

COURSE OUTCOMES

FACULTY OF MEDICINE

Course Outcomes - MBBS

Sl. No.	Name of the Program	Name of the Course	Course Outcome
1.1	MBBS – Phase I	Anatomy	<p>At the end of course, the learner shall be able to:</p> <ol style="list-style-type: none"> 1. Describe the general anatomy of structures and organ systems of the human body. 2. Describe the normal disposition, interrelationships, innervations, vascular supply and functional anatomy of clinically relevant structures and organs of the human body. 3. Correlate the normal microscopic structure of various organs with their functions (as a prerequisite for understanding the altered state in commonly encountered disease processes). 4. Explain basic principles and sequential development of the organ systems 5. Explain the embryologic basis of the major developmental abnormalities and variations. 6. Explain the basics of medical genetics with respect to common genetic syndromes. 7. Explain the anatomical basis of contraception.
1.2		Physiology	<p>At the end of the course, the student should be able to:</p> <ol style="list-style-type: none"> 1. Describe the normal functions of all organ systems, regulatory mechanisms and interactions of the various organs for well co-ordinated total body function. 2. Understand the basic principles, mechanism and homeostatic control of all the functions of human body as a whole. 3. Elucidate the physiological aspects of normal growth and development. 4. Analyse the physiological responses and adaptation to different stresses during life Processes. 5. Lay emphasis on applied aspect of physiological functions underlying disease state. 6. Correlate knowledge of physiology in areas indicated by National Health Programmes. 7. Acquire the skills to do the experiments for study of physiological function. 8. Interpret experimental and investigative data. 9. Distinguish between normal and abnormal data derived as a result of tests which he/she

			performed and observed in the laboratory.
1.3		Biochemistry	<p>At the end of the course, the student shall be able to:</p> <ol style="list-style-type: none"> 1. Enlist and describe the cell organelles with their molecular and functional organization. 2. Delineate structure, function and interrelationships of various biomolecules and consequences of deviation from the normal. 3. Understand basic enzymology and emphasize on its clinical applications wherein regulation of enzymatic activity is disturbed. 4. Describe digestion and assimilation of nutrients and consequences of malnutrition. 5. Describe and integrate metabolic pathways of various biomolecules with their regulatory mechanisms. 6. Explain the biochemical basis of inherited disorders with their associated sequelae. 7. Describe mechanisms involved in maintenance of water, electrolyte and acid base balance and consequences of their imbalance. 8. Outline the molecular mechanisms of gene expression and regulation, basic principles of biotechnology and their applications in medicine. 9. Understand basic immunology involving molecular concepts of body defense mechanisms and their applications in medicine. 10. Outline the biochemical basis of free radical injury and antioxidant action, biochemical basis of cancer and carcinogenesis and environmental health hazards. 11. Continue to learn advancements in biochemistry and the application of same in medical practice. 12. Understand different types of biomedical waste, their potential risks and their management.
2.1	MBBS – Phase II	Pathology	<p>Students at the end of training in Pathology will be able to:</p> <ol style="list-style-type: none"> 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 normal homeostatic mechanisms, the derangements of these mechanism and the effects on human systems. 3. Understand the etiopathogenesis, the pathological effects and clinico-pathological correlation of common infectious and non-infectious diseases.

			<ol style="list-style-type: none"> 4. Correlate normal and altered morphology (Gross and Microscopic) of different organ systems in different diseases to the extent needed for understanding of disease processes and their clinical significance. 5. Have knowledge of common immunological disorders and their resultant effects on the human body. Have an understanding of the common haematological disorders and the investigations necessary to diagnose them and determine their prognosis. 6. Know the principles of collection, handling and dispatch of clinical samples from patients in a proper manner. 7. Perform and interpret in a proper manner the basic clinical pathology procedures.
2.2		Microbiology	<p>At the end of the course, the learner shall be able to understand the infectious diseases in terms of their etiology, pathogenesis, laboratory diagnosis in order to efficiently treat, prevent and control the disease. To achieve this the student should be able to</p> <ol style="list-style-type: none"> 1. Describe the mechanism of host-parasite relationship 2. Enumerate normal microbial flora and its importance in health and disease 3. Describe the etiology and pathogenesis of common infectious diseases 4. Describe the etiology and pathogenesis of opportunistic infections 5. Chose appropriate laboratory investigations to support clinical diagnosis with respect to proper sample collection, timing and transport of the specimens 6. Describe suitable anti-microbial agents for treatment 7. Understand the mechanism of immunity to infection 8. Explain scope of immunotherapy and vaccines for prevention of infectious diseases 9. Perform simple tests to arrive at the diagnosis 10. Apply appropriate method of sterilization, disinfection and biochemical waste disposal in hospital and community practice 11. Explain the importance of National health programmes for prevention of communicable

			diseases.
2.3		Pharmacology	<p>At the end of the course, the student should be able to:</p> <ol style="list-style-type: none"> 1. Describe the pharmacokinetics and pharmacodynamics of essential and commonly used drugs. 2. List the indications, contraindications, interactions and adverse reactions of commonly used drugs. 3. Indicate the use of drug of choice and alternatives in a particular disease with consideration to its cost, efficacy and safety for individual needs. mass therapy under national health programme. 4. Describe the pharmacokinetic basis, clinical presentation, diagnosis and management of common poisonings. 5. List the drugs of addiction liability and their management. 6. Indicate causations in prescription of drugs in special medical situations such as pregnancy, lactation, infancy and old age. 7. Know the concept of rational drug therapy in clinical pharmacology. 8. State the principles underlying the concept of 'Essential Drugs' 9. Evaluate the ethics and modalities involved in the development and introduction of new drugs.
2.4		Forensic Medicine	<p>At the end of the course in, Undergraduate Medico Legal curriculum (Forensic Medicine & Toxicology), the learner shall be able to:-</p> <ol style="list-style-type: none"> 1. Identify, examine and prepare report or certificate in medico-legal cases/situations in accordance with the law of land with particular emphasis to <ol style="list-style-type: none"> a. maintenance of medico-legal register like accident register, b. issuance of wound certificate, c. issuance of drunkenness certificate, d. issuance of death certificate e. issuance of sickness and fitness certificate f. estimation of age by physical, dental and radiological examination and issuance of certificate g. Examination of victims and accused and

			<p>issuance of certificates in sex related offences.</p> <ol style="list-style-type: none"> 2. Perform medico-legal post-mortem examination and reasonably interpret autopsy findings and results of other relevant investigations to logically conclude the cause, manner and time since death-especially in accidents, hanging, burns, drowning and poisoning. 3. Preserve and dispatch specimens and other concerned materials in medico-legal/ post-mortem cases to the appropriate Government agencies for necessary examination and report. 4. Understand and observe medical ethics, etiquette, duties, rights, medical negligence, medico-social and legal responsibilities of the physicians towards patients, profession, State and society at large. 5. Be aware of relevant legal / court procedures applicable to the medico-legal/medical practice. 6. Deal with basic aspects of diagnosis and management of poisoning (acute & chronic), and develop competence to deal with medico social and medico legal issues arising there from. 7. Recognize and deal with the general principles of environmental, occupational, and preventive aspects of toxicology. 8. Manage medico legal and medico social issues related to Mass disaster including bioterrorism.
3.1	MBBS – Phase III Part - I	Community Medicine	<p>To attain the above mentioned goals, students are guided in the following situations:</p> <ol style="list-style-type: none"> 1. To organize elementary epidemiological studies to assess the health problems in the area. (Includes designing a study, collecting data, applying statistical tests, make a report for further action). 2. Prioritise the most important health problems and help formulate a plan of action to manage them under National Health Programme guidelines including population control and Family Welfare Programme. 3. Demonstrate knowledge of principles of organizing prevention and control of Communicable and Non-Communicable Diseases. 4. Organize health care services for special groups

			<p>like mothers, infants, under-five children, school children, handicapped, adolescents, geriatrics in rural, tribal and urban slum dwellers.</p> <ol style="list-style-type: none"> 5. Organize health care services in case of calamities. 6. Inculcate values like compassion, empathy to poor, rationale and ethical practice, honesty sincerity and integrity to ensure quality professional practice. 7. Able to work as an effective leader of health team with in the primary health care set-up. 8. Able to co-ordinate with and supervise other members of the health team. 9. Able to plan and implement health education programmes. 10. Able to perform administrative functions of health centres. 11. Able to promote community participation especially in areas of disease control, health education and implementation of National Programmes. 12. Aware of national priorities and the goals to be achieved to implement primary health care including Health for all, Millennium Development Goals.
3.2		ENT	<ol style="list-style-type: none"> 1. To enable the student to familiarize himself with the common problems related to the subject of ENT. 2. To enable the student to be competent to evaluate the symptoms, analyze the findings, diagnose the disease and suggest and implement the treatment modalities to treat the common ENT conditions. 3. To make the student competent to perform emergency life saving procedures commonly seen in ENT practice. 4. To make the student aware of the program on prevention of deafness and have knowl- edge of methods for screening for early detection of hearing loss. 5. To make the student understand the rational use of pharmaco-therapeutic agents used in treating ENT diseases and have the knowledge of the common side effects and interactions of commonly used drugs.

3.3		Ophthalmology	<p>At the end of the course the MBBS student should be able to;</p> <ol style="list-style-type: none"> 1. Identify common diseases of the eye. 2. Diagnose and treat common diseases of the Anterior segment eg sty, Conjunctivitis, Extra ocular foreign body, Corneal abrasion, Vitamin A deficiency. 3. Recognise and initiate treatment for sight threatening diseases like Corneal ulcer, Keratomalacia, Glaucoma, Ocular trauma, Chemical injuries. 4. Demonstrate knowledge of blindness and its causation and be able to actively participate in the implementation of the National programme for control & prevention of blindness.
3.4	MBBS – Phase III Part - II	Medicine	<p>At the end of the course, the student shall be able to:</p> <ol style="list-style-type: none"> 1. Diagnose common clinical disorders with special reference to infectious diseases, nutritional disorders, tropical and environmental diseases. 2. Outline various modes of management including drug therapeutics especially dosage, side effects, toxicity, interactions, indication and contra-indications. 3. Propose diagnostic and investigative procedures and ability to interpret them. 4. Provide first level management of acute emergencies promptly and efficiently and decide the timing and level of referral, if required. 5. Recognise geriatric disorders and their management. 6. Develop clinical skills (history taking, clinical examination) to diagnose various common medical disorders and emergencies. 7. Refer a patient to secondary and/ or tertiary level of health care after having instituted primary care. 8. Perform simple routine investigations like haemogram, stool, urine, sputum and biological fluid examinations. 9. Assist the common bedside investigative procedures like pleural tap, lumbar puncture, bone marrow aspiration / biopsy and liver biopsy.
3.5		Dermatology and Sexually Transmitted	<p>At the end of the course of dermatology and sexually transmitted diseases (STD) and leprology the student shall be able to:</p>

		Diseases	<ol style="list-style-type: none"> 1. Demonstrate sound knowledge of common diseases their clinical manifestations including emergent situations and investigative procedures to confirm their diagnosis. 2. Demonstrate comprehensive knowledge of various modes of topical therapy. 3. Describe the mode of action of commonly used drugs, their doses, side-effects/toxicity, indications and contra-indications and interactions. 4. 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. 5. Diagnose and manage emergencies specially recognizing the need for referral when appropriate and necessary.
3.6		Tuberculosis and Respiratory Diseases	<p>At the end of the course of Tuberculosis and Chest-diseases, the student shall be able to:</p> <ol style="list-style-type: none"> 1. Demonstrate knowledge of common chest diseases, their clinical manifestations, including emergent situations and of investigative procedure to confirm their diagnosis; 2. Demonstrate comprehensive knowledge of various modes of therapy used in treatment of respiratory diseases; 3. Describe the mode of action of commonly used drugs, their doses, side effects/ toxicity, indications and contra- indications and interactions; 4. Describe commonly used modes of management including medical and surgical procedures available for treatment of various diseases and to offer a comprehensive plan of management inclusive of National Tuberculosis Control Programme. 5. Interview the patient, elicit relevant and correct information and describe the history in chronological order; 6. Conduct clinical examination, elicit and interpret clinical findings and diagnose common respiratory disorders and emergencies. 7. Perform simple, routine investigative and office procedures required for making the bed side diagnosis; especially sputum collection and

			<p>examination for etiologic organisms especially acid fast bacilli (AFB), interpretation of the chest x-rays and respiratory function tests.</p> <ol style="list-style-type: none"> 8. Interpret and manage various blood gases and pH abnormalities in various respiratory diseases. 9. Manage common diseases recognizing need for referral for specialized care, in case of inappropriateness of therapeutic response. 10. Assist in the performance of common procedures, like laryngoscopic examination, pleural aspiration, respiratory physiotherapy, laryngeal intubation and pneumo-thoracic drainage / aspiration.
3.7		Psychiatry	<p>At the end of the course, the student will be able to:</p> <ol style="list-style-type: none"> 1. Understand human behaviour and its application in patient care. 2. Understand the concept of motivation, its impact on human behaviour and illness related behaviour. 3. Understand different types of emotions and their impact on health of the individual. 4. Define learning, comprehend different types of learning and conditioning. State methods of effective learning and demonstrate application of learning in treatment. 5. Understand different cognitive processes, comprehend memory process, describe short term memory and differentiate with long term memory, list causes of forgetting, and illustrate methods of improving memory. 6. Comprehend concept of thinking and its application to health care. 7. Understand nature of intelligence, explain growth of intelligence, compare role of heredity and environment in intellectual development. Method of assessment of intelligence. 8. Define personality, list determinants of personality, understand different theories of personality and learn methods of personality assessment. 9. Introducing concept of psychiatric disorders and their classification 10. Awareness of general issues about etiology of psychiatric disorders and methodology used to study aetiology of these disorders. 11. Ability to diagnose and treat common psychiatric

			<p>disorders like schizophrenia, acute manic episode, depression, anxiety disorders including phobias and OCD, conversion and dissociative disorders.</p> <ol style="list-style-type: none"> 12. To be able to diagnose severe/suicidal cases of depression and to refer them. 13. Understand the concept of personality disorders. 14. Ability to diagnosis and treat alcohol and drug dependence and withdrawal states. 15. Ability to diagnose common psychiatric disorders in children. 16. To know the role of counseling and psychological therapies in treatment of psychiatric disorders. 17. Demonstrate role of psychological testing in assessment of psychiatric disorders.
3.8		Paediatrics	<p>At the end of the course, the student should be able to:</p> <ol style="list-style-type: none"> 1. Describe the normal growth and development during fetal life, neonatal period, child- hood and adolescence and outline deviations thereof. 2. Describe the common pediatric disorders and emergencies in terms of epidemiology, etiopathogenesis, clinical manifestations, diagnosis, rational therapy and rehabilitation. 3. State age related requirements of calories, nutrients, fluids, drugs etc. in health and disease. 4. Describe preventive strategies for common infectious disorders, malnutrition, genetic and metabolic disorders, poisonings, accidents and child abuse. 5. Outline national programmes relating to child health including immunisation programmes
3.9		General Surgery	<p>At the end of the course, the student shall be able to:</p> <ol style="list-style-type: none"> 1. Describe aetiology, pathophysiology, principles of diagnosis and management of common surgical problems including emergencies, in adults and children. 2. Define indications and methods for fluid and electrolyte replacement therapy including blood transfusion. 3. Define asepsis, disinfection and sterilization and recommend judicious use of antibiotics. 4. Describe common malignancies in the country and their management including prevention. 5. Enumerate different types of anesthetic agents, their indications, mode of administration,

			<p>contra indications and side effects.</p> <ol style="list-style-type: none"> 6. Diagnose common surgical conditions both acute and chronic, in adult and children. 7. Plan various laboratory tests for surgical conditions and interpret the results. 8. Identify and manage patients of haemorrhagic, septicaemic and other types of shock. 9. Be able to maintain patent air-way and resuscitate. <ol style="list-style-type: none"> a) a critically injured patients. b) patient with cardio-respiratory failure. c) a drowning case. 10. Monitor patients of head, chest, spinal and abdominal injuries, both in adults and children. 11. Provide primary care for a patient of burns.
3.10		Orthopaedics	<p>At the end of the course, the student shall be able to:</p> <ol style="list-style-type: none"> 1. Explain the principles of recognition of bone injuries, dislocations & complications associated with such injuries. 2. Apply suitable methods to detect and manage common infections of bones and joints. 3. Identify congenital, skeletal anomalies and their referral for appropriate correction or rehabilitation. 4. Recognise metabolic bone diseases as seen in this country. 5. Explain etiology, pathogenesis, manifestations, diagnosis of neoplasm affecting bones. 6. Apply suitable knowledge to recognize and their referral for perifferral nerve injuries associated with musculoskeletal abnormalities. Detect sprains and deliver first aid measures for common fractures and sprains and manage uncomplicated fractures of clavicle, Colle's fracture, phalanges fractures. 7. Use techniques of splinting, plaster, immobilization. 8. Manage common bone infections. 9. Describe indications for sequestrectomy, amputations and corrective measures for bone deformities. 10. Advise aspects of rehabilitation for polio, cerebral palsy and amputation.

3.11		Radio-Diagnosis and Imaging	<p>At the end of the course the student shall be able to;</p> <ol style="list-style-type: none"> 1. Understand basic of x-rays productions, its uses and hazards 2. Appreciate and diagnose changes in bones - like fractures, infections, tumours and metabolic bone diseases; 3. Identify and diagnose various radiological changes in disease conditions of chest and mediastinum, skeletal system, Gastro intestinal Tract, Hepatobiliary system and Genito Uninary (GU) system; 4. Learn about various imaging techniques, including isotopes Computerized Tomography (CT), Ultrasound, Magnetic Resonance Imaging (MRI) and DSA. 5. Use basic protective techniques during various imaging procedures; 6. Interpret common X-ray, radio-diagnostic techniques in various community situations; 7. Advise appropriate diagnostic procedures in specialized circumstances to appropriate specialists.
3.12		Radiotherapy	<p>At the end of training in Radiotherapy, the student should be able to:</p> <ol style="list-style-type: none"> 1. Exhibit awareness of the principles of radiotherapy, the radio-responsiveness of various tumours and management of common cancers like cervical, breast and oral cancers. 2. Refer for further consultation at appropriate time without delay. 3. State general complications of irradiation and their management. 4. List common chemo-therapeutic drugs and toxicity of the same. 5. Implement health education programmes regarding prevention and early diagnosis of tobacco related cancers, cervical cancers and breast cancers. 6. Know the general outlines of use of radio-isotopes in diagnosis and therapy.
3.13		Anaesthesiology	<p>At the end of the training, the students should be able to:</p> <ol style="list-style-type: none"> 1. Enumerate different types of anaesthetic agents, their indications, mode of admission, contradictions and side effects; 2. Perform cardio-pulmonary resuscitation with the

			<p>available resources and transfer the patient to a bigger hospital for advanced life support.</p> <ol style="list-style-type: none"> 3. Set up intravenous infusion. 4. Clear and maintain airway in an unconscious patient. Perform endotracheal intubation 5. Administer oxygen correctly Perform simple nerve block
3.14		Obstetrics & Gynaecology	<p>At the end of the course, the student shall be able to :</p> <ol style="list-style-type: none"> 1. Outline the Anatomy, Physiology and Pathophysiology of the reproductive system and the common conditions affecting it. 2. Detect normal pregnancy, labour, puerperium and manage problems he/ she is likely to encounter therein. 3. List the leading causes of maternal and perinatal morbidity and mortality 4. Understand the principles of contraception and various techniques, employed, methods of medical termination of pregnancy, sterilization and their complications. 5. Identify the use, abuse and side effects of drugs in pregnancy, pre menopausal and post menopausal periods 6. Describe the national programme for maternal and child health and family welfare and their implementation at various levels. 7. Identify common gynecological diseases and describe principles of their management 8. State the indications techniques and complications of surgeries like Caesarean Section, Laparotomy, Abdominal and vaginal hysterectomy, Fothergill's operation and vacuum aspiration for MTP. Examine a pregnant woman, recognize high risk pregnancies and make appropriate referrals. 9. Conduct a normal delivery, recognize complications and provide postnatal care. 10. Resuscitate new born and recognize congenital anomalies 11. Advise a couple on the use of various available contraceptive devices and assist in insertion and removal of IUCD. 12. Perform pelvic examination, dispose and manage common gynecological problems including early detection of genital malignancy. Make a vaginal cytological smear, perform a

			<p>post coital test and wet mount vaginal smear examination for TV, Monilias and Gram stain for gonorrhoea.</p> <p>13. Interpret results of investigation like biochemical, histopathological radiological, ultrasound etc.</p>
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Course Outcomes - MD / MS / DM

Sl. No.	Name of the Program	Name of the Course	Course Outcome
1.1	MD in Anaesthesiology	Anaesthesiology	<p>At the end of the three years' post-graduate training in Anaesthesiology the student should be able to:</p> <ol style="list-style-type: none"> 1. Demonstrate understanding of basic sciences relevant to anaesthesia. 2. Master the anaesthetic management skills of common and uncommon surgical ailments belonging to various branches of surgery, at all ages requiring operative interventions with a basic knowledge of the aetiology, pathophysiology and the surgical treatment of the conditions. 3. Acquire the knowledge of the underlying theoretical background of mechanism of pain perception and pain management. 4. Thorough and systematic approach to the management of the conditions requiring resuscitation. 5. Demonstrate understanding of the theoretical base of polytrauma and the science of resuscitation. 6. Recognise the conditions that may be outside the area of his competence and refer them to an appropriate specialist prior to anaesthetising them. 7. Update himself / herself by self-study and by attending courses, conferences and seminars relevant to anaesthesia. 8. Function as a part of a team, develop an attitude of cooperation with colleagues, and interact with the patient and the clinician or other colleagues 9. Teach and guide his team colleagues and students. 10. Demonstrate understanding of medicolegal aspects of anaesthesia. 11. Demonstrate basic knowledge of the administrative aspects of operating room complex. 12. Undertake audit, use information technology tools and carryout research, both basic and clinical, with the aim of publishing the work and presenting the same at various scientific fora. 13. Perform pre-anaesthetic evaluation of patients undergoing surgery by taking, proper clinical history, examining the patient, ordering relevant investigations and interpreting them to have

			<p>additional information about the surgical condition, and or the associated medical condition, which warrant the modification of the proposed anaesthetic management.</p> <ol style="list-style-type: none"> 14. Administer anaesthesia (general and or regional) to common surgical operations independently and to superspecialities like cardiac surgery, neurosurgery etc. with the help of a senior anaesthesiologist. 15. Provide basic life support (BLS) and advanced cardiac life support (ACLS). 16. Manage airway and perform ventilatory care etc., of unconscious and polytrauma cases as a member of trauma team and critical care unit team. 17. Undertake complete patient monitoring including preoperative, intra-operative and postoperative ventilatory care of the patients. 18. Perform acute and chronic pain management. 19. Adopt ethical principles in all aspects of his anaesthetic practice. Professional honesty and integrity are to be fostered. Anaesthesia care is to be delivered to all in need, irrespective of the social status, caste, creed or religion of the patient. 20. Develop communication skills, in particular the skill to explain the various options available in the anaesthetic management, critical care, pain management and to obtain a true informed consent from the patient. 21. Provide leadership in the operating room environment and get best out of the team in a congenial working atmosphere. 22. Apply high moral and ethical standards while carrying out human or animal research. 23. Be humble and accept the limitations in his knowledge and skill and to ask for help from colleagues when needed. 24. Respect patient's rights and privileges including patient's right to information and right to seek a second opinion.
1.2	MD in Anatomy	Anatomy	<p>After completing the course the postgraduate should:</p> <ol style="list-style-type: none"> 1. Have acquired the competencies pertaining to the subject of Anatomy that are required to be practiced at all levels of health system. 2. Competently carryout the Body Donation Program, Prepare histology slides and maintain the museum 3. Be able to discharge responsibilities and participate in National Health Education Programme. 4. Be oriented to the principles of research methodology

			<ol style="list-style-type: none"> 5. Have acquired skills in educating medical and paramedical professionals. 6. Have acquired skills in effectively communicating with the students and colleagues from various medical and paramedical fields. 7. Have acquired skills of integrating anatomy with other disciplines as and when required. 8. Have acquired qualities of a good teacher capable of innovations in teaching & learning methodology
1.3	MD in Biochemistry	Biochemistry	<p>After completing the three years of MD Biochemistry, the post graduate should be able to:</p> <ol style="list-style-type: none"> 1. Demonstrate comprehensive understanding of biochemistry as well as applied aspects. 2. Educate medical & paramedical professionals. 3. Operate basic instrumentation and procedures pertaining to biochemistry that are required to be practiced in community and at all levels of health care system. 4. Perform relevant investigations which will help to diagnose important medical conditions. 5. Interpret all laboratory reports. 6. Perform Quality control procedures in the lab 7. Perform independent research. 8. To train scientists to identify, address and solve biochemical problems at molecular level
1.4	MD in Dermatology, Venereology & Leprosy	Dermatology , Venereology & Leprosy	<p>After completing the course the postgraduate should:</p> <ol style="list-style-type: none"> 1. Demonstrate understanding of basic sciences relevant to dermatology. 2. Have acquired the competencies pertaining to the subject of dermatology that are required to be practiced at all levels of health system. 3. Accurately describe skin lesions including morphology, configuration and distribution. 4. Recognize the clinical manifestations of common dermatologic conditions. 5. Able to treat common dermatological conditions. 6. Demonstrate knowledge of basic pharmacology and administration of medications commonly used for treatment of skin disease. 7. Recognize conditions that may be outside the area of his speciality/competence and refer them to proper specialist. 8. Update oneself by self-study and by attending courses, conferences and seminars relevant to the speciality.

			<p>9. Be oriented to the principles of research methodology</p> <p>10. Undertake audit, use information technology tools and carry out research, both basic and clinical, with the aim of publishing his work and presenting his work at various scientific fora.</p>
1.5	MD in Emergency Medicine	Emergency Medicine	<p>At the end of the MD Degree course in Emergency Medicine, the student should be able to:</p> <ol style="list-style-type: none"> 1. Demonstrate proficiency in the assessment of patients in the Emergency Department. 2. Understand disease processes as they affect patients who present to the Emergency Department. 3. Develop applied problem solving techniques in Emergency Medicine. 4. Discuss, observe and occasionally perform, as allowed, a variety of emergency medicine procedures, including bedside ultrasound, suturing, chest tube placement, paracentesis thoracentesis, lumbar puncture, fracture reduction, casting and central line insertion. 5. Attend Emergency Medicine Grand Rounds, Journal Clubs, resident seminars and other academic programs. 6. Be thorough with the concepts of clinical research and professional ethics of Emergency Medicine. 7. Have acquired skills in educating medical and paramedical personnel. 8. Have acquired skills of integrated team approach to an undifferentiated patient.
1.6	MS in Otorhinology	Otorhinology	<p>At the end of the course, the student should be able to:</p> <ol style="list-style-type: none"> 1. Demonstrate understanding of basic sciences relevant to this specialty. 2. Describe aetiology, pathophysiology, principles of diagnosis and management of common problems including emergencies, in adults and children. 3. Describe indications and methods for fluid and electrolyte replacement therapy, including blood transfusion. 4. Describe common malignancies in the country and their management including prevention. 5. Identify social, economic, environmental and emotional determinants in a given case, and take them into account for planning therapeutic measures. 6. Recognize conditions that may be outside the area specialty / competence and to refer them to the proper specialist. 7. Advice regarding the operative or non-operative management of the case and to carry out this

			<p>management effectively.</p> <ol style="list-style-type: none"> 8. Update oneself by self study and by attending courses, conferences and seminars relevant to the specialty. 9. Teach and guide his team, colleagues and other students. 10. Undertake audit, use information technology tools and carry out research, both basic and clinical, with the aim of publishing his work and presenting his work at various scientific for a.
1.7	MD in Forensic Medicine	Forensic medicine	<p>At the end of the course, the student should be able to:</p> <ol style="list-style-type: none"> 1. Become an expert in the field of Forensic Medicine and render his/her service wherever sorted. 2. Undertake medico-legal responsibilities and discharge medico-legal duties efficiently in required settings. 3. Impart education in Forensic Medicine & Toxicology to undergraduate and postgraduate students and assess their knowledge and skills 4. Conduct research in the areas of his/her interest in the different sub-specialties' of Forensic Medicine & Toxicology. 5. The postgraduate student shall be able to deal with general principle & practical problems related to Forensic Medicine and be expert in the said field.
1.8	DM in Medical Gastroenterology	Medical Gastroenterology	<p>After completing the course the postgraduate should:</p> <ol style="list-style-type: none"> 1. Have acquired the competencies pertaining to the subject of Gastroenterology that are required to be practiced at all levels of health system in India and abroad . 2. Have acquired skills of integrating Gastroenterology with other disciplines as and when required 3. Be able to discharge responsibilities and participate in National Health Education Programme. 4. Be oriented to the principles of research methodology 5. Have acquired skills in educating medical and paramedical professionals. 6. Have acquired skills in effectively communicating with the students and colleagues from various medical and paramedical fields. . 7. Have acquired qualities of a good teacher capable of innovations in teaching & learning methodology 8. Have acquired strong communication, leadership, organizational skills and problem solving skills in the field of gastroenterology.
1.9	MD in Medicine	Medicine	<p>At the end of the educational program, each student</p>

	e		<p>will demonstrate the following;</p> <ol style="list-style-type: none"> 1. Introduction to basics about applied anatomy, biochemistry and physiology from its molecular stage to the system as a whole. 2. Good knowledge about the epidemiology of common diseases and its varied clinical presentation with its relation to ethnicity and culture, socioeconomic factors. 3. To develop skills in history taking, general physical examination and through stepwise systemic examination along with medical case sheet writing in a legally acceptable manner. 4. To develop proficiency in analyzing the laboratory reports, imaging studies and its correlation with clinical judgment. 5. Learn the stepwise approach in performing common bedside procedures required for the diagnosis and management of the patient. 6. Exposure to advanced technologies and interventions in various subspecialties like cardiology, neurology, gastroenterology, nephrology etc. and to inculcate the same into the basic general medicine knowledge.
1.10	MD in Microbiology	Microbiology	<p>After completing the course the postgraduate should:</p> <ol style="list-style-type: none"> 1. Have acquired the competencies pertaining to the subject of Microbiology that are required to be practiced at all levels of health system. 2. Be able to discharge responsibilities and participate in National Health Education Programme. 3. Be oriented to the principles of research methodology 4. Have acquired skills in educating medical and paramedical professionals. 5. Have acquired skills in effectively communicating with the students and colleagues from various medical and paramedical fields. 6. Have acquired skills of integrating Microbiology with other disciplines as and when required. 7. Have acquired qualities of a good teacher capable of innovations in teaching & learning methodology 8. Recognize the key importance of infectious diseases in the context of public health priority of the country. 9. Practice Clinical Microbiology in adherence with

			the principles of professional ethics
1.11	MS in OBG	OBG	<p>At the end of 3 years of the course PG students should be :</p> <ol style="list-style-type: none"> 1. Able to manage antenatal case and conduct delivery independently with good intrapartum monitoring. 2. Competent to perform caesarean sections and routine gynecological surgeries including basic laparoscopy, first level infertility work up and basic ultrasound etc.. 3. Must be able to identify and manage High-risk pregnancy. 4. Must be able to teach UG students and present papers in conference. 5. Capable of counseling the patients and attenders effectively. 6. Learn to apply the highest level of ethics in Research, Publications and Practice of obstetrics &gynecology.
1.12	MS in Ophthalmology	Ophthalmology	<p>After completing the course the postgraduate should</p> <ol style="list-style-type: none"> 1. Be able to demonstrate effective clinical problem solving, judgement and ability to interpret and integrate available data in ophthalmology in order to address patient problems, generate differential diagnosis and develop effective treatment strategies for different ophthalmic conditions. 2. Be able to have accurate and detailed documentation of data of the patient in conformation with institution's legal and administrative frame works. 3. Be aware of the ocular diagnostic tests and ability to use them on a case based need. Exercise discretion in choosing appropriate diagnostic for particular conditions 4. Be able to provide primary, secondary and tertiary ophthalmic care.
1.13	MS in Orthopaedics	Orthopaedics	<p>At the end of the 3 years' post-graduate training in Orthopaedics the student should be able to:</p> <ol style="list-style-type: none"> 1. Acquire in depth knowledge of structure of human body related to musculoskeletal Embryology, Anatomy, Histology, Physiology and development of musculo skeletal system, and know the Metabolism and hormonal influence of musculo skeletal system. 2. Understand the process of human growth and

			<p>development of all the organ systems of body. Analyze the congenital malformations and etiological factors including genetic mechanisms involved in abnormal development.</p> <ol style="list-style-type: none"> 3. Have an in-depth theoretical knowledge of the syllabus with emphasis on current concepts. 4. Understand the process and General principles of healing of injury & musculoskeletal trauma, systemic management of the injured & body response to trauma. 5. Learn the general principles and management of musculoskeletal trauma – including surgical and conservative methods in all age groups including children. 6. Learn the general principles and management of Neurovascular injury, poly trauma, Consequences of musculoskeletal trauma including Compound injuries – management and stabilization procedures in orthopaedics & rehabilitation of the injured. 7. Acquire in depth knowledge of Tumour pathology and different infections, and metabolic disorders involving musculo skeletal system. 8. Understand the basic research methodology and recent scientific advances. Identify lacunae in the existing knowledge in a given area and to plan for research. 9. Learn basic skills in musculoskeletal surgery including training on bone models and on patients by assisting or performing under supervision or perform independently as required. 10. Postgraduate in Orthopaedics should be able to identify and recognize various congenital, developmental, inflammatory, infective, traumatic, metabolic, neuromuscular, degenerative and oncologic disorders of the musculoskeletal systems. 11. They should be able to provide competent professional services to trauma and orthopaedic patients at a primary/ secondary/tertiary healthcare centres. 12. Identify the diseases and injuries of musculo-skeletal system and obtain proper history and perform thorough clinical examination.
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			13. Plan and interpret investigations and institute management of diseases and injuries of musculo-skeletal system.
1.14	MD in Pathology	Pathology	<p>After completing the course the postgraduate should:</p> <ol style="list-style-type: none"> 1. Have acquired the competencies pertaining to the subject of pathology that are required to be practiced at all levels of health system. 2. Have acquired comprehensive knowledge to perform various laboratory procedures with quality control and to interpret the results to give a final impression of the underlying pathological condition. 3. Have acquired skills of integrating the pathology reports with other disciplines as and when required for a comprehensive care of patient. 4. Have acquired knowledge to perform clinical autopsy to confirm the cause of death. 5. Be able to discharge responsibilities and participate in National Health Education Programme. 6. Be oriented to the principles of research methodology 7. Have acquired skills in educating medical and paramedical professionals. 8. Have acquired skills in effectively communicating with the students and colleagues from various medical and paramedical fields. Have acquired qualities of a good teacher capable of innovations in teaching & learning methodology
1.15	MD in Pharmacology	Pharmacology	<p>A candidate upon successfully qualifying in the M.D. (Pharmacology) examination should be able to:</p> <ol style="list-style-type: none"> 1. Teach Pharmacology and Therapeutics to students of medical and allied disciplines. 2. Independently plan and undertake research related to drugs (basic as well as Clinical Pharmacology) and communicate the findings in conferences / journals. 3. Set up therapeutic drug monitoring, ADR monitoring, therapeutic audit and drug information services. 4. Plan and conduct toxicity studies and clinical trials. 5. Educate the public about use and misuse of drugs. 6. Supervise breeding and upkeep of small laboratory animals. 7. Act as medical advisor in a pharmaceutical company. 8. Explain how advances in pharmacology (e.g. biopharmaceuticals, pharmacogenomics, novel

			drug delivery systems) can contribute to improving human and animal health including the development of personalised therapies
1.16	MD in Physiology	Physiology	<p>After completing the course the postgraduate should:</p> <ol style="list-style-type: none"> 1. Have mastered most of the competencies, with awareness of the contemporary advances and developments in physiology. 2. Be a competent teacher in physiology, who shall have acquired the basic skills in teaching of the medical and paramedical professionals. 3. Be a researcher who shall have acquired a spirit of scientific inquiry and is oriented to the principles of research methodology. 4. Be able to explain the conceptual knowledge of physiology that can be effectively used by the clinicians in various clinical settings to diagnose and treat the clinical conditions. 5. Be able to interact with allied departments and render services in advanced laboratory Investigations.
1.17	MD in Psychiatry	Psychiatry	<p>At the end of the three years' post-graduate training in Psychiatry the student should:</p> <ol style="list-style-type: none"> 1. Have acquired the competencies pertaining to the subject of Psychiatry that are required to be practiced at all levels of health system 2. Play the assigned role in the implementation of National Health programmes effectively and responsibly. 3. Be oriented to the principles of research methodology. 4. Function as an effective leader of a health team engaged in health care, research and training. 5. Have acquired skills in educating ,effectively communicating and collaborating with medical and paramedical professionals. 6. Have acquired qualities of a good teacher capable of innovations in teaching & learning methodology. 7. Medical ethics in general and special ethical concerns as it applies to the practice of clinical Psychiatry
1.18	MD in Tuberculosis and Respiratory	Tuberculosis and Respiratory	<p>After completing the course, the students should be able to</p> <ol style="list-style-type: none"> 1. To practice as a pulmonologist, equipped with appropriate knowledge and skills necessary to care for the people with respiratory illness and advise preventive measures to the healthy individuals and contribute to public health. 2. To practice respiratory medicine in the

			<p>community (urban or rural) and to perform professionally at all levels of the existing health care system.</p> <ol style="list-style-type: none"> 3. To effectively participate in the National health programmes and train and sensitize other medical and para-medical professional in the programmes 4. To practice with empathy and the highest ethical standards of the profession. 5. To continue to strive for excellence by continuing medical education throughout his or her professional career. 6. To teach by sharing knowledge and skills with colleagues. 7. To research and find solutions to challenges in health care.
1.19	MD in Radio-Diagnosis	Radio-Diagnosis	<p>After completing the course the postgraduate should:</p> <ol style="list-style-type: none"> 1. Acquire good basic knowledge in the various sub-specialties of radiology such as chest radiology, neuro-radiology, GI-radiology, uro-radiology, cardio-vascular radiology, musculoskeletal, interventional radiology, emergency radiology, paediatric radiology and women's imaging 2. Independently conduct and interpret all routine and special radiologic and imaging investigations. 3. Provide radiological services in acute emergency and trauma including its medicolegal aspects. 4. Elicit indications, diagnostic features and limitation of applications of ultrasonography, CT and MRI and should be able to describe proper cost effective algorithm of various imaging techniques in a given problem setting 5. Decide on the various image-guided interventional procedures to be done for diagnosis and therapeutic management. 6. Able to decide on further specialization to be undertaken in any of the branches in Radiodiagnosis such as gastrointestinal radiology, uro-radiology, neuro-radiology, vascular radiology, musculoskeletal radiology, interventional radiology etc. 7. Able to formulate basic research protocols and carry out research in the field of radiology-related clinical problems. 8. Acquire knowledge and teaching capabilities to

			<p>work as a post graduate student /consultant in Radiodiagnosis and conduct teaching programmes for undergraduates, post graduates as well as paramedical and technical personnel.</p> <ol style="list-style-type: none">9. Interact with other specialists and super-specialists so that maximum benefit accrues to the patient.10. Should be able to organize CME activities in the specialty utilizing modern methods of teaching and evaluation.11. Acquire knowledge to impart training in both conventional radiology and modern imaging techniques so that the post graduate student is fully competent to practice, teach and do research in the broad discipline of radiology including ultrasound, Computed Tomography and Magnetic Resonance Imaging.12. Acquire knowledge of interventional radiology.13. Should be able to function as a part of a team, develop an attitude of cooperation with Colleagues, and interact with the patient and the clinician or other colleagues to provide the best possible diagnosis or opinion.14. Always adopt ethical principles and maintain proper etiquette in dealings with patients, relatives and other health personnel and to respect the rights of the patient including the right to information and second opinion.15. Develop communication skills to word reports and professional opinion as well as to interact with patients, relatives, peers and paramedical staff, and for effective teaching.
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Course Outcomes - BSc in Allied Sciences

Sl. No.	Name of the Program	Name of the Course	Course Outcome
1	B.Sc in Medical Laboratory Technology	Medical Laboratory Technology	<p>After completing three years of Medical Laboratory Technology course, the graduate should be able to</p> <ol style="list-style-type: none"> 1. Work efficiently in medical laboratories in India and abroad 2. Work under different specialities of Laboratory Medicine (Biochemistry, Microbiology, Pathology and Blood bank departments respectively) 3. Work and contribute in NABL accreditation program.
2	B.Sc in Medical Imaging Technology	Medical Imaging Technology	<p>After completing three years of Medical Imaging Technology course, the graduate should be able to</p> <ol style="list-style-type: none"> 1. Work efficiently under radiologist with knowledge and practical skills. 2. Work efficiently in radiology department in India and abroad 3. Work and contribute in NABL accreditation program
3	B.Sc in Renal Dialysis Technology	Renal Dialysis Technology	<p>After completing three years of Renal Dialysis Technology course, the graduate should be able to</p> <ol style="list-style-type: none"> 1. Work as efficient Renal dialysis technologist under the Nephrology department 2. Perform, maintain and monitor the haemodialysis procedures 3. Work and contribute in NABH accreditation program

4	B.Sc in Perfusion Technology	Perfusion Technology	<p>After completing three years of Perfusion Technology course, the graduate should be able to</p> <ol style="list-style-type: none"> 1. Work as efficient and skilled Perfusion technologist under the Cardiothoracic and vascular surgery department 2. Assist in various aspects of pre and post Cardiac care 3. Work and contribute in NABH accreditation program
Sl. No.	Name of the Program	Name of the Course	Course Outcome
5	B.Sc in Physician Assistant	Physician Assistant	<p>After completing three years of Physician Assistant course, the graduate should be able to</p> <ol style="list-style-type: none"> 1. Work efficiently as Physician Assistant under treating physician 2. Work and contribute in NABH accreditation program
6	B.Sc in Optometry	Optometry	<p>After completing three years of Optometry course, the graduate should be able to</p> <ol style="list-style-type: none"> 1. Work efficiently as skilled Optometrist under Ophthalmology Department in performing and recording refraction error testing and correction 2. Work and contribute in NABH accreditation program
7	B.Sc in Emergency Medicine Technology	Emergency Medicine Technology	<p>After completing three years of Emergency Medicine Technology course, the graduate should be able to</p> <ol style="list-style-type: none"> 1. Work as qualified Emergency Medicine technologist by assisting in emergency care of the patients 2. Work and contribute in NABH accreditation program
8	B.Sc in Respiratory Care Technology	Respiratory Care Technology	<p>After completing three years of Respiratory Care Technology Course the graduate should be able to</p> <ol style="list-style-type: none"> 1. Work as skilled Respiratory Care technologist by assisting in emergency care of patients in RICU 2. Work and contribute in NABH accreditation program

9	B.Sc in Cardiac Care Technology	Cardiac Care Technology	<p>After completing three years of Cardiac Care Technology Course the graduate should be able to</p> <ol style="list-style-type: none"> 1. Work as efficient Cardiac Care technologist by assisting cardiologist and Cardio thoracic and vascular surgeon. 2. Work and contribute in NABH accreditation program
10	B.Sc in Anaesthesia & Operation theatre technology	Anaesthesia & Operation theatre technology	<p>After completing three years of Anesthesia & Operation theatre Technology course the graduate should be able to</p> <ol style="list-style-type: none"> 1. Work as efficient technician, excelling in theoretical knowledge and implementation of practical skills in the operation theatre. 2. Assist anesthesiologist rendering his services to the best of his ability. 3. Have a sound knowledge of equipments like C Arm, operating microscope and surgical diathermy to properly assist the surgeons.