropriate box below the question number once only.
- 6) Use blue ball point pen only.
- 7) Each question carries **One mark**.
- 8) Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.

SECTION "A" MCQ (20 Marks)

1. Multiple Choice Questions (Total 20 MCQ of one mark each). (At least 5 should be scenario-based MCQ) (20 x1=20)

a) b) c) d) e) f) g) h) i) j)
k) l) m) n) o) p) q) r) s) t)

SECTION "B" & "C"

Instru ctions:

- 1) Use **blue/black** ball point pen only.
- 2) **Do not** write anything on the **blank portion of the question paper**. If written anything, such type of act will be considered as an attempt to resort to unfair means.
- 3) **All questions are compulsory**.
- 4) The number to the **right** indicates **full marks**.
- 5) Draw diagrams **wherever** necessary.
- 6) Distribution of syllabus in Question Paper is only meant to cover entire syllabus within the stipulated frame. The Question paper pattern is a mere guideline. Questions can be asked from any paper's syllabus into any question paper. Students cannot claim that the Question is out of syllabus. As It is only for the placement sake, the distribution has been done.
- 7) Use a common answerbook for all sections.

SECTION "B" (40 Marks)

2. Short Answer Questions (Any 4 out of 5) (7x4=28)
a) b) c) d) e)

3. Long Answer Questions (Any 1 out of 2) (At least one LAQ should be structured) (12x1=12)
a) b)

SECTION "C" (40 Marks)

4. Short answer questions (Any 4 out of 5) (7x4=28)
b) b) c) d) e)

5. Long Answer Questions (Any 1 out of 2) (At least one LAQ should be scenario-based) (12x1=12)
b) b)



SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)

(Established under section 3 of the UGC Act 1956)

Re - accredited by NAAC with 'A' Grade

Founder: Prof. Dr. S. B. Mujumdar, M.Sc.,Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

Course Name: Pediatrics

Course Code: Medical - PE

Faculty: Health Sciences

Programme Type: UG

Sub-Committee (Specialization): Medical

Goal: The broad goal of the teaching of undergraduate students in pediatrics is to acquire adequate knowledge and appropriate skills for optimally dealing with major health problems of children to ensure their optimal growth and development. The student should apply this knowledge to deliver promotive, preventive and curative services to children.

Objectives:

1. Knowledge: At the end of the course, the student shall be able to:

- a) Describe the normal growth and development during fetal life, neonatal period, childhood and adolescence and outline deviations thereof.
- b) Describe the common pediatric disorders and emergencies in terms of epidemiology, etiopathogenesis, clinical manifestations, diagnosis, rational therapy and rehabilitation.
- c) Age related requirements of calories, nutrients, fluids, drugs, etc, in health and disease;
- d) Describe the management and preventive strategies for common infectious disorders, malnutrition, genetic and metabolic disorders, poisonings, accidents and child abuse;
- e) Learn Ethical Values, Communication and Professional relationship with patients, caretakers, colleagues and Health staff.

- f) Outline National Programs relating to Child Health including Immunization Programs.

2. Skills:

- a) Take a detailed pediatric history, conduct an appropriate physical examination of children including neonates, make clinical diagnosis, conduct common bedside investigative procedures, interpret common laboratory investigation results, plan and institute therapy.
- b) Take anthropometric measurements, resuscitate newborn infants at birth, prepare oral rehydration solution, perform tuberculin test, administer vaccines available under current national programs,
- c) Perform venous cannulation, intraosseous line, start an intravenous saline, insert nasogastric tubes and provide nasogastric feeding.
- d) Conduct diagnostic procedures such as lumbar puncture, liver and kidney biopsy, bone marrow aspiration, pleural tap and ascitic tap;
- e) Distinguish between normal newborn babies and those requiring special care and institute early care to all new born babies including care of preterm and low birth weight babies, kangaroo mother care.
- f) They should provide correct guidance and counseling in breast feeding, warm chain & complementary feeding practices.
- g) Provide ambulatory care to all sick children, identify indications for specialized / inpatient care and ensure timely referral of those who require hospitalization as per IMNCI guidelines.

3. Attitude, Communication and Ethics:

- a) It is necessary to develop in students a sense of responsibility towards holistic patient care and prognostic outcomes.
- b) Students should develop behavioral & professional skills and humanitarian approach while communicating with patients and their care-takers as individuals, relatives, society at large and the co-professionals.
- c) Other areas apport building, consent, confidentiality and good communication skills
- d) Orientation to good ethical practices and medico legal issues

PEDIATRICS SYLLABUS

1. Introduction to Pediatrics

2. Growth and Development

- Define Growth and Development
- Factors affecting normal growth and development
- Different patterns of growth in infants, children and adolescents
- Methods of assessment of growth including WHO & Indian national standards
- Parameters used for assessment of physical growth in infants, children and adolescent
- Define development & discuss normal developmental milestones with respect to motor, behavior, social, adaptive and language
- Methods of assessment of development
- Failure to thrive causes, clinical features and management
- Short stature causes, clinical features and management
- Tall stature differential diagnosis, clinical features and management
- Referral criteria for growth related problems
- Common problems related to development
- Developmental delay definition, causes, approach, clinical presentations, differential diagnosis, investigations and management
- Define disability as per WHO

3. Problems related to development I

- Intellectual disability and grade intellectual disability in terms of IQ
- Clinical criteria for referral of a child with developmental delay
- Cerebral palsy (CP) definition, causes, etio-pathogenesis, classification with respect to function and topography, common clinical presentations of different types of CP, co-morbidities and multidisciplinary approach in the management of CP
- Structure and composition of child rehabilitation clinic

4. Problems related to development II

- Scholastic backwardness definition, common causes, clinical assessment and approach to a child with scholastic backwardness
- Learning disabilities definition, causes, clinical presentation, assessment and management options
- Attention deficit hyperactivity disorder definition, causes, diagnostic assessment and drugs for treatment for a child with ADHD
- Autistic spectrum disorders(ASD): definition, causes, clinical features, clinical assessment and management options for a child with ASD
- Child guidance clinic, its structure, composition and function, and role of child guidance clinic in children with developmental problems

5. Common behavioral Problems

- Clinical features, diagnosis and management strategies for a child with Thumb sucking,Nail-biting,Pica,Temper tantrums
- Feeding problems enumerate causes, clinical presentations and management strategies for a child with feeding problems
- Breath holding spells -types, cause and management
- Etiology, clinical features and management of Enuresis andEncopresis
- Role of child guidance clinic in children with behavioural problems and referral criteria

6. Adolescent health and problems related to adolescent health

- Definition and stages of adolescence
- Physical, physiological and psychological changes during puberty
- General health problems related to adolescence
- Adolescent sexuality and common problems related to it
- Adolescent nutrition, requirements and common nutritional problems
- Adolescent eating disorders: Anorexia Nervosa and Bulimia
- Common mental health problems
- Adolescent Friendly Health Services its objectives, functions and referral criteria
- Obesity and other NCDs in adolescence
- Sexual abuse and drug abuse amongst adolescent and children and adolescents

7. Breast Feeding

- Anatomy of breast and physiology of lactation
- Composition and types of breast milk
- Differences between cow's milk and human milk
- Advantages of breast feeding
- Correct techniques of breast feeding
- Common problems during lactation-retracted nipple, cracked nipple, breast abscess and breast engorgement
- Best breast feeding practices and Baby Friendly Hospital Initiatives

8. Complementary feeding

- Definition, initiation, attributes, frequency, correct technique and hygienic practices to be followed during complementary feeding
- Preparation of complementary foods from locally available foods.
- Infant and young child feeding practices and guidelines
- Responsive Feeding

9. Childhood Nutrition & Nutritional disorders

- Normal nutrition assessment and monitoring
- Age related nutritional needs of infant, children and adolescent
- Macronutrients and micronutrients required for growth
- Vitamins and trace elements
- Assessment methods and tools for classification of nutritional status of infants, children and adolescents
- Calorific value of common Indian foods
- SAM (severe acute malnutrition) and MAM (moderate acute malnutrition): clinical approach, definition, etiopathogenesis, WHO classification, clinical features, complications and steps of management involving stabilization and rehabilitation phase
- Role of locally prepared therapeutic diets and ready to use therapeutic diets to achieve catch up growth in malnourished children
- Obesity and overweight definition as per WHO guidelines
- Common causes, clinical features, principles of management of obesity in children

- Risk factors for obesity and prevention strategies for obesity in children
- Criteria for referral in an obese child

9. Micronutrients in Health and Disease I

- Vitamin A its RDA, dietary sources and their role in health and disease
- Causes, clinical features, diagnosis and plan management of Vitamin A deficiency and excess
- Vitamin A prophylaxis program and their recommendations
- Vitamin D its RDA, dietary sources and their role in health and disease
- Vitamin D deficiency and excess, causes, clinical features, diagnosis and management
- Vitamin K deficiency causes, clinical features, diagnosis and management
- Vitamin E deficiency causes, clinical features, diagnosis and management
- Vitamin B its RDA, dietary sources and their role in health and disease
- Vitamin B complex deficiency causes, clinical features, diagnosis and plan management
- Vitamin C its RDA, dietary sources and their role in health and disease
- Vitamin C deficiency causes, clinical features, diagnosis and management

10. Micronutrients in Health and Disease II

- Iron its RDA, dietary sources and their role in health and disease
- Iron deficiency causes, clinical features, diagnosis and management
- National anemia Control Program and its recommendations
- Iodine deficiency causes, clinical features, diagnosis and management
- National Goiter Control program and its recommendations
- Calcium its RDA, dietary sources and their role in health and disease
- Calcium deficiency causes, clinical features, diagnosis and management
- Magnesium its RDA, dietary sources and their role in health and disease
- Magnesium deficiency causes, clinical features, diagnosis and management

11. Common childhood poisoning

- Lead poisoning risk factors, clinical features, diagnosis and management
- Kerosene aspiration risk factors, clinical features, diagnosis and management
- Organophosphorus poisoning risk factors, clinical features, diagnosis and management
- Paracetamol poisoning risk factors, clinical features, diagnosis and management
- Oxygen toxicity risk factors, clinical features, diagnosis and management

12. Fluid and Electrolyte balance

- Fluid and electrolyte requirements of healthy children of different ages
- Fluid requirement in common diseases in children
- Clinical features of a child who has fluid overload or dehydration
- Hyponatremia signs, symptoms, and management
- Hypernatremia signs, symptoms, and management
- Hyperkalemia signs, symptoms, and management
- Hypokalemia signs, symptoms, and management

13. Diarrheal diseases in children

- Etiology, classification, clinical features, and fluid therapy dehydration management
- ORS -physiology, types of ORS and composition of various types of ORS

14. Pediatric Infections

- Epidemiology basic pathology, natural history of childhood infections.
- Symptomatology, signs, differential diagnosis & complications of childhood infections,
- Management and prevention of common bacterial, viral and parasitic infections in the region, with special reference to vaccine- preventable diseases: Tuberculosis, poliomyelitis, diphtheria, pertussis, tetanus including neonatal tetanus, measles, mumps, rubella.
- Other common infections typhoid, viral hepatitis, cholera, chickenpox, giardiasis, amebiasis, intestinal helminthiasis, malaria, dengue fever, HIV.

15. IMNCI guidelines and National Health Programs

- Components of IMNCI guidelines

- Methods of risk stratification and assessment in children <2 months using IMNCI guidelines and
- Risk stratification and assessment children 2 months-5 years using IMNCI guidelines
- RCH, RMNCH + A, RBSK components
- National Immunization Programs including Newer vaccines

16. Vaccines

- Epidemiology of Vaccine preventable diseases
- Vaccine: its dose, strain used, schedule, route, risks, benefits, side effects, indications and contraindications
- Cold chain and its components
- Immunization in special cases
- Safe vaccine practices
- Newer vaccines

17. Neonatology

- Normal newborn definition of neonatal and perinatal period, live and still birth
- Low birth weight baby, VLBW, ELBW and LGA baby definitions and complications and care of the low birth weight baby
- Steps of care of the normal neonate including neonatal resuscitation
- Neonatal reflexes, thermoregulation and red flags in a newborn
- Growth monitoring and follow up of the low birth weight baby and importance of KMC
- Respiratory distress in the newborn, etiology, clinical features and management
- Birth injuries and their management
- Birth asphyxia and their management
- Neonatal hypocalcemia and hypoglycemia their clinical features and management
- Neonatal sepsis, etiology, clinical features and management
- Perinatal infections their etiology, clinical features and management of TORCH, Varicella, Syphilis, HIV, Hepatitis B
- Neonatal hyperbilirubinemia, etiology, clinical features and management

18. Common surgical conditions of newborn

- Treacheo-Esophageal Fistula, Esophageal Atresia, Congenital Diaphragmatic Hernia, Cleft lip and Cleft palate, Malrotation, Ano-rectal anomalies, Neural tube defects

19. Genito-Urinary system

- UTI in children, etiology, clinical features, complications and management
- Hematuria causes & Acute post streptococcal glomerulonephritis in children
- Proteinuria causes and Nephrotic syndrome in children
- Acute Renal failure causes, clinical features, complications and their management
- Chronic renal failure causes, clinical features, complications and their management
- Hypertension in children etiopathology, grading, clinical features and management

20. Common Rheumatological problems in children

- Clinical approach, diagnosis and management of a child with common vasculitic disorders Henoch Schonlein Purpura, Kawasaki disease, SLE and JIA.

21. Cardiovascular System

- Acyanotic heart diseases – ASD, VSD and PDA, hemodynamic changes, clinical features and complications
- Cyanotic heart diseases-hemodynamic changes, clinical features and complications. Tetralogy of Fallot physiology, presentation, and management of cyanotic spells
- Cardiac failure in infant and children-etiopathology, grading, clinical features and management
- Acute Rheumatic fever in children- etiopathology, clinical features, complications, prevention and management
- Infective Endocarditis in children - etiopathology, clinical features, complications, prevention and management

22. Gastrointestinal system

- Malabsorption in children and Coeliac disease etiology, clinical features and management
- Acute hepatitis in children and Fulminant hepatic failure etiology, clinical features and management
- Chronic Hepatitis in children etiology, clinical features and management
- Chronic liver disease and portal hypertension in children etiology, clinical features and management

23. Respiratory System

- Upper respiratory infections: pharyngo-tonsillitis, epiglottitis, ASOM and CSOM in children etiology, clinical features, and management
- Croup and stridor in children causes, clinical features and management
- Foreign body aspiration in children and management
- Lower respiratory infections in children –bronchiolitis, pneumonia and empyema etiology, clinical features and management
- Childhood asthma and status asthmaticus
- Childhood tuberculosis and management

24. Hematology and blood disorders

- Anemias classification, causes, clinical features, and management
- Hemolytic anemias – thalassemia, sickle cell, hereditary spherocytosis, autoimmune hemolytic anemias causes, clinical features and management
- Thrombocytopenia in children and ITP
- Coagulation disorders and Hemophilia clinical features, and management
- Leukemias and Lymphomas

25. Central Nervous System

- Meningitis – tubercular and pyogenic in children etiopathology, clinical features, complications, prevention and management
- Comatose child-approach, presentation, signs and management
- Seizures in children, febrile seizures and status epilepticus
- Hydrocephalus in children etiopathology, clinical features, complications, prevention and management
- Microcephaly causes and mental retardation
- Neural tube defects causes, clinical features prevention and management

- Infantile hemiplegia causes, clinical features and management
- Floppy infant differentials -etiopathology, clinical features and management
- Cerebral palsy-definition, etiopathology, types, grading, clinical features, complications, prevention and management of associated co-morbidities
- Headache and approach to a child with headache and management
- Myopathies and muscular dystrophies types, clinical features and management

26. Common pediatric Skin conditions

27. Genetics and common Chromosomal anomalies

- Downs, Edwards, Patau, Turners and Klinefelters syndromes, clinical features, complications and management

28. Endocrine disorders

- Hypothyroid and hyperthyroidism clinical features and management
- Diabetes mellitus and DKA management

29. Common Pediatric Emergencies

- Common cause of morbidity and mortality in Under Five Children
- Cardiorespiratory arrest in children etiopathogenesis, clinical approach and management
- Respiratory distress in children etiopathogenesis, clinical approach and management
- Shock in children etiopathogenesis, clinical approach and management
- status asthmaticus and its management
- status epilepticus and its management
- Triage of sick children
- Oxygen therapy and modes of administration
- Hypothermia and hyperthermia causes, clinical features and management

30. Ethics, consent and confidentiality and handling medico legal issues

METHODS OF ASSESSMENT

Evaluation of MBBS Examination in Pediatrics (Including Neonatology)

University Examinations in Pediatrics (and Neonatology; III MBBS, Part II)

Theory: One paper = 100 marks

(Shall include one question on basic sciences and allied sciences, and one question to test knowledge- competencies acquired during professional development programme- AETCOM module)

Oral (Viva) = 20 marks

Clinical = 45 marks

OSCE = 15 marks

Internal Assessment = 40 marks
(Theory 20 Marks, Practical 20 Marks)

Grand Total = 200 marks

Table 1: Assessment in Pediatrics (including Neonatology): University Examination

Assessment	Duration	Maximum Marks	Minimum marks required to pass
Theory Paper	3 hours	100	50
Section A (MCQs: 20-1 mark each) Separate paper	30 min	20	
<ul style="list-style-type: none"> • Single best response • MCQ to cover whole syllabus 			
Section B and C	2 hours		
3/4 LAQ*- 10 marks each		30	
6/7 SAQ - 5 marks each		30	
10/11 BAQ - 2 marks each		20	
Practical		100	50
One Long Case	55 min	40	
<ul style="list-style-type: none"> • Case taking- 45 min • Examination time- 10 min 			
One Short Case	15 min	20	
<ul style="list-style-type: none"> • Case taking- 10 min • Examination time- 05 min 			
OSCE (4 stations, 5 marks each)		20	

Oral (Viva Voce) (4 marks each) <ul style="list-style-type: none"> • Instruments • X-ray • Drugs and Interpretation of investigations • Emergencies • Vaccines & Nutrition 	10 min	20	10
Internal Assessment <ul style="list-style-type: none"> • Theory <ul style="list-style-type: none"> - 2 Theory exams-6th and 8th semester (50 marks each; Total 100 marks to be converted into 10 marks, A) - Prelims Theory exam-9th semester (80 marks as per University Examination; Total 80 marks to be converted into 10 marks, B) - Total marks of internal assessment of Theory will be addition of A and B • Practical <ul style="list-style-type: none"> - 2 practical exams at the end of Clinical Postings of 6th and 8th semester (50 marks each; Total 100 marks to be converted into 10 marks, C) - Prelims Practical Exam-9th semester (80 marks as per University Examination; Total 80 marks to be converted into 10 marks, D) - Total marks of internal assessment of Practical will be addition of C and D 		20	10
		20	10

Evaluation

Plan of Internal Assessment: 40 (Theory 20 +Practical 20)

1. Marks of Internal Assessment should be sent to the University confidentially before the commencement of Theory examination.
2. Passing in Internal Assessment will be pre-requisite for clearing the subject
3. Combined theory and practical marks of the Internal Assessment Examination will be considered for Passing in Internal Assessment.
- 4.

Internal Assessment in Theory:

1. Theory Examination during semester: This will be carried out by conducting two Theory examinations at the end of sixth and eighth semesters (50 marks each): Total of 100 marks to be converted in to 10 marks (A).

A = 6th semester Theory (50 marks) + 8th semester Theory (50 marks) divided by 10 = 10 marks.

2. Prelim examination: This shall be carried-out during 9th semester. One-theory paper of 80 marks as per University examination. Total of 80 marks to be converted into 10 marks (B).

$B = 9^{\text{th}}$ semester Theory-Prelim Examination (80 marks) divided by 8 = 10 marks.

Total marks of Internal Assessment of Theory will be addition of A and B (10 + 10 = 20 marks).

Internal Assessment in Practical:

1. Practical Examinations at the end of Clinical Postings: There will be practical examination at the end of each clinical posting of Pediatrics, 6th and 8th semester. Each examination will be of 50 marks. Total of 2 examinations (100 marks) will be converted to 10 marks (C).

$C = 6^{\text{th}}$ semester Practical (50 marks) + 8th semester Practical (50 marks) divided by 10 = 10 marks.

2. Prelim examination: This will be conducted for 80 marks as per University Examination pattern and marks will be converted to 10 marks (D).

$D = 9^{\text{th}}$ semester Practical-Prelim Examination (80 marks) divided by 8 = 10 marks.

Total marks of Internal assessment of Practical will be addition of C and D (10 + 10 = 20 marks).

Evaluation Methods (Theory, Practical and Viva)

Pattern of theory examination including distribution of marks,

questions and timePattern of theory examination including distribution

of marks

- There shall be one theory paper, carrying 80 marks
- The paper will have two sections, A, B and C
- The paper will be of 3 hours duration

Section A will be MCQs in each paper. Section B and C will have to be written in separate answersheets.

Prelim and University Theory Examination:

100 marks, Duration: Three hours (3) hours

MCQ section A will be given to the candidates at the beginning of the examination. After 30minutes Section A will be collected, and then Section B and C of paper will be handed over to the candidates.

BOOKS RECOMMENDED:

Textbooks for Pediatrics

1. "Essentials of Pediatrics" by OP Ghai, Vinod K Paul and Piyush Gupta (latest edition)
2. "Care of the Newborn" by Meharban Singh (latest edition)
3. "Nutrition and Child development (5th Edition, K. E. Elizabeth)

Reference Books

4. "Nelson Textbook of Pediatrics" by Richard E. Behrman, Robert M. Kliegman, Waldo E. Nelson and Victor C. Vaughan (latest edition)
5. "Rudolph's Pediatrics" by Abraham M. Rudolph, Julien IE Hoffman, Colin D. Rudolph and Paul Sagan (latest edition)
6. IAP Text Book of Pediatrics

Clinical Methods

7. "Hutchison's Clinical Methods" by M Swash (latest edition)
8. "Pediatrics Clinical Methods" by Meharban Singh (latest edition)
9. Pediatrics Clinical Examination by A. Santosh Kumar (5th Edition)



SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)

(Established under section 3 of the UGC Act 1956)

Re - accredited by NAAC with 'A' Grade

Founder: Prof. Dr. S. B. Mujumdar, M.Sc.,Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

Course Name: Pharmacology

Course Code: Medical - PH

Faculty: Health Sciences

Programme Type: UG

Sub-Committee (Specialization): Medical

Department of Pharmacology & Therapeutics

Preamble:

Pharmacology is science of drugs, (Greek pharmakos, medicine or drug and logos study). It is study of substances that interact with living systems through chemical properties, especially through binding to regulatory molecules and activating or inhibiting normal body processes. Pharmacology is both a basic and an applied science. It forms the backbone of rational therapeutics. Whereas the medical student and prescribing physician are primarily concerned with the applied aspects, correct and skillful application of drugs is impossible without a proper understanding of their basic pharmacology and therapeutics.

Pharmacology and therapeutics is part of para-clinical phase (phase-II) of medical education. In phase-II of education, the student will be studying Para clinical subjects i.e. Pathology, Pharmacology, Microbiology, Community Medicine, Forensic medicine and Toxicology, professional development including Attitude, Ethics & communication (AETCOM) module and clinical exposure ensuring horizontal and vertical integration. The learning of Pharmacology will be started after completion of 13 months of training in phase 1. The duration of learning Medical pharmacology and therapeutics will be of 12 months.

In 2019 the medical curriculum in India underwent a revision. Hence the syllabus has been designed so as to align with national goal to create an Indian medical graduate(IMG) possessing requisite knowledge, skills, attitude, values and responsiveness so that the student may function appropriately and effectively as a physician of first contact of the community while being globally relevant. Thus

emphasis in medical education will be on learning as per specified competencies with stress on integrated teaching and learner centered acquisition of skills, ethical and humanistic values.

Goal:

The broad goal of teaching pharmacology to undergraduate students is to inculcate in them a rational and scientific and ethical basis of therapeutics.

Objectives:

At the end of one year of training in pharmacology, the MBBS student is expected to demonstrate:

Knowledge:

Knowledge about essential and commonly used drugs and understanding of pharmacologic basis of therapeutics.

1. Knowledge of indications, contraindications interactions and adverse drug reactions of commonly used drugs.
2. Knowledge of pharmacovigilance, essential medicine concept and sources of drug information and industry-doctor relationship.
3. Be conversant with principles of pharmacy and pharmaceutical preparations.
4. Student should be able to demonstrate a good understanding of the pharmacokinetic and pharmacodynamics principles involved in use of drugs.
5. Demonstrate familiarity with basic, clinical and translational research as it applies to care of the patient.
6. Ability to describe pharmacokinetic basis, clinical presentation, diagnosis and management of common poisonings
7. Knowledge about drugs liable for addiction and their management.
8. Evaluate the ethics and modalities involved in development and introduction of new drugs.

Skills:

1. Ability to select and prescribe medicines based on clinical condition and the pharmacologic properties, efficacy, safety, suitability and cost of medicines for common clinical conditions of national importance.
2. Ability to counsel patients regarding appropriate use of prescribed drug and drug delivery systems.
3. Identify adverse drug reactions and interactions of essential drugs.
4. 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.

5. Demonstrate ability to search (including through electronic means), and critically evaluate the medical literature and apply the information to patient care
6. Ability to interpret the data of experiments designed for study of effects of drugs and bioassays which are observed during the study with the help of computer simulation.

Attitude, Ethics and Communication:

1. Demonstrate ability to establish professional relationship with patients and families that are positive, understanding, humane, ethical, empathetic and trustworthy.
2. Demonstrate ability to communicate with patients in a manner respectful of patient's preferences, values, prior experience, beliefs, confidentiality and privacy.
3. Demonstrate ability to communicate with patients, colleagues and families in a manner that encourages participation and shared decision-making.
4. Demonstrate effective clinical problem solving, judgement and ability to interpret and integrate available data in order to address patient problems, generate differential diagnosis and develop individualised management plans that includes preventive, promotive and therapeutic goals.

PHARMACOLOGY SYLLABUS:

The topics will be covered as per proposed GMER guidelines.

1. General Pharmacology

- Introduction to Pharmacology
- Drug Development and animal studies, screening of new drugs, computer simulated experiments
- Sources of drug information and critical evaluation of promotional literature
- Basic principles of pharmacy
- Absorption, distribution, metabolism and elimination of drugs, routes of drug administration, dissolution and disintegration of tablets
- Pharmacodynamics
- Basic principles of drug action
- Adverse reactions to drugs, Pharmacovigilance
- Factors modifying drug response
- Pharmaco-economics
- P- drug concept and essential medicine list
- Rational drug therapy and prescription writing

- Critical evaluation of fixed dose combinations
- Drug and cosmetic act and drug schedules

2. Autonomic nervous system & Peripheral nervous system

- Neuro-humoral transmission
- Sympathetic nervous system - sympathomimetic, sympatholytic
- Parasympathetic - Cholinergic, Anticholinergics, Ganglion stimulants and blockers & Skeletal muscle relaxants
- Local anaesthetics

3. Central nervous system

- General principles - neurotransmitters, definition and common transmitters
- Drug therapy of various CNS disorders like epilepsy, depression, Parkinson's disease, schizophrenia, neuro- degeneration etc.
- Pharmacotherapy of pain
- General anaesthetics
- Drugs for arthritis & gout

4. Autacoids

- Histamine and antihistaminic
- Prostaglandins, leukotrienes, thromboxane and PAF
- Substance P, bradykinin

5. Cardiovascular system

- Drug therapy of hypertension, shock, angina, cardiac arrhythmias
- Renin angiotensin system
- Diuretics
- Coagulants and anticoagulants, antiplatelet drugs
- Hypo-lipidemics

6. Gastrointestinal and respiratory system

- Emetics and antiemetic
- Drugs for constipation and diarrhoea
- Drug treatment of peptic ulcer
- Drug therapy of bronchial asthma
- Pharmacotherapy of cough

7. Hormones

- Reproductive hormones - testosterone, oestrogen, progesterone, contraceptives
- Drug therapy of Diabetes
- Thyroid hormones
- Pituitary-hypothalamic axis
- Corticosteroids
- Oxytocin and drugs acting on uterus
- Drugs affecting calcium balance

8. Chemotherapy

- General principles of antimicrobial chemotherapy, rational use of antibiotics
- Chemotherapeutic agents - Penicillin, cephalosporin, fluoroquinolones, macrolides, aminoglycoside, tetracycline, chloramphenicol and polypeptide antibiotics etc.
- Chemotherapy of tuberculosis, leprosy, UTI
- Chemotherapy of parasitic infection
- Chemotherapy of fungal infections
- Cancer Chemotherapy

9. Miscellaneous

- Immunomodulatory Drugs
- Drug therapy of glaucoma and cataract
- Treatment of poisoning
- Drug- drug interactions, interaction with food
- Case studies for few important conditions of national importance
- Treatment protocols for emergency conditions and diseases such as Angina Pectoris, Congestive heart failure, Diabetes mellitus, Hypertension, Bronchial Asthma, Diarrhoea, Anaemia, Psoriasis, and Scabies etc.
- Prescriptions in special cases such as pregnancy, elderly, liver and kidney diseases

PAPER WISE DISTRIBUTION OF TOPICS:

Assessment of the student will be done through theory & practical exams. The distribution of the syllabus for theory is as follows:

Sr.No.	Paper	Topic
1	I [100 marks]	<ul style="list-style-type: none">• General Pharmacology• Autonomic nervous system• Peripheral Nervous System• Cardiovascular system• Drugs acting on kidney• Drugs affecting blood & blood formation• Drugs affecting Gastro-intestinal system• Ocular pharmacology• Drugs used in extremes of age, pregnancy• Diagnostic & chelating agents• Environment & chelating pollutants• Vitamins
2	II [100 marks]	<ul style="list-style-type: none">• Drugs affecting Central nervous system• Chemotherapy• Endocrinology• Dermatology• Autacoids• Respiratory system• Immune pharmacology• Vaccines and sera• Antiseptic and disinfectant

Second MBBS Internal Assessment Subject: Pharmacology

Phase	I-Exam			II-Exam			Prelim Exam		
	Theory	Practical (Including 10Marks for Journal & Log Book)	Total Marks	Theory	Practical Including 10Marks for Journal & Log Book	Total Marks	Theory	Practical	Total Marks
Second MBBS	100	100	200	100	100	200	Paper 1 -100 Paper 2 -100	100	300

1. There will be 3 internal assessment examinations in Pharmacology. The structure of the internal assessment theory examinations should be similar to the structure of University examinations.
2. It is mandatory for the students to appear for all the internal assessment examinations.
3. First internal assessment examination will be held in January, second internal assessment examination will be held in May and third internal assessment examination will be held in July.
4. A student who has not taken minimum required number of tests for Internal Assessment each in theory and practical will not be eligible for University examinations.
5. There will be only one additional examination for absent students (due to genuine reason) after approval by the Institutional Grievances Committee. It should be taken after preliminary examination and before submission of internal assessment marks to the University.
6. Internal assessment marks for theory will be out of 400 and practical will be out of 300.
7. Reduce total theory internal assessment to 40 marks and total practical internal assessment to 40 marks. Students must secure at least 50% marks of the total marks (combined in theory and practical; not less than 40 % marks in theory and practical separately) to be eligible for appearing University examination

8. Conversion Formula for calculation of marks in internal assessment examinations

	First IA	Second IA	Third IA (Prelim)	Total	Internal assessment marks: Conversion formula (out of 40)	Eligibility to appear for final University examination (after conversion out of 40) (40% separately in Theory & Practical 50% Combined)	
Theory	100	100	200	400	<u>Total marks obtained</u> 10	16 (Minimum)	Total of Theory + Practical Must be 40.
Practical	100	100	100	300	<u>Total marks obtained</u> 7.5	16 (Minimum)	

While preparing Final Marks of Internal Assessment, the rounding-off marks shall done as illustrated in following table

Internal Assessment Marks	Final rounded marks
15.01 to 15.99	16

9. Internal assessment marks will reflect as separate head of passing at the summative examination.
10. Internal assessment marks will not to be added to marks of the University examinations and will be shown separately in mark list.

Practical marks Distribution:

A. For Ist and IInd term examinations

1. **Journal / Logbook** - 10 Marks
2. **Viva – 20 marks**
3. **Clinical Pharmacy (20 marks) –**
 - a. Dosage form- 10 marks,
 - b. ORS preparation/ IV drip setting- 5 marks
 - c. Dose calculation – 5 marks
4. **Clinical Pharmacology (30 marks)-**
 - a. Prescription writing- 10 marks
 - b. Prescription criticism and rewriting / justification of FDC – 10 marks
 - c. ADR identification / ADR reporting- 5 marks
 - d. P- drug list- 5 marks.
5. **Experimental Pharmacology (10 marks) OSPE –**
 - a. Drug administration using maniquin / drug effect using CAL software (or any other)- 10 marks
6. **Communication (10 marks) OSPE-**
 - a. prescription communication / ethics- legal drug storage/ use of device/drug adherence-compliance/ drugdependence/OTC/ interaction with Medical representative- 10 marks
 - b.

B. For Preliminary and University examinations

1. **Viva – 30 marks**
 - a. Viva I- 15 marks
 - b. Viva II- 15 marks
2. **Clinical Pharmacy (20 marks) –**
 - a. Dosage form- 10 marks,
 - b. ORS preparation/ IV drip setting- 5 marks
 - c. Dose calculation – 5 marks
3. **Clinical Pharmacology (30 marks)-**
 - a. Prescription writing- 10 marks
 - b. Prescription criticism and rewriting / justification of FDC – 10 marks
 - c. ADR identification / ADR reporting- 5 marks
 - d. P- drug list- 5 marks.
4. **Experimental Pharmacology (10 marks) OSPE –**
 - a. Drug administration using maniquin / drug effect using CAL software (or any other)- 10 marks
5. **Communication (10 marks) OSPE-**
 - a. prescription communication / ethics- legal drug storage/ use of device/drug adherence-compliance/ drug dependence/OTC/ interaction with Medical representative- 10 marks

PHARMACOLOGY THEORY EXAM INTERNAL ASSESSMENT – 1 and II

Total Marks : **100**

Total Time : **3 Hrs.**

SECTION “A” MCQ (20 Marks)

Multiple Choice Questions (Total 20 MCQ of One mark each) (20 x1 = 20)

SECTION “B”

Short Answer Questions (AETCOM(2.1, 2.2, 2.3)(compulsory) (7x1=07)

Short Answer Questions (Answer Any 3 out of 4) (7x3=21)

Structured Long Answer Questions (Compulsory) (12x1=12)

Short Answer Questions (Answer Any 4 out of 5) (7x4=28)

Structured Long Answer Questions (Compulsory) (12x1=12)

PHARMACOLOGY THEORY EXAM INTERNAL ASSESSMENT – 3 (PRELIMS) AND UNIVERSITY EXAMINATION

PAPER 1

Total Marks : **100**

Total Time : **3 Hrs.**

SECTION “A” MCQ (20 Marks)

Multiple Choice Questions (Total 20 MCQ of One mark each) (20 x1 = 20)

SECTION “B”

Short Answer Questions (AETCOM(2.1, 2.2, 2.3)(compulsory) (7x1=07)

Short Answer Questions (Answer Any 3 out of 4) (7x3=21)

Structured Long Answer Questions (Compulsory) (12x1=12)

Short Answer Questions (Answer Any 4 out of 5) (7x4=28)

Structured Long Answer Questions (Compulsory) (12x1=12)

PAPER 2

Total Marks : **100**

Total Time : **3 Hrs.**

SECTION "A" MCQ (20 Marks)

Multiple Choice Questions (Total 20 MCQ of One mark each) (20 x1 = 20)

SECTION "B"

Short Answer Questions (AETCOM(2.1, 2.2, 2.3)(compulsory) (7x1=07)

Short Answer Questions (Answer Any 3 out of 4) (7x3=21)

Structured Long Answer Questions (Compulsory) (12x1=12)

Short Answer Questions (Answer Any 4 out of 5) (7x4=28)

Structured Long Answer Questions (Compulsory) (12x1=12)

Text Books Recommended:

1. Goodman & Gilman's - The Pharmacological Basis of Therapeutics
2. Basic & Clinical Pharmacology by Bertram G, Katzung
3. Clinical Pharmacology by DR Lawrence, PN Bennett & MJ Brown
4. Essentials of Medical Pharmacology by K.D. Tripathi
5. Pharmacology and Pharmacotherapeutics by RS Satoskar, SD Bhandarkar, SS Ainapure
6. Fundamental of Experimental Pharmacology by MN Ghosh



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Founder: Prof. Dr. S. B. Mujumdar, M.Sc.,Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

Course Name: Psychiatry

Course Code: Medical - PS

Faculty: Health Sciences

Programme Type: UG

Sub-Committee (Specialization): Medical

Goal:

Psychiatry is the branch of medicine concerned with the biopsychosocial study of the diagnosis, treatment, prevention and rehabilitation of mental, emotional, and behavioural disorders alone or comorbidly with other medical or surgical illnesses across the lifespan. All across the globe the contemporary society has grown more complex and intertwined, making the preservation of mental and physical health increasingly difficult. Learning psychiatry will help in improving people's mental health and welfare, overcome barriers and disadvantages that result from mental illness and support individuals in leading peaceful and satisfying lives.

Objectives:

1. Knowledge: At the end of the course the student will be able to:

- a) Well acquainted with the specialized knowledge to examine, diagnose and treat psychiatric disorders.
- b) Principles of positive psychology and rehabilitation of people with mental disorder.

2. Skills:

- a) Competent in history taking & interview skills, formulation of diagnosis and management of psychiatric disorders.
- b) To identify mental disorders and refer to a specialist, if not able to treat the same.
- c) To promote mental health and mental hygiene.

d)

3. Attitude, Communication and Ethics:

- a) To inculcate an empathic attitude that allows an integration of humanistic and ethical approach in medicine.
- b) Have respect for individuals with mental disorders as persons in their own right.
- c) Supporting individuals with mental disorders in realizing their hopes of leading meaningful lives while enjoying equal treatment by society.

PSYCHIATRY SYLLABUS

1. Doctor patient relationship

- Communication with patient, confidentiality, rapport and empathy

2. Mental health

- Stress and stress management.
- Learning, memory and emotions
- Personality development and motivation as basic need of day to day functioning.
- Identification of state of disorder

3. Introduction to psychiatry

- History taking and mental status examination
- Bio-psycho-social model of mental disorders.
- Distinguish organic and functional disorders.
- Concept of psychiatric disorders & types of classification e.g. International Classification of Diseases ((ICD) and the Diagnostic and Statistical Manual (DSM)

4. Psychotic disorders

- Aetiology, neurobiology, clinical features, diagnosis, treatment – pharmacological, role of ECT.
- Specialist referral

5. Substance use disorders (SUD)

- Concept of abuse and dependence, introduction to various substances that lead to addiction

- Magnitude and aetiology, clinical features, diagnosis, laboratory testing of SUD
- Treatment – pharmacological and psychosocial interventions (family therapy)

6. Depression

- Aetiology, neurobiology, clinical features, diagnosis, treatment – pharmacological, role of ECT.
- Specialist referral

7. Bipolar disorders

- Aetiology, types of bipolar disorders. neurobiology, clinical features, diagnosis
- Treatment with special reference to mood stabilizers

8. Anxiety disorders

- Types of anxiety disorders; phobias, OCD etc, clinical features and epidemiology
- Diagnosis, differential diagnosis of anxiety disorders
- Pharmacological and non-pharmacological modes of intervention

9. Stress related disorders

- Magnitude and aetiology, various presentations, subtypes, diagnosis
- Treatment - Pharmacological and psychotherapeutic
- Concept of psychosomatics

10. Somatoform disorders

- Magnitude and aetiology, various presentations, subtypes, diagnosis
- Treatment - Pharmacological and psychotherapeutic

11. Personality disorders

- Concept of personality disorders, aetiology and classification,
- Overview of clinical features & assessment

12. Psychosexual and gender identity disorders

- Magnitude and aetiology, clinical features, subtypes, diagnosis, overview of treatment – pharmacological

13. Psychiatric disorders in childhood and adolescence

- History taking in a child and adolescence, special assessments
- Classification of childhood psychiatric disorders - epidemiology, aetiology, clinical features

14. Mental retardation

- Magnitude and aetiology, IQ assessment
- Psychosocial intervention

15. Psychiatric disorders in the elderly

- Common psychiatric disorders in the elderly including dementia, depression and psychosis,
- Magnitude and aetiology, clinical features, subtypes, diagnosis, overview of treatment

16. Psychiatric emergencies

- Identifying emergencies in psychiatry – Suicidal risk, violence
- Initial stabilisation, management and proper referral

17. Therapeutics

- Pharmacology, dose and side effects of commonly used drugs in psychiatric disorders
- Indications for modified electroconvulsive therapy
- Counselling & psychotherapeutic approaches

18. Community psychiatry and Legal psychiatry

- National mental health programme, legal and ethical issues in psychiatry
- Principles of preventive mental health promotion (positive mental health); and community education
- Participatory management of mental illness occurring during and after disasters

BOOKS RECOMMENDED:

1. Kaplan and Saddock's Comprehensive Text Book of Psychiatry
2. Kaplan and Saddock's Synopsis of Psychiatry
3. Niraj Ahuja's text-book on Psychiatry
4. Oxford textbook of Psychiatry



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Founder: Prof. Dr. S. B. Mujumdar, M.Sc., Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

Course Name: Physiology

Course Code: Medical - PY

Faculty: Health Sciences

Programme Type: UG

Sub-Committee (Specialization): Medical

Goal: The broad goal of the teaching of undergraduate students in Physiology aims at providing the student comprehensive knowledge of the normal functions of the organ systems of the body to facilitate an understanding of the physiological basis of health and disease.

Objectives

1. Knowledge: At the end of the course the student will be able to:

- a. Explain the normal functioning of all the organ systems and their interactions for well-coordinated total body function.
- b. Assess the relative contribution of each organ system to the maintenance of the milieu interior.
- c. Elucidate the physiological aspects of normal growth and development.
- d. Describe the physiological response and adaptations to environmental stresses.
- e. List the physiological principles underlying pathogenesis and treatment of disease.

2. Skills: At the end of the course the student should be able to:

- a. Conduct experiments designed for study of physiological phenomena.
- b. Interpret experimental/investigative data.

c. Distinguish between normal and abnormal data derived as a result of tests which he/she has performed and observed in the laboratory.

3. Attitude ,Communication, Ethics:: At the end of the course the student should be able to:

- a. Develop empathy towards the patient
- b. Know the importance of obtaining consent from the patient
- c. Ethical protocol in dealing with female patients
- d. Explain the relevant details of the disease to the patient.
- e. Clear instructions to patients before and during examination

PHYSIOLOGY SYLLABUS

General Physiology

Structure and functions of a mammalian cell + intercellular connections

Principles of homeostasis

Intercellular communication, apoptosis – programmed cell death

Transport mechanisms across cell membranes

Methods used to demonstrate the functions of the cells and its products, its communications and their applications in Clinical care and research.

Blood

Fluid compartments of the body, its ionic composition & measurements

Composition and functions of blood components

Origin, forms, variations and functions of plasma proteins

Synthesis and functions of Haemoglobin. Variants of haemoglobin

RBC formation (erythropoiesis & its regulation) and its functions & fate of RBCs

Types of anaemias & Jaundice

WBC formation (granulopoiesis) and its regulation

Types of immunity. Development of immunity and its regulation

Formation of platelets, functions and variations.

Physiological basis of hemostasis and, anticoagulants. Bleeding & clotting disorders (Hemophilia, purpura)

Blood groups and clinical importance of blood grouping, blood banking and transfusion

Introduction to microscopy

Introduction to hemocytometry

RBC count

Hemoglobin estimation

ESR PCV

Blood indices

Osmotic fragility

Reticulocyte count

Total leucocyte count

Preparation of blood smear

Differential leucocyte count

Platelet count

BT, CT

Blood grouping

Nerve Muscle Physiology

Structure and functions of a neuron; Nerve Growth Factor & other growth factors/cytokines

Molecular basis of resting membrane potential and action potential in excitable tissue

The types, functions & properties of nerve fibers

Degeneration and regeneration in peripheral nerves

Structure of neuro-muscular junction and transmission of impulses, Action of neuro-muscular blocking agents

Pathophysiology of Myasthenia gravis

Different types of muscle fibres and their structure

Action potential and its properties in different muscle types (skeletal)

Strength-duration curve

Molecular basis of muscle contraction in skeletal muscles

Mode of muscle contraction (isometric and isotonic)

Energy source and muscle metabolism

Gradation of muscular activity

Muscular dystrophy: myopathies

Observe with Computer assisted learning amphibian nerve - muscle experiments

Ergography: Effect of load and frequency on work done.

Ergography: Effect of arterial and venous occlusion on work done and fatigue

Gastro Intestinal Physiology

Structure and functions of digestive system

Gut-Brain Axis

Composition, mechanism of secretion, functions, and regulation of saliva, gastric, pancreatic, intestinal juices and bile secretion

Action potential and its properties in different muscle types (smooth)

The molecular basis of muscle contraction in smooth muscles

GIT movements, regulation and functions. Defecation reflex. Role of dietary fibre.

Physiology of digestion and absorption of nutrients

Source of GIT hormones, their regulation and functions

Structure and functions of liver and gall bladder

Gastric function tests, pancreatic exocrine function tests & liver function tests

The physiology aspects of: peptic ulcer, gastro- oesophageal reflux disease, vomiting, diarrhoea, constipation, Adynamic ileus, Hirschsprung's disease

Examination of abdomen

Cardio vascular physiology

Functional anatomy of heart including chambers, sounds; and pacemaker tissue and conducting system.

Generation, conduction of cardiac impulse

Properties of cardiac muscle including its morphology, electrical, mechanical and metabolic functions

Physiology of electrocardiogram (E.C.G), its applications and the cardiac axis

Abnormal ECG, arrhythmias, heart block and myocardial Infarction

The events occurring during the cardiac cycle

Haemodynamics of circulatory system

Local and systemic cardiovascular regulatory mechanisms

Factors affecting heart rate, regulation of cardiac output & blood pressure

Regional circulation including microcirculation, lymphatic circulation, coronary, cerebral, capillary, skin, foetal, pulmonary and splanchnic circulation

Patho-physiology of shock, syncope and heart failure

Observe with Computer assisted learning amphibian cardiac experiments

Examination of arterial pulse and demonstration of arterial pulse tracing using finger plethysmography

Measurement of blood pressure

Effect of posture on heart rate and blood pressure

Effect of exercise on heart rate and blood pressure

Demonstration of electrocardiography

Examination of cardiovascular system

Respiratory physiology

Functional anatomy of respiratory tract

Mechanics of normal respiration, pressure changes during ventilation, lung volume and capacities, alveolar surface tension, compliance, airway resistance, ventilation, V/P ratio, dead space, diffusion capacity of lungs

The transport of respiratory gases: Oxygen and Carbon dioxide

Regulation of respiration - Neural & Chemical

The pathophysiology of dyspnoea, hypoxia, cyanosis asphyxia; drowning, periodic breathing, oxygen therapy

The physiology of high altitude and deep sea diving including acclimatization and decompression sickness.

Lung function tests & their clinical significance,

The principles of artificial respiration

Spirometry- Demonstration of lung volume and capacities

Spirometry (vitalography) – Recording of vital capacity and PEFV

Spirometry (vitalography)- Effect of posture on vital capacity

Examination of respiratory system

Endocrine Physiology

List of endocrine glands, endocrine and exocrine secretion, neuronal signaling of endocrine secretion, Mechanism of action of steroid, protein and amine hormones.

Synthesis, secretion, transport, physiological actions, regulations and effect of altered (hypo and hyper) secretion of pituitary gland, thyroid gland, parathyroid gland, adrenal gland, pancreas and hypothalamus. Function tests: Thyroid gland; Adrenal cortex, Adrenal medulla and pancreas

Physiology of bone and calcium, phosphorus metabolism

Physiology of Thymus & Pineal Gland

Metabolic and endocrine consequences of obesity & metabolic syndrome, Stress response.

Psychiatric component pertaining to metabolic syndrome.

Renal physiology

Structure and functions of kidney

Structure and functions of juxta glomerular apparatus

Mechanism of urine formation involving processes of filtration (along with role of renin-angiotensin system), tubular reabsorption & secretion; concentration and diluting mechanism

Significance & implication of renal clearance

Renal regulation of fluid and electrolytes

Concept of pH & buffer systems in the body and acid-base balance

Innervations of urinary bladder, physiology of micturition and its abnormalities, cystometry and normal cystometrogram,

Artificial kidney, dialysis and renal transplantation

Renal Function Tests

Reproductive Physiology

Sex determination; sex differentiation and their abnormalities, psychiatric and practical implication of sex determination.

Puberty: onset, progression, stages, early and delayed puberty, clinical and psychological association of puberty.

Male reproductive system: functions of testis and control of spermatogenesis. factors modifying, and its association with psychiatric illness (including male sex hormones)

Interpretation of a normal semen analysis, including (a) sperm count, b) sperm morphology and (c) sperm motility, as per WHO guidelines and discuss the results

Common causes of infertility

Female reproductive system: (a) functions of ovary and its control; (b) menstrual cycle - hormonal, uterine and ovarian changes (Including female sex hormones)

Physiological effects of sex hormones,

Effects of removal of gonads on physiological functions

Contraceptive methods for male and female, advantages & disadvantages

Physiology of pregnancy, parturition & lactation, outline the psychology and associated psychiatric disorders.

Physiological basis of various pregnancy tests.

Hormonal changes and their effects during perimenopause and menopause

Common causes of infertility and role of IVF

Integrative physiology

Mechanism of temperature regulation, adaptation to altered temperature (heat and cold)
mechanism of fever, cold injuries and heat stroke

Cardio-respiratory changes in exercise (isometric and isotonic), under different
environmental conditions (heat and cold),

Cardio-respiratory and metabolic adjustments during exercise; physical training effects

Physiological consequences of sedentary lifestyle

Physiology of Infancy (growth & development),

Interpret growth charts

Interpret anthropometric assessment of infants

Physiology of aging; free radicals and antioxidants

Diagnosis of brain death and its implications

Physiological effects of meditation

General examination

Harvard step test

Autonomic function test

Basic Life Support (BLS)

Interpretation of graphs, values and figures from 12 systems

Central nervous system

Organization of nervous system including neuroglia

Functions and properties of synapse, reflex, receptors

Somatic sensations & sensory tracts

Motor tracts, mechanism of maintenance of tone, control of body movements, posture and
equilibrium & vestibular apparatus

Structure and functions of reticular activating system, autonomic nervous system (ANS)

Spinal cord, its functions, lesion & sensory disturbances

Cerebral cortex, basal ganglia, thalamus, hypothalamus, cerebellum and limbic system and
their abnormalities

Behavioral and EEG characteristics during Sleep and mechanism responsible for its
production, Identification of normal EEG forms

Physiological basis of memory, learning and speech

Chemical transmission in the nervous system. (Outline the psychiatry element).

CSF, blood – brain barrier.

Examination of sensory system

Examination of motor system

Examination of reflexes

Examination of cranial nerves

Special senses

Smell and taste sensation, patho-physiology of altered smell and taste sensation

Functional anatomy of ear and auditory pathways, physiology of hearing, pathophysiology of deafness, Description of hearing tests.

Auditory evoked potentials.

Functional anatomy of eye, physiology of image formation, physiology of vision including color vision, refractive errors, color blindness, physiology of pupil and light reflex
physiological basis of lesion in visual pathway

Physiological basis of lesion in visual pathway, visual evoked potentials

Perimetry

Acuity of vision

Acuity of hearing

Internal Assessment

Applicable for the batches admitted from August 2020-21 onwards

I-Term Exam (December)

Theory (Max. marks) =100

Practical (Including 05 Marks for Journal&Log book) (Max. marks) = 50

Total Marks = 150

II-Term Exam (March)

Theory (Max. marks) =100

Practical (Including 05 Marks for Journal&Log book) (Max. marks) = 50

Total Marks = 150

Prelim Exam and University Exams (July)

Theory (Max. marks) =200 (Two papers of 100 marks each)

Practical (Including 05 Marks for Journal&Log book) (Max. marks) = 100

Total Marks = 300

IV- Remedial Examination (after University Examination)

Theory (Max. marks) =200 (Two papers of 100 marks each)

Practical (Including 05 Marks for Journal&Log book) (Max. marks) = 100

Total Marks = 300

There will be 3 internal assessment examinations in the academic year. The structure of the internal assessment theory examinations should be similar to the structure of University examination. There will be only one additional examination for absent students (due to genuine reason) after approval by the Institutional Grievances Committee. It should be taken after preliminary examination and before submission of internal assessment marks to the University. (It is mandatory for the students to appear for all the three internal assessment examination.)

First internal assessment examination will be held in December, second internal assessment examination will be held in March and third internal assessment examination will be held in July.

Internal assessment marks for theory and practical will be converted to out of 40.

The students who scores 35% marks separately in theory & practical internal assessment examinations is eligible to appear for university exams.

It is mandatory to secure 50% marks of the total marks (combined in theory and practical) assigned for internal assessment in the subject in order to be declared successful in the final university examination.

Remedial internal assessment examination for students:

Applicable for students who got individual theory or practical marks between 35% and 50% but did not score aggregate 50% (combined in theory and practical) for the subject: Remedial internal assessment should be organized by the college immediately after the completion of university examination of the affected students. The revised internal assessment marks (converted out of 40 each) of such students should be sent to the University within maximum of 15 days after university examination of these students. Such a remedial examination shall be conducted by allocating only three days per subject without any gap (two days for theory and one day for practical).

The internal assessment marks of the remedial examination alone shall be considered.

Conversion Formula for calculation of marks in internal assessment examinations

	First IA	Second IA	Third IA (Prelim)	Total	Internal assessment marks: Conversion formula (out of 40)	Eligibility to appear for final University examination (after conversion out of 40)	Minimum marks to be obtained to declare the final University examination result (Out of 80 Combined in theory and practical)
Theory	100	100	200	400	<i>Total marks</i> 10	14	40
Practical	50	50	100	200	<i>Total marks</i> 5	14	

While preparing Final Marks of Internal Assessment, the rounding-off marks shall done as illustrated in following table:

Internal Assessment Marks	Final roundedmarks
13.1 to 13.99	14

The result of the final University examination for students, who fail to secure 50% marks of the total marks (40 marks after conversion – combined in theory & practical) in internal assessment, even after remedial examination, shall not be declared by University and his/her performance in the final examination shall be annulled.

a) Non eligible students having less than 35% internal assessment marks and students who fail to secure 50% combined in theory and practical in remedial examination will have to appear for a remedial internal assessment examination which will be held before supplementary examination. Eligible students (minimum 35% separately in theory and practical) will be permitted to appear for supplementary examination, but students have to undergo remedial examination after university supplementary examination & score

aggregate 50% marks for results to be declared (same as described in point 8). The result of the supplementary University examination for students, who fail to secure 50% marks of the total marks (40 marks after conversion- combined in theory & practical) in internal assessment, even after remedial measure, shall not be declared by university and his/her performance in the supplementary examination annulled.

b) Students who score less than 35% separately in theory & practical and the students who were unable to score aggregate 50% in remedial measures after supplementary examination will have to appear for III internal assessment examination (Preliminary examination) along with next regular batch of students & marks obtained in this examination will be used to calculate internal assessment marks. Further rules for these students will remain similar to the students admitted in next regular batch.

Supplementary University examination shall be held within 45-90 days' declaration of results of first professional University examinations.

First Year MBBS Practical Mark's Structure Internal Assessment
Examinations I&II

Physiology					
	Hematology	Clinical Examination/Human Physiology expt. / Short exercises	Journal/ Logbook	Oral Viva	Total
	A	B	C	D	E
Max. Marks	15 (5 marks OSPE + 10 Marks practical)	20 (10 marks clinical practical + 5 marks OSCE (Skilled) +5 marks (charts/graphs/ calculation based OPSE)	5	10	50

PAPER WISE DISTRIBUTION OF TOPICS FOR PHYSIOLOGY

Paper	Topics
I (Total marks 100)	MCQs on all topics of the paper I
	General Physiology
	Blood
	Respiratory System
	Cardio Vascular System,
	Cardio-respiratory and metabolic adjustment during exercise
	Renal system
	Gastro intestinal system
	Life style, aging, Meditation
	AETCOM module no. 1.2 & 1.3
	Scenariobased/application questions can be on any topic of the paper I
	For long answer question and scenario based / application questions, topics will not be repeated
II (Total	MCQs on all topics of the paper II
	Endocrine Physiology

marks 100)	Reproductive System, Physiology of Infancy
	Special senses
	Central nervous system including brain death
	Temperature Regulation & applied
	Nerve muscle physiology
	Scenariobased/applicationquestionscanbeonanytopicofthepaper II
	For long answer question and scenario based / application questions , topics will not be repeated

First Year MBBS Practical Mark's Structure for Prelim and University Exams

Practical	80	Clinical Examination	CVS	10
			RS	10
			CNS & Special senses	10
			General & Abdomen	10
		Haematology		10
		Short Exercise	Case based scenarios/ endocrine disorders photographs.	3 X 5= 15
			Interpretation of function tests.	
			One skeletal graph	
			One cardiac graph	
			Calculation	
Human Physiology Experiment	3 X 5	15		
Viva	20		20	
Total	100		100	

1 Course and Year: First MBBS Prelim and Univ. Exams (applicable w.e.f. august 2020-21 & onwards examinations)

2 Subject: Physiology 3. Paper: I/II 4. Total Marks: 100

5 Total Time: 3 hours

SECTION – “A” MCQ

Instructions:

Put in the appropriate box below the question number once only

Use blue ball point pen only

Each question carries one mark.

Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.

SECTION – A MCQ (20 Marks)

1. Multiple Choice Questions (Total 20 MCQ of One mark each) (At least 4 MCQ should be CASE based) (20x1=20)

a) e) i) m) q)

b) f) j) n) r)

c) g) k) o) s)

d) h) l) p) t)

SECTION “B” & “C”

Instructions:

- Use blue/black ball point pen only.
- Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.
- All questions are compulsory.
- The number to the right indicates full marks.
- Draw diagrams wherever necessary.
- Distribution of syllabus in Question Paper is only meant to cover entire syllabus within the stipulated frame. The Question paper pattern is a mere guideline. Questions can be asked from

any paper's syllabus into any question paper. Students cannot claim that the Question is out of syllabus. As It is only for the placement sake, the distribution has been done.

- Use a common answer book for all sections

SECTION- B (40 Marks)

2. Short Answer Questions (Any Four out of Five & two SAQs will be Clinical Application based)

(4 x 5 = 20)

a) b) c) d) e)

3. Long Answer Questions (Any Two out of Three)

(2 x 10 = 20)

a) b) c)

SECTION - C (40 Marks)

4. Short answer questions (Any Four out of five)

(4 x 5 = 20)

(1 Should be on AETCOM module 1.2/1.3 in Paper I & two SAQs will be Clinical Application Based)

a) b) c) d) e)

5. Long Answer Questions (Any Two out of Three)

(2 x 10 = 20)

a) b) c)

Books recommended:

1) Textbooks of Physiology:

- 1. Guyton - Textbook of Physiology**
- 2. Ganong - Review of Medical Physiology**
- 3. G.K. Pal-Comprehensive Text Book of Medical Physiology.**
- 4. Ghai's VP Varshney, Mona Bedi- Textbook of Physiology -9th Edition2019.**
- 5. Dr. V.G. Ranade - Laboratory Manual and Journal of Physiology Practical's**

2) Reference Books:

- 1. Best and Taylor - Physiological basis of medical practice Berne & levy. - Principles of Physiology**
- 2. S. Wright - Applied Physiology**



SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)

(Established under section 3 of the UGC Act 1956)

Re - accredited by NAAC with 'A' Grade

Founder: Prof. Dr. S. B. Mujumdar, M.Sc.,Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

Course Name: Radiodiagnosis

Course Code: Medical - RD

Faculty: Health Sciences

Programme Type: UG

Sub-Committee (Specialization): Medical

Goal :

The broad goal of teaching undergraduate medical students in the field of Radio-diagnosis should be aimed at making the students realize the basic need of various radio-diagnostic tools in medical practice. They shall be aware of the techniques required to be undertaken in different situations for the diagnosis of various ailments as well as during prognostic estimations.

Objectives :

Knowledge : The students should

- Understand the basics of X-Ray, MRI and USG
- Understand the possible indications, contraindications and hazards of the different Imaging Modalities.
- Able to advice the best possible Radiological Investigation in the given clinical conditions.
- Know about Interventional Radiology and its applications.

Skills : The student shall be able to:

- Prescribe radiological investigations for particular conditions.
- Tell the preparations required for various Radiological investigations

- Interpret common conditions on X-Ray
- Interpret common radiological findings in Emergency conditions

	Teaching schedule	
Lecture	VI th Semester	10 hrs
Clinical postings	Vth Semester	48 hrs over two weeks
Competancy Based sessions	VII Semester	13 hrs
Total :		60 hrs

Syllabus

1. X-ray

- Its nature, production, hazards and basic safety protocols.

2. Central nervous system

- Radiological manifestations of infarcts, haemorrhage, tumours and inflammations in brain and spine and emergencies.

3. Chest

- Normal chest, various lung parenchymal pathologies, congenital and acquired cardiac conditions, pneumothorax, pleural effusion, mediastinal masses.

4. Hepatobiliary system

- Ultrasound examination, contrast studies, CT, MRI

5. Musculo Skeletal

- Commonly performed skeletal radiography, various types of fractures/ locations. infections, tumours, metabolic bone disease, joint disease (Infections ,Immunological metabolic condition)

6. Gastrointestinal System

- Upper GI examination, lesions of oesophagus, stomach and duodenum –small bowel diseases, various colonic pathologies.

7. Genitourinary system

- Plain film, ultrasound examination, contrast studies, IVU, MCU, urethrogram and CT and emergencies.

8. Interventional Radiology

- Common IR procedures and their role in clinical practice.

9. Women's Imaging

- Mammography, Imaging of the foetus and pregnant imaging of gynecologic diseases and emergencies.

Integration : The above topic will be integrated horizontally and vertically as per the new curriculum set by MCI.

Books to be referred:

1. Radiology and Imaging for Medical Students (7th Edition) - David Sutton
2. Radiological Procedures – A guideline. Author: Dr Bhushan Lakhkar
3. Textbook of Radiology and Imaging. Author: David Sutton (Reference Book)



SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)

(Established under section 3 of the UGC Act 1956)

Re - accredited by NAAC with 'A' Grade

Founder: Prof. Dr. S. B. Mujumdar, M.Sc.,Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

Course Name: General Surgery

Course Code: Medical - SU

Faculty: Health Sciences

Programme Type: UG

Sub-Committee (Specialization): Medical

Goal

The goal of surgical education for undergraduates is to develop a primary care physician with knowledge and skill to clinically diagnose each and every common and important surgical disorder, and take appropriate steps to manage it with the least inconvenience to the patient and the family. The later part of the statement means a lot to the majority of Indian population with difficulties in every walk of life. In the present era of commercialization, it has become a habit of clinicians to request a battery of investigations even in straightforward cases. Such a practice blunts the thinking aptitude very fast, decaying the clinical approach. Unfortunately, students adopt this approach from the beginning of their training. Our department of General Surgery at the Symbiosis Medical College for Women would like our students to learn only the best practices. Every student passing out of this college will be a master with the greatest level of competence in clinical diagnosis.

Objectives

At the end of the course, students should be able to demonstrate following subject specific competencies

1) Knowledge

- a) Understanding of the structural and functional basis, principles of diagnosis and management of common surgical problems in adults and children,

- b) Knowledge of common malignancies in India and their prevention, early detection and therapy

2) Skill

- a) Ability to choose, calculate and administer appropriately intravenous fluids, electrolytes, blood and blood products based on the clinical condition,
- b) Ability to apply the principles of asepsis, sterilization, disinfection, rational use of prophylaxis, therapeutic utilities of antibiotics and universal precautions in surgical practice,
- c) Ability to perform common diagnostic and surgical procedures at the primary care level,
- d) Ability to recognize, resuscitate, stabilize and provide Basic & Advanced Life Support to patients following trauma,
- e) Ability to administer informed consent and counsel patient prior to surgical procedures

3) Attitude

- a) Commitment to advancement of quality and patient safety in surgical practice.

GENERAL SURGERY SYLLABUS

Above objectives will be achieved by gaining competency in following Topics Each Topic has multiple competencies

Integration: The teaching of these topics will be aligned and integrated horizontally and vertically in order to provide a sound biologic basis and a holistic approach to the care of the surgical patient.

List of Topics

1) Metabolic response to injury

- a) Describe Basic concepts of homeostasis, enumerate the metabolic changes in injury and their mediators.
- b) Describe the factors that affect the metabolic response to injury.
- c) Describe basic concepts of perioperative care.

2) Shock

- a) Describe Pathophysiology of shock, types of shock & principles of resuscitation including fluid replacement and monitoring.
- b) Describe the clinical features of shock and its appropriate treatment.
- c) Communicate and counsel patients and families about the treatment and prognosis of shock demonstrating empathy and care

3) Blood & blood components

- a) Describe the Indications and appropriate use of blood and blood products and complications of blood transfusion.
- b) Observe blood transfusions.
- c) Counsel patients and family/ friends for blood transfusion and blood donation.

4) Burns

- a) Elicit document and present history in a case of Burns and perform physical examination. Describe Pathophysiology of Burns.
- b) Describe Clinical features, Diagnose type and extent of burns and plan appropriate treatment.
- c) Discuss the Medicolegal aspects in burn injuries.
- d) Communicate and counsel patients and families on the outcome and rehabilitation demonstrating empathy and care.

5) Wound Healing & wound care

- a) Describe normal wound healing and factors affecting healing.
- b) Elicit, document and present a history in a patient presenting with wounds.
- c) Differentiate the various types of wounds, plan and observe management of wounds.
- d) Discuss medico legal aspects of wounds

6) Surgical infections

- a) Define and describe the aetiology and pathogenesis of surgical Infections
- b) Enumerate Prophylactic and therapeutic antibiotics Plan appropriate management

7) Surgical audit & research

- a) Describe the Planning and conduct of Surgical audit
- b) Describe the principles and steps of clinical research in General surgery

8) Ethics

- a) Describe the principles of Ethics as it pertains to General Surgery
- b) Demonstrate Professionalism and empathy to the patient undergoing General Surgery
- c) Discuss Medico-legal issues in surgical practice

9) Investigation of a surgical patient

- a) Choose appropriate biochemical, microbiological, pathological, imaging investigations and interpret the investigative data in a surgical patient
- b) Biological basis for early detection of cancer and multidisciplinary approach in management of cancer
- c) Communicate the results of surgical investigations and counsel the patient appropriately

10) Pre, intra & post operative management

- a) Describe the principles of perioperative management of common surgical procedures
- b) Describe the steps and obtain informed consent in a simulated environment
- c) Observe common surgical procedures and assist in minor surgical procedures; Observe emergency lifesaving surgical procedures.
- d) Perform basic surgical Skills such as First aid including suturing and minor surgical procedures in simulated environment

11) Anaesthesia & Pain Management

- a) Describe principles of Preoperative assessment.
- b) Enumerate the principles of general, regional, and local Anaesthesia.
- c) Demonstrate maintenance of an airway in a mannequin or equivalent
- d) Enumerate the indications and principles of day care General surgery
- e) Describe principles of providing post-operative pain relief and management of chronic pain.
- f) Describe Principles of safe General Surgery

12) Nutrition & fluid therapy

- a) Enumerate the causes and consequences of malnutrition in the surgical patient
- b) Describe and discuss the methods of estimation and replacement of the fluid and electrolyte requirements in the surgical patient
- c) Discuss the nutritional requirements of surgical patients, the methods of providing nutritional support and their complications

13) Transplantation

- a) Describe the immunological basis of organ transplantation
- b) Discuss the Principles of immunosuppressive therapy. Enumerate Indications, describe surgical principles, management of organ transplantation
- c) Discuss the legal and ethical issues concerning organ donation
- d) Counsel patients and relatives on organ donation in a simulated environment

14) Basic Surgical Skills

- a) Describe Aseptic techniques, sterilization and disinfection.
- b) Describe Surgical approaches, incisions and the use of appropriate instruments in Surgery in general.
- c) Describe the materials and methods used for surgical wound closure and anastomosis (sutures, knots and needles)
- d) Demonstrate the techniques of asepsis and suturing in a simulated environment

15) Biohazard disposal

- a) Describe classification of hospital waste and appropriate methods of disposal

16) Minimally invasive general surgery

- a) Minimally invasive General Surgery: Describe indications advantages and disadvantages of Minimally invasive General surgery

17) Trauma

- a) Describe the Principles of FIRST AID
- b) Demonstrate the steps in Basic Life Support. Transport of injured patient in a simulated environment
- c) Describe the Principles in management of mass casualties
- d) Describe Pathophysiology, mechanism of head injuries

- e) Describe clinical features for neurological assessment and GCS in head injuries
- f) Chose appropriate investigations and discuss the principles of management of head injuries
- g) Describe the clinical features of soft tissue injuries. Chose appropriate investigations and discuss the principles of management
- h) Describe the pathophysiology of chest injuries.
- i) Describe the clinical features and principles of management of chest injuries
- j) Demonstrate Airway maintenance. Recognize and manage tension pneumothorax, hemothorax and flail chest in simulated environment.

18) Skin & subcutaneous tissue

- a) Describe the pathogenesis, clinical features and management of various cutaneous and subcutaneous infections.
- b) Classify skin tumors Differentiate different skin tumors and discuss their management
- c) Describe and demonstrate the clinical examination of surgical patient including swelling and order relevant investigation for diagnosis. Describe and discuss appropriate treatment plan.

19) Developmental anomalies of face, mouth & jaws

- a) Describe the etiology and classification of cleft lip and palate
- b) Describe the Principles of reconstruction of cleft lip and palate

20) Oropharyngeal cancer

- a) Describe etiopathogenesis of oral cancer symptoms and signs of oropharyngeal cancer.
- b) Enumerate the appropriate investigations and discuss the Principles of treatment

21) Disorders of salivary glands

- a) Describe surgical anatomy of the salivary glands, pathology, and clinical presentation of disorders of salivary glands
- b) Enumerate the appropriate investigations and describe the Principles of treatment of disorders of salivary glands

22) Endocrine General surgery: Thyroid & Parathyroid

- a) Describe the applied anatomy and physiology of thyroid
- b) Describe the etiopathogenesis of thyroidal swellings
- c) Demonstrate and document the correct clinical examination of thyroid swellings and discus the differential diagnosis and their management
- d) Describe the clinical features, classification and principles of management of thyroid cancer
- e) Describe the applied anatomy of parathyroid
- f) Describe and discuss the clinical features of hypo - and hyperparathyroidism and the principles of their management

23) Adrenal glands

- a) Describe the applied anatomy of adrenal glands
- b) Describe the etiology, clinical features and principles of management of disorders of adrenal gland
- c) Describe the clinical features, principles of investigation and management of Adrenal tumors

24) Pancreas

- a) Describe the clinical features, principles of investigation, prognosis and management of pancreatitis.
- b) Describe the clinical features, principles of investigation, prognosis and management of pancreatic endocrine tumours
- c) Describe the principles of investigation and management of Pancreatic disorders including pancreatitis and endocrine tumors

25) Breast

- a) Describe applied anatomy and appropriate investigations for breast disease
- b) Describe the etiopathogenesis, clinical features and principles of management of benign breast disease including infections of the breast
- c) Describe the etiopathogenesis, clinical features, Investigations and principles of treatment of benign and malignant tumours of breast.
- d) Counsel the patient and obtain informed consent for treatment of malignant conditions of the breast
- e) Demonstrate the correct technique to palpate the breast for breast swelling in a mannequin or equivalent

26) Cardiothoracic General surgery: Chest Heart & lungs

- a) Outline the role of surgery in the management of coronary heart disease, valvular heart diseases and congenital heart diseases
- b) Describe the clinical features of mediastinal diseases and the principles of management
- c) Describe the etiology, pathogenesis, clinical features of tumors of lung and the principles of management

27) Vascular diseases

- a) Describe the etiopathogenesis, clinical features, investigations and principles of treatment of occlusive arterial disease.
- b) Demonstrate the correct examination of the vascular system and enumerate and describe the investigation of vascular disease
- c) Describe clinical features, investigations and principles of management of vasospastic disorders
- d) Describe the types of gangrene and principles of amputation
- e) Describe the applied anatomy of venous system of lower limb
- f) Describe pathophysiology, clinical features, Investigations and principles of management of DVT and Varicose veins

- g) Describe pathophysiology, clinical features, investigations and principles of management of Lymph edema, lymphangitis and lymphomas
- h) Demonstrate the correct examination of the lymphatic system

28) Abdomen

- a) Describe pathophysiology, clinical features, Investigations and principles of management of hernias
- b) Demonstrate the correct technique to examine the patient with hernia and identify different types of hernias.
- c) Describe causes, clinical features, complications and principles of mangament of peritonitis
- d) Describe pathophysiology, clinical features, investigations and principles of management of Intra-abdominal abscess, mesenteric cyst, and retroperitoneal tumors
- e) Describe the applied Anatomy and physiology of esophagus
- f) Describe the clinical features, investigations and principles of management of benign and malignant disorders of esophagus
- g) Describe the applied anatomy and physiology of stomach
- h) Describe and discuss the aetiology, the clinical features, investigations and principles of management of congenital hypertrophic pyloric stenosis, Peptic ulcer disease, Carcinoma stomach
- i) Demonstrate the correct technique of examination of a patient with disorders of the stomach
- j) Describe the applied anatomy of liver. Describe the clinical features, Investigations and principles of management of liver abscess, hydatid disease, injuries and tumors of the liver
- k) Describe the applied anatomy of spleen. Describe the clinical features, investigations and principles of management of splenic injuries. Describe the post-splenectomy sepsis - prophylaxis
- l) Describe the applied anatomy of biliary system. Describe the clinical features, investigations and principles of management of diseases of biliary system
- m) Describe the applied anatomy of small and large intestine
- n) Describe the clinical features, investigations and principles of management of disorders of small and large intestine including neonatal obstruction and Short gut syndrome
- o) Describe the clinical features, investigations and principles of management of diseases of Appendix including appendicitis and its complications.
- p) Describe applied anatomy including congenital anomalies of the rectum and anal canal
- q) Describe the clinical features, investigations and principles of management of common anorectal diseases
- r) Describe and demonstrate clinical examination of abdomen. Order relevant investigations. Describe and discuss appropriate treatment plan

29) Urinary system

- a) Describe the causes, investigations and principles of management of haematuria
- b) Describe the clinical features, investigations and principles of management of congenital anomalies of genitourinary system
- c) Describe the Clinical features, Investigations and principles of management of urinary tract infections
- d) Describe the clinical features, investigations and principles of management of hydronephrosis
- e) Describe the clinical features, investigations and principles of management of renal calculi
- f) Describe the clinical features, investigations and principles of management of renal tumours
- g) Describe the principles of management of acute and chronic retention of urine Describe the clinical features, investigations and principles of management of bladder cancer
- h) Describe the clinical features, investigations and principles of management of disorders of prostate
- i) Demonstrate a digital rectal examination of the prostate in a mannequin or equivalent
- j) Describe clinical features, investigations and management of urethral strictures

30) Penis testis & Scrotum

- a) Describe the clinical features, investigations and principles of management of phimosis, paraphimosis and carcinoma penis.
- b) Describe the applied anatomy clinical features, investigations and principles of management of undescended testis.
- c) Describe the applied anatomy clinical features, investigations and principles of management of epididymo-orchitis
- d) Describe the applied anatomy clinical features, investigations and principles of management of varicocele
- e) Describe the applied anatomy clinical features, investigations and principles of management of Hydrocele
- f) Describe classification, clinical features, investigations and principles of management of tumours of testis

Specific learning objectives will be derived from the topic competencies. Further clearly defined teaching-learning strategies will be derived from these. Based on the TL methods effective methods of assessment will be derived

FINAL MBBS EXAMINATION IN SURGERY

Evaluation of 3rd MBBS students in subject of surgery will be done by following Evaluation Methods – Internal assessment, Theory, Practical and Viva

A) ELIGIBILITY

1) INTERNAL ASSESSMENT

Theory –	50
Practical / Clinical -	50
Total	100

- Total Marks secured in all Internal Assessment exams will be converted as above using a conversion formula Theory 50 Marks, Practical 50 Marks Total 100 Marks
- Student must secure at least 50% marks of the total marks (Combined in Theory & Practical and not less than 40% marks in theory & 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 a separate head of passing at the summative exam

2) REMEDIAL MEASURES:

- Remedial Internal assessment examination will be taken for Students who either have not been able to secure marks required for eligibility as above or have missed some assessment due to any justifiable reason.
- The remedial Exam will consist of theory and Practical of 100 marks each & will be taken within 10 days of the declaration of Block III/ Preliminary Examination results

3) DETENTION POLICY

- A student may be detained from appearing in the university exam if they are not eligible as per the attendance or internal assessment criteria

B) INTERNAL ASSESSMENT

1) ABOUT INTERNAL ASSESSMENT

- a) Regular periodic examinations shall be conducted throughout the course. Three internal assessment exams and Prelims (Consisting of theory paper & practical exam) will be conducted
- b) Student will maintain Day to day records & log book (Including the required skill certifications, and competencies). It will be given due weightage in the internal assessment

Student should have completed the required certifiable competencies and the log book; appropriate for that phase of training to be eligible for appearing at the university examination of that subject

2) PERIODIC EXAMINATIONS With Pattern & Mark Distribution

a) **MBBS Phase II** : For internal assessment one theory & practical exam will be conducted at the end of clinical posting to surgery. For orthopaedics & radiology only practical exam will be conducted at the end of respective clinical posting as per the table given below

Sr.No	Subjects(Weeks of Rotation)	Theory	Practical	Journal / Log Book	Practical Total
1	General Surgery (4)	50	65	10	75
2	Orthopaedics (2) (Only Practical)	--	45	5	50
3	Radiology (2) (Only Practical)	--	25	--	25

i) **Clinical Assessment at the end of Posting EOP**

Surgery Pattern & Mark Distribution (Practical)

Clinical A (45 Marks)			OSCE & Viva B (20 Marks)		Journal & Log Book C (10 Marks)	Grand TOTAL
Case	Demonstration of clinical signs	Communication skills	OSCE of Psychomotor Skills	Table viva (Surgical pathology -2, X rays -3, Instruments -2, Procedure - 3)		A +B +C
25	15	5	10	10	10	75

Orthopedics Pattern & Mark Distribution (Practical)

Clinical A (25 Marks)			OSCE & Viva B (20 Marks)		Journal & Log Book C (5 Marks)	Grand TOTAL
Case	Demonstration of clinical signs	Communication skills	OSCE of Psychomotor Skills	Table viva [Surgical pathology -2, X rays -3, Instruments -2, Procedure - 3]		A +B +C
10	10	5	10	10	5	50

Radiology Pattern & Mark Distribution (Practical)

Examination in Radiodiagnosis				
X-Ray and other diagnostic modalities - Basics A	Viva (B)		Journal & Log Book (C)	Grand Total A +B +C
	(Knowledge of legal aspects, radiation protection etc)			
15	10		--	25

- i) **Theory Assessment:** Theory assessment will be conducted after the completion of theory lectures of General surgery as per the schedule during the allotted time

Subject	Marks	Time Of Conduct
General Surgery	50	After the completion of theory lectures as per the schedule during the allotted time

Theory Exam Pattern & mark Distribution: Exam will be based on Multiple choice questions (20 X 1 Mark each) & Short answer questions (6 X 5 marks each) Covering all Topics covered during II Phase Total allotted time 1 hour. Total Marks 50

Theory Exam - Format for Internal Assessment in MBBS Phase II & MBBS Phase III Part I

General Instructions

- MCQ section A will be given to candidates at the beginning of the examination. After 20 minutes Section A will be collected.
- Mark the answer in the OMR Sheet in the appropriate box
- Use only Blue ball point pen
- Do not overwrite, strike, or put white ink on the box once marked. It will be considered as invalid & not be allotted marks
- Each Question carries 1 Mark
- MCQ will cover whole syllabus of Paper I

Section . A - MCQ

Q 1 Multiple choice Questions	Total 20 questions		1 Mark each	20 Marks
i) ii)	iii)	L)		

Section B Short Answer questions

Q 2 Short Answer Questions:			6 x 5 Mark each	30 Marks
i) ii)	iii) 	vi)		

a) **MBBS Phase III Part I**

For internal assessment one theory & practical exam will be conducted at the end of each clinical posting to surgery and ortho. For Dentistry & Anaesthesia one practical exam will be conducted at the end of its posting. Combined one theory exam will be conducted for (Dentistry& Anaesthesia) + Radiology. Total three theory exam will be conducted as per the table given below

Sr No	Subjects(Weeks of Rotation)	Theory	Practical	Journal	Practical Total
1	General Surgery (4)	50	65	10	75
2	Orthopedics (4)	50	65	10	75
3	Anesthesia & Dentistry (2)	50	20	5	25
4	Radiology (No Clinical Posting)		--	--	25

i) **Clinical Assessment at the end of Posting EOP**

Surgery & Orthopaedics Pattern & Mark Distribution (Practical)

Clinical A (45 Marks)			OSCE & Viva B (20 Marks)		Journal & Log Book C (10 Marks)	Grand TOTAL
Case	Demonstration of clinical signs	Communication skills	OSCE of Psychomotor Skills	Table viva (Surgical pathology -2, X rays -3, Instruments -2, Procedure - 3)		A +B +C
25	15	5	10	10	10	75

Anaesthesia Pattern & Mark Distribution (Practical)

Examination in Anesthesia				
OSCE	Drugs, Instruments	Viva	Journal & Log Book	Grand Total
10	5	5	5	25

- i) **Theory Assessment:** Total three theory papers of 50 Marks each in General Surgery, Orthopaedics and [Radiodiagnosis + (Dentistry & Anaesthesiology)] will be conducted after completion of all theory lectures of surgery & allied subjects

Sr. No	Subjects	Marks	Time of Conduct
1	General Surgery	50	After completion of all theory lectures of surgery & allied subjects as per schedule during the allotted
2	Orthopaedics	50	
3	Radiodiagnosis	50	
4	Anaesthesiology & Dentistry		

Theory Exam Pattern & mark Distribution: will be based on Multiple choice questions (20 X 1 Mark each) & Short answer questions (5 X 6 marks each) Covering all topics covered during MBBS Phase III Part I **Total allotted time** 1 hour for each paper

Questions Papers	Multiple Choice Questions 20 x 1 Mark Each	Short Answer Questions 6 x 5 Marks Each	TOTAL MARKS
General Surgery	20	30	50
Orthopaedics	20	30	50
Radiodiagnosis + (Dentistry & Anaesthesia)	20 (Radiology 10; Anaesthesia 10)	6 (Radiology 3; Anaesthesia 2; Dentistry 1)	50

Pattern will be same as Internal Assessment theory Exam of MBBS Phase II

a) MBBS Phase III Part II

Two internal Assessment exams will be conducted during Phase III Part II. One at the **end of Posting** and **One Prelims**.

End Of Posting Exam

i) Clinical Assessment at the end of Posting EOP

Sr No	Subjects (Weeks of Rotation)	Theory	Practical	Journal	Practical Total
I	General Surgery (8)	75	130	20	150
2	Orthopedics (2)	25	65	10	75

Surgery Pattern & Mark Distribution

Clinical A (90 Marks)			OSCE & Viva B (40 Marks)		Journal & Log Book C (20 Marks)	Grand TOTAL
Case	Demonstration of clinical signs	Communication skills	OSCE of Psychomotor Skills	Table viva (Surgical pathology -2, X rays -3, Instruments -2, Procedure - 3)		A +B +C
50	30	10	20	20	20	150

Orthopedics Pattern & Mark Distribution

Clinical A (45 Marks)			OSCE & Viva B (20 Marks)		Journal & Log Book C (10 Marks)	Grand TOTAL
Case	Demonstration of clinical signs	Communication skills	OSCE of Psychomotor Skills	Table viva (Surgical pathology -2, X rays -3, Instruments -2, Procedure - 3)		A +B +C
25	15	5	10	10	10	75

i) **Theory Assessment at the end Of Posting** will be conducted at the end of 8th semester as per schedule during allotted time

Sr No	Subjects	Marks	One Theory Paper Total Marks	Time of Conduct
1	General Surgery	75	100	After completion theory lecturehrs. as per schedule., during the allotted teaching time.
2	Orthopedics	25		

Theory Exam Pattern & mark Distribution: Exam will be based on all topics covered in surgery, Orthopedics, during MBBS Phase III Part II
It will contain Multiple choice questions 20 Questions for 1 mark each. (Surgery 15 questions and Ortho 5 questions) Long answer questions

Short answer questions & Brief answer question based on case scenarios

Total Marks 100 Total Time 3 Hr. (Section A 30 Min, Section B & C 150 Min)

Format For MBBS Phase III Part II Internal Assessment in Theory

Section A: Based on Multiple Choice questions	20 X 1 Mark each	20 Marks
Q 1 Multiple Choice questions		
i) ii) iii) xx)		
Section B: General Surgery		
Q2 Long Answer Questions	2 x 15 Marks each	30 Marks
i) ii)		
Q3 Short Answer Questions:	4 x 5 Marks each	20 Marks
i) ii) iii) iv)		
Q4 Brief Answer Questions based on case scenarion	2 x 5 Marks	10 Marks
i) Scenario 1 5 questions x 1 mark	ii) Scenario 2 5 questions x 1 Mark	
Section C: Orthopaedics		
Q5 Short Answer Questions:	4 x 5 Marks each	20 Marks
i) ii) iii) iv)		

Preliminary Exam

i) Preliminary Exam's Mark Distribution & Format for the Theory & Practical will be the same as that for the university Exam
(Given in University Exam)

SUMMARY OF INTERNAL ASSESSMENT

PHASE	SUBJECT	THEORY	PRACTICAL		
			Clinical (Cases + Viva)	Journal + Log Book	Total
MBBS Phase II (A)	Surgery	50	65	10	75
	Orthopedics	--	45	5	50
	Radiology	--	25	--	25
	TOTAL	50			150
MBBS Phase III Part I (B)	Surgery	50	65	10	75
	Orthopedics	50	65	10	75
	Radiology	25	--	--	--
	Dental/ Anaesthesia	25	20	5	25
	TOTAL	150	--	--	175
ELECTIVES Only Formative Assessment	Block I 4 wk Clinical Posting	50			50
	Block II 4 Wk	50			50
	TOTAL	100	--	--	100
MBBS Phase III Part II (C)	Surgery	75	130	20	150
	Orthopedics	25	65	10	75
	TOTAL	100	--	--	225
PRELIMS (D)	Surgery & Allied Paper I	100	Clinical Cases 120 Marks	OSCE + VIVA + Journal + Log Book 80 Marks	200
	Surgery & Allied Paper II	100			
	TOTAL	200	--	--	200
GRAND TOTAL OF IA Marks A + B + C + D		500			750

3) CONVERSION OF Total Internal Assessment Marks

	Theory Marks	Practical Marks	Total
Grand Total In all Internal Assessment exams	500	750	1250
Conversion Out Of	50	50	100
Formula	Total / 10	Total / 15	
Eligibility In Percent & marks	40%	40%	50%
	20 /50	20 /50	50 /100

C FINAL UNIVERSITY EXAMINATION

- 1) **Pattern of theory examination** Including distribution of marks, Questions and Time
 - a) There shall be two theory papers - Paper I and II, carrying 100 marks each.
 - b) Each paper will have three sections, A, B and C. Each paper will be of 3 hours duration.
 - c) Section A will be MCQ in each paper.
 - d) Section B and C will have to be written in separate answer sheets. Both will have Long Answer Question (LAQ) and Short Answer Questions (SAQ)

- 2) **The topic covered in each Paper & section** shall be as follows : -

Paper	Section	Topics
I	A	MCQs on all topics of paper I of Surgery
	B	Metabolic response to injury, Shock, Blood and blood components, Burns, Wound healing and wound care, Surgical infections, Surgical Audit and Research, Nutrition and fluid therapy, Transplantation, Biohazard disposal, Trauma, Skin and subcutaneous tissue, Developmental anomalies of face, mouth and jaws, Oropharyngeal cancer, Disorders of salivary glands, Endocrine General Surgery: Thyroid and parathyroid, Adrenal glands, Breast, Vascular diseases, Ethics & AETCOM (module4.3,4.5,4.6)
	C	Abdomen- including Hernia, Peritoneum, GIT tract including esophagus, stomach, small intestine, colon rectum and anal canal,Liver , Spleen, Pancreas, Biliary tract , Minimally invasive Surgery, Pediatric surgery
II	A	MCQs on all topics of the paper II including orthopaedics, anaesthesia, radiology , radiotherapy and dentistry .
	B	Cardio-thoracic - Chest - Heart and Lungs ,Urinary System- Kidney ureter and urinary bladder , Penis, Testis and scrotum, Plastic surgery, Oncology, Investigation of surgical patient, Pre, intra and post-operative management Radiology, Radiotherapy, Anesthesia and pain management , Dentistry
	C	Orthopedics ,

Section . C -

Q 3 Long Answer questions Structured case based **General Surgery** Any one out of two
1 x 15 15

Marks

a) b)
Q.4 Short Answer Questions **General Surgery** Any 4 out of 5 4 x 5 20

Marks

a) b) c) d) e)

b) Paper II 100 Marks 3hours

Section . A - MCQ

General Instructions

- MCQ section A will be given to candidates at the beginning of the examination. After 30 minutes Section A will be collected.
- Mark the answer in the OMR Sheet in the appropriate box
- Use only Blue ball point pen
- Do not overwrite, strike, or put white ink on the box once marked. It will be considered as invalid & not be allotted marks
- Each Question carries 1 Mark
- MCQ will cover

Section . A - MCQ

Q 1 Multiple choice Questions Total 20 1 Mark each 20
Marks

15 Gen Surgery, 2 Orthopedics, 1 Anaesthesia, 1 Dentistry & 1 Radiology

a) b) c)
..... t)

Section . B & C

General Instructions

- Time for Sec. B & C – Two and half hours.
- Section B and C to be written in separate answer sheets.
- Use only Blue Black ball point pen
- All questions are compulsory
- The number to the right indicates full marks
- Draw diagrams wherever necessary

Section . B - General Surgery Any two out of three
Q 2 Long Answer questions Structured case based 2 x 15 30
Marks

a)
b)

Q.3 Short Answer Questions Any 5 out of 6 5 x 5 25
Marks

(1 general Surgery, 2 Radiodiagnosis, 2 Anaesthesia, 1 Dentistry

a) b) c) g)

Section . C -Orthopedics

Q 3 Long Answer questions Structured case based **Orthopedics** Any one out of two
1 x 15 15
Marks

a)

Q.4 Short Answer Questions **Orthopedics** Any 2 out of 3 2 x 5 10
Marks

a) b) c)

MBBS Phase III Part - Format Of Prelim & University Practical Exam

- | | |
|---------------------------------------|-----------|
| i) PRACTICALS | 200 marks |
| (1) Clinical Cases- | 120 Marks |
| (2) OSCE + TABLE+ Journal & Log Book- | 80 Marks |

Long Case General Surgery including communication skill (60)		Short Case 1 General Surgery (30)		Short Case 2 Ortho (30)		General Surgery (60) OSCE # & Table viva			Ortho (20)	Grand Total
Long case	Communi- cation skills *	Short case	Clinical signs demo	Short case	Clinical signs demo	Instruments 10 +Procedure 5 + Log book 5	Radiology 10 + Surgical Pathology 5 +Journal 5	OSCE	OSCE (10) + Table (10)	
50	10	20	10	20	10	20	20	20	20	200

Books Recommended

Text Books:

1. 'Bailey and Love's Short Practice of Surgery' Edited by Norman Williams et al. CRC Press
2. 'Principles and Practice of Surgery' Edited by O. James Garden et al Elsevier/Churchill-Livingstone

Book for Clinical Case-taking (History-taking, examination and diagnosis):

- 1) Clinical Surgery. By S Das
- 2) Arriving at a Surgical Diagnosis' Written by PS Bapat Jaypee Brothers Medical Publishers

Book on Operative Surgery:

- 1) 'Farquharson's Textbook of Operative General Surgery' Edited by Margaret Farquharson and Brendan Moran, Hodder Arnold

Reference books:

1. 'Clinical Surgery' Edited by Cuschieri et al. Blackwell Publications
2. Hamilton Bailey's Demonstration of Physical Signs in Clinical Surgery' Edited by John Lumley et al CRC Press
3. 'Practical Applications of Intravenous Fluids in Surgical Patients' Written by Shaila Kamat Jaypee Brothers Medical Publishers
4. 'Last's Anatomy: Regional and Applied' Churchill-Livingstone
5. 'Clinically Oriented Anatomy' Edited by Keith Moore et al Wolters Kluwer
6. 'Pathology Illustrated' Edited by Robin Reid et al Elsevier/Churchill-Livingstone



SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)

(Established under section 3 of the UGC Act 1956)

Re - accredited by NAAC with 'A' Grade

Founder: Prof. Dr. S. B. Mujumdar, M.Sc.,Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

Course Name: Human Anatomy

Course Code: Medical - AN

Faculty: Health Sciences

Programme Type: UG

Sub-Committee (Specialization): Medical

Preamble:

The subject of Anatomy is about the macroscopic and microscopic study of structure of human body and correlating it with its functioning. The history of this subject can be traced back to almost 2000 years ago when it was studied by the Greeks. Even in those days there was awareness that unless the structure and function of the human body was understood it was not possible to treat the human being.

Anatomy is part of the Pre-clinical phase (Phase-I) of medical education. This phase of medical education begins with one month of Foundation course followed by 13 months of studying the Preclinical subjects i.e. Human Anatomy, Physiology, Biochemistry and Introduction to Community Medicine, Humanities, Professional development including Attitude, Ethics & Communication (AETCOM) module and early clinical exposure, ensuring both horizontal and vertical integration. Thus the learning of Anatomy subject will be started by students following completion of the Foundation course at the end of the month of August. The total duration for learning Human Anatomy is 13 months.

The subject of Anatomy is studied under several subheadings such as gross anatomy, histology, embryology and genetics. The gross anatomy itself is further subdivided into different regions of the body such as superior and inferior extremity, thorax, abdomen, head face, neck and

neuroanatomy. Histology and embryology are also further subdivided into general and systemic.

In 2019 the medical curriculum in India underwent a revision. Henceforth the emphasis in medical education will be on learning as per the specified competencies with stress on integrated teaching and learner centred acquisition of skills, ethical and humanistic values.

Goal: The Broad goal of teaching Human Anatomy to undergraduate students aims to provide comprehensive knowledge of the structure of Human body along with the various organ systems of the body to facilitate the understanding of structure function correlation as well as structural relation of health and disease.

Objectives:

Knowledge: At the end of the Phase I, the undergraduate student must be able to:

Understand the normal gross anatomy of the human body

Describe the structure of the central nervous system and its connections within and with rest of the body.

Comprehend the microscopic structure of human body.

Comprehend the basic principles of development of human body and embryological anomalies

Explain the clinical correlation of the organs and structures involved and interpret the anatomical basis of the disease presentations following the early clinical exposure sessions.

Comprehend the basics of genetics in relation to structure of chromosomes, chromosomal abnormalities and patterns of inheritance and to apply it with genetic disorders.

Skills:

Dissect the cadaver to identify the normal structure in Human body.

Identify the micro-structure of various tissues and Organs under the microscope.

Demonstrate the Human development and Genetic inheritance using models and Charts.

Attitude, Communication and Ethics:

Develop respect for the human body.

Exhibit honesty, fairness, respect and integrity in all interactions during the course.

Recognize the importance of teamwork.

ANATOMY SYLLABUS

The topics will be covered as per GMER guidelines.

General Anatomy

Normal anatomical position, various planes, relation, comparison, laterality & movement in our body

Various types of cartilage with its structure & distribution in body

Composition of bone and bone marrow. Classification of bones and their salient features. Parts, blood and nerve supply of a long bone.

Various joints with subtypes and examples. Salient features of Synovial joint.

Classification of muscle tissue according to structure & action. The parts of skeletal muscle and difference between tendons and aponeuroses with examples.

Different types, structure & function of skin. Dermatomes in body.

Types, Structure and function of fascia. Modifications of deep fascia with its functions.

The architecture of Cardio-vascular system, its parts and function. Difference between systemic and pulmonary circulation. Other types of circulations.

The components and functions of the lymphatic system

General plan of nervous system with components of central, peripheral & autonomic nervous systems

General Histology

Epithelium: microanatomy of epithelium, various types, function and the ultrastructure of epithelium.

Connective tissue: Various types, function and the ultrastructure of connective tissue

Muscle: microanatomy of various types, function and the ultrastructure of muscular tissue

Nervous tissue: Multipolar and unipolar neuron, ganglia, peripheral nerve with the structure-function correlation of neuron along with the ultrastructure of nervous tissue.

Blood Vessels: microstructure of blood vessels, capillaries. Various types and structure-function correlation of blood vessel and the ultrastructure of blood vessels

Glands & Lymphoid tissue: microstructure of Exocrine gland and distinguish between serous, mucous and mixed acini and the lymphoid tissue & microanatomy of lymph node, spleen, thymus, tonsil and their function.

Bone & Cartilage: Microanatomy, classification, various types and function of Bone and cartilage.

Integumentary System: microanatomy of skin and its appendages and their function.

General Embryology

Stages of human life, the terms- phylogeny, ontogeny, trimester, viability

Uterine changes occurring during the menstrual cycle, Synchrony between the ovarian and menstrual cycles

Spermatogenesis and Oogenesis.

Stages and Consequences of Fertilization and the anatomical principles underlying contraception

Teratogenic influences; fertility and sterility, surrogate motherhood, social significance of “sex-ratio”.

Cleavage and formation of blastocyst and the development of trophoblast.

Process of implantation & common abnormal sites of implantation and abortion, decidual reaction.

Formation of extra-embryonic mesoderm and coelom, bilaminar disc and prochordal plate

Formation & fate of the primitive streak

Development and fate of Notochord

Process of Neurulation

Development of somites and intra-embryonic coelom

Embryological basis of congenital malformations, nucleus pulposus, sacrococcygeal teratomas, neural tube defects

Pregnancy test, pregnancy in first trimester and role of teratogens, alpha-fetoprotein

Formation, functions & fate of-chorion, amnion, yolk sac, allantois & decidua

Formation & structure of umbilical cord, various types of umbilical cord attachments

Formation of placenta, its physiological functions, fetomaternal circulation & placental barrier, role of placental hormones in uterine growth & parturition.

Embryological basis of twinning in monozygotic & dizygotic twins

Embryological basis of estimation of fetal age.

Various methods of prenatal diagnosis

Indications, process and disadvantages of amniocentesis, chorion villus biopsy

Upper Limb

Bony landmarks of upper limb: Jugular notch, sternal angle, acromial angle, spine of the scapula, vertebral level of the medial end, Inferior angle of the scapula

The bones of superior extremity, its side, important features, anatomical position and joints formed by them.

Attachment, nerve supply & action of muscles of pectoral, Shoulder and Scapular region.

Location, extent, deep relations, structure, age changes, blood supply, lymphatic drainage, microanatomy, development and applied anatomy of breast.

Boundaries and contents of axilla

Origin, extent, course, parts, relations and branches of axillary artery & tributaries of vein

Formation, branches, relations, course of terminal branches of brachial plexus

The anatomical groups of axillary lymph nodes and their areas of drainage.

Type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, muscles involved, blood supply, nerve supply and applied anatomy of shoulder joint, Sternoclavicular joint, Acromioclavicular joint.

Attachment, nerve supply & action of muscle groups of upper arm.

Boundaries and contents of cubital fossa. Anatomical basis of Venepuncture of cubital vein.

Type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, muscles involved, blood supply, nerve supply and applied anatomy of Elbow joint.

Muscle groups of forearm with attachments, nerve supply and actions.

Type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, muscles involved, blood supply, nerve supply and applied anatomy of Wrist joint, Carpometacarpal joints & Metacarpophalangeal joint.

Intrinsic muscles groups of hand and movements of thumb and muscles involved

The bones and joints of upper limb seen in anteroposterior and lateral view radiographs of shoulder region, arm, elbow, forearm and hand.

Development of upper limb

Palpation of Brachial artery, Radial artery, testing of muscles of upper Limb.

Lower Limb

Anatomical position, side identification and important features of all the bones of Lower limb, joints formed by the given bones and their importance.

Origin, course, relations, branches (or tributaries), termination & clinical application of important nerves and vessels of thigh,

Attachment, nerve supply and actions of muscles of front and medial side of thigh.

Boundaries, floor, roof and contents of femoral triangle, Adductor canal and the anatomical basis of psoas abscess, femoral Hernia

Origin, course, relations, branches (or tributaries), termination of important nerves and vessels of gluteal region

Anatomical basis of sciatic nerve injury during gluteal intramuscular injections and Trendelenburg sign.

Hamstrings group of muscles with their attachment, nerve supply and actions

Boundaries, roof, floor, contents and relations of popliteal fossa

Type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply, bursae around the hip joint.

Anatomical basis of Complication of fracture of femur, dislocation of hip joint and surgical Hip replacement.

Muscles of leg with their attachment, nerve supply and actions.

Origin, course, relations, branches (or tributaries), termination & clinical application of important nerves and vessels of anterior compartment of leg.

Type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood, nerve supply, bursae and applied anatomy of knee joint.

Arches of Foot, factors maintaining arches of the foot with its importance, anatomical basis of Flat foot, club foot, metatarsalgia, and plantar fasciitis.

Type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply of tibiofibular, ankle joint, subtalar and transverse tarsal joints.

Fascia lata, venous drainage, Lymphatic drainage, Retinacula & Dermatomes of lower limb.

Anatomical basis of enlarged inguinal lymph nodes, varicose veins and deep vein thrombosis.

Bones and joints of lower limb seen in anteroposterior and lateral view of radiographs.

Important bony and soft tissue landmarks of lower limb.

Describe basic concept of development of lower limb

Thorax

Salient features of sternum, ribs and thoracic vertebra with type, articular surfaces & movements of manubriosternal, costovertebral, costotransverse, xiphisternal, Costochondral and interchondral joints.

Boundaries of thoracic inlet, cavity and outlet and Mechanics and types of respiration.

Typical and atypical intercostal space with its content.

Boundaries and contents of the superior, anterior, middle and posterior mediastinum.
Subdivisions, sinuses in pericardium, blood supply and nerve supply of pericardium.
External and internal features of each chamber of heart. Fibrous skeleton of heart. Parts,
position and arterial supply of the conducting system of heart.

Origin, course and branches of coronary arteries. Formation, course, tributaries and
termination of coronary sinus. Anatomical basis of ischemic heart disease.

External appearance, microanatomy, relations, blood supply, nerve supply, lymphatic
drainage and applied anatomy of Oesophagus and Trachea.

Origin, course, relations, tributaries and termination of superior venacava, azygos,
hemiazygos and accessory hemiazygos veins and thoracic duct and its applied anatomy.

Extent, branches and relations of arch of aorta & descending thoracic aorta.

Location and extent of thoracic sympathetic chain, splanchnic nerves and lymphatic duct.

Blood supply, lymphatic drainage and nerve supply of pleura, extent of pleura and describe
the pleural recesses and their applied anatomy.

Side, extent, external features, microanatomy and relations, blood supply, lymphatic drainage
and nerve supply of lungs & bronchial tree, bronchopulmonary segment and their clinical
correlate.

Development of pleura, lung, heart and Embryological basis of congenital anomalies.

General and special radiology of chest.

Surface marking of lines of pleural reflection, lung borders and fissures, trachea, heart
borders, apex beat & surface projection of valves of heart.

7. Abdomen

Planes regions & Quadrants of abdomen

Fascia, nerves & blood vessels of anterior abdominal wall the formation of rectus sheath and
its contents

Boundaries, extent, contents of Inguinal canal including and anatomical basis of inguinal
hernia.

Attachments of muscles of anterior abdominal wall and common Abdominal Incisions

Thoracolumbar fascia

Lumbar plexus for its root value, formation & branches.

Major subgroups of back muscles, nerve supply and action

Coverings, internal structure, side determination, blood supply, nerve supply, lymphatic
drainage and applied anatomy of testis, Epididymis, Penis.

Anatomical basis of Varicocoele, Phimosis & Circumcision

Boundaries and recesses of Lesser & Greater sac

Various peritoneal folds & pouches with its explanation and anatomical basis of Ascites, Peritonitis and Subphrenic abscess.

Major viscera of abdomen under following headings (anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects).

Formation, course relations and tributaries of Portal vein, Inferior vena cava & renal vein

Origin, course, important relations and branches of abdominal aorta,

The sites of portosystemic anastomosis and clinical application.

Nerve plexuses of posterior abdominal wall

Attachments, openings, nerve supply & action of the thoracoabdominal diaphragm, abnormal openings of thoracoabdominal diaphragm and diaphragmatic hernia

Muscles of Pelvic diaphragm

Position, features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and clinical aspects of important male & female pelvic viscera

Origin, course, important relations and branches of internal iliac artery

Branches of sacral plexus

Superficial & deep perineal pouch (boundaries and contents), perineal body, perineal membrane in male & female

Boundaries, content & applied anatomy of Ischioanal fossa. Anatomical basis of Perineal tear, Episiotomy, Perianal abscess and anal fissure

Curvatures of the vertebral column. Type, articular ends, ligaments and movements of intervertebral joints, Sacroiliac joints & Pubic symphysis

Lumbar puncture (site, direction of the needle, structures pierced during the lumbar puncture)

Anatomical basis of Scoliosis, Lordosis, Prolapsed disc, Spondylolisthesis & Spina bifida

Micro anatomical features of Gastro-intestinal system and Suprarenal gland.

Micro anatomical features of: Urinary system, Male Reproductive System and Female reproductive system.

Development and congenital anomalies of Diaphragm.

Development and congenital anomalies of: Foregut, Midgut & Hindgut.

Development of Urinary system.

Development of male & female reproductive system.

Anatomical position of bony pelvis & show boundaries of pelvic inlet, pelvic cavity, pelvic outlet. True pelvis and false pelvis and demonstrate sex determination in male & female bony pelvis.

Clinical importance of bones of abdominopelvic region

Features seen in plain and special radiographs, CT, MRI, ERCP of abdomen and pelvis and its clinical correlation.

Surface marking of Regions and planes of abdomen

8. Head and Neck

Anatomical position of skull, location of individual skull bones and the features of Norma frontalis, verticalis, occipitalis, lateralis and basalis.

Cranial cavity, its subdivisions, foramina and structures passing through them

Morphological features of mandible, typical and atypical cervical vertebrae.

Layers of scalp, its blood supply, its nerve supply and surgical importance.

Muscles of facial expression and their nerve supply. Sensory innervation and blood supply of face.

Parts, borders, surfaces, contents, relations and nerve supply of parotid gland with course of its duct and surgical importance

Attachments, nerve supply, relations and actions of sternocleidomastoid muscle.

Boundaries and contents of Posterior triangle.

Dural folds and Dural venous sinuses with their clinical importance.

Boundaries and contents of Orbit. Attachment, nerve supply and action of Extra-ocular muscles. Parts of Lacrimal apparatus.

Boundaries, subdivisions and contents of anterior triangle.

Boundaries and contents of temporal and infratemporal fossae.

Articulating surface, type, movements and clinical conditions of temporomandibular joint.

Attachments, direction of fibers, nerve supply and actions of muscles of mastication.

Morphology, relations and nerve supply of submandibular salivary gland & submandibular ganglion.

Parts, extent, attachments, modifications of deep cervical fascia

Location, parts, borders, surfaces, relations & blood supply of thyroid gland

Extent, drainage & applied anatomy of cervical lymph nodes.

Morphology, Extent, Parts, Muscles and function of Pharynx.

Morphology, relations, blood supply and applied anatomy of palatine tonsil and composition of soft palate.

Features of nasal septum, lateral wall of nose, their blood supply and nerve supply.

Location and functional anatomy of paranasal sinuses

Morphology, structure of the wall, nerve supply, blood supply and actions of intrinsic and extrinsic muscles of the larynx with the clinical correlations.

Morphology, nerve supply, embryological basis of nerve supply, blood supply, lymphatic drainage and actions of extrinsic and intrinsic muscles of tongue

Parts, blood supply and nerve supply of ear. Boundaries, contents, relations and functional anatomy of middle ear and auditory tube. Features of internal ear

Parts and layers of eyeball with clinical correlation.

Contents of the vertebral canal. Boundaries and contents of Suboccipital triangle

Movements with muscles producing the movements of atlanto-occipital joint & atlantoaxial joint.

Important bony and soft tissue landmarks on Head, Face and Neck region.

The bones and joints of Head, neck, face seen in anteroposterior and lateral view radiographs.

Microanatomy of pituitary gland, thyroid, parathyroid gland, tongue, salivary glands, tonsil, epiglottis, cornea, retina, olfactory epithelium, eyelid, lip, sclero-corneal junction, optic nerve, cochlea- organ of corti, pineal gland.

Development and developmental basis of congenital anomalies of face, palate, tongue, branchial apparatus, pituitary gland, thyroid gland & eye

9. Neuroanatomy

Layers of meninges with its extent & modifications. Circulation of CSF with its applied anatomy.

Extent, external and internal features of spinal cord. Ascending & descending tracts of spinal cord with clinical correlation.

External and Internal features of Medulla, Pons and Midbrain with clinical application.

External, internal features, divisions, functions and clinical correlation of cerebellum.

Nuclei with its functional component, course, distribution and clinical application of cranial nerve.

Surfaces, sulci, gyri, poles, functional areas and white matter of cerebral hemisphere

Parts & major connections of basal ganglia & limbic lobe.

Boundaries, parts, gross relations, major nuclei and connections of dorsal thalamus, hypothalamus, epithalamus, metathalamus and subthalamus.

Blood supply of Central nervous system.

Parts, boundaries & features of IIIrd, IVth & lateral ventricle

Micro anatomical features of Spinal cord, Cerebellum & Cerebrum.

Development of neural tube, spinal cord, medulla oblongata, pons, midbrain, cerebral hemisphere & cerebellum.

10. Genetics

The structure of chromosomes with classification

Technique of karyotyping with its applications

The Lyon's hypothesis

The various modes of inheritance with examples

Pedigree charts for the various types of inheritance & give examples of diseases of each mode of inheritance

Multifactorial inheritance with examples

The genetic basis & clinical features of Achondroplasia, Cystic Fibrosis, Vitamin D resistant rickets, Hemophilia, Duchene's muscular dystrophy & Sickle cell anemia

The structural and numerical chromosomal aberrations. Mosaics and chimeras with example.

The genetic basis & clinical features of Prader Willi syndrome, Edward syndrome & Patau syndrome

Genetic basis of variation: polymorphism and mutation

The principles of genetic counselling

11. Ethics

Respect and follow the correct procedure when handling cadavers and other biologic tissue.

12. Integration

The above topic will be integrated horizontally and vertically as per the new curriculum set by MCI.

ASSESSMENT: ANATOMY

1. Assessment will be in the form of formative assessment (conducted during the course of phase I) and summative assessment (conducted at the end of the Phase I)
2. The formative assessment consists of the internal assessment examinations while the summative assessment consists of the University examination

Internal assessment examinations and marks distribution:

3. There will be 3 internal assessment examinations conducted during academic year. First internal assessment examination will be held in December, second internal assessment examination will be held in March and third internal assessment examination will be held in July.
4. There will be only one additional examination for absent students (due to genuine reason) after approval by the Institutional Grievances Committee. It will be taken after preliminary examination and before submission of internal assessment marks to the University
5. It is mandatory for the students to appear for all the three internal assessment examinations.
6. Day to day records and log book (including required skill certifications) will be given importance in internal assessment. Internal assessment will be based on competencies and skills. Completion of Log book as well as Journals with requisite signatures and stamps of teachers and Head of the Departments is mandatory in order to be eligible for appearing at the final University examination of that subject.
7. Internal assessment marks for theory and practical will be converted to out of 40 as below

Calculation of Internal Assessment marks:		
	Theory	Practical
First IA	100	50
Second IA	100	50
Third IA (Prelim)	200	100
Total	400	200
Internal assessment marks: Conversion formula (out of 40)	Total marks obtained divided by 10	Total marks obtained divided by 5
Eligibility to appear for final University examination (after conversion out of 40, individually in theory and practical)	16	16

Eligibility to appear for final University examination (after conversion out of 80, combined in theory and practical)	40
--	----

8. While preparing Final Marks of Internal Assessment, the rounding-off marks shall done as illustrated in following table

Internal Assessment Marks	Final rounded marks
15.1 to 15.99	16

9. 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.
10. Internal assessment marks will reflect as separate head of passing at the summative examination.
11. Attendance requirements are 75% in theory and 80% in practical /clinical for eligibility to appear for the University (summative) examinations in that subject. 75% attendance in
12. AETCOM module is required for eligibility for final examination in each professional year.

University examinations (Summative) and marks distribution:

13. Summative assessment consists of University examinations. A maximum number of four permissible attempts would be available to clear the first Professional University examination, whereby the first Professional course will have to be cleared within 4 years of admission to the said course. Partial attendance at any University examination shall be counted as an availed attempt.
14. Only those students having the qualifying internal assessment marks can attempt the University examination.
15. Marks distribution for the Anatomy is given in the table below.

Subject	Number of papers	Written-Theory total marks	Practical /Orals total marks
Human Anatomy	2	200 (100 marks each)	100

16. 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. Theory marks will be marks scored in the theory paper only and practical marks will consist of score in the practical examination and the score in the viva. (practical = practical/ clinical + viva)
17. The learner must secure at least 40% marks in each of the papers and minimum of 50% marks in aggregate (sum of total of the 2 papers) to pass in theory in the said subject.
18. Internal assessment marks will not to be added to marks of the University examinations. Internal assessment marks will reflect as separate head of passing at the summative examination

Supplementary University examination shall be held within 45-90 days of declaration of results of first professional University examinations.

19. A remedial internal assessment examination will be held before supplementary examination. Those students, who had failed to secure qualifying internal assessment marks and were therefore not allowed to sit for the summative examination will appear for this remedial internal assessment examination.

20. Conversion formula for calculation of marks in Remedial internal assessment examination

	Remedial Exam (Prelim)	Int. Assess. marks conversion formula (out of 40)	Eligibility to appear for Supplementary Exam. (after conversion out of 40) (40% Separately in Theory and Practical, 50% Combined)	
Theory	200	Total marks obtained divided by 5	16 (minimum)	Total of Theory + Practical Must be 40.
Practical	100	Total marks obtained divided by 2.5	16 (minimum)	

21. The students 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 supplementary University examination of that subject.

22. Those students, who fail to secure qualifying internal assessment marks after the remedial

internal assessment examination, shall not be allowed to sit for the supplementary University examination

23. Following students will appear for the Supplementary examination:

- i. Those who did not pass the University examination
- ii. The students who have secured 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 the remedial internal assessment examination
- iii. Any student who may have missed the University examination (due to illness or otherwise) but was otherwise qualifying for the University examination as per above given norms, with due permission of the concerned authority of the Medical College and University.

24. Passing criteria for the supplementary university examination will be same as that for the regular university examination.

25. Those candidates who do not clear the supplementary examination and those candidates who were unable to secure the qualifying internal assessment marks even after remedial examination, will have to appear for III internal assessment examination (Preliminary examination) along with next regular batch of students and marks obtained in this examination will be used to calculate internal assessment marks. Further rules for these students will remain similar to the students admitted in next regular batch.

Paperwise distribution of topics for Prelim and University Examination

Paper	Section	Topics
I	A	MCQs on all topics of the paper I
	B & C	1. General Anatomy
		2. General Histology
		3. Inferior Extremity
		4. Abdomen and pelvis and related Histology and Embryology
		5. Thorax and related Histology and Embryology
		6. One short answer question on AETCOM module 1.1 & 1.5
		<i>Scenario based / application questions can be on any topic of the paper I</i>
		<i>For long answer question and scenario based / application questions , region will not be repeated</i>
II	A	MCQs on all topics of the paper II
	B & C	1. General Embryology
		2. Superior Extremity
		3. Genetics
		4. Head Neck Face and related Histology and Embryology
		5. Neuroanatomy and related Histology and Embryology
		<i>Scenario based / application questions can be on any topic of the paper II</i>
	<i>For long answer question and scenario based / application questions , region will not be repeated</i>	

First Year MBBS

Practical Mark's Structure of Internal Assessment Examinations I, II.

(Applicable for batch admitted in MBBS course from 2020-21 and onwards)

Anatomy								
Roll No	Soft Parts	Hard Parts	Histology		Embryology	Radiology	Journal/ Log Book	Total
			Spots	Slide discussion		And Living Surface		
	15	10	6	4	5	5	5	50

First Year MBBS Practical Mark's Structure

Prelim Exam													
Practical									Oral/Viva				Total
	Soft Part	Micro Anatomy (10 Spots)	Micro Anatomy slides for Discussion (2 slides)	Axial Skeleton	Embryology Models	Clinical Anatomy Including Genetic charts (2 Spots)	Journal /logbook	Total	Appendicular Skeleton	X - ray	Surface Living Anatomy	Total	Total
	A	B	C	D	E	F	G	H	I	J	K	L	M
Max. Marks	25	10	10	10	10	10	05	80	10	05	05	20	100
University Examination													
Practical									Oral/Viva				Total
	Soft Part	Micro Anatomy (10 Spots)	Micro Anatomy slides for Discussion (2 slides)	Axial Skeleton	Embryology Models	Clinical Anatomy Including Genetic charts (2 Spots)	Total	Appendicular Skeleton	X - ray	Surface Living Anatomy	Total	Total	
	A	B	C	D	E	F	G	H	I	J	K	L	
Max. Marks	30	10	10	10	10	10	80	10	05	05	20	100	

BOOKS RECOMMENDED:

Textbooks:

Human Anatomy - B D Chaurasia Vol 1 to 4
Textbook of Anatomy – Vishram Singh. Vol 1 to 4
Neuroanatomy - Vishram Singh
Textbook of Histology - I B Singh
General Anatomy – B D Chaurasia
Textbook of Osteology – Poddar
Human Embryology – I B Singh
Human Genetics – Gangane S D
Di fiore's atlas of Histology

Reference Books:

Gray's Anatomy
Snell's Clinical Anatomy
Snell's Neuroanatomy
Keith Moor's Developing Human
Last's Anatomy

SYMBIOSIS MEDICAL COLLEGE FOR WOMEN, SIU
FORMAT / SKELETON OF QUESTION PAPER
FOR TERM EXAMS, PRELIM EXAM AND UNIVERSITY
EXAMINATION

1. Course and Year : First MBBS	2. Subject Code :
3. Subject : Anatomy	
4. Paper :	
5. Total Marks : 100	
6. Total Time : 3 Hrs.	

SECTION "A" MCQ

Instructions:

- 1) Fill (dark) the appropriate empty circle below the question number once only.
- 2) Use blue/black ball point pen only.
- 3) Each Question carries One mark.
- 4) A student will not be allotted any marks if he/she overwrites, strikes out or puts white ink on the circle once filled (darkened).
- 5) Do not write anything on the blank portion of the question paper if written anything, such type of act will be considered as an attempt to resort to unfair means.

SECTION "A" MCQ (20 Marks)

Q1. Multiple Choice Questions (Total 20 MCQ of One mark each) (5 MCQ should be clinical application based) (20x1=20)

- a) b) c) d) e) f) g) h) i) j)
k) l) m) n) o) p) q) r) s) t)

SECTION "B"

Instructions:

- 1) Use blue/black ball point pen only.
- 2) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.
- 3) All questions are compulsory.
- 4) The number to the right indicates full marks.

- 5) Draw diagrams wherever necessary.
- 6) Distribution of syllabus in Question Paper is only meant to cover entire syllabus within the stipulated frame.

The Question paper pattern is a mere guideline. Questions can be asked from any paper's syllabus into any question paper. Students cannot claim that the Question is out of syllabus.

As It is only for the placement sake, the distribution has been done.

- 7) Use a common answer book for all sections.

SECTION "B" (80 Marks)

2. Brief answer questions (Any Ten out of Eleven) (10x 2= 20)

a) b) c) d) e) f) g) h) i) j) k)

3. Short Answer Questions (Any Eight out of Nine) (8x5= 40)

One SAQ has to be on AETCOM Module (For Anatomy 1.1, 1.5) & Minimum 2 SAQs should be Case Based Questions/ Clinically applied Questions.

a) b) c) d) e) f) g) h) i)

4. Long Answer Questions (Any Two out of Three) (2x 10= 20)

a) b) c)

Note: All questions should be structured. Wherever necessary; split up of marks should be specified.

SYMBIOSIS MEDICAL COLLEGE FOR WOMEN, SIU
FORMAT / SKELETON OF QUESTION PAPER
FOR PRELIM EXAM AND UNIVERSITY EXAMINATION

1. Course and Year : First MBBS	2. Subject Code :
3. Subject : Anatomy	
4. Paper : I / II	
5. Total Marks : 100	
6. Total Time : 3 Hrs.	

SECTION "A" MCQ

Instructions:

- 1) Fill (dark) the appropriate empty circle below the question number once only.
- 2) Use blue/black ball point pen only.
- 3) Each Question carries One mark.
- 4) A student will not be allotted any marks if he/she overwrites, strikes out or puts white ink on the circle once filled (darkened).
- 5) Do not write anything on the blank portion of the question paper if written anything, such type of act will be considered as an attempt to resort to unfair means.

SECTION "A" MCQ (20 Marks)

Q1. Multiple Choice Questions (Total 20 MCQ of One mark each) (5 MCQ should be clinical application based) (20x1=20)

- a) b) c) d) e) f) g) h) i) j)
k) l) m) n) o) p) q) r) s) t)

SECTION "B"

Instructions:

- 1) Use blue/black ball point pen only.
- 2) Do not write anything on the blank portion of
- 3) The question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.
- 4) All questions are compulsory.
- 5) The number to the right indicates full marks.
- 6) Draw diagrams wherever necessary.

- 7) Distribution of syllabus in Question Paper is only meant to cover entire syllabus within the stipulated frame. The Question paper pattern is a mere guideline. Questions can be asked from any paper's syllabus into any question paper. Students cannot claim that the Question is out of syllabus. As it is only for the placement sake, the distribution has been done.
- 8) Use a common answer book for all sections.

SECTION "B" (80 Marks)

2. Brief answer questions (Any Ten out of Eleven)
(10x 2= 20)

- a) b) c) d) e) f) g) h) i) j) k)

3. Short Answer Questions (Any Eight out of Nine)
(8x5= 40)

One SAQ has to be on AETCOM Module (For Anatomy 1.1, 1.5) & Minimum 2 SAQs should be Case Based Questions/ Clinically applied Questions.

- a) b) c) d) e) f) g) h) i)

4. Long Answer Questions (Any Two out of Three)
(2 x 10 = 20)

- a) b) c)

Note: All questions should be structured. Wherever necessary; split up of marks should be specified.



SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)

(Established under section 3 of the UGC Act 1956)

Re - accredited by NAAC with 'A' Grade

Founder: Prof. Dr. S. B. Mujumdar, M.Sc., Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

Course Name: Anesthesiology

Course Code: Medical - AS

Faculty: Health Sciences

Programme Type: UG

Sub-Committee (Specialization): Medical

PREAMBLE:

The purpose of anesthesia training for medical students is to give students knowledge of basic concepts used in anesthesia and to teach them skills of airway management, vascular access and basic life support that may be useful to them in other areas of medical practice.

The student should learn to apply knowledge of anatomy in airway management, local and regional anaesthesia. Also they should observe and study the physiological changes which takes place in the anesthetized patient. Emphasis should be laid on good preoperative preparation.

The students should be trained regarding the basics of Anaesthesia including the Procedures in Anaesthesia the drugs used during Anaesthesia and the equipment in Anaesthesia.

They should be able to apply knowledge of pharmacology related to anaesthetic drugs. Medical students should learn enough about an anesthetic machine.

OBJECTIVES:

1. KNOWLEDGE

- The main objective is to integrate knowledge of anatomy, physiology and pharmacology related to anaesthesia and use their knowledge applied to Anaesthesia.

- Introduce principles of acute medicine as it is practiced in managing the anesthetized patient in the operating room and in managing the patient in the recovery unit.
- Review principles of and teach skills in resuscitation (cardiopulmonary, cerebral, fluid and others).
- Teach care of the unconscious patient, including maintaining patent airway and ventilation management.
- Teach management of blood, fluid, electrolyte balance and metabolic disturbances in the surgical patient, with specific emphasis on those derangements which are encountered in the anesthetized patient.
- Review management of acute and chronic pain problems.
- Introduce concepts of drug interactions, especially as they apply to patients receiving anesthesia.
- Demonstrate the evaluation of patients related to surgical and anesthesia risk. Teach appropriate preoperative preparation of patients subjected to surgery and anesthesia.
- Introduce the various techniques of anesthesia.
- Pharmacology of muscle relaxant, opioids, induction agents, local anaesthetics and adjuvants and their application in relation to Anaesthesia and monitoring the effects of the drugs.
- Teach knowledge about ethics and medicolegal issues related to anaesthesia and also keeping the records in Anaesthesia.

2. SKILLS

- Maintenance of Clear airway
- Bag Mask Ventilation
- Starting a Venous Access
- CPR — Basic and advanced
- Giving a simple infiltration block, Some nerve block
- Performing A lumbar puncture
- Obtain informed consent for various procedures

Teaching Schedule

1. THEORY: Total hours 20

- Teaching hours 8
- Tutorials/seminars/integrated teaching 10

- Self-directed learning 2

2. PRACTICAL

- Teaching and learning in anesthesiology should be guided through a series of posting in which the emphasis is laid on practical hands –on experience.
- Human patient simulator (HPS) be purchased for better skill development and to reduce the danger to the patients during the learning curve of student. To allow repeat practice according to ability of the student to reach the level of competence needed.

3. Posting Schedule

- Two Weeks in 7th semester

SYLLABUS

Topic 1 : Anaesthesiology as a specialty

- Evolution of Anaesthesiology as a modern specialty.
- Roles of Anaesthesiologist in the medical profession.
- Principle of ethics as it relates to Anaesthesiology.
- Prospects of Anaesthesiology as a career.
- Basic Life Support in adults, children and neonates.
- Advanced Life Support in adults and children.

Topic 3: Preoperative evaluation and medication

- Principles of preoperative evaluation.
- Elicit, present and document an appropriate history including medication history in a patient undergoing Surgery as it pertains to a preoperative anaesthetic evaluation.
- Demonstrate and document an appropriate clinical examination in a patient undergoing General Surgery.
- Choose and interpret appropriate testing for patients undergoing Surgery.
- Readiness for General Surgery in a patient based on the preoperative evaluation.
- Prescription for appropriate premedications for patients undergoing surgery.

Topic 4: General Anaesthesia

- Pharmacology of drugs used in induction and maintenance of general anaesthesia (including intravenous and inhalation induction agents, opiate and non-opiate analgesics, depolarising and non depolarising muscle relaxants, anticholinesterases).
- Anatomy of the airway and its implications for general anaesthesia.
- Principles and the practical aspects of induction and maintenance of anaesthesia.
- Principles and the steps/ techniques in maintenance of vital organ functions in patients undergoing surgical procedures.
- Principles and the steps/ techniques in monitoring patients during anaesthesia.
- Principles and the steps/ techniques involved in day care anaesthesia.
- Principles and the steps/ techniques involved in anaesthesia outside the operating room.

Topic 5: Regional Anaesthesia

- Principles of regional anaesthesia (including spinal, epidural and combined).
- Anatomy of the brachial plexus, subarachnoid and epidural spaces.
- Principles and steps/ techniques involved in peripheral nerve blocks.
- Pharmacology and correct use of commonly used drugs and adjuvant agents in regional anaesthesia.
- Principles and steps/ techniques involved in caudal epidural in adults and children.
- Principles and steps/ techniques involved in common blocks used in surgery (including brachial plexus blocks).

Topic 6: Post-Anaesthesia Recovery

- Principles of monitoring and resuscitation in the recovery room.
- Enumerate the contents of the crash cart and describe the equipment used in the recovery room.
- Common complications encountered by patients in the recovery room, their recognition and principles of management.

Topic 7: Intensive Care Management

- Describe the functions of an Intensive Care Unit.
- Criteria for admission and discharge of a patient to an ICU.
- Management of an unconscious patient.

- Basic setup process of a ventilator.
- Principles of monitoring in an ICU.

Topic 8: Pain and its Management

- Anatomical correlates and physiologic principles of pain.
- Elicit and determine the level, quality and quantity of pain and its tolerance in patient or surrogate.
- Describe the pharmacology and use of drugs in the management of pain.
- Principles of pain management in palliative care.
- Principles of pain management in the terminally ill.

Topic 9: Fluids

- Establish intravenous access in a simulated environment.
- Establish central venous access in a simulated environment.
- Principles of fluid therapy in the preoperative period.
- Enumerate blood products and describe the use of blood products in the preoperative period.
- Hazards of incorrect patient positioning.
- Hazards encountered in the perioperative period and steps/techniques taken to prevent them.
- Role of communication in patient safety.
- Common medical and medication errors in anaesthesia.

To achieve the objectives, the students will be posted to

- 1 Preanaesthesia Clinic: Preoperative evaluation & optimization of the Patients.
- 2 Operation theatre: Anaesthesia workstation/ Machine /monitoring, Anaesthetic Techniques
- 3 Recovery Room: Postoperative Recovery criteria: Management of complications, Defibrillator and its use.
- 4 Intensive Care Unit: Management of respiratory failure Various types of ventilatory Assistance Ventilatory settings. devices Monitoring Devices and application. Management of patient in Coma.

- 5 Pain Clinic: Evaluation of patient / noninvasive / invasive techniques of pain relief to the patients.

Emergency On Call

The Interns will be posted in the emergency areas like operation theatres, ICU, casualty department for observing and managing emergency cases under the supervision and guidance of the faculty members.

LOG BOOK: A log book will need to be completed by the student under the supervision of the faculty member

SKILLS

1. I/V Cannulation 5
2. Oropharyngeal/Nasopharyngeal Airway insertion 10
3. Bag Mask Ventilation first on Mannekin 5
4. Mask Ventilation in unconscious patient 5
5. Attaching pulse oximeter, BP cuff and ECG
6. electrodes and setting up a monitor 5
7. Lumbar puncture 2
8. Infiltration block 2
9. Demonstration of epidural/nerve block 2 each
10. LMA insertion demo 5
11. Intubation demo 5
12. CPR on mannekin 5

RECOMMENDED BOOKS

1. TEXT BOOKS

- Morgan and Mikhail's Clinical Anaesthesiology, edited by John F. Butterworth, David C. Mackey, John D. Wasnick Published by MC Graw Hill Higher education.
- Basics of Anaesthesia, edited by Manual C. Pardo, Jr, Ronald D. Miller Published by Elsevier.

- Understanding anaesthetic equipment and procedures, edited by Dwarakadas K Baheti and Vandana Laheri published by Jaypee Brothers.

2. REFERENCE BOOKS

- Clinical Anaesthesia, edited by Paul G Barash, Bruce F. Cullen, Robert K. Stoelting
Published by wolters kluwers.
- Wylie Churchill – Davidson's A practice of Anaesthesia, , edited by Thomas EJ Healy and Paul R. Knight Published by CRC Press.
- Miller's Anaesthesia, edited by Michal Gropper, Lars Krilsson, Lee Fleisher
published by Elsevier.



॥वसुधैव कुटुम्बकम्॥

SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)

(Established under section 3 of the UGC Act 1956)

Re - accredited by NAAC with 'A' Grade

Founder: Prof. Dr. S. B. Mujumdar, M.Sc., Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

Course Name: Biochemistry

Course Code: Medical - BI

Faculty: Health Sciences

Programme Type: UG

Sub-Committee (Specialization): Medical

Preamble

The purpose of competency based undergraduate medical education is to produce doctors, competent in diagnosis and management of common health problems. To achieve this, understanding of basic sciences through the clinical context is required.

The term biochemistry was introduced by German chemist Carl Neuberg in 1903. Biochemistry is the chemical basis of life. It is a branch of medical science that describe the structure, organization and functions at the molecular level.

According to Dr. Alberts Sols “The biochemistry of today is the medicine of tomorrow”. It encompasses large areas of cell biology, molecular biology and molecular genetics. Biochemistry is very important in healthcare for diagnosis, treatment & manufacture of various biological products. Biochemical aspects of nutrition play a special role in health & disease.

The sound knowledge of biochemistry revolutionized medical science by providing the tools like genetic engineering, PCR & many more which helps in drug designing. It provides good insight regarding pathophysiology of the various diseases.

Goal:

-The goal of teaching biochemistry to undergraduate students is to provide comprehensive knowledge of biochemical reactions taking place in human body, to facilitate the understanding of biochemical basis of disease with respect to normal.

-The analysis of different biochemical analytes can throw light on diagnosis and prognosis of different diseased conditions.

-To produce doctors with proper knowledge of diagnostic tests, who can correlate the biochemical tests with the clinical conditions so as to reach the accurate diagnosis.

-Awareness regarding the short term research projects.

Objectives:

1. Knowledge: At the end of the course, the student should be able to understand molecular and functional organization of a cell, sub-cellular components & extracellular components.

study of normal metabolism of various biomolecules in order to know alternations in diseased conditions.

explain basic and clinical relevance of enzymology.

understand biomedical importance of various nutrients in health & disease.

describe central dogma of life with regulation of gene expression.

study effect of mutations and genetic basis of diseases.

Explain principles of genetic engineering and their application in medicine.

Comprehend biochemical basis of cancer & role of tumor markers.

Study molecular concepts of body defense and their application in medicine.

Understand mechanisms involved in maintenance of acid-base & water electrolyte balance.

Describe principles of various conventional and specialized laboratory investigations and analysis and interpretation of data.

Understand principles and working of the instruments.

2. Skills: At the end of the course, the student should be able to estimate, analyse & interpret laboratory data for the diagnosis and prognosis of disease conditions.

Use of various biochemical techniques in relevance to clinical problems.

3. Attitude, Communication, Ethics: At the end of the course, the student should be able to

Show empathy towards the patient & be able to communicate in a better way so that patient feel accepted and built trust in doctors.

Apply the knowledge to real life situations which will help them to develop skills that are transferable to the real world.

BIOCHEMISTRY SYLLABUS: THEORY

Basic biochemistry

Cell: Molecular and functional organization of cell and its subcellular components

Chemistry of Biomolecules

Chemistry Carbohydrates: Classification and biomedical importance of mono, di and polysaccharides, Glycosaminoglycans & its clinical significance.

Chemistry of Lipids: Classification and biomedical importance of Triacylglycerol, Phospholipids, Glycolipids, Fatty acids, Cholesterol & Lipoproteins. Prostaglandins with clinical significance

Chemistry of Proteins: Classification of amino acids & proteins with examples, General properties of amino acids and proteins, biologically important peptides, Structural organization of proteins & structure-function relationships. Plasma proteins with their functions & method of separation along with associated disorders.

Chemistry of Hemoglobin: Structure & function of hemoglobin, Normal variants of Hemoglobin, Hemoglobin derivatives, abnormal hemoglobins.

Enzymes:

IUBMB classification, Cofactors & Coenzyme, Mechanism of enzyme action, Factors affecting enzyme action, Enzyme inhibitions, Regulation of enzymes, Isoenzymes, Clinical use of enzymes.

Biological oxidation:

General concept of oxidation & reduction, Redox Potential, Enzymes & coenzymes involved in Biological oxidation, Electron transport chain, Substrate level & Oxidative phosphorylation, Chemiosmotic theory, Role of uncouplers & inhibitors.

Vitamins:

General nature, classification, sources, RDA, active forms & metabolic role of vitamins, deficiency manifestations & hypervitaminosis.

Metabolism of Biomolecules

Metabolism of Proteins: Digestion & Absorption & its clinical significance, amino acid pool, formation & fate of ammonia, metabolism of glycine, metabolism of aromatic amino acids & sulphur containing amino acids, common disorders associated with protein metabolism with lab investigations.

Metabolism of Carbohydrates: Digestion & absorption & its clinical significance, glycolysis, significance of Rapaport Lumbering cycle, gluconeogenesis, TCA cycle and its amphibolic role, significance of HMP shunt, glycogenesis, glycogenolysis & glycogen storage disorders, disorders associated with galactose & fructose, regulation of blood

glucose level, biochemistry of diabetes mellitus, Lab investigations related to disorders of carbohydrate metabolism.

Metabolism of Lipids: Digestion & absorption & its clinical significance, biosynthesis and degradation of fatty acids, adipose tissue metabolism, cholesterol biosynthesis, its transport and excretion, metabolism of lipoproteins and associated disorders, metabolism of ketone bodies with ketosis, fatty liver & atherosclerosis. Lab investigations related to disorders of lipid metabolism.

Metabolism of Nucleotides: Biosynthesis & breakdown of purines & pyrimidines, salvage pathway, common disorders associated with purine & pyrimidine metabolism with interpretation of laboratory results.

Integration of metabolism & Starvation: Metabolic interrelationship in fed and fasting state, metabolic adaptations in starvation.

Metabolism of Hemoglobin: Synthesis and breakdown of heme along with porphyrias, fate of bilirubin and different types of jaundice.

Organ Function Tests:

Functions of the kidney, liver, thyroid and adrenal glands, tests that are commonly done in clinical practice to assess the functions of these organs & associated disorders.

Molecular Biology

Chemistry of nucleic acid : Nucleoside & nucleotides, biologically important nucleotides, synthetic nucleotides, structure and function of DNA & RNA, central dogma & cell cycle, DNA replication & repair, transcription & post-transcriptional modifications, genetic code & mutation, translation & post-translational modifications, regulation of gene expression, recombinant DNA technology & its applications, PCR & blotting techniques, gene therapy.

Minerals:

Classification of minerals, sources, RDA, absorption, biochemical role & deficiency manifestations of calcium & phosphorus, biomedical importance of other macrominerals, sources, RDA, absorption, biochemical role, deficiency manifestations of iron, biomedical importance of other trace elements (copper, iodine, selenium, zinc, fluoride etc)

Acid-base Balance:

General concept of acids, alkali, buffers, pH, pK, role of blood buffers, respiratory system and kidney in regulation of acid base balance, acid-base disorders

Water- electrolyte Balance:

Total body water, role of hormones in water electrolyte balance, dehydration, disorders associated with electrolyte imbalance.

Nutrition:

Dietary importance all nutrients, balanced diet, diet recommended in various disorders, obesity & protein energy malnutrition.

Xenobiotics & Biotransformation:

Phase I & Phase II reactions with examples, Role of cytochrome p450

Free radicals & anti-oxidants:

Role of oxidative stress in the pathogenesis of conditions such as cancer, complications of diabetes mellitus and atherosclerosis.

Oncogenesis and immunity:

Causes of cancer along with mechanism of carcinogenesis, role of p53 & apoptosis, biochemical basis of cancer therapy, tumor markers, innate & adaptive immunity, types and structure of antibody, antigen & concepts involved in vaccine development.

Extracellular Matrix (ECM):

Functions & components of ECM, involvement of ECM in health & disease, protein targeting & sorting with associated disease.

Biochemistry Syllabus: Practicals

General Laboratory

Commonly used laboratory apparatus and equipments.

Good laboratory practice & waste disposal.

Preparation of buffers & estimation of pH.

Qualitative Experiments

Normal constituents of urine

Abnormal constituents of urine and urine report

Quantitative Experiments

Estimation of blood Glucose level.

Estimation of serum Urea level.

Estimation of serum Creatinine

Estimation of urine Creatinine and creatinine clearance

Estimation of serum Total proteins, Albumin and A:G ratio.

Estimation of serum Cholesterol

Estimation of serum HDL- cholesterol.

Estimation of serum Triglycerides.

Estimation of serum Calcium

Estimation of serum Phosphorous.

Estimation of serum Bilirubin

Estimation of serum ALT/ AST

Estimation of serum Alkaline phosphatase

Estimation of serum Uric acid

Demonstrations

Glucose tolerance test

Physical characteristics & Chemical composition of CSF

Principle & applications of Colorimeter
 Principle & applications of Spectrophotometer
 Principle & applications of pH meter
 Principle & applications of Paper & Thin layer Chromatography
 Screening of urine for inborn errors
 Principle & applications of Electrophoresis
 Principle & applications of Immunodiffusion
 Principle & applications of ELISA
 Principle & applications of ISE
 Principle & applications of ABG Analyser
 Principle & applications of Autoanalyser
 Quality control

DNA Isolation from blood/ tissue

Interpretation of lab results (Case oriented)

Diabetes mellitus/ Diabetic Ketoacidosis

Dyslipidemia& Myocardial infarction.

Nephrotic Syndrome/Renal Failure

Jaundice

Acid-base disorders

Thyroid disorders

Gout

Pancreatitis

Group A estimations: Blood glucose, Serum urea, Serum total proteins, albumin, A:G ratio, ALT/AST, Alkaline phosphatase, Serum bilirubin, Serum creatinine, Serum triglycerides.

Group B estimations: Normal constituents of urine, Abnormal constituents of urine, Urine creatinine, Serum calcium, Serum Phosphorus, Serum uric acid, Serum cholesterol, Serum HDL.

Spots:

Principle & use of instrument

Identification of GTT, Electrophoretogram, Chromatogram

Identification & significance of laboratory test

Picture based identification

Paper wise distribution of topics
 Year: First MBBS Subject: Biochemistry

Paper	Section	Topics	Competency
I	A	MCQs on all topics of the paper I	

	B & C	Basic Biochemistry	1.1
		Enzymes	2.1-2.7
		Chemistry and metabolism of carbohydrates	3.1-3.10
		Chemistry and metabolism of Lipids	4.1-4.7
		Biological Oxidation	6.6
		Xenobiotics	7.5
		Antioxidants and defense system	7.6-7.7
		Nutrition	8.1-8.5
		Extracellular Matrix	9.1-9.3
		Oncology, oncogenesis & Immunity	10.1-10.5
		Biomedical waste	11.1
		Physical characteristics and chemical composition of CSF	11.15
	Energy contents of lipids, carbohydrates and protein in common food items, Advantages of unsaturated fats. Disadvantages of saturated and trans fats in food.	11.23 & 11.24	
	AETCOM		
For long answer question and scenario based/ application questions, topics will not be repeated.			
II	A	MCQs on all topics of the paper II	
	B & C	Chemistry and metabolism of Proteins	5.1-5.5
		Integration and starvation	6.1
		Nucleic acid metabolism	6.2-6.4
		Vitamins	6.5
		Water electrolyte balance and acid base balance	6.7-6.8
		Mineral metabolism	6.9-6.10
		Hemoglobin chemistry and metabolism	6.11-6.12
		Organ function test	6.13-6.15
		Molecular biology	7.1-7.3
		Genetic engineering	7.4
Urine: Screening of inborn errors.	11.5		
	Principle, application and working of following lab equipments/techniques: pH meter, paper chromatography of amino acids, protein electrophoresis, TLC, PAGE, Electrolyte analysis by ISE, ABG analyzer, ELISA, immunodiffusion, auto analyzer, quality control, DNA isolation from blood/tissue	11.16	
For long answer question and scenario based/ application questions, topics will not be repeated.			

Internal Assessment

Biochemistry

Applicable w. e. f. August 2019 onwards examination for batches admitted from June 2019 onwards

S	I-Term Exam (December)			II- Term Exam (March)		
	Theory	Practical (including 05 marks for journals and log book)	Total Marks	Theory	Practical (including 05 marks for journals and log book)	Total Marks
1	100	50	150	100	50	150

Preliminary and University Examinations				Remedial internal assessment examination for Non- eligible students		
III- Exam (July)				October		
Theory (Two Papers of 100 marks)	Practical including 10 Marks for Journal and Log book	Total Marks		Theory (Two Papers of 100 marks)	Practical including 10 Marks for Journal and Log book	Total Marks
200	100	300		200	100	300

1. There will be 3 internal assessment examinations in the academic year. The structure of Preliminary examinations should be similar to the structure of University examination.
2. There will be only one additional examination for absent students (due to genuine reason) after approval by the Committee Constituted for the same. It should be taken after preliminary examination and before submission of internal assessment marks to the University.
3. First internal assessment examination will be held in December, second internal assessment examination will be held in March and third internal assessment examination will be held in July.
4. Internal assessment marks for theory and practical will be converted to out of 40. Internal assessment marks, after Conversion, should be submitted to university by 7th of August.
5. The student must secure at least 50% marks for 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.

6. **Remedial internal assessment examination for Non - eligible students:** Student who were not eligible due to less than 50% combined or less than 40% in any theory or practical, will re appear as repeater student for Prelim exam which will be conducted before Supplementary Exam. His/her internal assessment will be calculated on the basis of this Examination marks only. Students who will not be eligible in this Examination will appear with regular batch as repeater student

7. The internal assessment marks of the remedial examination alone shall be considered and converted into out of 40

8. Conversion **Formula for calculation of marks in internal Assessment examinations**

	First IA	Second IA	Third IA (Prelim)	Total	internal Assessment Marks: Conversion formula (out of 40)	Eligibility to appear for final University examination (after conversion out of 40) (40 % Separately in Theory and Practical, 50 % Combined)	
Theory	100	100	200	400	<u>Total marks obtained</u> 10	16 (Minimum)	Total of Theory + Practical <u>Must</u> be 40
Practical	50	50	100	200	<u>Total marks obtained</u> 05	16 (Minimum)	

9. Conversion formula for calculation of marks in remedial internal assessment examination

	remedial exam (Prelim)	Int. Assess. Marks conversion formula (Out of 40)	Eligibility to appear for Supplementary Exam. (after conversion out of 40) (40 % Separately in Theory and Practical, 50 % Combined)	
Theory	200	<u>Total marks obtained</u> 5	16 (Minimum)	Total of Theory + Practical <u>Must</u> be 40
Practical	100	<u>Total marks obtained</u> 2.5	16 (Minimum)	

While preparing final Marks of Internal Assessment, the rounding-off marks shall done as illustrated in following table

internal Assessment Marks:	Final rounded Marks
15.1 to 15.99	16

**First Year MBBS Practical Mark's Structure Internal Assessment Examination I Term & II Term
(Applicable for batch admitted**

in M.B.B.S. Course from Academic Year 2019-20 & onwards)

Biochemistry						
Practical					Oral/Viva	Total
Seat no.	Quantitative Experiment	Quantitative Experiment/ Urine organic/ Urine report/ Quality control/ Interpolation of lab report/ Interpolation of special Technique	Spots	Journal/ Logbook		
	A	B	C	D	E	F
Max. Marks	15	15	5	5	10	50

First Year MBBS Prelim Practical Marks Structure

Biochemistry

Seat No.	Case Based Quantitative Estimation	Urine Report/Quantitative estimation	Quality Control	Interpretation of lab Reports and special techniques (Minimum 2 interpretation)	Spots	Journal and Logbook	Practical Total	Viva voce/ Oral	Practical/ Viva Total Marks
	A	B	C	D	E	F	G	H	I
Max. Marks	25	15	10	20	10	10	90	10	100

First Year MBBS Practical Marks Structure (Univ. Exam)

(Applicable w.e.f. August 2019 onwards examination for batches admitted from June 2019 onwards)

Biochemistry

Seat No	Case based Quantitative Estimation	Urine report/Quantitative estimation	Quality Control	Interpretation of lab Reports and Special techniques (Minimum 2 interpretation)	Spots	Practical Total	Viva voce/Oral	Practical/Viva Total Marks
	A	B	C	D	E	F	G	H
Max. Marks	25	15	10	20	10	80	20	100

SYMBIOSIS MEDICAL COLLEGE FOR WOMEN, PUNE FORMAT / SKELETON OF QUESTION PAPER FOR INTERNAL ASSESSMENT/ PRELIM/ UNIVERSITY

1. Course and year: **First MBBS**
(applicable w.e.f. Sept. 2020 & onwards examinations)

2. Subject Code : *Appendix-a*

3. Subject (PSP) : **Anatomy/ Physiology/ Biochemistry**
(TT) :

4. Paper: : **I/II**

5. Total Marks : **100**

6. Total time : **3 Hrs.**

Instructions:

Section “A” MCQ

1) Fill ●(dark) the appropriate empty circle below the question number once only.

2) Use **blue/black** ball pen only.

3) Each question carries **One mark**.

4) A student will not be allowed any marks if he/she overwrites, strikes out or puts white ink on the circle once filled (Darkened)

5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means

Section “A” MCQ (20 Marks)

Q.1 Multiple Choice Questions (Total 20 MCQ of one mark each) (At least 4 MCO should be clinical application based) (20 x 1=20)

- a) b) c) d) e) f) g) h) i) j)
k) l) m) n) o) p) q) r) s) t)

Instructions:**Section “B”**

- 1) Use **blue/black** ball pen only.
- 2) **Do not** write anything on the **blank portion of the question paper**. If written anything, such type of act will be considered as an attempt to resort to unfair means
- 3) **All Questions are compulsory.**
- 4) The number to the **right** indicates **full marks**.
- 5) Draw diagrams **wherever** necessary.
- 6) Distribution of syllabus in Question paper is only meant to cover entire syllabus within the stipulated frame. The Question paper pattern is a mere guideline. Questions can be asked from any paper's syllabus into any question paper. Students cannot claim that the Question is out of syllabus. As It is only for the placement sake, the distribution has been done.
- 7) Use a common answer book for all sections.

Section “B” (80 Marks)

- Q.2 Brief answer questions (Any Ten out of Eleven) (10 x 2=20)
a) b) c) d) e) f) g) h) i) j) k)
- Q.3 Short answer Questions (Any Eight out of Nine) (8 x 5=40)
One SAQ has to be on ATECOM Module (For Anatomy 1.1, 1.5 , For physiology 1.2, 1.3 & For Biochemistry 1.4)
& minimum 2 SAQ's should be case based Questions/clinically applied Questions.
a) b) c) d) e) f) g) h) i)
- Q.4 Long Answer Questions (Any two out of three) (2 x 10=20)
a) b) c)

Note: All questions should be structured. Wherever necessary; split up of marks should be specified.

BOOKS TO BE REFERRED**Textbooks:**

Biochemistry – U. Satyanarayan

Textbook of biochemistry for medical students - D. M. Vasudevan& Shree Kumari.

Textbook of biochemistry for undergraduates - Rafi MD

Biochemistry- Lippincott Illustrated reviews.

Textbook of medical biochemistry - M. N. Chatterjea and Rana Shinde.

Reference Books:

Harper's illustrated biochemistry

Textbook of Biochemistry with clinical correlations -Thomas M. Devlin.

Principles of Biochemistry- Lehninger

Biochemistry -L. Stryer.

Note: Verified above entries from Answer books and we hereby certify that the marks entered against each Seat Number are found correct.

	Name of Examiner	College	Signature with Date	
			Convenor	
			Internal	
			External	
			External	



SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)

(Established under section 3 of the UGC Act 1956)

Re - accredited by NAAC with 'A' Grade

Founder: Prof. Dr. S. B. Mujumdar, M.Sc., Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

Course Name: Community Medicine

Course Code: Medical - CM

Faculty: Health Sciences

Programme Type: UG

Sub-Committee (Specialization): Medical

Phase I MBBS

Preamble:

The syllabus for Phase I MBBS is in accordance with the BOG notification and Medical Council of India's, Attitude, Ethics and Communication (AETCOM) based teaching, learning and assessment.

The students will be exposed to explicit teaching of interactive cognitive base and stage appropriate opportunities for experiential learning and reflection throughout the curriculum. A framework of competencies has been designed which ensures coverage of necessary topics in terms of domains of learning. It will also help students acquire necessary competence in attitudinal, ethical and communication domains. An approach has been made to organize sessions for teaching learning and assessment mechanisms for the students.

Goal: To teach the undergraduate students by exposing from basic course subject to comprehensive learning, as per common prevailing health problems and health conditions of public health priority or emergency and as per attainment of higher domain of learning.

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

1. Describe the evolution of medicine and contributions of scientists.

2. Understand the health care delivery system, especially at the primary health care level.
3. Discuss the evaluation of National health program/ priorities and policies
4. Understand the sociodemographic and economic characteristics of rural people and patients living in rural communities and assess their health conditions through qualitative techniques.
5. Describe the various principles and practices of health education and application of appropriate communication skills for behavior change in the community.
6. Describe health, its determinants, natural history of disease and modes of intervention at various levels of prevention.
7. Describe demography cycle, principles, vital events, consequences of population explosion and methods to control the same under National Population Policy.
8. Explain the key indicators of disease burden, health related states or events in national and international context.
9. Discuss the principles of hospital management and describe their waste management methods.
10. Discuss the principles of health economics in terms of opportunity cost and production, demand for health and need, efficiency and equity.
11. Describe the socio-economical, behavioural and cultural factors in context to human society.

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

- a. Explain the concepts of health and disease in terms of its natural course and applied disease prevention and control strategies.
- b. Explain the demographic cycles, trends, indicators pertaining to population dynamics.
- c. Explain the hospital management infrastructure and waste management practices of the institute.

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

- a. Demonstrate communication skills with patient, their family members, peers, seniors.
- b. Express doctor-patient relationship maintaining professionalism.
- c. Demonstrate various ways of changing behavior of people in community in terms of an action-based strategy.
- d. Reflect on visits to special care places. E.g., visit to rehabilitation centre.

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

- a. Counsel the patient, family members regarding health-related issues.
- b. Inform families the impact of underlying multifactorial causation of disease, socio-economic status, use of health schemes, home economics, nutritional factors on health.
- c. Demonstrate the ability to work in a team of peers and seniors.
- d. Develop communication skills with patient, relatives of patient, own peers, health care workers.

Syllabus -Foundation course

1. Field visit to Community Health Centre

- Visit to Community Health Centre (**PHC/RHTC**) - Level of health care, primary health care, elements, principles, staffing pattern.
- Visit to Community Health Centre – (**Sub-Centre**)
- Introduction to health care workers and their role.
- Introduction to and interaction with patients

2. Orientation

- Health care system and its delivery

3. National health programme/priorities and policies

- Health care delivery system in India
- National policies related to health
- Health problems of public health importance in India
- AYUSH system of health care in India

Syllabus (1st Professional MBBS)

1. Introduction to Community medicine: Man, and Medicine

- Man, and Medicine towards health for all.

2. Concept of health and disease.

- Concept of health, Changing concepts, dimensions, determinants.
- Concept of disease causation, triad, multifactorial causation, web of causation, natural history of disease

- Concept of Control, Elimination, Eradication, Prevention with modes of intervention.
- Health indicators
- Evaluation of health promotion and education program.

3. Introduction -Basic epidemiology

- Epidemiology, tools of measurement in epidemiology. Morbidity and mortality indicator(s).

4. Communication for health education

- Health communication, Doctor-patient relationship
- Principles of health education
- Health education methods, advantages & disadvantages (under communication for health education)
- Methods in health communication

5. Demography, population dynamics, qualitative research.

- Family case Proforma discussion

6. Hospital waste management

7. Principles of health economics

- Components, need and importance of health economics

8. Sociology and Research (Types)

- Social psychology, community behavior, socio-cultural factors, family and its types, S-E status, barrier assessment to good health, poverty, social-security.
- Basic research - qualitative research methods
- Describe research and its approach.

9. Environment

- Housing & health and Sanitation

10. Anaemia & Hypertension (Nutritional Anaemia, Increase BP)

- OSCE- nutritional Anaemia, increase BP.

Teaching hours covered

Foundation course			
Sr. no	Content	Syllabus Topics	MBBS
CM/FC/01	Field visit to Community Health Centre	Field visits a. Visit to Community Health Centre (PHC/RHTC) b. Visit to Community Health Centre - Sub-Centre c. Introduction to health care workers and their role. d. Introduction to and interaction with patients	08 hours (students in batches) (i.e., 02 hours each session) (students in batches)
CM/FC/02 (a)	Orientation	Health care system and its delivery	02 hours (150 students)
CM/FC/02 (b)		National health programme/priorities and policies	02 hours (150 students)
Total Hours = 12			

Topic	Competency no	Competency
Field visits a. Visit to Community Health Centre (PHC/RHTC)	CM/FC/1.1 (a)	Define health, Primary health care and explain its concept.
	CM/FC/1.2 (a)	Enumerate the elements, functions and describe the principles of Primary health care.
	CM/FC/1.3 (a)	Describe the Indian Public Health Standards (IPHS) for PHCs and staffing pattern of a PHC.
b. Visit to Community Health Centre - Sub-Centre	CM/FC/1.4 (b)	Describe the IPHS standards for sub-centres and staffing pattern of a subcentre.
c. Introduction to health care workers and their role.	CM/FC/1.5 (c)	Enumerate the health care systems and types of primary health care and their man-power at village, sub-centre and primary health centre (PHC) level.
	CM/FC/1.6 (c)	Describe the job responsibility of a Medical officer/ HWF or ANM/ HA at PHC
d. Introduction to and interaction with patients	CM/FC/1.7(d)	Describe the socio-demographic and economic characteristics of patient.
	CM/FC/1.8 (d)	Discuss the disease/ disorder condition awareness in patient and family members
	CM/FC/1.9 (d)	Discuss the health care utilization about the disease condition

Topic	Competency no	Competency
Orientation - Healthcare System and its delivery & National health prog/priorities & policies	CM/FC/ 2.1 (a)	Describe health care delivery system in India
	CM/FC/ 2.2 (a)	List various health problems of public health importance in India
	CM/FC/ 2.3 (a)	Classify health problems in India
	CM/FC/ 2.4 (a)	List various systems of AYUSH
	CM/FC/2.5 (b)	National health programme/priorities and policies
Orientation course will be completed as single block in the first week and will contain above elements		

First professional teaching hours required as per BOG amendment notification. New Delhi, 4th November, 2019 and covered as per SMCW				
Subjects	Lectures (hours)	Small Group Teaching/ Tutorials/ Integrated learning/ Practical (hours)	Self-directed learning (hours)	Total (hours)
Community Medicine	20	27	05	52
As per SMCW	21	27	06	54

Table 2: Phase -I (Non-foundation)					
Comp. no	Chapters/ Topics	Lectures Each 1 hr.	SGT/ tuts/ Int. Learn/Practical Each 2 hrs.	SDL Each 2 hrs.	Total hours
CM 1.0	Introduction to Community Medicine, Man and Medicine towards health for all.	01	1	-	03
CM 2.0	Concepts of health and disease (Including health communication for health education)	10	4		18
CM 3.0	Understanding of interventions to promote health and prevent diseases as envisioned in National and State Health Programmes. (Communication for health education)	00	3 (BCC)	1	8
CM 4.0	Demography, population dynamics.	01		-	01
CM 5.0	Disease burden in National and global context	00	1		02
CM 6.0	Principles of Hospital Management	01	1	1	05
CM 7.0	Principles of health economics	01	-	-	01
CM 8.0	Sociology	05	1	01 Family health study (FHS) visit (2 hours)	09
CM 9.0	Describe research	01	1		03
CM 10	Environment	01			01
CM 11	Anaemia & Rise in Blood pressure	-	02	-	04
Grand total to be achieved		21	28	06	55

Topic	Comp. no.	Competency
1. Intro. to CM, Man and Medicine towards health for all	CM 1.0	Describe the historical era of evolution of medicine and contribution of various scientists towards its evolution.
	CM 1.1	Define and describe the concepts of public health and revolution in medical and health care.
2. Concepts of Health and Disease	CM 2.1	Define and describe the concept of Health, dimensions, positive health and spectrum
	CM 2.2	Define health; describe the concept of holistic health including concept of spiritual health and the relativity & determinants of health
	CM 2.3	Describe the characteristics of agent, host and environmental factors in health and disease, risk factors for the risk groups & Ice-berg
	CM 2.4	Describe and discuss the health care & their level, the natural history of disease.
	CM 2.5	Describe the Spectrum of disease, Ice-berg, Risk factors, risk groups & risk approach.
	CM 2.6 i CM 2.6 ii	Describe the concept of control of endemic diseases Concept elimination, eradication, extinction
	CM 2.7	Describe the application of interventions at various levels of prevention.
		Disability limitation, Rehabilitation and Rehabilitation Center, ICD & ICF.
	CM 2.8	Describe and discuss the concepts, the principles of Health promotion and Education, IEC and Behavioral change communication (BCC)
	CM 2.9	Define epidemiology, describe the tools of measurement in epidemiology. Describe in brief how morbidity and mortality are calculated.
	CM 2.10	Enumerate and describe health indicators.
	CM 2.11	Demonstrate the role of effective Communication skills in health in a simulated environment
	CM 2.12	Demonstrate the important aspects of the doctor patient relationship in a simulated environment
	CM 2.13	Changing pattern of disease in community
3. Understanding of interventions to promote health and prevent diseases as envisioned in National and State Health Programmes.	CM 3.1	Describe the various methods of health education with their advantages and limitations
	CM 3.2	Describe the methods of organizing health promotion and education and counselling activities at individual, family and community settings
	CM 3.3	Demonstrate and describe the steps in evaluation of health promotion and education program
	CM 3.4	Demonstrate the Behaviour Change Communication (BCC) example which is effective in community.
4. Demography, Population dynamics	CM 4.1	Define and describe the principles of Demography, Demographic cycle
	CM 4.2	Define, calculate and interpret demographic indices including birth rate, death rate, fertility rates

	CM 4.3	Enumerate and describe the causes of declining sex ratio and its social and health implications
	CM 4.4	Enumerate and describe the causes and consequences of population explosion and population dynamics of India.
5. Disease burden in Global and National Context	CM 5.1	Explain the key indicators for presenting the disease burden
	CM 5.2	Present the disease burden of selected diseases health related state or event of Public Health importance in global and National context
6. Principles of Hospital Management	CM 6.1	Discuss the functioning of tertiary care hospital
	CM 6.2	Describe various facilities and services provided to patients in a tertiary care hospital.
	CM 6.3	Discuss and communicate with paramedical staff working in tertiary care hospital.
	CM 6.4	Define and classify hospital waste
	CM 6.5	Describe various methods of treatment of hospital waste
	CM 6.6	Describe laws related to hospital waste management
7. Principles of health economics	CM 7.1	Discuss components of health economics (resources, health care market etc.)
	CM 7.2	Discuss the need for health economics
	CM 7.3	Understand the importance of health economics
8. Sociology	CM 8.1	Describe social psychology, community behaviour and community relationship and their impact on health and disease
	CM 8.2	Describe the socio-cultural factors, family (types), its role in health and disease & demonstrate in a simulated environment the correct assessment of socio-economic status
	CM 8.3	Describe the steps and perform clinico socio-cultural and demographic assessment of the individual, family and community (Family Health Survey)
	CM 8.4	Methods for assessment of Socio-economic status - Per capita income, B G Prasad Classification and modified kuppuswamy scale
	CM 8.5	Describe and demonstrate in a simulated environment the assessment of barriers to good health and health seeking behavior
	CM 8.6	Describe poverty and social security measures and its relationship to health and disease
	CM 8.7	Describe the personality and intelligence
	CM 8.8	Describe the composition of a family in the community – FHS visit
9. Research	CM 9.7	Describe research, research question.
	CM 9.8	Enumerate the PRA tools for community needs assessment. Describe the focus group discussion (FGD) and 24-hour calendar (2 SGT=4 hours)
10. Environment	CM 10.1	Describe the housing and health and Sanitation.

	CM 10.2	Identify overcrowding, and problems of housing structure in a given situation
11. Anaemia & Hypertension (Nutritional Anaemia, Increase BP)	CM 11.1	Demonstrate the measurement of BP through an OSCE approach
	CM 11.2	Examine for the signs of Anaemia through an OSCE approach

Topic	Competency no	Competency
1. Family health study (FHS) visit = 01	CM/FV/ 8.8	Describe the composition of a family in the community – FHS visit

Internal Assessment exam IA 1: There shall be **one Internal Assessment** exam conducted during their 7th month of teaching. Preferably during the 4th week of seventh month.

Internal assessment exam-Theory (At the end of first term)		
Theory	Practical (including 5 marks for journal & log book)	Total marks
50	50	100

1 st Internal assessment exam – Practical	
1. Family Study record book/presentation	10 marks
2. Qualitative research methods / *Exercises	05 marks
3. OSCE/OSPE – Including Professional Value & Ethics, Attitude & Communication, Skills	10 marks
4. Theory Viva	10 marks
5. Day-to-day assessment	10 marks
6. Log Book & Record Books Completion	05 marks
Total marks	50 Marks

*Exercises - are based on SE status calculation in rural and urban area, overcrowding, housing structure.

Note: In case, Qualitative research method is conducted in the field, the assessment will be as per student's presentation.

BOOKS RECOMMENDED:

1. Textbooks of Community Medicine:

- Park's Textbook of Preventive and Social Medicine
- Textbook of Community Medicine- Rajvir bhalwar
- J. Kishore's National Health Programs of India.
- Mahajan's Methods in Biostatistics for Medical Students and Research Workers.
- Mastering practical's – Poornima Tiwari
- Community Medicine Practical Manual – Rajkumar Patil.

2. Websites recommended:

- <https://mohfw.gov.in/ecitizentender/maharashtramh>
 - <https://mohfw.gov.in/>
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COMMUNITY MEDICINE

Phase II MBBS

Community medicine is concerned with health and disease with a goal to mark out the health problems and needs of the people in a community (community diagnosis) and then to plan, implement and evaluate the effectiveness of the health care system.

Recognizing the importance of Health in the process of economic and social development and improving the quality of life of our citizens is the responsibility of every public health personnel. Hence the community medicine practitioner should possess competencies like clinical teaching/training, public health management, research, and leadership skills.

During Phase II MBBS, based on the framework of competencies, students will be exposed to explicit the teaching of Epidemiology, Epidemiology of Communicable & non-communicable diseases, emerging & re-emerging diseases. There will be appropriate opportunities for experiential learning and reflection in Phase II MBBS in the areas of Community Diagnosis and research, Nutrition & Environmental Health.

GOAL

1. To prepare undergraduate students to recognize various health problems of public health importance and make them competent in diagnosis and management of it at the individual and the community level to function as a proficient Community Physician.
2. To teach the undergraduate students by exposing them from basic course subject to comprehensive learning in Epidemiology of diseases, Biostatistics, Nutrition & related disorders.
3. To expose the students in community for learning the Epidemiological factors related to health and disease and ensuring their attainment of higher domain of learning.

OBJECTIVES

1. Describe the concept of epidemiology and basic statistics.
2. Evaluate Screening tests for diseases.

3. Describe epidemiology of communicable and non-communicable diseases with less public health importance and those with high or increasing prevalence, targeted towards elimination.
4. Describe emerging and re-emerging diseases.
5. Identify and describe food groups pertaining to nutrition and public health importance.
6. Identify and describe of environmental models in Public health.
7. Explain role of genetic predisposition in common disorders and various preventive and social measures under genetics and health.

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

- a. Define epidemiology. Describe the various tools of measurements in epidemiology.
Describe the basic measurements in epidemiology.
- b. Describe the various emerging and re-emerging diseases.
- c. Describe the communicable & non-communicable diseases with high burden, aimed for achieving elimination and control and also with least public health importance.
- d. Describe the role of genetic predisposition in common disorders and various preventive and social measures under genetics and health.

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

- a. Demonstrate the use and evaluation of screening tests.
- b. Identify and describe the food groups pertaining to nutrition and nutritional problems of public health importance.
- c. Identify and describe the environmental models in public health.

INTEGRATION: At the end of the integrated teaching the student should acquire an integrated knowledge of an update to the topic under discussion and their preventive and control measures as provided by the health authorities.

- a. 20% of total syllabus under integrated teaching.
- b. Both vertical and horizontal integration will be carried

Vertical – General Medicine, Paediatrics, Obstetrics and Gynaecology

Horizontal – Department of Microbiology & Pathology

CLINICAL POSTINGS: For 4 Weeks in Rotation

SYLLABUS:

1) Epidemiology

- Definition, Principles, Concept, Uses
- Sources of epidemiological data
- Epidemiological methods: study designs, the principles of association and causation in epidemiological studies
- Infectious disease epidemiology, immunity – SDL
- Immunizing agents, and cold chain & immunization – SGT/PRACTICAL
- Adverse Effects Following Immunization (AEFI) – SDL
- Disease prevention and control measures including the National Immunization Schedule (NIS) & Emporiatrics (SGT?)
- Disinfection and sterilization (Field visit milk dairy – disinfection [include in competency – demonstrate preparation of hypochlorite solution])
- Investigation and control of disease epidemic
- Screening tests & evaluation
- Application of computers in epidemiology
- Community diagnosis and feasible intervention

2) Basic statistics, vital statistics and its applications

- Data, types, sources, collection, classification, analysis, interpretation and presentation of statistical data.
- Measures of central tendency and dispersion
- Normal distribution
- Application of elementary statistical methods in various study designs
- Vital stats: rates, fertility, birth and death rates, death certificates.
- Mortality rates and ratios including direct and indirect standardization.

3) Epidemiology and control programmes for communicable and non- communicable diseases

- Epidemiological and control measures for communicable for Respiratory infections, intestinal infections, arthropod-borne infections, zoonoses, surface infections.
- Epidemiological and control measures for non- communicable diseases – Diabetes, hypertension, blindness, accidents and injuries.
- Modes of transmission and measures for prevention and control of communicable diseases (Various vector borne, water borne, Air borne, etc)
- Use of essential laboratory tests at the primary care level – e.g., blood sugar
- Relevant national health programs for communicable and non-communicable diseases.

- Planning, implementation and evaluation of control measures at community level
- Disease surveillance (IDSP)
- Training Health workers in health education and disease surveillance
- Management of information system

4) Maternal and child health, clinical case study

- Under- 5, Antenatal, Post-natal with new born care, breastfeeding and feeding of infants, baby friendly hospital initiative (BFHI), Integrated Child Development Services (ICDS) scheme.

5) Nutrition & Health

- Common nutritional sources, special nutritional requirements according to age, sex, activity, physiological conditions
- Nutritional profile, balanced diet and dietary goals
- Nutritional assessment of individuals, families and the community
- Nutrition related health problems, diseases, their control and management
- Plan and recommend a suitable diet for the individuals and families
- Food fortification and adulteration, Food additives
- Estimation of Hb– Practical

6) Environment & Health

- Air pollution, water pollution, noise pollution, radiation pollution and their health hazards
- Safe and wholesome water, sources of water, water purification processes
- Water quality standards, concepts of water conservation and rainwater harvesting
- Water borne diseases /jaundice/hepatitis/ diarrheal diseases
- Solid waste management, human excreta and sewage disposal
- Meteorological environment
- Medical Entomology - Life cycles of vectors of Public Health importance and their control measures
- Insecticides and rodenticides

7) Tribal Health

- Tribal demography, disease burden
- Provisions for Tribal health under National health mission

8) Genetics & Health

- Preventive and social measures under genetics and health
- Advances in molecular genetics and factors influencing gene frequencies

9) Pandemic module - emerging and re-emerging

- Emerging and Re-emerging infections, early identification and control of new infections (6hrs)
- Vaccination strategies including vaccine development & Implementation (3hrs)

10) Hospital acquired infection

- Standard precautions against hospital acquired infections.

11) Family Planning

- Eligible & target couple, CPR, Contraceptive methods

12) Sociology

- Attitude, learning, emotions, habits. Social problems, social security

ASSESSMENT: Internal Assessment Phase II

- a. Attendance:** The learner must have 75% attendance in theory and 80% in practical's
- b. Internal Assessment:**
- Internal assessment shall be based on day-to-day assessment
 - Regular periodic examinations shall be conducted throughout the Phase II
 - Day to day records and log book.

Assessment Methods:

- **Formative:** MCQs, OSCE (Objective structured clinical exam) and OSPE (Objective structured practical examination)
- Summative assessment

Total Marks: 100 Marks

Internal Assessment 02 (IA 02): <u>There shall be one IA held during the 1st week of 8th month, considering their 2nd academic year of 11 months</u>		
Distribution of Marks for IA 02		
Theory IA 02	Practical IA 02	Total marks

	(Including 5 marks for journal & log book)	
50	50	100

Practical sessions/ topics for teaching the students during their second professional year in the subject	
Sr. No	Topics
1	Nutrition
2	Environment Health including Entomology
3	Communicable diseases
4	Non-communicable diseases
5	Vaccines, Cold Chain & Immunization
6	Family Planning & Contraceptives
7	Occupational Health
8	Epidemiological Exercises
9	Statistical Exercises
10	MISCELLANEOUS – Hospital Waste, Disaster, Accidents & Injuries, Etc.

Distribution of Practical Marks for IA 02	
1. Family Study/Epidemiology & Stats/ clinico-social/practical-Museum/ visit-health care system/visit-centres	10 marks
2. Exercises (Epidemiological and Statistical.)	05 marks
3. OSCE/OSPE – Including Professional Value & Ethics, Attitude & Communication, Skills	10 marks
4. Theory Viva	10 marks
5. Day-to-day assessment	10 marks
6. Log Book & Record Books Completion	05 marks
Total marks	50 Marks

Books recommended:

1) Textbooks of Community Medicine

1. Park's Textbook of Preventive and Social Medicine
2. Textbook of Community Medicine - Rajvir Bhalwar
3. IAPSM's Textbook of Community Medicine, 2nd Edition
4. J. Kishore's National Health Programs of India.
5. Mahajan's Methods in Biostatistics for Medical Students and Research Workers.
6. Mastering practical's – Poornima Tiwari
7. Community Medicine Practical Manual – Rajkumar Patil.

2) Websites recommended

1. <https://mohfw.gov.in/ecitizentender/maharashtrah>
2. <https://mohfw.gov.in/>

COMMUNITY MEDICINE

Phase III- Part I, MBBS

Preamble:

The syllabus for Phase III MBBS is in accordance with the BOG notification and Medical Council of India's, Attitude, Ethics and Communication (AETCOM) based teaching, learning and assessment.

The students will be taught through class room teaching, clinical postings starting after two weeks after completion of their previous professional examination, laboratory and museum activities and through visits to Rural and Urban Health Training centers. In addition to the departmental teaching, a joint program with other departments will be taken in order to give the students a comprehensive picture of man, his health and illness.

Goal:

The aim of teaching by the department of Community Medicine is directed towards preparation of the medical student to function as community and primary care physician. Towards this end, by completion of training the MBBS student must be

- i) Aware of the physical, social, psychological, economic and environmental aspect of health and disease.
- ii) Able to apply the clinical skills to recognize and manage common health problems including their physical, emotional and social aspects at the individual, family and community levels and deal with public health emergencies.
- iii) Able to define and manage the health problems of the community he/she serves.

Objectives: At the end of the course, the student should be able to Demonstrate knowledge of principles of organizing prevention and control of communicable and non-communicable diseases.

- i) Organize health care service for special groups like mother infants, under five children and school children, handicapped, adolescents and geriatric, rural tribal and urban slum dwellers.
- ii) Organize health care in case of calamities.
- iii) Inculcate values like compassion, empathy to poor, rationale and ethical practice, honesty sincerity integrity to ensure quality professional practice.
- iv) Able to work as an effective leader of the health team within the primary health care set-up.

- v) Able to coordinate with and supervise other members of the health team and maintain liaison with various agencies. (Government, non-government and voluntary organizations).
- vi) Able to plan and implement health education programmes.
- vii) Able to perform administrative functions of health centers.
- viii) Able to promote community participation especially in areas of disease control, health education and implementation of national programmes.
- ix) Aware of national priorities and the goal to be achieved to implement primary health care including health for all.
- x) Organize elementary epidemiological studies to assess the health problems in the area. For this he should be able to design a study collect data, analyze it with statistical tests, make a report and be able to participate in a health information systems.
- xi) Priorities the most important problems and help formulate a plan of action to manage them under National Health Programme guidelines including population control and family welfare program. (He should be able to assess and allocate resources, implement and evaluate the programmes).

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

- a. Describe the various maternal and child health care services.
- b. Describe the communicable & non-communicable diseases with high burden, aimed for achieving elimination and of public health emergency.
- c. Enumerate and describe disease specific National Health Programs including their prevention and treatment of a case
- d. Describe the MDG and SDG in context to India
- e. Describe the discuss the health promotion and prevention measures for obstetrics, pediatrics and Geriatrics health
- f. Describe various Occupational illnesses
- g. Describe the principles of planning, implementing and evaluating control measures for disease at community level bearing in mind the public health importance of the disease
- h. Describe health planning in India and National policies related to health and health planning
- i. Describe the various disasters and their prevention and mitigation strategies
- j. Describe various mental health problems along with National Mental Health Program

- k. Define International Health and describe its concept
- l. Describe, discuss and demonstrate the application of elementary statistical methods including test of significance in various study designs

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

- a. Elicit Clinico-social history to describe the agent, host and environment factor that determine and influence health.
- b. Recognize and assist in management of common health problems of the community.
- c. Apply elementary principles of epidemiology in carrying out simple epidemiological studies in the community.
- d. Work as a team member in rendering health care.
- e. Carry out health education effectively for the community.
- f. Demonstrate the application of relevant study design and its analysis for a given Public health scenario.
- g. Recognize the identification and utilization of services for a given health condition of a patient in context to its National Health Programme.
- h. Report, manage, and demonstrate the relevant steps in investigation of a given epidemic/ emergency or community health problems including malnutrition.

Attitude, communication and ethics:

- a) Counsel the patient, family members regarding health-related issues.
- b) Inform families the impact of underlying multifactorial causation of disease, social economic status, use of health schemes, home economics, and nutritional factors on health.
- c) Demonstrate the ability to work in a team peers and seniors.
- d) Develop communication skills patient, relative of patient, own peers, health care workers.

Syllabus (3rd Professional MBBS):

1. Epidemiology of Communicable Diseases & Non-communicable diseases
 - a. Epidemiological characteristics and control measures for Non-communicable diseases (cardiovascular diseases, coronary heart diseases, rheumatic heart diseases, stroke, obesity and cancer etc.)

- b. Modes of transmission and measures for prevention and control of communicable diseases – respiratory and contact diseases (Meningococcal, and Leprosy, STD, AIDS)
 - c. Nutritional surveillance, education and rehabilitation in the context of sociocultural factors
 - d. National Nutrition Policy, National nutritional programs including ICDS
2. National Health Programs in India
- a. Diseases of common and major public health importance
 - b. Newer programmes and components
 - c. National nutritional programmes - Nutritional surveillance, education and rehabilitation in the context of sociocultural factors
 - d. National Nutrition Policy, National nutritional programs including ICDS
3. Biostatistics
- a. Sampling techniques
 - b. Test of Significance and association (Chi-Square)
 - c. Correlation and Regression
4. Pandemic management module
- a. Outbreak Management including Quarantine, Isolation, Contact Tracing
 - b. Interdisciplinary Collaboration, Principles of Public Health Administration, Health Economics, International Health
 - c. Operational Research, Field work, Surveillance
5. Reproductive, Maternal and Child Health including Adolescent health and Family planning
- a. Measuring the baby, low birth weight (LBW), growth & development,
 - b. Current status of Reproductive, maternal, newborn and Child Health
 - c. Reproductive, maternal, newborn & child health (RMNCH); child survival and safe motherhood interventions, child health problems & rights, juvenile delinquency, child abuse and labour, indicators of MCH care including mortality in infancy and childhood, Integrated Management of Neonatal and Childhood Illnesses (IMNCI).
 - d. Physiology, clinical management and principles of adolescent health

- e. Basis and principles of the Family Welfare Program, National population policy.
6. Geriatric Services
 - a. Concept of Geriatric services
 - b. Prevention of health problems of aged population
7. Occupational Health
 - a. Occupational hazards, illnesses including diseases in agricultural workers and legislation - Factories Act, Health insurance -CGHS, Employees State Insurance Act [ESI]
8. Disaster Management
 - a. Concept of Disaster management
 - b. National Disaster management Authority
9. Mental Health
 - a. Concept of Mental Health, Warning signals of mental health disorder,
 - b. Alcoholism and drug dependence.
10. Health Care of the Community
 - a. Level of health care, primary health care, elements, principles, staffing pattern.
 - b. Health status, problems and resources
 - c. Millennium development goals and sustainable development goals
 - d. IPHS standards for Sub-centre, PHC, CHC
 - e. Voluntary health agencies
11. Health Planning and Management
 - a. Planning cycle, committees for health planning in India
 - b. Health management techniques
12. International Health –
 - WHO, UNICEF, UNDP, World bank, FAO, ILO, USAID, SIDA, Non-governmental and other agencies.
13. Essential Medicine
 - a. Essential Medicine List (EML)
 - b. Roles in Primary health care.
 - c. Counterfeit medicine and its prevention
14. Recent Advances in Community Medicine
 - a. Important public health events of last five years
 - b. Various issues during outbreaks and their prevention

- c. Laws pertaining to practice of medicine such as Clinical establishment Act and Human Organ Transplantation Act and its implications
(Anat. Integration)

15. Communication for health education

- Process, types, functions and barriers
- Principles and practice of health education

FINAL ASSESSMENT IN COMMUNITY MEDICINE

Eligibility to appear for Professional examination.

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

(a) Attendance

The learner must have 75% attendance in theory and 80% in practical **in each phase** of instruction in that subject.

(b) Internal Assessment:

- a. There will be **three Internal Assessment exams** during the third professional year.
 - i. The **First IA (IA 03)** shall be conducted preferably during the 1st week of the 4th month of academic year.
 - ii. The **Second IA (IA 04)** shall be conducted preferably during the 3rd week of the 7th month of academic year.
 - iii. The **Third IA (IA 05)**, Prelim exam, shall be conducted preferably during the 2nd week of the 10th month of their academic year.
- b. 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.
- c. 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.

Assessment Phase III (Part I) MBBS

Internal Assessment IA 03-exam			Internal Assessment IA 04-exam			Internal Assessment (Prelims) IA 05-exam		
Theory	Practical	Total marks	Theory	Practical	Total marks	Theory	Practical	Total marks
50	50	100	100	100	200	200	100	300

Note:

- i. Internal assessment marks will reflect as separate head of passing at the summative examination, in the marks card of the university examination.
- ii. The results of internal assessment should be displayed on the notice board within 1-2 weeks of the test.
- iii. Internal assessment marks will reflect under separate head

Internal Assessment (contd.)

Internal Assessment will include: (a) Written tests comprising of short notes and creative writing experiences, (b) OSCE based clinical scenarios / viva voce.

Since, the marks requirement is to obtain 50% combined in theory and practical (not less than 40% in each) **as eligibility for appearing for University Examinations**

Conversion formula for calculation of marks in Internal assessment examinations.									
Exam	1 st IA (Phase- I)	2 nd IA (Phase- II)	3 rd IA (Phase- III)	4 th IA (Phase- III)	5 th IA (Phase- III) (Prelim)	Total	IA marks conversion formula (CF) (out of 40 each)	Eligibility to appear for final university examination (after conversion out of 40) (40% separately in Theory and Practical, 50% combined)	
Theory	50	50	50	100	200	450	$\frac{\text{Total marks obtained}}{40}$ 11.25	** 16 (minimum)	Total of theory and practical Must be 40.
Practical	50	50	50	100	100	350	$\frac{\text{Total marks obtained}}{40}$ 8.75	*** 16 (minimum)	
Grand total marks	100	100	100	200	300	800	$\frac{\text{Total marks obtained}}{40}$ 10	**** 40 (minimum)	

*Formula is total marks obtained divided by conversion factor 40,

That is $450/40=11.25$, CF = $450/11.25 = 40$, **40% of 450 = 180, THEREFORE $180/11.25 = 16$ minimum marks to be achieved.

$350/40=8.75$, CF = $350/8.75 = 40$, *40% of 350 = 140, THEREFORE $140/8.75 = 16$ minimum marks to be achieved.**

$800/80$ [CF (T) + CF (P) = $40+40=80$] = **10, ****50% of 800 = 400, THEREFORE $400/10 = 40$ minimum marks to be achieved to clear as 50% Theory & practical combined)**

The additional IA exam for students belonging to the remedial batch, that is those who failed the IA exam, will be conducted after the university examination for which they were not eligible.

This is because the university conducts the supplementary examination not later than 90 days from the date of declaration of the results of the main examination. Also, the previous year's IA marks scored by the remedial candidate will not be considered for deciding the eligibility of the candidate for appearing in the university examination.

Conversion formula for calculation of marks in Remedial IA examination

	Remedial exam (Prelim)	IA marks conversion formula (out of 40)	Eligibility to appear for final university examination (after conversion out of 20) (40% separately in Theory and Practical, 50% combined)	
Theory	200	= Total marks obtained / 5	16 (minimum)	Total of theory and practical Must be 40.
Practical	100	= Total marks obtained / 2.5	16 (minimum)	
Grand total	300	= Total marks obtained / 3.75	40 (minimum)	

200/40 = 5, 200/5 = 40, 40% of 200 = 80, THEREFORE 80/5 = 16 Min. marks to be obtained
 100/40 = 2.5, 100/2.5 = 40, 40% of 100 = 40, THEREFORE 40/2.5 = 16 Min. marks to be obtained
 300/80 = 3.75, 300/3.75 = 80, 50% of 300 = 150, THEREFORE 150/3.75 = 40 Min marks to be obtained by the candidate for securing 50% combined theory and practical for passing.

Note: While preparing Final Marks of Internal Assessment, the rounding-off marks shall be done as illustrated in the following table:

Phase of course	Written-theory	Practicals /orals/clinicals	Pass criteria
Third professional Part-I			Internal Assessment: 50% combined in theory and practical (not less than 40% in each) <u>for eligibility for appearing for University Examinations.</u>
Community Medicine – 2 Papers	200	100	University Examination: Mandatory 50% marks separately in theory and practical (Practical = practical/ clinical + viva)

Internal Assessment Marks	Final rounded marks example
15.0 to 15.99	16

Theory and practical marks distribution for final IA/ Prelim examination, as per university examination pattern

Topic distribution for Theory Paper		
Paper	Section	Topics
I	A	MCQs on all topics of paper I
	B & C	Epidemiology
		Concept of health and disease
		Screening
		Man & Medicine
		Sustainable development goals
		Demography and Family planning
		Medicine and Social sciences
		Tribal health
		Environment and health
		Genetics and health
		Mental health
Health information and basic medical statistics		
II	A	MCQs on all topics of paper II
	B & C	Preventive Medicine in Obstetrics, Paediatrics and Geriatrics
		Emerging and Re-emerging infections
		Communicable & Non- Communicable diseases
		Health programmes in India
		Nutrition and Health
		Hospital waste management
		Hospital acquired infections
		Disaster management
		Occupational health
		Communication for health education
		Health care of the community
		International health
Health planning and management		

- Scenario based/ application questions can be on any topic of the paper I & II
- For long answer question and scenario based / application questions, topics will not be repeated.

Practical sessions/ topics for teaching the students during their third professional year in the subject	
Sr. No	Topics
1	Nutrition
2	Environment Health including Entomology
3	Communicable diseases
4	Non-communicable diseases
5	Vaccines, Cold Chain & Immunization
6	Family Planning & Contraceptives
7	Occupational Health
8	Epidemiological Exercises
9	Statistical Exercises
10	MISCELLANEOUS – Hospital Waste, Disaster, Accidents & Injuries, Etc.

<u>Practical distribution:</u> includes practical/ clinical and viva voce for IA-IV & V	
1. Clinico-social case – OSCE - Including Professional Value & Ethics, Attitude & Communication, Skills	20 marks
2. Practical – Museum & Laboratory (spotters) - Epidemiological & Statistical Exercises [10+20+20]	50 marks
3. Theory Viva	20 marks
4. Log Book & Record Books Completion	10 marks
Total marks	100 Marks
<ul style="list-style-type: none"> • OSCE & OSPE stations will be conducted in the hospital building on a separate floor in the forenoon hours. The patients will be kept for stations. • Viva – Paper-I = 10 marks, Paper – II = 10 marks. 	

- **Since the IA-V (Prelim pattern) should be that of the final exam as per the NMC-GMER guidelines, the day-to-day assessment criteria for marks has been removed.**

IA-I, II, III (Pattern)

FORMAT / SKELETON OF QUESTION PAPER

1. Course and Year: MBBS, Phase-I, II & III-Part-I
2. Subject Code:
3. Subject (PSM): **Community Medicine**
4. Paper: I. **Total Marks: 50** (Sec A+B) (10+40 = 50 Marks)
5. Total Time: **2 & 1/2 Hrs.**

SECTION "A" MCQ

Instruction:

- 1) in the appropriate box below the question number once only.
- 2) Use **blue** ball point pen only.
- 3) Each Question carries One mark.
- 4) A student will not be allotted any marks if he / she overwrites, strikes out or put white ink on the cross once marked.

SECTION "A" MCQ (10 Marks)

Q.1 Multiple Choice Question (Total 10 MCQs of One mark each) (10x1=10)

- a) b) c) d) e) f) g) h) i) j)

SECTION “ B ”

Instruction :

- 1) Use **blue** ball point pen only.
- 2) Do not write anything on the **blank portion of the question paper**. If written anything, such type of act will be considered as an attempt to resort to unfair means.
- 3) **All** questions are **compulsory**.
- 4) The number to the right indicates full marks
- 5) Draw diagrams wherever necessary.
- 6) Distribution of syllabus in question paper is only meant to cover entire syllabus within the stipulated frame. The Question paper pattern is a mere guideline. Question can be asked from any paper’s syllabus into any question paper. Students cannot claim that the Question is out of syllabus. As it is only for the placement’s sake, the distribution has been done.
- 7) Use a common answer book for all sections.

Section “B”

- | | | |
|----|---|--------------------|
| 2. | Short answer question (Any 2 out of 3)
a) b) c) | (2 x 5 marks = 10) |
| 3. | Short answer question (Any 3 out of 4)
a) b) c) d) | (3 x 4 marks = 12) |
| 4. | Short answer question (Any 3 out of 4)
a) b) c) d) | (3 x 3 marks = 09) |
| 5. | Short answer question (Any 3 out of 4)
a) b) c) d) | (3 x 3 marks = 09) |

IA-IV, & IA-V; Paper-I
(Prelim), and University Paper-I

FORMAT / SKELETON OF QUESTION PAPER

1. Course and Year: **III-II- MBBS**
2. Subject Code:
3. Subject (PSM): **Community Medicine**
4. Paper: I
5. Total Marks: **100**
6. Total Time : **3 Hrs.**

SECTION "A" MCQ

- Instruction:** 1) Put in the appropriate box below the question number once only.
2) Use **blue** ball point pen only.
3) Each Question carries One mark.
4) A student will not be allotted any marks if he / she overwrites, strikes out or put white ink on the cross once marked.

SECTION "A" MCQ (20 Marks)

Q.1 Multiple Choice Question (Total 20 MCQ of One mark each) **(20x1=20)**

- a) b) c) d) e) f) g) h) i) j)
k) l) m) n) o) p) q) r) s) t)

SECTION "B"

- Instruction:**
- 1) Use **blue / black** ball point pen only.
 - 2) Do not write anything on the **blank portion of the question paper**. If written anything, such type of act will be considered as an attempt to resort to unfair means.
 - 3) **All** questions are **compulsory**.
 - 4) The number to the right indicates full marks
 - 5) Draw diagrams wherever necessary.
 - 6) Distribution of syllabus in question paper is only meant to cover entire syllabus within the stipulated frame. The Question paper pattern is a mere guideline. Question can be asked from any paper's syllabus into any question paper. Students cannot claim that the Question is out of syllabus. As It is only for the placement sake, the distribution has been done.
 - 7) Use a common answer book for all sections

Section "B"

2. Short answer question One question AETCOM (Compulsory) (7x1=7)
a)
3. Short Answer Question (Any 3 Out of 4) (7x3 =21)
a) b) c) d)
4. Structured Long Answer Question (Compulsory) (12x1=12)
a)
5. Short Answer Question (Any 4 Out of 5) (7x4=28)
a) b) c) d) e)
6. Structured Long Answer Question(Compulsory) (12x1=12)
a)

IA-V Paper-II (Prelim), and University Paper-II

FORMAT / SKELETON OF QUESTION PAPER

1. Course and Year: **III-I- MBBS**

2. Subject Code :

(Applicable w.e.f. October 2022& onwards examination)

3. Subject (PSM): **Community Medicine**

4. Paper: II

5. Total Marks : **100**

6. Total Time: **3 Hrs.**

7. Remu. (PS) : **Rs.**

8. Remu. (PM) : **Rs.**

SECTION "A" MCQ

Instruction:

- 1) in the appropriate box below the question number once only.
- 2) Use **blue** ball point pen only.
- 3) Each Question carries One mark.
- 4) A student will not be allotted any marks if he / she overwrites, strikes out or put white ink on the cross once marked.

SECTION "A" MCQ (20 Marks)

Q.1 Multiple Choice Question (Total 20 MCQ of One mark each) (20x1=20)

- a) b) c) d) e) f) g) h) i) j)
k) l) m) n) o) p) q) r) s) t)

SECTION "B"

Instruction:

- 1) Use **blue** ball point pen only.
- 2) Do not write anything on the **blank portion of the question paper**. If written anything, such type of act will be considered as an attempt to resort to unfair means.
- 3) **All** questions are **compulsory**.
- 4) The number to the right indicates full marks
- 5) Draw diagrams wherever necessary.
- 6) Distribution of syllabus in question paper is only meant to cover entire syllabus within the stipulated frame. The Question paper pattern is a mere guideline. Question can be asked from any paper's syllabus into any question paper. Students cannot claim that the Question is out of syllabus. As It is only for the placement sake, the distribution has been done.
- 7) Use a common answer book for all sections.

Section "B"

2. Short answer question (Any 4 out of 5) (7x4=28)
a) b) c) d) e)
3. Structured Long Answer Question (Compulsory) (12x1=12)
a)
4. Short answer question (Any 4 out of 5) (7x4=28)
a) b) c) d) e)
5. Structured Long Answer Question (Compulsory) (12x1=12)
a)

INTERNAL ASSESMENT PAGE FOR EACH STUDENT IN RECORD

Day to day assessment format

Attendance	Responds to direction/ Question	Activity involvement (Solving task)	Answers the question in exercise	Submits Home Work	Submits feedback	Completes activity in Logbook	Completes activity in Moodle
(present/late/absent)	(yes/late/no)	(active/hesitates/doesn't)	(right/avg./wrong)	(timely/late/doesn't)	(timely/late/doesn't)	(timely/late/doesn't)	(timely/late/doesn't)
2 1 0	2 1 0	2 1 0	2 1 0	2 1 0	2 1 0	2 1 0	2 1 0
1. The above scoring is calculated for each student from first professional year to Phase-III (Part-I) MBBS. 2. The percentage scored is recorded for all the teachings except for FC and Theory lectures. 3. For IA, 10 marks are adjusted for 100% and thus, the marks are given for their calculated percentage.							

Books Recommended:

1. Park's Textbook of Preventive and Social Medicine, Park
2. Text book of Community Medicine, Kulkarni A.P. and Baride J.P.
3. IAPSMs textbook of Community Medicine as per CBME NMC, AM Kadri
4. Principles of Preventive and Social Medicine, K. Mahajan
5. Textbook of Community Medicine, B. Shridhar Rao.
6. Essentials of Community Medicine, Suresh Chandra.
7. Textbook of Biostatistics, B. K. Mahajan
8. Review in Community Medicine, V.R. Sheshu Babu.
9. Competency-based practical's in Community Medicine, Anjana Verma

Reference books

1. Public health & preventive medicine - Maxcy -Rosenau
2. Oxford text book of public health -Oxford medical publication
3. O.P. Ghai's text book of applied medicine -O. P. Ghai
4. Uses of epidemiology – Morris
5. Preventive & community medicine – Clark

Nature of questions will include different types such as structured essays (Long Answer Questions - LAQ), Short Answers Questions (SAQ) and objective type questions (e.g. Multiple Choice Questions - MCQ). Marks for each part should be indicated separately. MCQs shall be accorded a weightage of not more than 20% of the

Note: Both Examiners should jointly conduct practical examination for each student.

Verified above entries from Answer books and we hereby certify that the marks entered against each Seat Number are found correct. Since, the day-to-day assessment is limited up to the IA -V (Internal Assessment – Prelim exam), its 10 marks will be considered for Epidemiological and Statistical Exercise.

NAME OF EXAMINER		COLLEGE	SIGNATURE WITH DATE	
1			Convener	
2			Internal	
3			External	
4			External	

