स्वामी राम हिमालयन विश्वविद्यालय
Swami Rama Himalayan University

Criterion 1 - Curricular Aspects

1.1.1 Outcome Analysis of POs, COs

MBBS (2018-2023)

Himalayan Institute of Medical Sciences

Swami Rama Nagar, Jolly Grant, Dehradun 248016, Uttarakhand, India

A. Program Outcomes

After successful completion of the program, the student will able to be a:

PO1	Clinician, who understands and provides preventive, promotive, curative, palliative and holistic care with compassion.
PO2	Leader & member of health care system.
PO3	Communicator with patients, families, colleagues, and community.
PO4	Lifelong learner committed to continuous improvement of skills and knowledge.
PO5	Professional who is committed to excellence, is ethical, responsive and accountable to patients, community and the profession.

B. Course-wise CO-PO Mapping

Mapping factor or Correlational level between Course Outcome (CO) and Program Outcomes (PO) indicates to what extent the teaching and assessment method of CO correlates/contributes the PO at the level defined below:

Corelation Level	Particulars
3	Substantial/high contribution of CO towards PO
2	Moderate contribution of CO towards PO
1	Slight/low contribution of CO towards PO

Following are the list of courses and the mapping factors between COs and POs:

Course code	Course Name					
MBBS101	Anatomy					
Course Outcomes (COs)		CO-PO Mapping (Articulation Matrix)				
At the end of the course the students will be able to:		PO-1	PO-2	PO-3	PO-4	PO-5
CO1	Demonstrate the knowledge of normal disposition, clinically relevant interrelationships, functional and cross-sectional anatomy of the various structures in the body.	3	1	1		1
CO2	Demonstrate the knowledge of basic structure and connections of the central nervous system to analyse the integrative and regulative functions of the system and locate the site of lesion according to the deficits encountered.	3	1	1	1	1
CO3	Demonstrate the knowledge of basic principles and sequential development of the organs and systems, recognize critical stages of development and the effects of common teratogens, genetic mutations and environmental hazards and explain the developmental basis of the major variations and abnormalities.	3	2	2	2	1
CO4	List the basic principles of genetics, features of common chromosomal aberrations and techniques in clinical genetics including karyotyping and its applications.	3	2	1	1	1
CO5	Describe basic principles of newer imaging techniques and interpretation of Computerised Tomography (CT scan), Magnetic Resonance Imaging, Sonogram etc.	3	1	2	1	1

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CO6	State the clinical basis of some common clinical procedures like intramuscular and intravenous injections, lumbar puncture, and biopsy etc.	3	2	1	1	1
CO7	Identify, locate and dissect all the important structures of the human body with relevant relations.	1	1	1	2	1
CO8	Mark the surface projection (living anatomy) of important structure and organs of the human body on the assigned cadaver/human model.	2	2	1	1	1
CO9	Identify the microscopic structure and correlate elementary ultrastructure of various organs and tissues with the functions as prerequisite for understanding the altered state in various disease processes.	3	1	1	1	1
CO10	Demonstrate respect and follow the correct procedure when handling cadavers and other biologic tissues.	3	2	1	1	3
CO11	Demonstrate ability to communicate adequately, sensitively, effectively, and respectfully with colleagues, teachers, and staff of the department in a manner that will improve the future outcomes.	3	2	3	1	1
CO12	Demonstrate ability to work effectively and appropriately with colleagues in assigned teamwork respecting diversity of roles, responsibilities, and competencies of others.	3	3	2	3	3
CO13	Demonstrate ability to perform an objective self-assessment of knowledge and skills, continue learning, refine existing skills and acquire new skills	1	2	2	2	3
CO14	Develop a strong foundation of ethics, integrity, and responsibility in the profession as well as professional boundaries between patients' colleagues and society.	1	2	1	3	3
	Course-wise PO Average	**2.500**	**1.714**	**1.429**	**1.429**	**1.571**

Course code	Course Name					
MBBS102	Biochemistry					
Course Outcomes (COs)		CO-PO Mapping (Articulation Matrix)				
At the end of the course the students will be able to:		PO-1	PO-2	PO-3	PO-4	PO-5
CO1	Describe the molecular and functional organization of a cell and list its subcellular components	1	1	1	1	1
CO2	Delineate structure, function and inter-relationships of bio molecules and integrate various aspects of metabolism with consequences of deviation from normal	3	1	2	2	1
CO3	Explain the fundamental aspects of enzymology and clinical application wherein regulation of enzymatic activity is altered	3	1	2	3	1
CO4	Describe digestion and assimilation of nutrients and consequences of malnutrition	3	1	3	2	1
CO5	Explain the molecular mechanisms of gene expression, regulation and its role in inherited disorders along with the principles of genetic engineering and its application in medicine	3	1	2	2	1
CO6	Describe mechanisms involved in maintenance of body fluid and pH homeostasis;	3	1	2	1	1
CO7	Explain the molecular concepts of body defence and their application in medicine	3	2	1	1	1
CO8	Characterize the biochemical basis of environmental health hazards, biochemical basis of cancer and carcinogenesis	3	2	2	1	1
CO9	Explain the principles of various laboratory investigations and instruments and use them for clinical screening and diagnosis by correlating and interpreting the results with diagnosis	3	2	3	2	3
CO10	Understand the principles of total quality control during the processes of biochemical analysis of samples.	2	3	1	1	2

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CO11	Know about the importance of maintaining confidentiality of patient information & test results and apply it in professional practice	2	1	1	1	3
CO12	Know about professional, ethical, and empathetic relationship with teachers, colleagues, and staff in the Department as well as the Laboratory and interact in small group discussions for preparing lucid and clear presentations in seminars	2	1	3	1	2
CO13	Preserve the dignity of the profession by his/her own conduct	2	2	3	2	3
	Course-wise PO Average	**2.538**	**1.462**	**2.000**	**1.538**	**1.615**

Course code	**Course Name**					
MBBS103	**Physiology**					
Course Outcomes (COs)		**CO-PO Mapping (Articulation Matrix)**				
At the end of the course the students will be able to:		**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**
CO1	Explain the normal functioning of all the organ systems and their interactions for well-coordinated total body function.	3			1	
CO2	Discuss the relative contribution of each organ system to the maintenance of the milieu interior.	3	1	1	1	
CO3	Describe the physiological aspects of normal growth and development.	3	1	1	1	1
CO4	Perform various experiments designed for study of physiological phenomenon for the assessment of the body functions	3	1	1	1	2
CO5	Demonstrate and interpret various haematological data and usage of basic tools for clinical examination human.	2	1	2	2	3
CO6	Interpret amphibian experiments through computerized assisted software	2	2	2	1	2
CO7	Demonstrate the physical examination of various systems that is complete and relevant to disease identification	2	1	2	2	3

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CO8	Demonstrate ability to communicate adequately, sensitively, effectively, and respectfully with colleagues, teachers and staff of department in manner that will improve future outcome	2	1	3	3	3
CO9	Demonstrate ability to work effectively and appropriately with colleagues in assigned teamwork respecting diversity of roles, responsibilities and competencies of other		3	2	2	3
CO10	Demonstrate ability to perform an objective self –assessment of knowledge and skills, continue learning, refine existing skills and acquire new skills	2	3	2	2	3
CO11	Develop a strong foundation of ethics, integrity, and responsibility in the profession as well as professional boundaries between patients, colleagues, and society	2	3	2	2	3
	Course-wise PO Average	**2.182**	**1.545**	**1.636**	**1.636**	**2.091**

Course code	**Course Name**					
MBBS201	**Forensic Medicine**					
Course Outcomes (COs)		**CO-PO Mapping (Articulation Matrix)**				
At the end of the course the students will be able to:		**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**
CO1	Define, describe, and discuss death and its types including somatic/clinical/cellular, molecular and brain-death, Cortical death and Brainstem death	3	2	3	2	1
CO2	Describe and discuss natural and unnatural deaths	3	2	2	1	2
CO3	Describe and discuss issues related to sudden natural deaths	3	2	2	1	2
CO4	Discuss moment of death, modes of death-coma, asphyxia and syncope	3	3	2	2	2
CO5	Describe and discuss autopsy procedures including post- mortem examination, different types of autopsies, aims and objectives of post-mortem examination	3	2	3	2	3
CO6	Describe the legal requirements to conduct post-mortem examination and procedures to conduct medico-legal post- mortem examination	3	2	3	2	3

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CO7	Describe and discuss obscure autopsy	2	1	2	2	1
CO8	Describe evidence of abortion - living and dead, duties of doctor in cases of abortion, investigations of death due to criminal abortion	3	2	3	2	3
CO9	Describe different types of specimens and tissues to be collected both in the living and dead: body fluids (blood, urine, semen, faeces, saliva), skin, nails, tooth pulp, vaginal smear, viscera, skull, specimen for his to-pathological examination, blood grouping, HLA Typing and DNA Fingerprinting. Describe Lockard's Exchange Principle	3	2	3	2	2
CO10	Demonstrate & identify that a particular stain is blood and identify the species of its origin	2	2	1	1	2
CO11	Demonstrate the correct technique to perform and identify AB● & RH blood group of a person	1	2	1	3	3
	Course-wise PO Average	**2.636**	**2.000**	**2.273**	**1.818**	**2.182**

Course code	**Course Name**					
MBBS202	**Microbiology**					
Course Outcomes (COs)		**CO-PO Mapping (Articulation Matrix)**				
At the end of the course the students will be able to:		**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**
CO1	Able to Understand of role of microbial agents in health and disease	2		1	2	
CO2	Able to describe general properties of micro-organism (bacteria, fungi, viruses, parasites in terms, taxonomy, morphology, pathogenesis, lab diagnosis & treatment	2	1	2	3	1
CO3	Able to describe various infective syndrome in relation to etiological agents, Clinical presentation and their Laboratory diagnosis	3	2	3	3	2
CO4	State or indicate the modes of transmission of pathogenic and opportunistic organisms and their sources, including insect vectors responsible for transmission of infection	3	2	1	3	1

CO5	Able to recognize, diagnose, investigate, present newly emerging disease that may result into outbreak epidemic or pandemic	3	3	2	3	2
CO6	Able to demonstrate knowledge of immunological mechanism of various disease and immunological methods of their diagnosis	3	1	2	1	1
CO7	Acquire knowledge on suitable antimicrobial agents for treatment of infections and scope of immunotherapy and different vaccines available for prevention of communicable diseases.	3	2	1	3	1
CO8	Able to describe relevant clinical sampling & interpretation of laboratory reports in relation with clinical conditions covering all aspects of clinical microbiology	3	2	3	3	2
CO9	Plan laboratory investigation in Hepatobiliary, Skin, soft tissues, and musculoskeletal infections, Genitourinary, Blood stream and Cardio-vascular and CNS infections.	3	1	1	3	1
CO10	Use the correct method of collection, storage and transport of clinical material for microbiological investigation	3	2	3	3	2
CO11	Able to demonstrate knowledge of various infection control practices in healthcare settings including use of hand hygiene, PPE kit, sterilization and disinfection and biomedical waste management	3	3	3	1	2
CO12	Able to demonstrate confidentiality and respect for patient sample	1	2	3	1	3
CO13	Able to demonstrate communication skill pertaining to patient identity and laboratory results	1	1	3	2	3
	Course-wise PO Average	**2.538**	**1.692**	**2.154**	**2.385**	**1.615**

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Course code	Course Name					
MBBS203	Pathology					
Course Outcomes (COs)		CO-PO Mapping (Articulation Matrix)				
At the end of the course the students will be able to:		PO-1	PO-2	PO-3	PO-4	PO-5
CO1	Demonstrate ability to understand and practice Universal precautions while handing all samples.	2	1	1	2	1
CO2	Demonstrate knowledge of proper handling and disposal of Biomedical waste.	2	1	2	3	1
CO3	Should be able to understand functioning of various pre-analytical, analytical & post analytical errors.	3	1	1	3	2
CO4	Demonstrate ability to recall classification of various infections and neoplastic diseases as per ICD / WHO classification.	3	2	3	3	1
CO5	To be able to perform and interpret / analyse results of basic Laboratory investigations.	3	1	1	3	2
CO6	Should be able to understand the value of taking consent in various pathological invasive procedures.	3	2	1	3	1
CO7	Demonstrate ability to understand & incorporate pathological basis of diseases in both horizontal & vertical interpretation.	3	2	2	3	1
CO8	Should be able to understand functioning of various pre-analytical, analytical & post analytical errors.	3	1	3	2	2
CO9	To be able to understand/ perform the basic functioning of Blood Bank & know the importance of safer blood transfusion services by doing good donor selection.	3	2	1	3	2
CO10	Should be able work as a member of a team in a cordial manner with Laboratory personnel & colleagues.	2	3	1	2	1
CO11	Demonstrate/show knowledge of basic statistics & research.	1	3	3	2	2
	Course-wise PO Average	**2.545**	**1.727**	**1.727**	**2.636**	**1.455**

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Course code	Course Name					
MBBS204	Pharmacology					
Course Outcomes (COs)		CO-PO Mapping (Articulation Matrix)				
At the end of the course the students will be able to:		PO-1	PO-2	PO-3	PO-4	PO-5
CO1	Competent in providing rational drug therapy with thorough general understanding of the pharmacological basis of drugs use and conversant with individualization of drug therapy, therapeutic drug monitoring, essential- medicines and evidence-based medicine concept and pharmaco-economics while appreciating the importance of adverse drug reactions, drug toxicity, environmental and occupational toxicity and their monitoring with a general understanding of their management and prevention and be conversant with various dosage forms, quality storage standards of medicines, reliable sources of drug information, drug discovery and regulatory process including clinical trials and translational research	3		1	2	1
CO2	Able to select and prescribe medicines and safely administer appropriate rational therapies including nutritional interventions, based on individual drug(s) pharmacology and cost effectiveness for common clinical conditions of national importance, encountered at primary care settings with holistic approach and be able to provide /guide continuum of medical care based on individual drug(s) pharmacology for chronic communicable / non –communicable diseases including chronic psychiatric conditions as advocated primarily by the secondary /tertiary care settings.	3	2	1	1	1
CO3	Well versed with pharmacotherapy of National Health Policies covering diseases of national importance i.e., NVBDCP, NCCP, NLEP, NTEP, NIDCCP, UIP etc	3	2	1	1	1
CO4	Demonstrate basic skills in selecting P- drugs and essential medicines with a proper use of medicaments/ formulations /drug delivery devices, assessing and reporting ADRs (pharmacovigilance) and evaluating off label use of drugs for common conditions of national importance and to elicit drug use history (allopathic and alternative medicines) for anticipating any interactions and can identify and refer patients who may require specialized or advanced drug therapy at a tertiary care.	3	2	2	2	1
CO5	Demonstrate basic skills in therapeutic auditing, maintaining accurate, clear and appropriate prescription record in conformation with legal and administrative frame works	3	2	2	3	1

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CO6	Be skilful in medicines inventory management (procurement, distribution, organization and inventory control) based on rational drug use criteria following national EMD list and able to take corrective pharmaco- epidemiological measures, commensurate with his/her position as a leader of the health care	3	3	2	3	1
CO7	Perform an objective self-assessment of knowledge, skills, attitude and communicable skills and upgrade knowledge in latest advances in drug therapy, in refining existing prescribing skills and acquire skills for newly discovered drugs having a clear therapeutic advantage early and in appropriately discarding the older inferior drugs quickly from one's therapeutic armamentarium regularly with a commitment for quality healthcare, or to pursue research in the area of therapeutics, clinical trials and their documentation regularly with a commitment for quality healthcare, or to pursue research in the area of therapeutics, clinical trials and their documentation.	3	1	2	3	2
CO8	Demonstrate ability to search (including through electronic means), and critically evaluate for quality evidence on drug therapy in the medical literature and can apply the information appropriately in patient care	3	1	2	3	2
CO9	Prioritize patient's preferences, values, prior experiences, social compulsions, beliefs, on drug use and its acceptance with all confidentiality and privacy and communicate appropriately to patient and their families on the limitations of drug therapy and the alternatives available to encourages participation, compliance and shared decision-making on rational drug use.	2	1	3	2	2
CO10	Counsel patients/families /and communities adequately, sensitively, effectively, respectfully and professionally in their own language, on rational use of prescribed drug and drug delivery systems, pros and cons of drug therapy, with all possible precautions and contraindications observed during individual and mass treatment so as to prevent /mitigate drug-harm and explain explicitly the outcome of drug therapy to patient's satisfaction keeping in mind the socio-psychological, cultural, religious, economic and environmental factors affecting the drug..	2	2	3	2	2
CO11	Practice and aspire selflessness, integrity, responsibility, accountability and respect to professional code of conduct in rational drug prescribing knowledge of medico-legal, societal, ethical and humanitarian principles of drug use by patient or by community, obliging the rapidly evolving field of drug discovery and drug use concepts in commensurate with the newer emerging challenges of diseases /disorders/syndromes and practice professional and ethical restrains while dealing with patients, colleagues/	1	2	3	3	3

	society and the drug industry in particular whereby able to effectively tackle the undue influence of the Pharmaceutical industry and to set exemplary goals of high standards in discharging social and professional obligations.					
CO12	Participate effectively, appropriately and educate and motivate inter-professional health care colleagues for advancement of therapeutics, changing paradigms of drug use overtime and patient safety while acknowledging the limited /scarce health care resources for drug therapy	1	3	3	3	2
	Course-wise PO Average	**2.500**	**1.750**	**2.083**	**2.333**	**1.583**

Course code	**Course Name**					
MBBS301	**Community Medicine**					
Course Outcomes (COs)		**CO-PO Mapping (Articulation Matrix)**				
At the end of the course the students will be able to:		**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**
CO1	Understand the concept of Public Health, natural history of disease and application of interventions at various levels of prevention.	3	1	2	3	1
CO2	Discuss health care delivery system, concept of primary health care, essential medicines, prevention of counterfeit medications and health promotion and communication methods (including IEC, BCC).	3	2	3	1	2
CO3	Perform clinic- socio-cultural, demographic, and nutritional assessment to understand its relationship with health and disease and recommend suitable measures at individual, family, and community level.	3	2	3	2	2
CO4	Describe common nutritional disorders of public health importance and discuss appropriate prevention and curative measures as per relevant National nutritional Programs.	3	1	1	2	2
CO5	Differentiate between various epidemiological study designs and its application in data collection, statistical analysis, interpretation, and presentation.	1	2	3	2	2
CO6	Discuss the epidemiological and control measures including the use of essential laboratory tests at the primary care level for Communicable and Non-Communicable diseases of public health importance including relevant national health programs.	3	2	2	2	2

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CO7	Discuss the reproductive, maternal, newborn, child & adolescent health; child survival and safe motherhood interventions including gender issues and women empowerment including various health problems of the aged, and national program for elderly.	2	1	2	2	2
CO8	Discuss various environmental (air, water, noise, and radiation) & occupational health hazards along with their preventive and control strategies.	1	2	1	2	3
CO9	Describe various international health agencies and discuss planning cycle with health management techniques.	1	3	2	2	2
CO10	Recognize important public health events of recent years including disasters, and discuss their prevention and control measures, discuss laws pertaining to practice of medicine.	2	2	2	2	2
	Course-wise PO Average	**2.200**	**1.800**	**2.100**	**2.000**	**2.000**

Course code	**Course Name**					
MBBS302	**EYE - Ophthalmology**					
Course Outcomes (COs)		**CO-PO Mapping (Articulation Matrix)**				
At the end of the course the students will be able to:		**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**
CO1	Diagnose and describe common eye problems including systemic diseases affecting vision	3	2	1	1	1
CO2	Discuss the principal management of major ophthalmic emergencies including first aid applicable to a primary care setting.	3	2	2	2	2
CO3	Enumerate various adverse drug reactions with special reference to ophthalmic manifestations.	3	1	1	2	2
CO4	Discuss the National program of blindness.	2	2	3	2	2
CO5	To identify common eye problems and systemic diseases which affect vision and take necessary action required to minimize the sequence of such disease.	3	1	1	1	2
CO6	To help organizing community-based survey and motivate for cataract surgery and eye donation.	2	2	3	2	1

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CO7	Ability to perform basic ophthalmic procedures as applicable to a primary care setting.	3	2	3	2	2
CO8	Ability to recommend rehabilitative services for common ophthalmic problems across all ages.	3	1	2	2	3
CO9	Demonstrate ability to establish rapport with seniors, colleagues, and paramedical workers so as to work effectively and appropriately in an inter-professional health care team respecting diversity of roles, responsibilities and competencies of other professionals.	2	3	2	1	2
CO10	Demonstrate ability to communicate adequately, sensitively, effectively, and respectfully with patients in a language that the patient understands and in a manner that will improve patient satisfaction and health care outcomes.	2	1	3	2	2
	Course-wise PO Average	**2.600**	**1.700**	**2.100**	**1.700**	**1.900**

Course code	**Course Name**					
MBBS303	**ENT /OTO-RHINO-LARYNGOLOGY**					
Course Outcomes (COs)		**CO-PO Mapping (Articulation Matrix)**				
At the end of the course the students will be able to:		**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**
CO1	Ability to recognize and assess ear conditions –such as earache, decreased hearing, and ear discharge and provide first contact care prior to appropriate referral.	3	1	2	2	1
CO2	Ability to recognize and assess common conditions of nose – such as rhinosinusitis, nasal mass, epistaxis, deviated nasal septum, provide primary care and refer appropriately.	3	2	2	2	1
CO3	Ability to recognize and assess head and neck swellings, head and neck malignancies, and refer appropriately.	3	1	2	2	2
CO4	Ability to recognize and assess emergency conditions in Otorhinolaryngology such as Stridor, epistaxis, deep neck abscess, vertigo, and sudden sensorineural hearing loss. Provide first contact care, timely and appropriate referral.	3	2	2	2	3
CO5	Demonstrate ability to choose the appropriate diagnostic tests and interpret these (tests) based on scientific validity, cost effectiveness related to ear, nose and throat diseases.	2	2	3	2	1

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CO6	Demonstrate ability to elicit and record from the patient, and other relevant sources including relatives and caregivers, a history that is complete and relevant to ear, nose and throat diseases.	2	2	1	1	2
CO7	Demonstrate ability to perform a clinical examinations and clinical tests for ear, nose and throat diseases that are relevant for diagnosis and identification of the disease, disease prevention and health promotion.	3	1	3	1	1
CO8	Ability to perform basic procedures syringing, nasal packing, care of tracheostomized patient and other procedures in otorhinolaryngology as applicable to a primary care setting.	3	2	2	2	2
CO9	Ability of early diagnosis and timely referral for ear nose throat foreign bodies especially in aerodigestive tract.	2	3	2	2	1
CO10	Demonstrate effective judgment while requesting an appropriate audiological test and ability to interpret basic audiological tests such as PTA, Tympanometry, OAE and BERA.	1	1	3	1	1
CO11	Demonstrate knowledge of and detect various causes of hearing loss and recommend rehabilitative services for hearing problems across all ages. Demonstrate knowledge of screening programs for early detection of hearing loss and awareness of National program for prevention and control of deafness and National program for prevention and control of Cancer.	3	2	1	2	1
CO12	Demonstrate ability to communicate adequately, sensitively, effectively, and respectfully with patients in a language that the patient understands and apply newly gained knowledge and skills to the care of the patient in a manner that will improve patient satisfaction and health care outcomes.	1	2	3	2	2
CO13	Understands the importance of ethics, integrity, discipline & responsibility in the profession as well as professional boundaries between patients, colleagues and society, ting diversity of roles, whilst respecting responsibilities and competences of other professionals	1	1	2	1	3
	Course-wise PO Average	**2.308**	**1.692**	**2.154**	**1.692**	**1.615**

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Course code	Course Name					
MBBS401	General Medicine and allied (Medicine, Respiratory medicine, psychiatry, Dermatology)					
Course Outcomes (COs)		CO-PO Mapping (Articulation Matrix)				
At the end of the course the students will be able to:		PO-1	PO-2	PO-3	PO-4	PO-5
CO1	Understanding the symptoms pertaining to various chest disorders and draw differential diagnosis.	3	1	1	2	2
CO2	Ability to interpret and integrate available data in order to address patient problems, generate differential diagnoses and develop individualized management plans that include preventive, promotive & therapeutic goals for a respiratory case.	3	2	2	2	2
CO3	Ability to choose the appropriate diagnostic tests and interpret these (tests) based on scientific validity, cost effectiveness related to a respiratory case.	2	2	2	2	2
CO4	Ability to recognize, diagnose and manage pulmonary tuberculosis as contemplated in national tuberculosis control programme	2	2	2	1	2
CO5	Ability to manage common respiratory emergencies in primary care setting and refer appropriately.	3	3	2	2	2
CO6	Ability to perform clinical examinations of respiratory system that is complete and relevant to respiratory disease identification, disease prevention, and health promotion	2	2	2	2	1
CO7	Ability to perform an objective self-assessment of knowledge and skills, continue learning, refine existing skills and acquire new skills.	2	3	2	3	3
CO8	Demonstrate ability to communicate adequately, sensitively, effectively, and respectfully with patients in a language that the patient understands and in a manner that will improve patient satisfaction and health care outcomes	2	1	3	2	2
CO9	Work effectively and appropriately with colleagues in an inter-professional health care team respecting diversity of roles, responsibilities, and competencies of other professionals.	1	2	3	2	1
CO10	Understands the importance of ethics, integrity & responsibility in the profession as well as professional boundaries between patients' colleagues and society	2	1	1	2	3
CO11	Ability to promote mental health and mental hygiene;	3	2	1	1	1

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CO12	Knowledge of ethology (bio-psycho-social-environmental interactions), clinical features, diagnosis, and management of common psychiatric disorders across all ages,	3	2	2	2	2
CO13	Ability to recognize and manage common psychological and psychiatric disorders in a Primary care setting, institute preliminary treatment in disorders difficult to manage, and refer	2	1	2	2	3
CO14	Ability to recognize alcohol/ substance abuse disorders and refer them to appropriate enters,	2	2	2	2	2
CO15	Ability to assess risk for suicide and refer appropriately,	2	2	3	1	3
CO16	Ability to recognize temperamental difficulties and personality disorders	1	1	2	1	2
CO17	Assess mental disability and rehabilitate appropriately,	2	1	1	1	1
CO18	Understanding of national and state programmes that address mental health and welfare of patients and community.	1	1	1	3	2
CO19	Demonstrate effective clinical problem solving, judgment and ability to interpret and integrate available data in order to address patient problems, generate differential diagnoses and develop individualized management plans that include preventive, promotive and therapeutic goals for Psychiatry	2	2	3	2	2
CO20	Sympathetic and compassionate attitude towards patient and their relatives.	2	2	3	2	2
CO21	Recognize and function effectively, responsibly, and appropriately as a health care team leader in primary and secondary health care settings	1	3	2	2	1
CO22	Demonstrate ability to communicate adequately, sensitively, effectively, and respectfully with patients in a language that the patient understands and in a manner that will improve patient satisfaction and health care outcomes	1	2	3	2	2
CO23	Understanding of the principles of diagnosis of diseases of the skin, hair, nail and mucosa.	2	1	1	2	1
CO24	Demonstrate the ability to elicit the relevant history regarding disorders of skin, hair, nail and mucosa from patient/ relatives.	1	1	3	1	1
CO25	Demonstrate the ability to perform complete and relevant clinical examination of skin and mucosa regarding disease identification.	3	1	1	1	1

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CO26	Ability to recognize, diagnose, order appropriate investigations, and treat common diseases of the skin in the primary care setting and refer as appropriate	3	1	1	1	2
CO27	Ability to recognize, diagnose, order appropriate investigations, and treat, recommend rehabilitative services, preventive measures regarding leprosy in the primary care setting and refer as appropriate	3	1	1	1	1
CO28	Ability to recognise, diagnose, preventive measures, counselling, testing, and management of common sexually transmitted diseases including HIV based on national health priorities.	3	1	1	1	1
CO29	Ability to recognize and treat emergencies including drug reactions and refer as appropriate.	2	1	2	1	2
CO30	Ability to perform/ assist basic dermatological procedures as applicable to primary care setting.	2	1	2	2	1
CO31	Demonstrates the medico-legal aspects in various diseases of skin including severe cutaneous adverse drug reactions and leprosy.	1	2	1	1	2
CO32	Demonstrate the ability to apply newly gained knowledge or skills to the care of the patients	1	1	1	2	1
CO33	Demonstrate the ability to communicate adequately, sensitively, effectively, and respectfully with patients/ relatives in a manner that will improve patient satisfaction and health care outcome.	1	1	3	1	1
CO34	Work effectively and appropriately with colleagues in an inter-professional health care system and within professional boundaries in ethical manner	1	2	1	2	1
CO35	The student shall have adequate knowledge to diagnose common clinical conditions with special reference to infectious diseases, nutritional disorder, metabolic disorders, Cardiac disorders, Respiratory disorders, Gastro-intestinal, Hepatobiliary disorders, Renal disorders, Musculo-skeletal disorders, Haematological disorders, Neurological disorders, Geriatric disorders, environmental disorders, and common malignancies	3	1	1	1	1
CO36	Propose diagnostic and investigative procedures and ability to interpret them	2	1	1	1	1
CO37	Outline various modes of management including drug therapy especially doses, side effects, toxicity, indications, contraindications, and interaction.	3	1	1	1	1
CO38	Provide first level management of acute emergencies promptly and efficiently and decide on the timing and level of referral if required	3	2	2	1	1

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CO39	Apply clinical skill of history taking, clinical examination to diagnose common medical disorders and medical emergencies	3	1	1	1	1
CO40	A curiosity to learn about medical research.	2	1	1	1	1
CO41	Demonstrate effective clinical problem solving, judgment and ability to interpret and integrate available data in order to address patient problems, generate differential diagnoses and develop individualized management plans that include preventive, promotive and therapeutic goals for General Medicine	2	1	1	1	1
CO42	Sympathetic and compassionate attitude towards patient and their relatives	3	1	1	1	1
CO43	Demonstrate ability to apply newly gained knowledge or skills to the care of the patient	1	1	1	1	1
CO44	Demonstrate ability to recognize and manage ethical and professional conflicts	1	2	2	1	1
	Course-wise PO Average	**2.045**	**1.500**	**1.705**	**1.523**	**1.545**

Course code	**Course Name**					
MBBS402	**Obstetrics Gynaecology**					
Course Outcomes (COs)		**CO-PO Mapping (Articulation Matrix)**				
At the end of the course the students will be able to:		**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**
CO1	Ability to Provide peri-conceptional counselling and antenatal care,	3	1	3	1	1
CO2	Ability to Identify high-risk pregnancies and refer appropriately,	2	2	3	2	3
CO3	Ability to conduct normal deliveries, using safe delivery practices in the primary and secondary care settings,	3	3	2	3	3

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CO4	Ability to diagnose complications of labour, institute primary care and refer in a timely manner	3	2	3	3	3
CO5	Ability to perform early neonatal resuscitation,	1	2	2	3	2
CO6	Ability to Provide postnatal care, including education in breast-feeding,	3	1	3	2	2
CO7	Ability to Counsel and support couples in the correct choice of contraception,	3	2	3	2	2
CO8	Ability to apply medico-legal principles as they apply to tubectomy, Medical Termination of Pregnancy (MTP), Pre-conception and Prenatal Diagnostic Techniques (PC PNDT Act) and other related Acts.	2	2	3	1	3
CO9	Ability to demonstrate basics of control of bleeding and judgment for blood transfusion	2	2	3	1	1
CO10	Ability to demonstrate the skill in managing different types of shock before evaluating the need of referral	1	3	3	2	2
CO11	Ability to demonstrate the skill in communicating the result of investigations, especially about the terminal illness and death to the patient or relatives	1	2	3	2	2
CO12	Ability to elicit a gynaecologic history, perform appropriate physical and pelvic examinations and PAP smear in the primary care setting,	2	1	3	1	2
CO13	Ability to recognize, diagnose and manage common reproductive tract infections in the primary care setting,	2	1	2	1	1
CO14	Ability to recognize and diagnose common genital cancers and refer them appropriately	3	2	2	2	3
	Course-wise PO Average	**2.214**	**1.857**	**2.714**	**1.857**	**2.143**

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Course code	Course Name					
MBBS403	Paediatrics					
Course Outcomes (COs)		CO-PO Mapping (Articulation Matrix)				
At the end of the course the students will be able to:		PO-1	PO-2	PO-3	PO-4	PO-5
CO1	The student shall have adequate knowledge to diagnose common paediatrics conditions with special reference to growth & development infectious diseases, genetics, nutritional disorder, and metabolic disorders.	3	2	1	2	1
CO2	Understand the common disorders of childhood involving systems like CNS, CVS, Respiratory, Gastroenterology and Hepatology.	3	1	2	2	1
CO3	Apply clinical skills of history taking, clinical examination to diagnose common paediatric disorders and paediatric emergencies.	1	2	3	3	2
CO4	Outline various modes of management including common drug therapy especially doses, side effects, toxicity, indications, contraindications, and interaction.	2	3	2	2	2
CO5	Demonstrate effective acumen to solve clinical and able to interpret their data provide differential diagnoses and effective management which included following goals. i. Should be able to demonstrate bedside important clinical signs and their interpretation. ii. To interpret simple routine investigations like hemogram, stool, urine, sputum and other biological fluids. iii. To interpret simple X-ray, ECG, CT scan and laboratory report findings. iv. Observe and assist common bedside medical procedures like pleural tap, lumbar puncture, bone marrow aspiration, catheterization, insertion of Ryle's tube, Immunization etc.	2	3	2	2	2
CO6	Sympathetic and compassionate attitude towards patient and their family members	2	3	2	2	2
CO7	Recognize and function effectively, responsibly and appropriately as a health care team leader in primary and secondary health care settings	2	3	3	3	2
CO8	Demonstrate ability to communicate adequately, sensitively, effectively and respectfully with patients in a language that the patient understands and in a manner that will improve patient satisfaction and health care outcomes	2	2	3	3	3
CO9	Work in a collaborative and collegial fashion that will help maximize the health care delivery potential of the team.	1	3	3	2	2
	Course-wise PO Average	**2.000**	**2.444**	**2.333**	**2.333**	**1.889**

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Course code	Course Name					
MBBS404	General Surgery and allied (Orthopaedics, anaesthesia, radiology/radiotherapy, Dental)					
Course Outcomes (COs)		CO-PO Mapping (Articulation Matrix)				
At the end of the course the students will be able to:		PO-1	PO-2	PO-3	PO-4	PO-5
CO1	Describe the evolution of Anaesthesiology as a modern specialty and the diverse roles of Anaesthesiologist in the medical profession.	3	1	2	2	1
CO2	Discuss the Pre-anaesthetic assessment, preoperative preparation with premedication, minimum mandatory monitoring standards and Post Anaesthesia Care with recovery and discharge criteria of surgical patients	3	1	3	2	1
CO3	Describe General Anaesthesia – with a knowledge of intravenous inducing agents, analgesic agents especially the opioids, inhalational agents, neuromuscular blocking agents and reversal agents and Endotracheal Intubation.	3	1	1	2	1
CO4	Discuss Regional Anaesthesia along with the details of types of regional i.e. Spinal and Epidural Anaesthesia and a knowledge of Local Anaesthetic drugs used	3	2	3	2	2
CO5	Describe the care of unconscious patient with cardiopulmonary resuscitation and the American Heart Association (AHA) guidelines of Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS)	3	3	3	1	2
CO6	Illicit detailed history and duly signed Informed Consent from the patients and their relatives depending on the type of surgery with communication skills.	3	2	3	2	3
CO7	Ability to recognize and assess bone injuries, dislocation and poly-trauma and provide first contact care prior to appropriate referral.	3	1	2	2	1
CO8	Ability to recognize and manage common infections, congenital, metabolic, neoplastic, degenerative, and inflammatory bone and joints disease in primary care setting and refer appropriately.	3	2	2	2	1
CO9	Demonstrates knowledge of the medico-legal aspects of trauma.	3	2	2	2	3
CO10	Demonstrate ability to choose the appropriate diagnostic tests and interpret these tests based on scientific validity, cost effectiveness related to musculoskeletal trauma and disease.	3	2	3	2	2

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CO11	Demonstrate ability to elicit and record from the patient, and other relevant sources including relatives and caregivers, a history that is complete and relevant to Orthopaedic trauma and disease.	3	2	2	2	3
CO12	Demonstrate ability to perform a clinical examination of Musculo-skeletal system that is complete and relevant to trauma and disease identification, disease prevention and health promotion.	2	2	2	2	2
CO13	Demonstrate effective clinical problem solving, judgment and ability to interpret and integrate available data in order to address patient problems, generate differential diagnoses and develop individualized management plans that include preventive, promotive and therapeutic goals for Orthopaedic trauma and disease.	2	2	2	2	2
CO14	Ability to perform basic Orthopaedic procedures as applicable to a primary care setting.	3	3	1	1	1
CO15	Ability to recommend rehabilitative services for common Orthopaedic problems across all ages.	3	2	3	2	2
CO16	Demonstrate ability to communicate adequately, sensitively, effectively and respectfully with patients in a language that the patient understands and in a manner that will improve patient satisfaction and health care outcomes.	2	1	3	2	2
CO17	Work effectively and appropriately with colleagues in an inter-professional health care team respecting diversity of roles, responsibilities and competencies of other professionals.	2	3	2	2	2
CO18	Demonstrate ability to perform an objective self-assessment of knowledge and skills, continue learning, refine existing skills and acquire new skills.	2	3	2	3	2
CO19	Demonstrate ability to apply newly gained knowledge or skills to the care of the patient.	2	2	1	3	2
CO20	Understands the importance of ethics, integrity & responsibility in the profession as well as professional boundaries between patients` colleagues and society.	2	2	1	2	3
CO21	Able to Understand the indications of common radiological investigations for common medical conditions.	3	1	1	1	2
CO22	Able to communicate to the patient the preparation required for common imaging procedures in a comforting manner	3	2	3	2	1
CO23	Able to choose the most appropriate and cost-effective radiological method for diagnosis of common conditions	2	2	3	2	3

CO24	Able to diagnose common medical conditions by interpreting radiological findings.	2	2	3	2	3
CO25	Able to judge common medicolegal aspects of Radiological investigations	1	2	2	2	3
CO26	Able to demonstrate knowledge of common precautions to be taken in radiological techniques	3	1	2	2	2
CO27	Able to demonstrate knowledge of common errors which occur while radiologically investigating patient.	3	2	1	3	2
	Course-wise PO Average	**2.593**	**1.889**	**2.148**	**2.000**	**2.000**

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C. Program outcome Reference Value:

Following table calculates the overall average of all POs of the Courses and is referred as average PO Reference values.

Sr. No.	Course Code	Course Title	PO-1	PO-2	PO-3	PO-4	PO-5
1	MBBS101	Anatomy	2.500	1.714	1.429	1.429	1.571
2	MBBS102	Biochemistry	2.538	1.462	2.000	1.538	1.615
3	MBBS103	Physiology	2.182	1.545	1.636	1.636	2.091
4	MBBS201	Forensic Medicine	2.636	2.000	2.273	1.818	2.182
5	MBBS202	Microbiology	2.538	1.692	2.154	2.385	1.615
6	MBBS203	Pathology	2.545	1.727	1.727	2.636	1.455
7	MBBS204	Pharmacology	2.500	1.750	2.083	2.333	1.583
8	MBBS301	Community Medicine	2.200	1.800	2.100	2.000	2.000
9	MBBS302	EYE-Ophthalmology	2.600	1.700	2.100	1.700	1.900
10	MBBS303	ENT /OTO-RHINO-LARYNGOLOGY	2.308	1.692	2.154	1.692	1.615
11	MBBS401	General Medicine and allied (Medicine, Respiratory medicine, psychiatry, Dermatology)	2.045	1.500	1.705	1.523	1.545
12	MBBS402	Obstetrics Gynaecology	2.214	1.857	2.714	1.857	2.143
13	MBBS403	Paediatrics	2.000	2.444	2.333	2.333	1.889
14	MBBS404	General Surgery and allied (Orthopaedics, anaesthesia, radiology/radiotherapy, Dental)	2.593	1.889	2.148	2.000	2.000
	Combined Average PO Reference values		**2.386**	**1.769**	**2.040**	**1.920**	**1.800**

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D. Assessment of Program Outcome and Attainment Value

The attainment of the course outcome is measured at the level of 3 as follows:

Attainment Levels	Criteria
3	If **80%** of student achieves marks **greater** than threshold percentage of the total score of assessment
2	If **70%** of student achieves marks **greater** than threshold percentage of the total score of assessment
1	If **60%** of student achieves marks **greater** than threshold percentage of the total score of assessment
0	If **60%** of student achieves marks **less** than threshold percentage of the total score of assessment

Attainment level of COs is measured through direct attainment of COs depending on the performance of the students in Internal Assessment (IA) and University Examination (UE) individually. The average attainment level of both assessment is calculated depending on the proportional weightage of IA and ESE according to the academic regulation or marks distribution of the assessment. For the MBBS program the threshold percentage is set at 50% for IA and 50% for UE Assessments.

Sr. No.	Course Code	Course Title	Attainment of COs	Derived Attainment of POs Course-wise				
				PO-1	PO-2	PO-3	PO-4	PO-5
1	MBBS101	Anatomy	**2.30**	1.92	1.31	1.10	1.10	1.20
2	MBBS102	Biochemistry	**2.40**	2.03	1.17	1.60	1.23	1.29
3	MBBS103	Physiology	**2.40**	1.75	1.24	1.31	1.31	1.67
4	MBBS201	Forensic Medicine	**3.00**	2.64	2.00	2.27	1.82	2.18
5	MBBS202	Microbiology	**2.53**	2.14	1.43	1.82	2.01	1.36
6	MBBS203	Pathology	**2.47**	2.09	1.42	1.42	2.17	1.20
7	MBBS204	Pharmacology	**3.00**	2.50	1.75	2.08	2.33	1.58
8	MBBS301	Community Medicine	**2.50**	1.83	1.50	1.75	1.67	1.67

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9	MBBS302	EYE-Ophthalmology	**1.80**	1.56	1.02	1.26	1.02	1.14
10	MBBS303	ENT /Oto-Rhino-Laryngology	**2.30**	1.77	1.30	1.65	1.30	1.24
11	MBBS401	General Medicine and allied	**3.00**	2.05	1.50	1.71	1.52	1.55
12	MBBS402	Obstetrics Gynecology	**2.60**	1.92	1.61	2.35	1.61	1.86
13	MBBS403	Paediatrics	**2.64**	1.76	2.15	2.05	2.05	1.66
14	MBBS404	General Surgery and allied	**2.73**	2.36	1.72	1.96	1.82	1.82
	Average PO Achievement Through Results			**2.022**	**1.508**	**1.738**	**1.640**	**1.530**
	Average PO Reference values			**2.386**	**1.769**	**2.040**	**1.920**	**1.800**
	Percentage Attainment of PO's			**84.8%**	**85.2%**	**85.2%**	**85.4%**	**85.0%**

From the Attainment level of CO, the Derived PO's value for course is calculated as follows:

$$Derived\ PO\ Value = \frac{CO\ attaintment \times respective\ PO\ average}{3}$$

Depending on derived PO values of the courses, calculate the average PO achievement for each PO.
Calculate the percentage attainment of PO's as follows:

$$Percentage\ attainment\ of\ PO's = \frac{Average\ PO\ Attainment\ through}{average\ PO\ refrenece\ value} \times 100$$

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