SHRI GURU RAM RAI UNIVERSITY

SGRRIM & HS SCHOOL OF PARAMEDICAL SCIENCES

PO,CO,PSO AND PEO BOOKLET

Shri Guru Ram Rai University

SCHOOL OF PARAMEDICAL SCIENCES

SHRI GURU RAM RAI UNIVERSITY

(Established under Shri Guru Ram Rai University Act no. 03 of 2017)

SCHOOL OF PARAMEDICAL SCIENCES

PG COURSES

1. M.Sc MLT Program Outcome

PO-1	Apply knowledge to perform routine clinical laboratory procedures within acceptable quality control parameters in Hematology, Biochemistry, Immunohematology, Cytopathology, Histopathology, Blood transfusion and Microbiology.
PO-2	Identify the structures and functions of biomolecules. Their relations to implement the understanding of the concept and research related to them
PO-3	Development of basic skills in aseptic techniques, and sterilisation techniques. Perform various staining techniques, Cultivate bacteria with different cultivation techniques and the conceptual knowledge of HAI.
PO-4	Extend the concepts of the immune system and their determination of immunomodulatory strategies that can be used to enhance immune responses or to suppress undesired immune responses as mandatory in hypersensitivity reactions, transplantations or autoimmune diseases.
PO-5	Demonstrate an understanding of essential basic pathological processes including cell death and injury, inflammation, thrombosis and neoplasia.
PO-6	Develop an understanding of the patterns of inheritance, clinical manifestations of genetic diseases and the molecular basis of human diseases.
PO-7	Gain information on concepts of Biostatistics, an essential part of research and its methodologies.
PO-8	Demonstrate the application abilities regarding biochemical tests to determine the health problems and explain their clinical significance and pathophysiology.
PO-9	Identification of common pathogenic bacterial agents and the associated diseases, their specific mechanisms by which bacteria cause disease, their epidemiology of infectious agents including how infectious diseases are transmitted and explain interventions employed to prevent bacterial diseases including infection control measures and course of treatment.
PO-10	Application of advanced blood bank and blood transfusion technical skills to make appropriate and effective on-the-job professional decisions. Performance and interpretation of commonly employed procedures in the blood bank. Interpreting normal and abnormal test results and correlation of the data with appropriate pathologic conditions to accurately advise health care providers.
PO-11	Work effectively in teams to collect clinical samples for analysis. Storage or transportation of samples for analysis using appropriate preservation methods. Implementation as per prescribed procedures, and with adequate orientation, perform routine testing in immunology, Immunohematology, haematology, hemostasis, blood bank and molecular diagnostics. Manage laboratory operations and human resources to ensure cost-effective, high-quality laboratory services.

PO-12	Exhibit the ability to perform histopathological and cytological laboratory testing techniques to gain knowledge and become laboratory efficient.

Course Code	Course Name	Course Outcome
MMLT-101	General Biochemistry Medical Laboratory Technology	1. To define concepts and principles of biochemistry, correlations of biomolecules: carbohydrates, proteins, lipids, Nucleic acids with cellular and molecular processes involved in health and in disease states for clinical problem solving and research. 2. To estimate fundamental aspects of enzymology and clinical application wherein regulation of enzymatic activity is altered. 3. To integrate biochemical pathways of the intermediary metabolism along with their individual and integrated regulation and apply that in understanding the functioning of body with respect to energy liberating process. 4. To estimate the normal ranges and abnormal ranges Interpreting of principle of biochemical Clinical bi with accuracy, handle stress; make an analytica knowledge of laboratory instrumentation. 5. To validate special emphasis on Laboratory Management and safety with Health care delivery and financial strategies for managed care, financial management, human resource management and space and facility management. 6. To build Quality management: Fundamentals, total quality management, total testing process, control of pre-analytical and analytical variables, control of analytical quality using stable control materials, external quality assessment, documentation of reports.
MMLT-102	General Bacteriology, Immunology and Parasitology	1. To describe the History of microbiology in detail and study the morphology and physiology of bacteria. 2. To discuss the principles of Sterilization, Disinfection, Cultivation methods and Antibiotic Susceptibility testing. 3. To illustrate the transmission of infection and prevention of HAI. 4. To Explain the concept of Antigen, Antibody and their reactions. 5. To evaluate the importance of immunity and Hypersensitivity with their types. 6. To design the parameters for identification of etiological features, pathogenesis and laboratory diagnosis of important parasites causing infections.
MMLT-103	Haematology and Clinical Pathology	1. To examine the role of laboratory techniques including sample collection and investigation procedures. 2. To discuss the basics of human genetics, DNA, techniques of Molecular biology and cytogenetics. 3. To demonstrate the principle and applications of

		various molecular techniques used in the laboratory. 4. To Explain the concept of important instruments with their principle and applications. 5. To assess the blood transfusion studies and procedures conducted in Blood Bank. 6. To prepare the classification of and diagnosis of Haemolytic and malignant disorders in detail.
MMLT-104	General Pathology	1. To describe the basics of pathological processes including cell death and injury, inflammation and thrombosis. 2. To discuss the basics of the cell cycle, regulation of cell division and cell signalling mechanism. 3. To demonstrate the concept of molecular genetics of human diseases, disorders and diagnosis. 4. To Explain the nomenclature, characteristics of neoplasia and its molecular studies. 5. To assess the lab diagnosis, etiology and pathogenesis of emerging diseases. 6. To generalize the concept of various pathological and analytical techniques.
MMLT-105	Epidemiology & Biostatistics	1. To describe the epidemiology of the disease, its transmission and control. 2. To discuss the importance of prevention and control of communicable and non-communicable diseases and interpretation of the epidemiological data. 3. To present the published research including need of screening tests, its accuracy and types of study design. 4. To analyse the data using various statistical sampling methods. 5. To evaluate the data using statistical interference methods. 6. To prepare a result out of the data using Anova.
MMLT-201	Clinical Biochemistry	1. To highlights clinical significance of enzymology & role of Isoenzymes and plasma enzymes-separation and identification, in clinical diagnosis and interpretation with reference to cardiac and skeletal muscle enzymes, liver and biliary tract enzymes digestive, bone GI disorders. 2. To interpret the metabolic Disorders of Carbohydrates e.g. diagnosis, gestation diabetes mellitus, role of laboratory in diagnosis and prognosis and qualitative and quantitative analysis and protein and clinical significance: analysis of amino acids- screening test, quantitative tests for specific amino acids 3. To integrate the metabolic Disorders of protein and clinical relevance to Atherosclerosis and coronary

		artery disease, its analytical and biological variations. 4. To correlate the concept of nutrition in health and disease, micro and macronutrition and essential nutrients, hormones, electrolytes and vitamins with interlinks of nutrients with metabolism and functions of a living system. 5. To detect Disease relates to organs functions and its tests specific for its clinical significance and early diagnostic markers with skills for practical with clinical diagnosis, testing, understanding of biochemical conditions with clinical approach. 6. To compose knowledge of basics of research methodology, develop a research protocol, an assigned research project as dissertations, analyze data using currently available statistical software, interpret results and disseminate these results, to pursue further specializations and eventually develop to be competent researcher.
MMLT-202	General Bacteriology, Immunology and Parasitology	1. To describe the History of microbiology in detail and study the morphology and physiology of bacteria. 2. To discuss the principles of Sterilization, Disinfection, Cultivation methods and Antibiotic Susceptibility testing. 3. To illustrate the transmission of infection and prevention of HAI. 4. To Explain the concept of Antigen, Antibody and their reactions. 5. To evaluate the importance of immunity and Hypersensitivity with their types. 6. To design the parameters for identification of etiological features, pathogenesis and laboratory diagnosis of important parasites causing infections.
MMLT-203	Advanced Haematology and Immunohematology	1. To describe the basics of blood disorders and analysis using analytical techniques. 2. To discuss the analysis and interpretation of urine and stool. 3. To illustrate the immunohematology techniques for studying the Blood group system. 4. To explain the Blood group compatibility and its clinical significance. 5. To evaluate quality control of blood bank system. 6. To develop an understanding of transfusion reactions and HDN disease.
MMLT-204	Techniques in Histopathology and Cytology	1. To memorize the basic histopathological staining techniques. 2. To extend the knowledge on enzyme histochemistry and immunoenzyme techniques. 3. To apply the concept of immunohistochemistry in

		the diagnosis of various disorders. 4. To explain the Cytology techniques, quantitative methods and micro incineration. 5. To evaluate the applications of autoradiography techniques for disease diagnosis. 6. To develop an understanding of Microscopy, its types and immunofluorescence.

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2.Masters in Physiotherapy Program Outcome

PO1	Knowledge :Better understanding of the structures & physiological studies of mechanical,physical & biochemical functions of human body along with their functions of major body systems and its pathology
PO2	The programme support to understand about the basic concepts of exercise physiology and nutrition,energy,work and power
PO3	Development of knowledge regarding responses to exercise in various systems of the body like respiratory,cardiovascular,acid base balance ,hormonal systems.
PO4	Practical application: to describe the concept of posture and function of joints and muscles. Prescribed to correct impairments,restore muscular and skeletal functions,improvement in gait and balance , prevention and promotion of health,wellness & fitness
PO5	Skills: Facilitate muscle relaxation,prevention of atrophy,muscle rehabilitation and re-education by electrical muscle stimulations
PO6	Design : Evaluate skilled movement patterns which can be employed for many different purposes including pain reduction & functional improvement using various force systems and different types of exercise trainings
PO7	Basics: reacquire the knowledge ofmobilization,strengthening,conditioning and fitness enhancement for neuromuscular control. Gained knowledge through pharmacological studies which provides significant positive impact on human health
PO8	**:** Clinical enhancement: Understand the mechanism of injuries and learn how to implant exercise prescription. Focused on assessing and treating patient with neurological disorders. Understand patient's conditions related to shoulder,elbow,hand injuries etc.
PO9	Recognize various path mechanics of different complexes of joints and its management and prevention.
PO10	Skill Practice: Treatment and rehabilitate of musculoskeletal systems that has been subject to injury and trauma, Gain maximum potential, independence and optimize the quality of life in patient with neurological conditions by introducing importance of gait and its analysis.
PO11	Develop awareness of bioengineering concepts in rehabilitation. Introducing various concepts of manual therapy techniques and advanced electrotherapy in treating patients.
PO12	Skill enhancing through research methodology,biosatatics,educational technology and computers.

PROGRAMME SPECIFIC OUTCOME (PSO)

Programme name	**MPT Orthopedics**
Programme Code	M9501

PSO1	The ability to perform an appropriate subjective and physical examination with development of suitable analytical skills to evaluate data obtained. A sound theoretical knowledge & understanding of neuro-musculoskeletal conditions affecting. management needed (medical or surgical) and to apply appropriate techniques. rehabilitation based on etiology of disease and to progress with rehabilitation .
PSO2	Evaluate various level of spinal cord, rationalize the treatment approach according to the management needed (medical or surgical) and to apply appropriate techniques.
PSO3	Evaluate various level of hand injuries, rationalize various approaches for hand rehabilitation based on etiology of disease and to progress with rehabilitation .
PSO4	Enhance student's research ability through dissertation that will help in the course of degree pursuance.

Programme name	**MPT Neuro**
Programme Code	M9601

PSO1	Analyze, Interprete and Evaluate various levels of spinal cord injuries & peripheral nerve injuries,the treatment approach according to the management(medical/surgical) and to apply appropriate techniques.
PSO2	Patient assessment and treatment planning including integration and interpretation of patient problems and effective goal setting for neurological patients
PSO3	Evaluate primitive reflexes, analyse developmental milestones and apply various neo-natal therapeutic approaches and neurodevelopmental techniques
PSO4	Enhance student's research ability through dissertation that will help in the course of degree pursuance.

Programme name	**MPT Obs & gynae**
Programme Code	M9690

PSO1	The ability to perform an appropriate subjective and physical examination of pelvic organs, reproductive tract and abdominal with development of suitable analytical skills to evaluate data obtained. A sound theoretical knowledge & understanding of gynecological problem and surgeries in gynecological condition.
PSO2	Evaluate common complication and discomforts during pregnancy after delivery, rationalize the treatment approach according to the management needed (medical or surgical) and to apply appropriate techniques & understand the impact of exercise programs for specific women's physiology, pathophysiology and psychology of pregnancy, menopause, aging and osteopenia/ osteoporosis.
PSO3	Evaluate various level of PFM weakness due to menopause, peri-menopause and after delivery, rationalize various approaches for PFM rehabilitation based on etiology of disease and to progress with rehabilitation .Understand the safety issues associated with leading exercise classes for women with specific physical needs
PSO4	Enhance student's research ability through dissertation that will help in the course of degree pursuance.

Programme name	**MPT Pedia**
Programme Code	M9410

PSO1	Assessment and treatment planning including integration and interpretation of patient problems and effective goal setting.
PSO2	Demonstrate a well-developed problem solving ability and evidence based practice of paediatric physiotherapy
PSO3	Evaluate primitive reflexes, analyse developmental milestones and apply various neo-natal therapeutic approaches and neurodevelopmental techniques
PSO4	Enhance student's research ability through dissertation that will help in the course of degree pursuance.

Programme name	**MPT SPORTS**
Programme Code	M9401

PSO1	Analyse and interprete various sports injuries, pathomechanics and apply appropriate therapeutic techniques on and off field
PSO2	Modify and devise various exercises for sports personnel and prevent injuries by applying proper dynamics during play.
PSO3	Analyse the effect of therapeutic modalities, indications & contraindications to ensure safety and carry out proper management in both acute and long standing injury condition.
PSO4	Enhance student's research ability through dissertation that will help in the course of degree pursuance.

Programme name	**MPT Cardio**
Programme Code	M9701

PSO1	Better understanding of applied anatomy and physiology of cardiorespiratory system and pre and post-operative medical and surgical management related to the system.
PSO2	Prescribe the various physiotherapy technique in ICU and cardiopulmonary patients
PSO3	Develop the skill to formulate the fitness training programme in disease condition related to cardiopulmonary system
PSO4	Enhance student's research ability through dissertation that will help in the course of degree pursuance

Course Code	Course Name	Course Outcome
MP102	Review of basic therapeutics	1. To memorize definition of physiotherapy and various rehabilitation and modern concepts in sports physiotherapy like dynamic exercises, plyometric exercises, manipulative techniques etc. MMT, reeducation and strengthening, gait analysis& training, PNF, aquatic therapy etc. 2. To discuss various physiotherapy techniques for enhancing Neuromuscular control, various methods of conditioning & fitness enhancement, exercise prescription, massage and hydrotherapy etc. 3. To apply various electro therapy modalities and knowing of the principles underlying the application in different conditions and calculate the specific usage in terms of low frequency, medium frequency & high frequency currents. 4. To prioritize the principles of biomechanics and pathomechanics of each joint complexes of human body. Also to distinguish about various gaits and its analysis in terms of abnormal postures & gait. 5. To evaluate the principles of Bio engineering-its preparation, application & trainings both orthotics & prosthetic. 6. To define concept of Review of basic therapeutics
MP103	Advanced Therapeutics & Diagnosis	1. To describe and memorize basic Manual Therapy techniques-history, classification

		for Cyriax, Maitland & Mulligan, Butler etc. 2. To interpret Muscle energy technique, positional stretch, myofascial release-its concept and application. 3. To illustrate importance of Lasers in various conditions. 4. To analyze the importance and effects of microcurrent and biofeedback—the concepts, principles, indications, contraindication and its application in different conditions. 5. To evaluate nerve conduction studies and EMG along with the importance of normal & abnormal action potentials in diagnosing conditions. 6. To define concept Advanced Therapeutics & Diagnosis
MP104	Research Methodology, Biostatics, Education Technology And Computer	1. To describe the research methodology's formulas and methods like standard deviation, data collection methods, central tendency, correlation, regression, sampling testing, hypothesis, data collection and test etc. 2. To understand the moral and ethics in physiotherapy profession and rules and regulations of the association/council. 3. To demonstrate the laws related to physiotherapy practice like medico legal aspect, practice, negligence, licensure workmen compensation and maintaining the medical register. 4. To classify policies and procedure related to management of physiotherapy department

		like recruitment, interview, salary, working hours, leaves, referred policy, maintaining statistics, planning and design. 5. To evaluate the concept of physiotherapy education technology, its aims, philosophy, trends and issues; concepts of teaching and learning, curriculum for physiotherapy, principles and methods of teaching, measurement and evaluation, guidance and counseling. 6. To design the use of computer application in medical science and introduction of software and hardware of computer system.
MPO 201	Orthopedics in Physical Therapy	1. To describe Embryology and Anatomy of the musculoskeletal system, Arthro-kinematics and Osteo-kinematics, etc. Also to define Paediatric Orthopedics conditions & their management and physiotherapy management of lumbo-sacral disorders, assessment of locomotor impairments. Also to describe traumatic orthopaedics, with their medical, surgical and PT management. 2. To discuss assessment of posture , role of physiotherapy in scoliosis unit, Injuries of brachial plexus , peripheral nerve. Also to discuss principles of amputation surgery and their prosthetic management. Also to explain about PT management of UL & LL fractures, after replacement of arthroplasties& thoracic spine disorders. 3. To illustrate PT management of conditions affecting UL and LL, pelvic fractures and spinal cord injuries. Also to illustrate

		Autoimmune disorders affecting musculoskeletal system their PT management 4. To Explain advanced investigative procedures like CT, MRI scanning, principles of illizarov fixation & their PT management. Also to explain physiological effects of electrotherapeutic agents. 5. To evaluate General principles of Orthopaedic surgery, Arthrodesis, Osteotomy, Arthroplasty, Bone grafting, Internal and external fixations Etc . 6. To write about Nerve suturing and grafting. Wound debridement Orthopaedic implants.
MPO 202	Vertebral disorders & Rehabilitation	1. To describe Anatomy and Biomechanics of vertebral column. Also to define Congenital disorders of vertebral column and vertebral deformities. 2. To explain inflammatory disorders of vertebrae, vertebral joints & soft tissues etc and changes, changes of alignment of bone, joint of vertebral column. 3. To demonstrate low back pain, pain in vertebral column and stiffness disorders. Also to illustrate cervical, thoracic, lumbar and sacral region. 4. To explain traumatic injuries of vertebral column; general and regional injuries like soft tissue injuries, bone Injuries (fractures & dislocation of spine), pelvic injuries. also to explain tightness and structural changes. 5. To assess spinal cord injuries, with their types, classification, pathology, level

		examination, management and rehabilitation. 6. To write about Orthopaedic surgeries, bioengineering appliances and supportive devices. To write pre and post-operative rehabilitation.
MPO 203	Hand Rehabilitation	1. To describe Anatomy of hand with bio & patho-mechanics of hand, functions of hand, motor and sensory organ. Also to describe assessment of hand. 2. To classify hand injuries ; tendon injuries, tendinopathies, nerve injuries, neuropathies and hand fractures , joint &ligament injuries. Also to describe principles of hand rehabilitation and detailed aspects of various conditions. 3. To illustrate Rehabilitation in various hand conditions; Burns in hand, spastic hand, stiff hand, RA hand , hand in Hansen's disease, Dupuytren's contracture ,RSD , Compartment syndrome and Reynaud's phenomenon Etc. 4. To explain Rehabilitation following surgeries; tendon transfer& reconstruction, replantation surgeries. Also to explain Nerve graft, suture &neurotization surgeries and flaps skin grafts management following burns. 5. To evaluate sensory and functional re-education. Also to evaluate disability & compensation in hand injuries. 6. To write about correction of deformities of hand ;Orthoses for hand and prosthetic hand.

MPTN201	Physical Therapy In Neurological Disorders	1. Describe the orientation and introduction, physical basis, normal result and common abnormal responses of various investigative procedures. 2. List the testing of cranial nerves. Describe the disorders of cranial nerves and rehabilitation protocol. 3. List the disorders of cerebral circulation and disorders of higher cerebral cortical function. Describe the classification, causes, pathophysiology, clinical features, complication, management and rehabilitation. 4. Define the demyelinating and also degenerative diseases of the nervous system. Describe the classification, causes, pathophysiology, clinical features, complication, management and rehabilitation. 5. List the movement disorders and disorders of spinal cord and caudaequine. Describe the classification, causes, pathophysiology, clinical features, complication, management and rehabilitation. 6. List the nutrition disorders, peripheral nerve disorders and disorders of autonomic nervous system. Describe the classification, causes, pathophysiology, clinical features, complication, management and rehabilitation.
MPTN202	Neurological Rehabilitation	1. Describe techniques, types of skull, brain and spine surgery and its complication.

		Design pre and postoperative physiotherapy assessment and treatment. 2. Describe traumatic brain injury.Design pre and post operative physiotherapy assessment and treatment. 3. Define tumors. Describe pathophysiology classifications ,effects of mass lesions, examination, management, pre and post-operative rehabilitative protocol. 4. Define decompression surgery of spinal cord describe disc operation pre and post-operative physiotherapy assessment and treatment physiotherapy assessment and treatment. 5. Describe operative procedures of peripheral nerves. Design pre and post- operative physiotherapy assessment and treatment. 6. Define and classify tumors of cranial bones, meningiomas, tumors of spinal cord, intracranial tumors. Design pre and post-operative physiotherapy assessment and treatment.
MPTN203	Physical Therapy In Paediatric Neurology	1. Define general Developmental sequence of normal child. Describe development in various period of growth, postnatal growth pattern, types of body build, physical examination of a child. 2. List the normal nutritional requirement of a child and infant feeding. Describe prevention of some nutritional disorders, Nutritional deficiency diseases and immunization. 3. Define Cerebral Palsy. List the types, aetiology and clinical features. Design the assessment and rehabilitation of various types of cerebral palsies. 4. Define the muscular disorders of childhood. List the types of muscular dystrophies and myopathies of childhood. Design the

		assessment and rehabilitation of muscular disorders of childhood. 5. Define epilepsy. List the classification, etiology, pathology and clinical features of various types of seizures. 6. Describe the neurological affection of childhood. Describe the etiology, clinical features, assessment and rehabilitation in early childhood.
MPOG 201	Medical & Surgical Gynaecology	1. To describe the Anatomy of Pelvis, PFM and Pelvic organs and reproductive tract . 2. To discuss internal and external genitalia, physiology of female reproductive system &urinary and fecal continence, menstrual cycle and its integration. To describe anatomy and development of breast. 3. To List the Gynecological infections and design the assessment and physiotherapy protocol. 4. To explain about infertility, menstrual abnormalities, contraception and family planning.. 5. To evaluate urinary, bowel and anorectal dysfunction and its PT management. 6. To write about gynaecological problems in adolescents also to write about gynaecological surgeries.
MPOG 202	Clinical Obstetrics	1. To discuss developmental anatomy embryology in details. Also to describe physical, physiological and musculoskeletal changes during pregnancy, common complication & discomforts during pregnancy. 2. To illustrate PT in labour, breast feeding position and episiotomy and its PT

		management. 3. To explain about labour and types of assistive deliveries and caesarean section. Also explain gestational DM, PIH, eclampsia and water birth. 4. To evaluate puerperium& its physiological changes and diastasis recti. 5. To write about breast milk and its advantages , common problem in breast feeding. Also to write about types of nipple and its problems 6. To define the concept off Clinical Obstetrics
MPOG 203	Clinical Obstetrics	1. To describe PFM grading, LAS, pre and post-operative indication and contraindication, active PFM exercises and impairment of PFM and its PT management. 2. To discuss about Antenatal classes, Swiss ball in pregnancy and electrotherapy modalities in obstetrics. 3. To illustrate PT in labor, breast feeding position and episiotomy and its PT management. 4. To explain perineal massage and breast engorgement and its PT management. 5. To evaluate aerobics and weight training in pregnancy. 6. To write about PT management of edema in Pregnancy, GDM, High risk Pregnancy. Water birth and Management of common problem in Antenatal period, PT management of diastasis recti
MPTP	Physiotherapy For Paediatric	1. Describe Neuro developmental assessment

201	Neurological Conditions	and developmental screening (Paediatric Coma Scale). 2. Define congenital peripheral nerve injury. Design the assessment and rehabilitation protocol. 3. List the growth and development of child and its disorders. Design the assessment and rehabilitation protocol. 4. List the various congenital injuries, syndromes and infections of central nervous system. Design the assessment and rehabilitation protocol. 5. Define progressive locomotor disorders. Design the assessment and rehabilitation protocol. 6. To integrate the role of various approaches in paediatric Development.
MPTP 202	Physiotherapy For Paediatric Orthopaedic Conditions	1. List the principles of laboratory investigation for differential diagnosis. 2. Describe the genetic basis of pediatric disorders and counseling 3. Describe the various congenital and acquired orthopaedic problems in children and its medical, surgical and physiotherapy management. 4. Define JRA and Limb Deficiencies. Design the assessment and rehabilitation protocol. 5. Describe amputation and congenital disorders of bones. 6. Define the pediatric burn. List the Lund and Browder chart. Design the assessment and rehabilitation protocol.
MPTP	Physiotherapy For Paediatric	1. List the concepts and principles of various

203	Cardio-Respiratory Conditions	approaches. 2. Describe the clinical reasoning and clinical decision making. 3. Describe the various congenital and acquired cardiac diseases in children and its medical, surgical and physiotherapy management. 4. Describe the various respiratory problems and its medical, surgical and physiotherapy management. 5. List the neonatal care. Describe the management of high risk babies. 6. Describe the Intensive care management of high risk babies.
MPS201	Traumatology: Orthopedic & community medicine Physical Therapy	1. To enumerate the assessment principles of spine, hip & thigh, knee & leg, foot & ankle, shoulder & arm, elbow & forearm, wrist & hand in sports person. 2. To understand common back problems & injuries in sports person. 3. To illustrate lower limb problems & injuries common in sports person. 4. To analyze upper limb problems & injuries common in sports person. 5. To evaluate common fractures & dislocation in sports person. 6. To plan basic diagnosis and management of skin condition of athletes, female specific problems and common diseases like common col amoebiasiss tree ulcers etc.
MPS202	Fundamentals in sports	1. To define brief idea about some common sports terminology, methodology rules, equipment and infrastructure of sports like basket Ball, hockey, tennis, badminton,

		wrestling ,boxing ,track & field, volleyball etc. 2. To summarize physics in sports and its application like types of motion, distance, speed, velocity, angular motions, law of inertia, force and its characteristics, classification of force systems ,levers & fluid mechanics etc. 3. To apply and illustrate biomechanics in different sporting events like running, throwing, swimming, jumping and also to analyze equipment. 4. To explain the importance of psychological aspects in sports, doping in sports and point out performance enhancing drugs. 5. To evaluate special aids in performance, to measure body composition, its analysis and its effects in sports and to rank protective equipment in sports. 6. To define the concept of fundamental in sports
MPS203	Rehabilitation in sports	1. To describe physiological responses to exercise and its effects on metabolism, muscle fatigue, respiratory & cardiovascular changes, second wind, electrolyte regulations during sports etc. 2. To summarize responses to injury in muscles, bones, ligaments and its effects of immobilization & detraining. Also to explain mechanical properties & injuries to articular cartilage. 3. To discover various prevention of injuries and its risk factors along with the strategies

		of injury prevention. 4. To analyze injury and managing sporting emergencies, On field assessment, clinical assessment, principles of management etc. 5. To summarize various nutrition in sports based on the requirement of athletes, diet planning, pre-game meal, carbohydrates loading. 6. To design various trainings in sports like plyometric and to generalize some injuries related to some common & popular sports along with their management like in football & soccer, track & field, aquatic sports, basketball & volleyball, gymnastics etc.
MPTC 201	Medical And Surgical Management Of Disorders Of The Cardiopulmonary System	1. To describe the applied anatomy and physiology of cardio-thoracic and respiratory system also the mechanism of ventilation. 2. To understand the radiological anatomy for clinical assessment, ECG, echo, PFT, ABG, exercise ECG testing, cardiac catheterization, stress testing and medical management of disorders of the cardiac system. 3. To demonstrate the symptoms assessment of the heart disease like cardiac rate, rhythm and conduction; cardiac arrest, shock, RHD,CHD, diseases of heart valves, IHD, hypertension, heart . 4. To classify the disease conditions related to the pulmonary system like obstructive, restrictive and infections of pulmonary systems, interstitial pulmonary disease,

		vascular disease, respiratory failure, neuro muscular and skeletal disorders leading to pulmonary conditions. 5. To evaluate the concept of various cardiothoracic surgery pre and post-operative management like open heart surgery, emergencies in CTVS, heart transplant, left ventricle assistive device, cardiopulmonary bypass and artificial airway removal etc. 6. To define concept of Medical And Surgical Management Of Disorders Of The Cardiopulmonary System
MPTC 202	Physiotherapy Management And Principles Of Cardiopulmonary System	1. To describe the physiotherapy assessment, exercise testing and training program. 2. To understand the concepts and physiological effects of various equipment like ventilator, humidification, aerosol therapy and oxygen delivery devices in respiratory disease. 3. To demonstrate the airway clearance techniques like postural drainage, FET, AD, ACBT, breathing exercise, percussion, shaking, vibration and biofeedback. 4. To classify the role of physiotherapy in ICU and diabetes. 5. To evaluate the concept of respiratory muscles training, ventilator facilitation technique, mobilization and strengthening exercise. 6. To design the prescription in Cardiac and Pulmonary rehabilitation.
MPTC	Cardio-Pulmonary	1. To describe the exercise physiology, patient

203	Rehabilitation And Acute Cardio Respiratory Practice	evaluation for exercise testing, principles of exercises testing, programme planning and implementation. 2. To understand the phase wise protocols in MI, beneficial effects of aerobic exercise in coronary artery disease, various aspect of cardiac rehabilitation also to study the rehabilitation in PVD and cardiac transplantation. 3. To demonstrate the respiratory muscle training in pediatric patient with cardio vascular disease, pulmonary conditions and study of interventions in various pulmonary conditions. 4. To classify the goals and physiotherapy treatment in acute cardio respiratory conditions related to ICU patient, infection control in ICU, principles of oxygen administration andapplication of ICU equipment. 5. To evaluate the concept of fitness training, health promotion, stress modifications by exercise and to understand the scientific basis for exercise programs. 6. To design the fitness programme for cardiac patients with normal and abnormal activity and its effect on cardio vascular system, also to prescribe the exercises by exercise testing using its principles, effect of exercises regime on body and nutrition intake.

UNERGRADUATE PROGRAM

1. BMRIT Program Outcome

PO-1	Acquire knowledge of radiology and relationship between physics and imaging techniques
PO-2	Problem Analysis: Identify, understand, formulate and solve problems related to radiological equipment
PO-3	Design and development of solutions in case of emergency condition during radiological examination.
PO-4	Develop an understanding to conduct investigation of complex problems.
PO-5	Recognize the basic and advanced knowledge of hardware, software and applications of computers in health care systems
PO-6	The radiographer and skill: understanding to evaluate the factors affecting technical quality of images and various pathological conditions.
PO-7	The radiographer and society: Apply reasoning informed by contextual knowledge to asses health, safety, legal and cultural issues and the consequent responsibility relevant to impact of radiation on society.
PO-8	Ethics:Understand their ethical and legal responsibilities as a radiographer.
PO-9	Individual and Team Work **:** Understand the importance of teamwork while handling patients with drugs & equipment in general as well as in emergency situations.
PO-10	Laws: Develop understanding of laws/provisions for radiation safety by various regulatory bodies.
PO-11	Implement and follow standard protocols while doing various radiological procedures and scans
PO-12	Maintenance : Maintain quality assurance, quality control measures, safety procedures and maintenance of radiological equipment.

Course Code	Course Name	Course Outcome
BMRT-101	Human Anatomy	1. To outline introduction of anatomy, classification and development of bones and joints. 2. To summarize osteology and joints associated with upper limb of human body. 3. To determine osteology and joints associated with lower limb of human body. 4. To illustrate osteology, soft tissues and joints associated with trunk, head and neck portion of body. 5. To assess organs present in thorax portion of the body like pleura, lungs, mediastinum, pericardium, heart, trachea and oesophagus. 6. To write about abdomen portion of the body and neuro anatomy.
BMRT-102	Human Physiology	1. To memorize physiology and composition of blood and CVS, blood groups, cardiac cycle and E.C.G. 2. To summarize mechanism of respiration, capacity of lung volume, introduction of digestive system, functions of organs and glands associated with digestive system. 3. To determine general principle of endocrinology, structure and function of skin 4. To illustrate physiology of kidney and reproductive system, KFT and constituents of urine. 5. To review reflex arc, physiology of CNS, physiology of sympathetic and parasympathetic nervous system and to assess function of different parts of brain. 6. To facilitate experimental handling by doing TLC, DLC, RBC, Hb, ESR, BP etc. during lab sessions
BMRT-103	Preventive Medicine and Health Care	1. To outline about water, air and noise pollution. 2. To associate with hygiene and sanitation. 3. To examine infection and control like microbial pathogenicity and source and spread of infection. 4. To illustrate about epidemiology, surveillance, methods of prevention and control of infection. 5. To debate on prophylactic immunization. 6. To write about role of balanced diet and yoga for health care and health planning and management.
BMRT-	Basic Physics	1. To define basic concepts of atomic structure,

104		ionization, excitation, basic units and measurements. 2. To interpret practical aspects behind electromagnetic induction, capacitance, circuit laws, impedance and power factors. 3. To examine the phenomenon of Radioactive decay, production of radioisotopes and fission products. 4. To explain the process of radiation production and interpret properties of X- rays. 5. To debate on the interaction of radiation with matter and outline measurement units like absorbed dose & RAD. 6. To write about measurement of radiation dose through different radiation detectors.
BMRT-105	Orientation of Diagnostic Radiology and Para clinical Sciences	1. To Describe the use x-ray exposure switches 2. To classify the equipment maintenance of equipment procedure of X-ray machine and cooling method. 3. To Demonstrate workflow digital/equipment handling. 4. To assess the importance of radiographic exposure 5. To evaluate the radiographic image quality 6. To design the parameter for identification of radiographic image quality
BMRT-201	Orientation in Para clinical Imaging	1. To identify parasitology of Entamoeba Histolytica, Leishmania, Material Parasites of Man, Helminthology, Taenia Saginata, Taenia Soleum, Echinococcus Granuloses, Ascaris Lumbricoides, Ancylostoma Duodenale, Strongylids Stercoralis 2. To interpret microbiology of Morphology & physiology of Bacteria, Staphylococcus, Streptococcus, Mycobacterium Tuberculosis, Spirochetes, Corynebacterium Diphtheria 3. To examine general properties of Herpes, Polio, Hepatitis, Oncogenic and HIV viruses. 4. To explain pathology of Inflammation, Osteomyelitis, Fractures, Osteoporosis, Rickets, Osteomalacia, Tumours of Bone, Rheumatoid Arthritis, Gout Osteoarthritis. 5. To mind map pharmacology of drugs like absorption, metabolism and excretion of drugs. 6. To write about adverse drugs, reaction & its Management
BMRT-202	Special Radiological Equipment and Radiation Protection	1. To outline about two different modalities of radiography i.e. Fluoroscopy and mammography. 2. To done contrasting between computed and digital radiography. 3. To examine physical characteristics of ultrasound and Doppler techniques. 4. To link between data communication in the

		radiology department and computers in radiology. 5. To comment on Tele radiology system and review various principles of radiation protection. 6. To manage shielding materials, radiation survey meters and personnel monitoring devices.
BMRT-203	Radiographic Techniques	1. To Describe the professional laws and ethics. 2. To discuss the legal aspect and medical ethics in health setup 3. To Demonstrate patient handling and preparation. 4. To assess the importance Chest, abdomen, pelvis and extremities Radiography. 5. To evaluate the radiographic image quality 6. To design the parameter for identification of radiographic image quality
BMRT-204	Special Radiological Procedures	1. To Describe the properties of contrast media. 2. To discuss the legal aspect and medical ethics in health setup 3. To Demonstrate patient handling and preparation. 4. To assess the importance of Radiological Procedure done in Radiology Department. 5. To evaluate the radiographic image quality 6. To design the parameter for identification of radiographic image quality
BMRT-205	Advances Techniques and Instrumentation of CT and MRI	1. To outline developments, Principe and various generations of computed tomography. 2. To interpret technical aspects behind instrumentation of CT scan, advancements in detector technology, helical CT, and HRCT. 3. To implement standard protocols of CT angiography, CT guided biopsies, CT guided FNAC, adult and paediatric whole body CT. 4. To illustrate the basic concept behind principle of MRI, precession, TR, T1 weighted, T2 weighted and proton density. 5. To assess basic and advanced pulse sequences, MR angiography and MR spectroscopy. 6. To write about standard protocols of MRI, artifact's and safety aspects of MRI and advantages of MRI over CT.
BMRT-301	Orientation in Clinical Sciences	1. To outline clinical features and lab investigations of Pericarditis, Valvular diseases, Rheumatic Heart Disease, Heart failure, Hypertension 2. To interpret clinical features and lab investigations of Chronic Bronchitis, Emphysema, Bronchiectasis, Pneumonia, Tuberculosis, Pleura effusion, Empyema, Spontaneous Pneumothorax 3. To determine clinical features and lab investigations of Achalasia Cardia, Peptic ulcer, Intestinal obstruction, Crohn's disease, Ulcerative Colitis, Pancreatitis, Portal Hypertension, Ascites,

		Cirrhosis, Cholecystitis 4. To illustrate clinical features and lab investigations of UTI, Glomerulonephritis, Nephrotic syndrome, Urinary Calculi, Polycystic Kidney disease, Cerebral Vascular Disorders, Meningitis, Encephalitis. 5. To assess clinical features and lab investigations of Type Mechanism, Healing, Delayed Union, Non-complication, Injuries of the shoulder gridle, Dislocation of shoulder, # of Humerus, Elbow Forearm, Of Distal Radius & Ulna, Injuries of the Capos, Dislocation of Hip, # Femur, Tibia, Ankle, Calcaneum, Acute & chronic osteoarthritis, Rheumatoid arthritis, Paget's Disease, Ankylosing spondylitis, Club foot, Bone Tumour- Benign, Malignant 6. aTo write about clinical features and lab investigations of Cholelithiasis, Peritonitis, Subphrenic Abscess, Appendicitis, Hydronephrosis, Benign Hypertrophy prostatye, Sinusitis, Diagnosis of Pregnancy
BMRT-302	Radiotherapy Planning and Radiation Therapy	1. To define role of radiotherapy, its planning and procedures. 2. To express proper simulation techniques. 3. To efficiently present terminology of radiotherapy 4. To organize treatment setup efficiently with use of proper immobilization devices. 5. To measure percentage of radiation dose at particular depth. 6. To write about physical properties of particular phantom, bolus and shell immobilization devices.
BMRT-303	Equipment for Radiotherapy including Newer Developments	1. Define kilo voltage and ortho voltage techniques of radiotherapy. 2. Interpret design and construction of various Radiotherapy machines associated with Radiotherapy techniques. 3. Examine different types of Radio frequency generators can be used in radiotherapy. 4. Illustrate clinical applications of internal radiation therapy. 5. Experiment techniques for administration of internal radiation therapy. 6. Write about working principal of the gamma knife.
BMRT-304	Interventional Radiological Procedures and Techniques	1. To define role of interventional radiology, IR machine handling, DSA, different IR procedures and modalities. 2. To exemplify equipment used in IR procedures like Cath Lab/ DSA, C-arm equipment etc. 3. To efficiently present principles of Pre, intra and Post IR procedures.

		4. To organize treatment setup efficiently by understanding vascular and non-vascular anatomy and pathology, clinical applications and sterile techniques in angiography procedures. 5. To distinguish anaesthesia and emergency drugs in IR. 6. To write about emboli zing agents, radiation safety aspects in IR department, OT instruments and sterility.
BMRT-305	Patient Care and Radiation Protection in Diagnostic Radiology	1. To describe the Importance of the Professional Laws &Ethics. 2. To discuss the legal aspect and medical ethics in health setup 3. To demonstrate body mechanics & transferring of patient. 4. To assess the Knowledge of departmental safety and infection control. 5. To evaluate the roll of Radiological exposure & protection principle. 6. To design the parameter for identification of patient care responsibility & health care facility of a radiographer.

2. B.Sc Medical Microbiology
Program Outcome

PO-1	Apply knowledge and technical skills associated with Medical Microbiology for delivering quality clinical investigations support.
PO-2	Recognize routine clinical laboratory procedures within acceptable quality control parameters in medical microbiology lab (serology, virology, bacteriology, Immunology, Molecular microbiology).
PO-3	Communicate technical skills, social behaviour and professional awareness for functioning effectively.
PO-4	Apply problem solving techniques in identification and correction of pre analytical, post analytical & analytical variables
PO-5	Demonstrate an understanding of essential basic pathological process including cell death problems.
PO-6	Identification of common pathogenic bacterial agents and associated disease, their specific mechanisms.
PO-7	Develop an understanding of the patterns of clinical procedures of diagnosis of Microbial infections & infestations.
PO-8	Demonstrate an understanding pathogenic viruses and associated diseases
PO-9	Function as a leader or team member in diverse professionals and medical research areas.
PO-10	Function in an ethical and professional manner without bias against any ethnicity, race, religion, caste or gender.
PO-11	Work on career enhancement by adapting to professional and social needs engaged in lifelong learning.
PO-12	Practice professional and ethical responsibilities with high degree of credibility, integrity and social concern.

Course Code	Course Name	Course Outcome
BMM 101	Human Anatomy & Physiology	1. To outline introduction of medical science, organization and physiology of human body and primary defence mechanism of human body. 2. To interpret about gross anatomy and histology of respiratory system, digestive system, alimentary system, and physiology of digestion and absorption. 3. To examine morphology and distribution of cells and organs of immune system, Gross anatomy and physiology of reticulo-endothelial system and physiology of various body fluids. 4. To illustrate gross anatomy and physiology of excretory system, cardiovascular system. 5. To assess gross anatomy, and physiology of musculo-skeletal system, nervous system. 6. To write about gross anatomy, histology and physiology of reproductive system, endocrine system.
BMM 102	Basic pathology	1. To describe the concepts of haematology. 2. To explain the basics of haematology and quality assurance. 3. To demonstrate the methods of histopathological staining, haemoglobinometry and haemo-cytoglobinometry. 4. To analyse the various types of immunity and mechanisms of antigen and antibody reactions. 5. To evaluate the pathology of microbial infections, pathogenesis of tumours and oncogenesis. 6. To develop an understanding of immunohistopathology, immunohistochemistry and blood banking technology.
BMM 103	Clinical Biochemistry	1. To define concepts and principles of biochemistry, correlations of biomolecules: carbohydrates, proteins, lipids, Nucleic acids with cellular and molecular processes involved in health and in disease states for clinical problem solving. 2. To express fundamental aspects of enzymology with mode of action, clinical application. 3. To determine basics of clinical Biochemistry and technology in safety and hazards. 4. To correlate the normal ranges and abnormal ranges of l Interpreting of principle of biochemical Clinical bio criteria's 5. To evaluate an analytical judgment, interpreting technic Colorimeters, analytical balance, flame photometer. 6. To devise the importance of Sterilization and disinfectic concept of application of biophysics, clinical sensitivity
BMM	Preventive Medicine & Health	1. To Introduce the air and noise pollution and their

104	care	preventions. 2. To associating the microbial pathogenicity source and spread of infections in community. 3. To determine the Epidemiology, surveillance and control of community infections. 4. To divide Prophylactic Immunization and vaccines and hazards of immunization. Various national immunization programs and vaccine schedules. 5. To detect health care by balance diet and yoga. 6. To program health planning & management.
BMM 104	Fundamentals of Medical Microbiology	1. To Introduce the Discovery of micro-organism. Contribution of various scientist. 2. To associating the anatomy of bacterial cell, bacterial reproduction, morphological study of bacteria. 3. To determine the culture media and its type (liquid and solid media). Common ingredients of cultural media. Cultivation of bacteria. 4. To divide Maintenance & Preservation of pure cultures. Collection, transport processing & storage of clinical samples for Microbiological Analysis. 5. To measure immunological tests, antigen test, antibodies reaction and antigen antibody reaction. 6. To Formulate disinfectants, antiseptics chemotherapeutic agents: Future development of chemotherapy.
BMM 105	Instrumentation Techniques In Medical Microbiology	1. To list the study of Microscope & its types. 2. To describe preparation of Stains, making of Films, Staining Methods, Mounting Media, Stains (Gram stains, AFB Stains, Capsule, Spores Stains.) 3. To operate the study of Microbiological Instruments. Instruments used in Immunology. 4. To question about the Care & Management Of Experimental animals. 5. To select the safety Measure in Microbiology Laboratory. 6. To investigate the culture, Isolation & Identification of Pathogens & Drug Sensitivity test.
BMM 201	Bacterial Pathogens & Associated Diseases	1. To Memorize the normal microflora of Human Body(Skin, Respiratory, Gastrointestinal, genitourinary tracts.) 2. To recognize the Pathogenicity, mode of infection etc. Staphylococcus, , Pneumococcus, etc 3. To implement the host Parasite in bacterial infection. 4. To test the , Pathogenicity, mode of infection etc. Coryne bacteria, Anthrax bacillus, a typical mycobacteria etc. 5. To value the physiology & biochemistry of bacteria 6. To develop the incubation Period & Toxigenecity of bacteria

BMM 202	Systematic Bacteriology	1. To repeat the role of Laboratory in the diagnosis and control of Infection. 2. To Classify the management and Quality control of Medical Microbiology laboratory. 3. To examine the specimen Collection from Patients, Epidemiological investigations. 4. To experiment the isolation of Pure Culture and its Preservation. 5. To select the morphology of bacteria , stain cultural character, selective cultural media, biochemical reaction. 6. To assemble the microbiology Drug sensitivity test and its clinical interpretation.
BMM 203	Miscellaneous Microbes, Fungal Pathogens and Associated Diseases.	1. To examine the principle and mode of action of antibiotics. 2. To classify the pathogens in terms of their pathogenesis, mode of infection and toxigenicity. 3. To demonstrate the clinical presentation and pathology of miscellaneous microbial pathogens. 4. To explain the pathogenic features of spirochetes and fungal microbes. 5. To evaluate the clinical characters and pathology of pathogenic and non-pathogenic fungi. 6. To develop an understanding of the classification, pathogenicity and diagnosis of pathogenic fungus and various insects.
BMM 204	Lab Diagnosis of Microbial Diseases	1. To examine the etiopathogenesis, pathology, clinical features and Lab diagnosis of osteomyelitis, sore throat, scarlet fever, acute glomerulonephritis, pneumonia, rheumatic fever and whooping cough. 2. To classify the Gram-positive and Gram-negative bacterial infections causing bacteria in terms of pathogenesis, clinical features and Lab diagnosis. 3. To illustrate the clinical importance of the disease: Diptheria, Tuberculosis, skin, ulcers and leprosy, malignant pustules and isortiers disease. 4. To analyse pathogenic features and lab diagnosis of brucellosis, plague, genital infections, typhus, oral thrush, ringworms and mycetoma. 5. To assess the laboratory identification methods of typhoid and paratyphoid fever, bacterial food poisoning, bacillary dysentery, gastroenteritis, and cholera. 6. To develop the understanding of disease with the help of pathogenesis, pathology, clinical features and lab diagnosis of Tetanua, botulism, wound infections, aspergillosis and blastomycosis.
BMM 205	Human Parasitology	1. To describe the introduction and classification of Protozoa.

		2. To classify the phylum Protozoa with reference to classes: Rhizopoda, Mastigophora. Sporozoa and Cilliata. 3. To demonstrate the clinical importance of Sacocysts, Pneumocystis and Toxoplasma. 4. To analyse the pathogenic features of class Cestoidea and trematoda. 5. To evaluate the lab diagnosis, pathogenesis of Nematodes and their plan of treatment. 6. To generalise the lab diagnostic procedures and analysis of clinical samples.
BMM 206	Applied Medical Microbiology	1. To examine the microbial specimens, their collection technique and lab diagnostic procedures. 2. To describe the process of documentation and preservation of microorganisms. 3. To illustrate the significance of infective syndromes their diagnostic procedures and the strategy of antimicrobial therapy. 4. To analyse in detail the epidemiology markers of micro-organisms, passive prophylactic mass immunization and nosocomial infections. 5. To evaluate the diagnosis, treatment and control of common infections and manifestations. 6. To design the specific serological methods for diagnosis and drug sensitivity methods.
BMM 301	Pathogenic Viruses and Associated Diseases	1. To describe the pathogenesis, life cycle and treatment of Pox and Herpes virus. 2. To explain the pathogenicity and treatment of adenoviruses. 3. To demonstrate the patterns of orthomyxovirus and paramyxovirus disease causing abilities and interventions to prevent the infection. 4. To classify miscellaneous viruses, Picorna viruses and rhinoviruses in terms of their pathogenesis. 5. To summarize the clinical manifestations and treatment plan of Hepatitis viruses, arbo viruses and rhabdo viruses. 6. To develop an understanding of slow and oncogenic viruses and cell culture studies.
BMM 302	Applied Immunology & Serodiagnosis	1. To describe the basic concepts of immunology and analytical techniques. 2. To explain the mechanisms of antibody production, its clinical significance and various viral markers for identification. 3. To demonstrate the importance of autoimmune disorders, pathogenesis, clinical features and its markers.

		4. To explain the concept of immunological techniques with principle and applications. 5. To summarize the methods and principle of serological tests and HIV I & 2 screening. 6. To develop an understanding of tumor markers, their clinical significance, antibiotic preparation and vaccine production.
BMM 303	Advanced Diagnostic Technology	1. To memorize the clinical significance of bacteriophages and concept of DNA and Protein synthesis mechanisms. 2. To explain the importance of TORCH profile and kit based study to identify the *M. tuberculosis.* 3. To demonstrate the identification techniques of Hepatitis A, B, C virus immunoglobulins. 4. To explain the concept of viral serological techniques: ELFA, DLISIA. 5. To assess the presence of HIV, autoimmune disorder and chlamydia serologically. 6. To compile the serological diagnostic tests used for the identification of Dengue, Steller test and important immunoglobulins.
BMM 304	Automation & Computerization Medical Microbiology	1. To Introduce the Introduction to Computer Hardware central processing Unit (CPU), input drives, storage and output devices. Binary decimal, octal and hexadecimal system 2. To associate the Computer programs for simple problems such as Matrix addition Multiplication and Transposition, trace of Matrix Chi sq.test. Fitting a straight light line (using principal of least square fit). 3. To determine the Computer Application and their use in Medical Microbiology: Features of Computers. Application areas of Computers involved in data processing common activities in processing. 4. To divide Classification of software, system software, application software, Operating Systems, computer Viruses, Precautions against Viruses Dealing with Viruses Computers in Medical Electronics, 5. To measure Internet basics of Microbiologists. Electronic Mail, Electron Mail servers. Down Loading, file with anonymous FTP. 6. To Formulate Medical documents, contents of medical case sheet, Goals of Medical Transcription training? Basic Guidelines for medical transcription. Pronunciation guidelines. Basic elements of a medical world.
BMM 305	Molecular Biology & Clinical Lab Technology	1. To list Determination of Blood Glucose by various methods. Glucose tolerance test. 2. To describe the Function test ,Blood urea, Serum Creatinine, Uric acid and various ice test. 3. To operate the spinal and other body fluids analysis.

		(Normal & Abnormal values & Clinical significance). 4. To question the Quality assurance and safety measures in Blood Banking. Organization. Operation and administration of Bank. 5. To select the Tissue Processing Dehydration, clearing & impregnation in wax & Decalcification. 6. To investigate the Exfoliative cytology, FNAC and cervical cytology, Techniques, applications and interpretation of results.

3. B.Sc MLT (M301) Program Outcome

PO-1	Provide the healthcare community with graduate's expertise in the knowledge and skills to display ethical, professional conduct in education and clinical settings.
PO-2	Perform analytical tests including quality control on biological specimens; including collecting and processing of biological specimens for analysis and interpret.
PO-3	Demonstrate conceptual knowledge in haematology, blood chemistry, clinical Biochemistry, Immunology, immune haematology and pathogenic Microbiology.
PO-4	Recognize factors that affect laboratory procedures and results and take appropriate action, within predetermined limits.
PO-5	Acquire basic knowledge of human Anatomy and Physiology to integrate both the functional and structural aspects of a Human body.
PO-6	Acquire knowledge and application of the principle of biostatistics for the purpose of establishment and maintenance of Quality Controls (instruments and diagnostic tests).
PO-7	Recognize factors that affect laboratory procedures, results and take appropriate action, within predetermined limits and safety.
PO-8	Describe the principles of learning technology in application. Take interactive classroom lectures, small group discussions (debate), Seminars etc.
PO-9	Apply basic scientific principles in learning new techniques and procedures of advanced Lab technology and inculcate the knowledge of handling of automatic analyzers, organization and management of clinical laboratory.
PO-10	Provide a high quality, educational program that prepares the student to achieve competent skills essential for employment as Medical laboratory technicians or researchers in diverse clinical areas.
PO-11	Provide guidance to Medical Laboratory Technology program which assist them in pursuing educational and occupational opportunities that maximize their professional potential.
PO-12	Assessing analytically and critically while solving problems and making decisions during daily practice with major focus on public health care, quality diagnostic protocols and safety.

Course Code	Course Name	Course Outcome
BMLT101	HUMAN ANATOMY & PHYSIOLOGY	1. To outline introduction of medical science, organization and physiology of human body and primary defence mechanism of human body. 2. To interpret about gross anatomy and histology of respiratory system, digestive system, alimentary system, and physiology of digestion and absorption. 3. To examine morphology and distribution of cells and organs of immune system, Gross anatomy and physiology of reticulo-endothelial system and physiology of various body fluids. 4. To illustrate gross anatomy and physiology of excretory system, cardiovascular system. 5. To assess gross anatomy, histology and physiology of musculo-skeletal system, nervous system. 6. To write about gross anatomy, histology and physiology of reproductive system, endocrine system.
BMLT 102	BASIC PATHOLOGY	1. To describe the concepts of haematology. 2. To explain the basics of haematology and quality assurance. 3. To demonstrate the methods of histopathological staining, haemoglobinometry and haemo-cytoglobinometry. 4. To analyse the various types of immunity and mechanisms of antigen and antibody reactions. 5. To evaluate the pathology of microbial infections, pathogenesis of tumours and oncogenesis. 6. To develop an understanding of immunohistopathology, immunohistochemistry and blood banking technology.
BMLT-103	**B.M.L.T 1st Year**	1. To define concepts and principles of biochemistry, correlations of bio molecules: carbohydrates, proteins, lipids, Nucleic acids with cellular and molecular processes involved in health and in disease states for clinical problem solving 2. To express fundamental aspects of enzymology with mode of action, clinical application 3. To determine basics of clinical Biochemistry and medical lab technology in safety and hazards 4. To correlate the normal ranges and abnormal ranges of biochen Interpreting of principle of biochemical Clinical biochemistry t 5. To evaluate an analytical judgment, interpreting technical/principles of laboratory instrumentation like Colorimeters, analytical balance, flame photometer 6. To devise the importance of Sterilization and disinfection and its application in clinical lab & develop concept of application of biophysics, clinical sensitivity, specificity
BMLT 104	**PREVENTIVE MEDICINE AND HEALTHCARE**	1. To associate Sanitation barriers, excreta disposal and disposal of hospital waste, Incineration and disinfection.

		2. To determine the Emergence of drug resistance. Methods of prevention & control- isolation of patients, quarantine & incubation periods of various infectious diseases. 3. To divide Various national immunization programs and vaccine schedules. 4. To detect health care by balance diet and yoga. : Normal constituents of diet, various diet programs 5. To program health planning & management. 6. To define concept of health and hazards
BMLT 105	**MICROBIAL BIOLOGY**	1. To Introduce the Discovery of micro-organism. Contribution of various scientist. 2. To associating the anatomy of bacterial cell, bacterial reproduction, morphological study of bacteria. 3. To determine the culture media and its type (liquid and solid media). Common ingredients of cultural media. Cultivation of bacteria. 4. To divide Maintenance & Preservation of pure cultures. Collection, transport processing & storage of clinical samples for Microbiological Analysis. 5. To measure immunological tests, antigen test, antibodies reaction and antigen antibody reaction. 6. To Formulate disinfectants, antiseptics chemotherapeutic agents: Future development of chemotherapy.
BMLT 106	**TECHNICAL METHODS IN MICROBIAL BIOLOGY**	1. To definestudy of Microscope & its types. 2. To compare preparation of Stains, making of Films, Staining Methods, Mounting Media, Stains (Gram stains, AFB Stains, Capsule, Spores Stains.) 3. To examine the study of Microbiological Instruments. Instruments used in Immunology. 4. To organize Care & Management Of Experimental animals. 5. To measure Safety Measure in Microbiology Laboratory. 6. To investigate culture, Isolation & Identification of Pathogens & Drug Sensitivity test.
BMLT-201	**B.M.L.T 2nd Year (Paper I)**	1. To highlights the basics of separative and instrumental techniques applied in clinical Biochemistry and medical lab technology 2. To infer concepts and principles of lab techniques like chromatography, electrophoresis with protocols and specific tests implementations in healthy and disease states for clinical diagnosis 3. To articulate fundamental aspects of colorimeter, spectrophotometer and flame photometer with clinical application and daily maintenance 4. To correlate the normal ranges and abnormal ranges of biochemical components, interpreting principles of Clinical biochemistry tests to be processed by applying above lab

		techniques and procedure 5. To review an analytical judgment, interpreting technical/principles of laboratory instrumentation in Immuno-chemistry, osmometry etc 6. To build the concepts, principles and applications of molecular lab instrumentation like Coulter counters, ELISA, RIA and PCR
BMLT-202	**B.M.L.T 2nd Year (Paper II)**	1. To highlights the basics of Metabolic and Blood Chemistry techniques applied in Clinical Biochemistry Lab 2. To associate fundamental aspects of metabolic pathways carried by biomolecues like carbohydrates, protein, lipids with their clinical implication on dysfunction 3. To determine pathways of the intermediary metabolism along with their individual and integrated regulation and relate that in insightful functioning of the body. 4. To attribute the principles, procedures and clinical implications of biochemical daily routine tests components such as glucose, protein, urea, creatinine, bilirubin, electrolytes classified as pivotal diagnostic/prognostic markers 5. To measure with all the advanced biochemical tests and clinical importance of acid base balance, Xylose, insulin Urea and creatinine clearance tests 6. To lead the importance of Organ Functions Tests in integrating and correlating the quality of diagnostic outcomes.
BMLT 203	**MEDICAL MICROBIOLOGY- I**	1. To recall normal microfora of Human Body (Skin, Respiratory,Gastrointestinal, genitourinary tracts.) 2. To understand description, Pathogenicity, mode of infection etc Staphylococcus, Streptococcus, Pneumococcus, etc 3. To concept of the host Parasite in bacterial infection. 4. To differentiate the description, Pathogenicity, mode of infection etc.Coryne bacteria, Anthrax bacillus, a typical mycobacteria etc. 5. To support the physiology & biochemistry of bacteria 6. To investigate the incubation Period & Toxigenecity of bacteria
BMLT 204	**MEDICAL MICROBIOLOGY-II**	1. To list the role of Laboratory in the diagnosis and control of Infection. 2. To classify the management and Quality control of Medical Microbiology laboratory. 3. To ues the specimen Collection from Patients, Epidemiological investigations. 4. To relate the isolation of Pure Culture and its Preservation. 5. To value the morphology, staining cultural character, selective cultural media, biochemical reaction. 6. To design the microbiology Drug sensitivity test and its clinicalinterpretation.

BMLT 205	**BASIC PATHOLOGY AND ALLIED SUBJECT- I**	1. To describe the coagulation disorders and bleeding disorders with its mechanism. 2. To explain the mechanism of platelet disorders and types of anaemia. 3. To illustrate the causes and significance of Leucocytosis and neutropenia. 4. To compare the identification features and types of malignancies. 5. To Evaluate the haematological changes leading to haematological disorders. 6. To design the basic procedures to maintain the quality control, safety and management of blood bank.
BMLT-301	**B.M.L.T 3rd Year (Paper I)**	1. To outline knowledge and concepts of biostatistics for evaluation and interpretation of quality Controls 2. To infer tools and rules applied for accessing and maintaining quality Control for clinical diagnosis 3. To present skills for clinical diagnosis, testing, understanding of biochemical conditions and diagnostic service with reference to normal ranges of various bio-metabolites 4. To illustrate skills in Automation techniques, its advantages with impetus on its working and managing hospital laboratory 5. To review an analytical judgment, interpreting clinical significance of lab findings on toxicology, drug abus 6. To build the concepts, principles and role of Endocrinology in clinical diagnosis and prognosis of diseases
BMLT-302	**(Paper II)**	1. To highlights the basics of clinical techniques and tests applied in Clinical Biochemistry Lab 2. To summarize fundamental aspects of enzymology, regulatory factors, mechanism affecting enzyme activity 3. To determine the clinical importance of Isoenzymes and interpretation 4. To attribute the importance of advance tests in clinical Lab like Fructosamine test in semen,analysis of renal biliary and prostatic stones, alpha-foetoprotein, lactogen and their clinical significanc 5. To review knowledge about recent advances and trends in research in the field of clinicalBiochemistry with all the advanced biochemical tests and clinical importance of infertile, thyroid profiles. 6. To collaborate the principles of teaching -learning technology towards application. Take interactive classroom lectures, conduct small group discussions, Seminars and research presentations

BMLT 303	**MEDICAL MICROBIOLOGY I**	1. To describe the pathogenesis, lab diagnosis and pathology of bacteria. 2. To explain the pathogenic role of adenovirus, herpesvirus. 3. To apply the conceptual knowledge on the topic: pathogenicity of orthomyxovirus and paramyxovirus. 4. To distinguish the viruses on the basis of their multiplication cycle, lab diagnosis and treatment. 5. To evaluate the infectivity of hepatitis, Arbo and Rhabdo virus. 6. To develop an understanding of Cell Culture and observation of effect of viruses on cell: Technique, procedure and interpretation of results.
BMLT 304	**MEDICAL MICROBIOLOGY II**	1. To examine the microbial specimens, their collection technique and lab diagnostic procedures. 2. To describe the process of documentation and preservation of microorganisms. 3. To illustrate the parasitology of Protozoa, Rhizopoda and helminths. 4. To analyse in detail the epidemiology markers of micro-organisms, passive prophylactic mass immunization and nosocomial infections. 5. To evaluate the diagnosis, treatment and control of common infections and manifestations. 6. To design the specific serological methods for diagnosis and drug sensitivity methods.
BMLT 305	**PATHOLOGY AND ALLIED SUBJECT I**	1. To gain knowledge on the concept of antigen and antibodies. 2. To develop an understanding on types of immune response, allergic Reactions and rheumatological diseases. 3. To illustrate the mechanisms of infectious cycle, cancer immunology markers. 4. To analyse the role of cell-mediated immune response and Laboratory investigations in megaloblastic anaemias. **5.** To evaluate the Pathogenesis and laboratory investigation in Leukaemia and Laboratory investigation in coagulation disorder, bleeding disorder, disseminated intravascular coagulation (DIC), Platelet functions etc. **6.** To design the plan of work to study Cytogenetics in haematology and Radioisotopes and their applications.
BMLT 306	**PATHOLOGY AND ALLIED SUBJECT II**	1. To describe the Types of tissue seen in histopathology and Handling of fresh histological specimen (Tissues) cryo/frozen sections of fresh and fixed tissues, freezing drying. 2. To explain the identification methods and various staining

		techniques for tissue identification. 3. To illustrate the mechanism of neuropathological techniques and special treatment required for tissues i.e. eyeball B.M. biopsy, undecalcified bones. 4. To analyse the methods involved in enzyme histochemistry and electron microscopy. 5. To evaluate the principle and procedure of immunohistochemistry and Hormonal assessment. 6. To develop an understanding on the Demonstration of sex chromatin and Aspiration cytology principles indication.

4. B.Sc. Optometry Program Outcome

PO-1	Acquire knowledge to perform the ability to diagnose and manage various vision abnormalities including refractive errors as well as various eye diseases
PO-2	Demonstrate the application abilities Developing the ability to practice various sub-specialities of Eye care Industry like contact lens, spectacle dispensing, orthoptics, low vision management
PO-3	Design and Development of basic skills on environmental consciousness and society &community eye concerns in achieving the goal of vision for all.
PO-4	Develop an understanding to conduct investigation of complex problems.
PO-5	Demonstrate an understanding of learning to upgrade one-self with eye care innovations
PO-6	Developing and applying computer skills in eye care system and taking entrepreneurial decisions.
PO-7	Applying systematized problem-solving techniques to identify and correct procedural errors to verify the accuracy of ophthalmic diagnosis obtained
PO-8	Demonstrate the application abilities regarding eye tests to determine the occular problems and explain their clinical significance and pathophysiology
PO-9	Individual and Team Work **:** Extend the concepts of the ability to communicate effectively both with the patients as well as with in the organization for effective team work .
PO-10	Assist the student to learn to maintain collaborative relationship with the members of other disciplines to improve health care
PO-11	Implement and follow standard protocols while doing various Work effectively in teams to develop national programs for the prevention of blindness
PO-12	Maintenance : Application of advanced technical skills to make appropriate and effective on-the-job professional decisions. Performance and interpretation of commonly employed procedures in the ophthalmology department.

Course Code	Course Name	Outcome
BSO 101	Human anatomy & Physiology	1. To understand the concept & terminology of Human anatomy & Physiology 2. To explain the structure, function & location of cells, tissues and major human organs system/part 3. To classify the function of various organ systems and employing its knowledge to identify diseases related to them. 4. To explain interrelation between different organ system. 5. To differentiate various organs and organ system. 6. To justify the various joints, muscle and nerves
BSO 102	Ocular anatomy, Pathology and Microbiology	1. To understand relationship between different ocular structure. 2. To compare the concepts and terminology of ocular anatomy. 3. To demonstrate the structure, functions and locations of different parts of eye. 4. To recognize the different ocular structure. 5. To gain essential knowledge about the characteristics of bacteria, vireo and fungi 6. To analyze the clinical features of blood cells.
BSO 103	Ocular physiology & biochemistry including binocular reflexes and its maintenance	1. To understand the concept and terminology of ocular physiology. 2. To explain the normal functioning of all structures of the eye and their interactions. 3. To organize functions of various ocular structure and applying this knowledge to identify disease related to them . 4. To explain the inter relationships between different ocular structure.. 5. To classify the phenomenon of vision. 6. To inspect physiology of extra ocular muscles...
BSO 104	Optics	1. To define the concepts and theories of light, its nature & properties 2. To choose the concepts and theories of interference, polarization & Diffraction 3. To build the concept of schematic and Reduce eye and Visual acuity 4. To explain the concept of Image formation by different types of lenses 5. To distinguish the concept of refractive error and its management options 6. To classify the concept of Accommodation & Presbyopia
BSO 201	Pharmacy and Pharmacology Sciences	1. To understand the concept & terminologies of Pharmacology and ocular preparations.

		2. To illustrate the routes of drug administration in ophthalmology. 3. To apply of different pharmaceutical agents in the management of Ocular diseases. 4. To analyze and applying diagnostic and therapeutic drugs in ophthalmology. 5. To conduct the procedure for installing cycloplegics and mydratics to see the effect of drugs. 6. To prepare various ways of disinfection
BSO 202	Refraction (Including prescription, making & fitting of glasses)	1. To name the various optical constant of eye & their measurements. 2. To rephrase about various refractive anomalies of the eye. 3. To apply all the theoretical skills on practical purpose. 4. To examine the concept of different types and design of ophthalmic lenses. 5. To categorize the various aspects of vision and measuring visual acuity. 6. To deduct knowledge about various optical defects of eye.
BSO 203	Investigative Ophthalmology	1. To choose the general concept of orthoptics. 2. To understand the anatomy of extra ocular muscles and their movement. 3. To assess the pediatric visual acuity and rerfraction. 4. To explain the causes and treatment of amblyopia. 5. To decide the use of synaptophore and its advantages. 6. To analyze the binocular single vision and their grades.
BSO 204	Ophthalmic Instrument and Appliances	1. To define the method of using indirect ophthalmoscope and their advantage. 2. To compare the difference between contact and non contact tonometer. 3. To explain the advantage of automated perimetry over manual. 4. To discover the use of orthoptics instruments. 5. To examine and describe colour vision test. 6. To determine the knowledge of slit lamp examination.
BSO 301	Clinical & Advanced & Optics & Orthoptics	1. To select the measurement of angle of squint. 2. To interpret the disorders of accommodation. 3. To assess the convergence anomalies and their clinical significance. 4. To distinguish the causes, treatment and management of amblyopia. 5. To examine the difference between paralytic and non paralytic squint. 6. To discuss the classification of strabismusradiographic image quality
BSO 302	Clinical Refraction & contact lenses	1. To understand about soft contact lenses material and their properties 2. To explain complication and their management of contact lenses

		3. To organize about RGP contact lens material and their properties. 4. To divide the indications and contraindications of contact lenses 5. To analyze the post-operative refractive error. 6. To conclude the concept of convergence.
7. BSO 303	8. Community ophthalmology & eye banking	1. To understand the role of optometrist in public health. 2. To classify the basic definition and classification of LOW vision. 3. To develop the basic concept of eye banking. 4. To explain the National programme for control of blindness. 5. To examine the difference between subjective and objective refraction. 6. To conclude the procedure and storage of eye in EYE BANK. Safety aspects in IR department, OT instruments and sterility.
7. BSO 304	8. Investigations in clinical ophthalmology & management of OT	1. To recall the syringing and lacrimal functions test. 2. To understand the role of specular microscopy. 3. To describe the Optical coherence tomography. 4. To divide the fundus photography. 5. To explain the ophthalmic drugs and dyes used in OT. 6. To analyze the angle of anterior chamber through gonioscopic lenses.

5. BACHELOR OF PHYSIOTHERAPY

Programme name	BPT
Programme Code	M101

Students will be able to

PO1	Knowledge :Better understanding of the structures & physiological studies of mechanical,physical & biochemical functions of human body along with their functions of major body systems.
PO2	Problem analysis: Develop a clinical or counseling services assess and treat mental,emotional & behavioral disorders.
PO3	Development of solutions: Foundation for understanding all biological process that provide explanations for the causes of many diseases in human body.
PO4	Practical application: to describe the concept of posture and function of joints and muscles. Prescribed to correct impairments,restore muscular and skeletal functions,improvement in gait and balance , prevention and promotion of health,wellness & fitness
PO5	Skills: Facilitate muscle relaxation,prevention of atrophy,muscle rehabilitation and re-education by electrical muscle stimulations
PO6	Design : Evaluate skilled movement patterns which can be employed for many different purposes including pain reduction & functional improvement using various force systems.
PO7	Basics: Acquire the knowledge of cell injuries and changes. Gained knowledge through pharmacological studies which provides significant positive impact on human health.
PO8	Clinical enhancement: Understand the mechanism of injuries and learn how to diagnose and manage orthopedic conditions. Focused on assessing and treating patient with neurological disorders. Understand patient's conditions related to heart,lungs and thorax
PO9	Management: Assess the individual with the aim of diagnosis ,treatment and preventing disease that leads to illness. Assess the individual with the pre and post operative indications for all types of surgeries.
PO10	Skill Practise: Treatment and rehabilitate of musculoskeletal systems that has been subject to injury and trauma, Gain maximum potential,independence and optimize the quality of life in patient with neurological conditions.
PO11	Life long outcome: Provide rehabilitation process to cure medical conditions and pre -post operative surgeries. Performed to prevent cardiac and respiratory problems or minimize the risk of reoccurrence with the help of rehabilitation .
PO12	Ethics: Provide an opportunity to investigate a clinically relevant topic and to meaningful contribute to the profession.

Course Code	Course Name	Course Outcome
BP101	Human Anatomy	1. To describe about the scope of Anatomy, organs and systems, structure of skin, muscles bones and joints. 2. To explain about the regional anatomy of upper Extremity-its osteology, soft tissue parts and joints. 3. To demonstrate about the osteology, soft tissue parts and joints of lower extremity. 4. To explain about the osteology, soft tissue parts and joints of the trunk head and neck. 5. To summarize about the thoracic region and abdomen of human body. 6. To compile about the basic concepts of Neuro anatomy of human body.
BP102	Human Physiology	1. To describe the physiology of muscle and blood cells structures and functions like: type of contractions, muscle tone, blood pressure; and nerve cell physiology like: nerve degeneration and reaction of degeneration. 2. To demonstrate the mechanism of respiratory and digestive system like; lung volume, capacities and factors, affecting the respiration, absorption and metabolism. 3. To understand the physiology of endocrinal and urogenital system like; pituitary gland, pineal gland, urine formation, functions of kidney. 4. To describe the physiology of skin and its functions. 5. To evaluate the physiology of nervous system like; reflex arc, central and peripheral nervous

		system 6. To facilitate experimental handling by doing TLC, DLC, RBC, Hb, ESR, BP etc. during lab sessions
BP103	General, Social & Clinical Psychology	1. To describe about the natural of Psychology, its fields and also about the schools of Psychology. 2. To describe about motivation and emotions in terms of various principle of Homeostasis, and relationship of emotions with Autonomic nervous system, etc. 3. To demonstrate conflict and frustration, common defensive mechanism, learning role in human life and its various methods and techniques. 4. To analyze about various mode of memory and its types, role and principles of perceptual grouping, illusion and hallucinations. 5. To evaluate Intelligence and personality. Different types of approach and trait approach of personality biological and social factors. 6. To develop various emotional reactions to various illnesses, understand various defense mechanisms used by patients in physical illness and mental status.

BP104	Biochemistry	1. To describe biochemical organization of human cell and classify the structure of protein. 2. To understand the definition and composition of enzymes and hormones, mode of action and chemical composition. 3. To describe the biochemical aspects of hemoglobin and myoglobin and their role in physical activities. 4. To classify the biochemical aspect of connective tissue, nervous tissue and muscle. 5. To evaluate the basic concept of metabolic chemistry like; intermediary metabolism, protein metabolism, carbohydrate metabolism, lipid metabolism. 6. To generalize about the hormones and its classification and compose ideal nutrition with the physiotherapeutic view point-eg. Protein disorders, vitamins-minerals-fibers.

BP105	Basic Principles in Physiotherapy	1. To define Physiotherapy, and describe their branches & Scope 2. To Explain electrotherapy and classify various modalities, Basic electricity, Transformers, AC, amplitude Etc. DC electricity, Capacitance and potential difference Etc. Effects of electric currents, Shock, Magnetism. Thermionic valves and Semi-conductors. 3. To illustrate Galvanic & Faradic currents, basic principles in light & sound, therapeutic & physiological effects of heat and cold, introduction to Exercise therapy. 4. To Explain Basic modalities of electrotherapy & exercise therapy, traction, tilt table, C.P.M., quadriceps table & Shoulder wheels Etc. 5. To evaluate the use of SWD, UST, TENS, IFT, Wax Bath, MHT etc. 6. To design the practical demonstration OF basic principle of physiotherapy
BP201	Exercise Therapy, Massage And Yoga	1. To define the principle, type, indication and application method of exercise therapy neuromuscular efficacy test, joint range test and test for co-ordination. 2. To describe the evaluation methods, principle and technique

		of relaxation, passive movement, active movement and hydrotherapy. 3. To demonstrate the different aspect of proprioceptive neuromuscular facilitation, suspension therapy, functional re-education and aerobic exercises. 4. To classify the stretching, mobilizing technique, balance, co-ordination exercise and posture principles.. 5. To evaluate the concept of walking aids, massage, individuals and group exercise. 6. To design the practical demonstration of all the topics discussed in theory like coordination, mat exercise, breathing exercise, traction, posture, yoga etc.
BP202	Electrotherapy	1. To define the basic physics related to physiotherapy like electricity, condenser, transformer, magnetism, ionization also the prevention and management of burn and shock. 2. To explain the principle and application of low and median frequency current like direct current, indirect current, TENS, pain mechanism, IFT,etc and electro-diagnosis like FG test, SD curve, and biofeedback. 3. To demonstrate the principle and use of High frequency current like

		SWD, MWD,ultrasound, LASER, UVR, IRR etc. 4. To explain the Superficial heating Modalities like PWB, contrast bath, moist heat therapy, fuidotherpay. 5. To evaluate the principle and application superficial heating modalities. Describe PWB, Contrast Bath, Moist heat Therapy, Fluid therapy, whirlpool and cry therapy.. 6. To design the application of all the electrotherapy modalities according to patient condition.
BP203	Biomechanics & Kinesiology	1. To define study of kinesiology and various fundamental concepts like starting positions, gravity ,planes and axis of motion along with fundamental movement of major body segments. 2. To describe about muscular system, the joints and neuromuscular functions. 3. To apply the concept of the machinery of the musculo-skeletal system like levers, pulleys and the fundamental principles of motion. Also to illustrate the fundamental principles of force and components of muscular force and also to use the confused effects of two or more forces. 4. To analyze the principles of stability covering postures in different segments of human body

		like vertebral column, upper and lower limbs. 5. To evaluate the application of kinesiology to locomotion, occupational therapy, daily life skills and selection and evaluation of exercise for various faulty postures. 6. To design principle of Biomechanics & Kinesiology
BP204	PATHOLOGY AND MICROBIOLOGY	1. To describe the etiology and classification of disease, inflammation- acute, sub-acute and chronic type; bacteria, fungal, viral; and types of wound. 2. To understand the degenerative process, disorders of growth, metabolic disease of bone, tumors of bones, myopathies, disease of C.N.S. and peripheral nerves. 3. To illustrate the disease condition related various system like; respiratory system, cardiovascular system, musculoskeletal system and circulatory system. 4. To analyze the role of Pasteur, Koch, Lister etc., and their contribution in the history of microbiology. 5. To evaluate and assess the basic techniques for growth of bacteria, types of infections associated with and the methods of control. 6. To design the lab diagnostic procedures for identification of the bacterial, viral and fungal

		diseases and role of immunity to suppress the diseases.
BP205	PHARMACOLOGY	1. To define the scope of pharmacology in Physiotherapy, Processes of drug absorption, Biotransformation and models of Drug administration. 2. To explain the drug toxicity, Allergy and resistance, pharmacodynamics of drug also to describe the mechanism of drug action, and factor effecting drug action. 3. To demonstrate the concepts General and local anesthetics, anxiolytics, Lytics, anticonvulsants, sedatives, anti-inflammatory analgesic agents, neuromuscular blockers and muscle relaxants. 4. To analyze the effect and side effects of some common groups of drugs. 5. To illustrate the action of drug absorption 6. To design the basic principle of drug reaction

BP301	CLINICAL ORTHOPAEDICS	1. To describe the general terminology and techniques related to orthopedics, deformities, etiology, pathology, clinical features, investigation and management of common infection of Bones and joints. 2. To understand the disease course of bones and connective tissue also to describe the regional disorders, etc. 3. To demonstrate the generalized out line of fracture and dislocation, its types, complications, symptoms, common investigations and its management. 4. To classify the conditions related the spinal column like; common fracture, dislocation, PIVD, sacralization, spondylolisthesis, scoliosis, lordosis, kyphosis, LBA, etc 5. To evaluate and asses the pathologies related to shoulder girdle and arms, pathologies related to wrist and hand; Pathologies related to lower limb. 6. To evaluate the classification, pathology, clinical features, investigation and management of amputation, poliomyelitis, peripheral nerve injury, cerebral palsy, etc.

BP302	Clinical Neurology And Psychiatry	1. To describe neuro-anatomy & neurophysiology, to tell about formation & circulation of CSF. Also to define about cerebrum, brainstem and neural 2. To explain about blood supply of Spinal cord, cerebrum, internal capsule and circle of willis. 3. To illustrate congenital and childhood disorders, clinical features and their management ofcerebral ischemia &infarction, embolism &hemorrhage. Also toillustrate cerebrovascular accidents, clinical features, investigation and their management 4. To explain trauma, head injury, spinal cord injuries and their pathophysiology clinical features, investigation, management 5. To evaluate infections related to CNS, lesions of cerebellum & lesions of cranial nerves, assessment their management. Also to assess peripheral nerve disorders. 6. To write about psychiatry, defense mechanism causes&types of mental disorders, psychosomatic complications. Also to write about Schizophrenic , psychoneurosis and MR.

BP303	Clinical Cardiothoracic Conditions	1. C01: To describe the anatomy and physiology of pulmonary segment, lung, heart and thorax and also to assess the basic principles of cardiothoracic sciences like; examination of respiratory system, cardiac system disorders, investigation techniques. 2. To understand the common deformities related to thoracic cage and common conditions related to cardio vascular system like; cardiac failure, rheumatic fever, IHD, hypertension, myopathies, pericarditis, atherosclerosis, etc 3. To demonstrate and understand the definition, etiology, clinical feature, diagnosis of respiratory disease conditions like; bronchitis, COPD, restrictive disease, pneumonia,etc 4. To classify the common surgical procedure related to cardiac and thoracic regions, its indication, contraindication, types, sites of incision, management and complications. Examples of the surgeries are; open heart surgery, coronary angioplasty, cardiac transplant, etc. 5. To evaluate and describe the procedures like; Management of ET tubes, tracheal suction, extubation, CPR, ICU,ICCU care,

		etc. 6. To evaluate and understand the emergences and clinical of cardiothoracic patient.
BP304	Physiotherapy In General Medicine, Skin & Paediatrics	1. To define about Infectious diseases, Measles, Enteric fever, Tuberculosis, leprosy, malaria, Amoebiasis, etc. 2. To describe about common heart and respiratory conditions like- IHD, Hypertension,Valvular heart diseases,COPD,Asthma, Bronchiectasis, Pneumonia, etc 3. To demonstrate about conditions related to Digestive and Kidney system like- Reflex esophagitis, Ulcerative colitis Hepatitis, Jaundice, Nephritic syndrome, Renal failure, etc. 4. To classify about various Endocrine, Metabolic and blood diseases like- Diabetes Mellitus, hyperthyroidism, Anemia, Leukemia, Hemophilia, etc. 5. To evaluate Diseases of the connective tissues, Joints, bones and skin like- Arthritis, Spondylitis, Arthritis, Vasculitis, Osteoporosis, Rickets, Acne, Psoriasis, Dermatitis, etc. 6. To evaluate the Pediatrics Mile

		stone & reflexes, Poliomyelitis, Vitamin deficiency disorders, etc.
BP305	General Surgery, Obs, Gynae, Ent& Plastic Surgery	1. To describe the Types, Clinical Features, Pathology &Management of Shock, Hemorrhage, and Pain Relief, etc. 2. To explain about the Wounds, Tissue repair, scars, acute and chronic wounds management, Ulcers, Burns, etc. 3. To illustrate about the causes, clinical presentation, diagnosis and treatment of various ENT related conditions, sinusitis, Rhinitis, Vertigo, etc 4. To explain about the various disorders related to Pregnancy & labor : Rectal Prolapse, Uterine Prolapse,Incontinence, Pelvicinflammatory diseases 5. To explain patient care related to General Surgery, Obs, Gynae, Ent & Plastic Surgery 6. To illustrate the causes of General Surgery, Obs, Gynae, Ent & Plastic Surgery

BP306	Disability, Prevention And Rehabilitation	1. To describe the principle of practical application, history and development of occupation therapy and physiotherapy ,also to describe the rehabilitation of the handicapped, scope of rehabilitation organization and structure of rehabilitation 2. C02: To understand the administration principles of relationship between personnel with other department, institute, government bodies; also to understand the principles of maintaining department secrecy, etc 3. To demonstrate and understand the principle of Physical therapy philosophy, need of rehabilitation, principle of rehabilitation nursing and mental retardation. 4. To classify and evaluate the principle in managing of social problems related to patients, rehabilitation center, community resources, etc and vocational problems. 5. To illustrate the current status of disability prevention and rehabilitation. 6. To define principle of disability prevention and rehabilitation.

BP401	PT in Orthopedics	1. To describe General PT assessment and approaches for traumatic conditions, fractures, dislocation, its causes and types, signs & symptoms, complication of fractures. 2. To discuss about specific fractures and their complete PT assessment and management. Fractures of bones and soft tissue injuries. 3. To demonstrate principles of PT assessment &management in dislocations & fracture, dislocation. 4. To explain degenerative and infective conditions, osteo-arthritis, PIVD, RA and ankylosing Spondilitis. Also to explain deformities, congenital and acquired. 5. To evaluate orthopedic surgery, pre and post-operative assessment and management. Surgeries Also to evaluate amputation with their assessment and management. 6. To write about low back ache, regional joints, bones and soft tissue, with their etiology, clinical features, investigations, differential diagnosis and PT assessment and PT management.

BP402	Pt In Neurology & Neurosurgery	1. Describe about Nervous system including CNS, peripheral nerves and ANS. 2. Describe about various techniques used assessment and treatment of nervous tissue disorders, Neuro developmental therapy, Bobath techniques, Broomstick techniques, PNF, etc. 3. Illustrate about Detailed assessment and Management of diseases of CNS 4. Analyze about the assessment and treatment of peripheral nerve injuries. Myopathies, Muscular Dystrophy, Myasthenia Gravis, Polyneuropathies, Leprosy etc. 5. Evaluate about the assessment and treatment of following; Traumatic paraplegia, quariplegia, nerve suturing, coma, and head injuries etc. 6. To define principle PT In Neurology & Neurosurgery

BP403	Pt. In Cardiothoracic Conditions	1. To describe the anatomy and physiology of pulmonary and cardiac system, peripheral vascular system, mechanism of respiration, respiratory muscles, lung volume, etc. 2. To demonstrate the basic physiotherapy techniques like postural drainage, breathing Exercise, various techniques, brief discussion of suction, MV, AMBU bag procedures, etc. 3. To demonstrate and manage the conditions related to cardiothoracic system like chest deformities, rib and sternum fractures, IHD, COPD, lung abscess, pneumonia, etc. 4. To assess and apply the pre and post-operative physiotherapy management in cardiorespiratory surgical conditions like open heart surgery, etc. 5. To identify and describe the examination procedure used to evaluate patients with heart disease 6. To discuss and demonstrate PT interventions specific for cardiopulmonary and circulatory disease.

BP404	Physiotherapy in general medicine and surgical conditions.	1. To define about oedema, inflammation, artherosclerosis, diabetes, obesity, lymphedema. 2. To describe about general surgery-wound ,ulcers, burns, pre & post-operative P.T., common abdominal incisions and surgeries with their P.T. treatment &post operative complications, hernia, skin grafting, mamoplasty. 3. To demonstrate about ante natal & post natal physiotherapy, PID, incontinence, prolapsed rectum etc. and pediatric conditions. 4. To classify about various ENT conditions and its P.T management. 5. To evaluate and prepare various programms for sportsmen like mechanism of injury, PT treatment of common sports injuries and Ergonomics 6. To define and explaine Physiotherapy in general medicine and surgical conditions.
BP405	Research methodology computer & Biostatistics	1. To describe about the measurement of central tendency, dispersion, theory of probability, its laws and theorems 2. To discuss about various test like t-test, f-test etc. sampling methods, its types and its application. 3. To illustrate about correlation and regression line-coefficient of correlation, its properties, its

		calculations, regressions and condition for constancy of data, coefficient of measuring associations. 4. To analyze about computers and its applications, soft & hardware, application in medicine, programming etc. Modern concept of computer technology in rehabilitation of persons with disabilities. 5. Demonstrate the ability to choose method appropriate to research aims and objective 6. To write a critical review of a literature.

1. M.Sc MLT Program Outcome

PO-1	Develop an understanding to perform routine clinical laboratory procedures within acceptable quality control parameters in Hematology, Biochemistry, Immunohematology, Cytopathology, Histopathology, Blood transfusion and Microbiology.
PO-2	Demonstrate the application abilities of biomolecules. Their relations to implement the understanding of the concept and research related to them
PO-3	Development of basic skills in aseptic techniques, and sterilisation techniques. Perform various staining techniques, Cultivate bacteria with different cultivation techniques and the conceptual knowledge of HAI.
PO-4	Extend the concepts of the immune system and their determination of immunomodulatory strategies that can be used to enhance immune responses or to suppress undesired immune responses as mandatory in hypersensitivity reactions, transplantations or autoimmune diseases.
PO-5	Demonstrate an understanding of essential basic pathological processes including cell death and injury, inflammation, thrombosis and neoplasia.
PO-6	Develop an understanding of the patterns of inheritance, clinical manifestations of genetic diseases and the molecular basis of human diseases.
PO-7	Gain information on concepts of Biostatistics, an essential part of research and its methodologies.
PO-8	Demonstrate the application abilities regarding biochemical tests to determine the health problems and explain their clinical significance and pathophysiology.
PO-9	Identification of common pathogenic bacterial agents and the associated diseases, their specific mechanisms by which bacteria cause disease, their epidemiology of infectious agents including how infectious diseases are transmitted and explain interventions employed to prevent bacterial diseases including infection control measures and course of treatment.
PO-10	Application of advanced blood bank and blood transfusion technical skills to make appropriate and effective on-the-job professional decisions. Performance and interpretation of commonly employed procedures in the blood bank. Interpreting normal and abnormal test results and correlation of the data with appropriate pathologic conditions to accurately advise health care providers.
PO-11	Work effectively in teams to collect clinical samples for analysis. Storage or transportation of samples for analysis using appropriate preservation methods. Implementation as per prescribed procedures, and with adequate orientation, perform routine testing in immunology, Immunohematology, haematology, hemostasis, blood bank and molecular diagnostics. Manage laboratory operations and human resources to ensure cost-effective, high-quality laboratory services.
PO-12	Exhibit the ability to perform histopathological and cytological laboratory testing techniques to gain knowledge and become laboratory efficient.

Course Code	Course Name	Course Outcome
MMLT-101	General Biochemistry Medical Laboratory Technology	1. To define concepts and principles of biochemistry, correlations of biomolecules: carbohydrates, proteins, lipids, Nucleic acids with cellular and molecular processes involved in health and in disease states for clinical problem solving and research. 2. To estimate fundamental aspects of enzymology and clinical application wherein regulation of enzymatic activity is altered. 3. To integrate biochemical pathways of the intermediary metabolism along with their individual and integrated regulation and apply that in understanding the functioning of body with respect to energy liberating process. 4. To estimate the normal ranges and abnormal ranges o Interpreting of principle of biochemical Clinical biochemistry tests, finish tasks with speed as well as with accuracy, handle stress; make an analytical judgment, interpreting technical/scientific data, knowledge of laboratory instrumentation. 5. To validate special emphasis on Laboratory Management and safety with Health care delivery and financial strategies for managed care, financial management, human resource management and space and facility management. 6. To build Quality management: Fundamentals, total quality management, total testing process, control of pre-analytical and analytical variables, control of analytical quality using stable control materials, external quality assessment, documentation of reports.
MMLT-102	General Bacteriology, Immunology and Parasitology	1. To describe the History of microbiology in detail and study the morphology and physiology of bacteria. 2. To discuss the principles of Sterilization, Disinfection, Cultivation methods and Antibiotic Susceptibility testing. 3. To illustrate the transmission of infection and prevention of HAI. 4. To Explain the concept of Antigen, Antibody and their reactions. 5. To evaluate the importance of immunity and Hypersensitivity with their types. 6. To design the parameters for identification of etiological features, pathogenesis and laboratory diagnosis of important parasites causing infections.
MMLT-103	Haematology and Clinical Pathology	1. To examine the role of laboratory techniques including sample collection and investigation procedures. 2. To discuss the basics of human genetics, DNA,

		techniques of Molecular biology and cytogenetics. 3. To demonstrate the principle and applications of various molecular techniques used in the laboratory. 4. To Explain the concept of important instruments with their principle and applications. 5. To assess the blood transfusion studies and procedures conducted in Blood Bank. 6. To prepare the classification of and diagnosis of Haemolytic and malignant disorders in detail.
MMLT-104	General Pathology	1. To describe the basics of pathological processes including cell death and injury, inflammation and thrombosis. 2. To discuss the basics of the cell cycle, regulation of cell division and cell signalling mechanism. 3. To demonstrate the concept of molecular genetics of human diseases, disorders and diagnosis. 4. To Explain the nomenclature, characteristics of neoplasia and its molecular studies. 5. To assess the lab diagnosis, etiology and pathogenesis of emerging diseases. 6. To generalize the concept of various pathological and analytical techniques.
MMLT-105	Epidemiology & Biostatistics	1. To describe the epidemiology of the disease, its transmission and control. 2. To discuss the importance of prevention and control of communicable and non-communicable diseases and interpretation of the epidemiological data. 3. To present the published research including need of screening tests, its accuracy and types of study design. 4. To analyse the data using various statistical sampling methods. 5. To evaluate the data using statistical interference methods. 6. To prepare a result out of the data using Anova.
MMLT-201	Clinical Biochemistry	1. To highlights clinical significance of enzymology & role of Isoenzymes and plasma enzymes-separation and identification, in clinical diagnosis and interpretation with reference to cardiac and skeletal muscle enzymes, liver and biliary tract enzymes digestive, bone GI disorders. 2. To interpret the metabolic Disorders of Carbohydrates e.g. diagnosis, gestation diabetes mellitus, role of laboratory in diagnosis and prognosis and qualitative and quantitative analysis and protein and clinical significance: analysis of amino acids- screening test, quantitative tests for specific amino acids 3. To integrate the metabolic Disorders of protein and

		clinical relevance to Atherosclerosis and coronary artery disease, its analytical and biological variations. 4. To correlate the concept of nutrition in health and disease, micro and macronutrition and essential nutrients, hormones, electrolytes and vitamins with interlinks of nutrients with metabolism and functions of a living system. 5. To detect Disease relates to organs functions and its tests specific for its clinical significance and early diagnostic markers with skills for practical with clinical diagnosis, testing, understanding of biochemical conditions with clinical approach. 6. To compose knowledge of basics of research methodology, develop a research protocol, an assigned research project as dissertations, analyze data using currently available statistical software, interpret results and disseminate these results, to pursue further specializations and eventually develop to be competent researcher.
MMLT-202	General Bacteriology, Immunology and Parasitology	1. To describe the History of microbiology in detail and study the morphology and physiology of bacteria. 2. To discuss the principles of Sterilization, Disinfection, Cultivation methods and Antibiotic Susceptibility testing. 3. To illustrate the transmission of infection and prevention of HAI. 4. To Explain the concept of Antigen, Antibody and their reactions. 5. To evaluate the importance of immunity and Hypersensitivity with their types. 6. To design the parameters for identification of etiological features, pathogenesis and laboratory diagnosis of important parasites causing infections.
MMLT-203	Advanced Haematology and Immunohematology	1. To describe the basics of blood disorders and analysis using analytical techniques. 2. To discuss the analysis and interpretation of urine and stool. 3. To illustrate the immunohematology techniques for studying the Blood group system. 4. To explain the Blood group compatibility and its clinical significance. 5. To evaluate quality control of blood bank system. 6. To develop an understanding of transfusion reactions and HDN disease.
MMLT-204	Techniques in Histopathology and Cytology	1. To memorize the basic histopathological staining techniques. 2. To extend the knowledge on enzyme

		histochemistry and immunoenzyme techniques. 3. To apply the concept of immunohistochemistry in the diagnosis of various disorders. 4. To explain the Cytology techniques, quantitative methods and micro incineration. 5. To evaluate the applications of autoradiography techniques for disease diagnosis. 6. To develop an understanding of Microscopy, its types and immunofluorescence.

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2.Masters in PhysiotherapyProgram Outcome

PO1	Knowledge :Better understanding of the structures & physiological studies of mechanical,physical & biochemical functions of human body along with their functions of major body systems and its pathology
PO2	The programme support to understand about the basic concepts of exercise physiology and nutrition,energy,work and power
PO3	Development of knowledge regarding responses to exercise in various systems of the body like respiratory,cardiovascular,acid base balance ,hormonal systems.
PO4	Practical application: to describe the concept of posture and function of joints and muscles. Prescribed to correct impairments,restore muscular and skeletal functions,improvement in gait and balance , prevention and promotion of health,wellness & fitness
PO5	Skills: Facilitate muscle relaxation,prevention of atrophy,muscle rehabilitation and re-education by electrical muscle stimulations
PO6	Design : Evaluate skilled movement patterns which can be employed for many different purposes including pain reduction & functional improvement using various force systems and different types of exercise trainings
PO7	Basics: reacquire the knowledge ofmobilization,strengthening,conditioning and fitness enhancement for neuromuscular control. Gained knowledge through pharmacological studies which provides significant positive impact on human health
PO8	**:** Clinical enhancement: Understand the mechanism of injuries and learn how to implant exercise prescription. Focused on assessing and treating patient with neurological disorders. Understand patient's conditions related to shoulder,elbow,hand injuries etc.
PO9	Recognize various path mechanics of different complexes of joints and its management and prevention.
PO10	Skill Practice: Treatment and rehabilitate of musculoskeletal systems that has been subject to injury and trauma, Gain maximum potential, independence and optimize the quality of life in patient with neurological conditions by introducing importance of gait and its analysis.
PO11	Develop awareness of bioengineering concepts in rehabilitation. Introducing various concepts of manual therapy techniques and advanced electrotherapy in treating patients.
PO12	Skill enhancing through research methodology,biosatatics,educational technology and computers.

PROGRAMME SPECIFIC OUTCOME (PSO)

Programme name	**MPT Orthopedics**
Programme Code	M9501

PSO1	The ability to perform an appropriate subjective and physical examination with development of suitable analytical skills to evaluate data obtained. A sound theoretical knowledge & understanding of neuro-musculoskeletal conditions affecting. management needed (medical or surgical) and to apply appropriate techniques. rehabilitation based on etiology of disease and to progress with rehabilitation .
PSO2	Evaluate various level of spinal cord, rationalize the treatment approach according to the management needed (medical or surgical) and to apply appropriate techniques.
PSO3	Evaluate various level of hand injuries, rationalize various approaches for hand rehabilitation based on etiology of disease and to progress with rehabilitation .
PSO4	Enhance student's research ability through dissertation that will help in the course of degree pursuance.

Programme name	**MPT Neuro**
Programme Code	M9601

PSO1	Analyze, Interprete and Evaluate various levels of spinal cord injuries & peripheral nerve injuries,the treatment approach according to the management(medical/surgical) and to apply appropriate techniques.
PSO2	Patient assessment and treatment planning including integration and interpretation of patient problems and effective goal setting for neurological patients
PSO3	Evaluate primitive reflexes, analyse developmental milestones and apply various neo-natal therapeutic approaches and neurodevelopmental techniques
PSO4	Enhance student's research ability through dissertation that will help in the course of degree pursuance.

Programme name	**MPT Obs & gynae**
Programme Code	M9690

PSO1	The ability to perform an appropriate subjective and physical examination of pelvic organs, reproductive tract and abdominal with development of suitable analytical skills to evaluate data obtained. A sound theoretical knowledge & understanding of gynecological problem and surgeries in gynecological condition.
PSO2	Evaluate common complication and discomforts during pregnancy after delivery, rationalize the treatment approach according to the management needed (medical or surgical) and to apply appropriate techniques & understand the impact of exercise programs for specific women's physiology, pathophysiology and psychology of pregnancy, menopause, aging and osteopenia/ osteoporosis.
PSO3	Evaluate various level of PFM weakness due to menopause, peri-menopause and after delivery, rationalize various approaches for PFM rehabilitation based on etiology of disease and to progress with rehabilitation .Understand the safety issues associated with

	leading exercise classes for women with specific physical needs
PSO4	Enhance student's research ability through dissertation that will help in the course of degree pursuance.

Programme name	**MPT Pedia**
Programme Code	M9410

PSO1	Assessment and treatment planning including integration and interpretation of patient problems and effective goal setting.
PSO2	Demonstrate a well-developed problem solving ability and evidence based practice of paediatric physiotherapy
PSO3	Evaluate primitive reflexes, analyse developmental milestones and apply various neo-natal therapeutic approaches and neurodevelopmental techniques
PSO4	Enhance student's research ability through dissertation that will help in the course of degree pursuance.

Programme name	**MPT SPORTS**
Programme Code	M9401

PSO1	Analyse and interprete various sports injuries, pathomechanics and apply appropriate therapeutic techniques on and off field
PSO2	Modify and devise various exercises for sports personnel and prevent injuries by applying proper dynamics during play.
PSO3	Analyse the effect of therapeutic modalities, indications & contraindications to ensure safety and carry out proper management in both acute and long standing injury condition.
PSO4	Enhance student's research ability through dissertation that will help in the course of degree pursuance.

Programme name	**MPT Cardio**
Programme Code	M9701

PSO1	Better understanding of applied anatomy and physiology of cardiorespiratory system and pre and post-operative medical and surgical management related to the system.
PSO2	Prescribe the various physiotherapy technique in ICU and cardiopulmonary patients
PSO3	Develop the skill to formulate the fitness training programme in disease condition related to cardiopulmonary system
PSO4	Enhance student's research ability through dissertation that will help in the course of degree pursuance

Course Code	Course Name	Course Outcome
MP 101	Review of Basic Medical Sciences	1. To memorize definition of physiotherapy and various rehabilitation and mo dynamic exercises, plyometric exercises, manipulative techniques etc. MM analysis & training, PNF, aquqtic therapy etc. 2. To summarize various systems in human body like cardio vascular, mu systems and to analyse between normal & abnormal functions. 3. To apply pharmacology in medical Professional supportive purpose/action specialization. 4. To evaluate pathology in basic condition's knowledge, their patholog support the specialization. 5. To summarise exercise physiology and its response in respiration, cardiova 6. To create a comparison among nutrition and diet chart of different spor involved in physical
MP102	Review of basic therapeutics	1. To memorize definition of physiotherapy and various rehabilitation an like dynamic exercises, plyometric exercises, manipulative techniques gait analysis& training, PNF, aquatic therapy etc. 2. To discuss various physiotherapy techniques for enhancing Neu conditioning & fitness enhancement, exercise prescription, massage and hydrotherapy etc. 3. To apply various electro therapy modalities and knowing of the princi conditions and calculate the specific usage in terms of low frequen currents. 4. To prioritize the principles of biomechanics and pathomechanics of ea distinguish about various gaits and its analysis in terms of abnormal post 5. To evaluate the principles of Bio engineering-its preparation, applicatio 6. To define concept of Review of basic therapeutics
MP103	Advanced Therapeutics & Diagnosis	1. To describe and memorize basic Manual Therapy tec Maitland & Mulligan, Butler etc.

		2. To interpret Muscle energy technique, positional str application. 3. To illustrate importance of Lasers in various conditions. 4. To analyze the importance and effects of microcurrent indications, contraindication and its application in different conditions. 5. To evaluate nerve conduction studies and EMG along w action potentials in diagnosing conditions. 6. To define concept Advanced Therapeutics & Diagnosis
MP104	Research Methodology, Biostatics, Education Technology And Computer	1. To describe the research methodology's formulas and methods like st central tendency, correlation, regression, sampling testing, hypothesis, d 2. To understand the moral and ethics in physiotherapy professi association/council. 3. To demonstrate the laws related to physiotherapy practice like medico workmen compensation and maintaining the medical register. 4. To classify policies and procedure related to management of physiother salary, working hours, leaves, referred policy, maintaining statistics, planning and design. 5. To evaluate the concept of physiotherapy education technology, its aims teaching and learning, curriculum for physiotherapy, principles an evaluation, guidance and counseling. 6. To design the use of computer application in medical science and computer system.
MPO 201	Orthopedics in Physical Therapy	1. To describe Embryology and Anatomy of the musculoskeletal system etc. Also to define Paediatric Orthopedics conditions & their manag lumbo-sacral disorders, assessment of locomotor impairments. Also to medical, surgical and PT management. 2. To discuss assessment of posture , role of physiotherapy in scoliosis u nerve. Also to discuss principles of amputation surgery and their prosthe management of UL & LL fractures, after replacement of arthroplasties& 3. To illustrate PT management of conditions affecting UL and LL, pelvi illustrate Autoimmune disorders affecting musculoskeletal system their 4. To Explain advanced investigative procedures like CT, MRI scanning,

		management. Also to explain physiological effects of electrotherapeutic 5. To evaluate General principles of Orthopaedic surgery**,** Arthrodesis**,** Internal and external fixations Etc . 6. To write about Nerve suturing and grafting. Wound debridement Orthop
MPO 202	Vertebral disorders & Rehabilitation	1. To describe Anatomy and Biomechanics of vertebral column. Also t column and vertebral deformities. 2. To explain inflammatory disorders of vertebrae, vertebral joints & s alignment of bone, joint of vertebral column. 3. To demonstrate low back pain, pain in vertebral column and stiffness dis lumbar and sacral region. 4. To explain traumatic injuries of vertebral column; general and regio Injuries (fractures & dislocation of spine), pelvic injuries. also to explain 5. To assess spinal cord injuries, with their types, classification, pathol rehabilitation. 6. To write about Orthopaedic surgeries, bioengineering appliances and s operative rehabilitation.
MPO 203	Hand Rehabilitation	1. To describe Anatomy of hand with bio & patho-mechanics of hand, fu Also to describe assessment of hand. 2. To classify hand injuries ; tendon injuries, tendinopathies, nerve injuri &ligament injuries. Also to describe principles of hand rehabilitation and 3. To illustrate Rehabilitation in various hand conditions; Burns in hand, s Hansen's disease, Dupuytren's contracture ,RSD , Compartment syndrom 4. To explain Rehabilitation following surgeries; tendon transfer& reco explain Nerve graft, suture &neurotization surgeries and flaps skin grafts 5. To evaluate sensory and functional re-education. Also to evaluate disabi 6. To write about correction of deformities of hand ;Orthoses for hand and
MPTN201	Physical Therapy In Neurological Disorders	1. Describe the orientation and introduction, physical basis, normal result and common abnormal responses of various investigative procedures. 2. List the testing of cranial nerves. Describe the disorders of cranial nerves and rehabilitation protocol. 3. List the disorders of cerebral circulation and

		disorders of higher cerebral cortical function. Describe the classification, causes, pathophysiology, clinical features, complication, management and rehabilitation. 4. Define the demyelinating and also degenerative diseases of the nervous system. Describe the classification, causes, pathophysiology, clinical features, complication, management and rehabilitation. 5. List the movement disorders and disorders of spinal cord and caudaequine. Describe the classification, causes, pathophysiology, clinical features, complication, management and rehabilitation. 6. List the nutrition disorders, peripheral nerve disorders and disorders of autonomic nervous system. Describe the classification, causes, pathophysiology, clinical features, complication, management and rehabilitation.
MPTN202	Neurological Rehabilitation	1. Describe techniques, types of skull, brain and spine surgery and its c physiotherapy assessment and treatment. 2. Describe traumatic brain injury.Design pre and post operative physiothe 3. Define tumors. Describe pathophysiology classifications ,effects of mass lesions, examination, management, pre 4. Define decompression surgery of spinal cord describe disc operati assessment and treatment physiotherapy assessment and treatment. 5. Describe operative procedures of peripheral nerves. Design pre and pos treatment. 6. Define and classify tumors of cranial bones, meningiomas, tumors of spinal cord, intracranial tumors. Des assessment and treatment.
MPTN203	Physical Therapy In Paediatric Neurology	1. general Developmental sequence of normal child. Describe developm growth pattern, types of body build, physical examination of a child. 2.

		normal nutritional requirement of a child and infant feeding. Describe Nutritional deficiency diseases and immunization. 3. Cerebral Palsy. List the types, aetiology and clinical features. Design t types of cerebral palsies. 4. muscular disorders of childhood. List the types of muscular dystrophie assessment and rehabilitation of muscular disorders of childhood. 5. epilepsy. List the classification, etiology, pathology and clinical features 6. the neurological affection of childhood. Describe the etiology, clinical early childhood.
MPOG 201	Medical & Surgical Gynaecology	1. To describe the Anatomy of Pelvis, PFM and Pelvic organs and reprod 2. To discuss internal and external genitalia, physiology of female continence, menstrual cycle and its integration. To describe anatomy an 3. To List the Gynecological infections and design the assessment and phys 4. To explain about infertility, menstrual abnormalities, contraception and 5. To evaluate urinary, bowel and anorectal dysfunction and its PT manage 6. To write about gynaecological problems in adolescents also to write abo
MPOG 202	Clinical Obstetrics	1. To discuss developmental anatomy embryology in details. Also musculoskeletal changes during pregnancy, common complication & dis 2. To illustrate PT in labour, breast feeding position and episiotomy and its 3. To explain about labour and types of assistive deliveries and caesarean eclampsia and water birth. 4. To evaluate puerperium& its physiological changes and diastasis recti. 5. To write about breast milk and its advantages , common problem in b nipple and its problems 6. To define the concept off Clinical Obstetrics

MPOG 203	Clinical Obstetrics	1. To describe PFM grading, LAS, pre and post-operative indication and co impairment of PFM and its PT management. 2. To discuss about Antenatal classes, Swiss ball in pregnancy and electroth 3. To illustrate PT in labor, breast feeding position and episiotomy and its I 4. To explain perineal massage and breast engorgement and its PT manage 5. To evaluate aerobics and weight training in pregnancy. 6. To write about PT management of edema in Pregnancy, GDM, High risk Pregnancy. Water birth and Mana period, PT management of diastasis recti
MPTP 201	Physiotherapy For Paediatric Neurological Conditions	1. Describe Neuro developmental assessment and developmental screening 2. Define congenital peripheral nerve injury. Design the assessment and rel 3. List the growth and development of child and its disorders. Design the as 4. List the various congenital injuries, syndromes and infections of central rehabilitation protocol. 5. Define progressive locomotor disorders. Design the assessment and reha 6. To integrate the role of various approaches in paediatric Development.
MPTP 202	Physiotherapy For Paediatric Orthopaedic Conditions	1. List the principles of laboratory investigation for differential diagnosis. 2. Describe the genetic basis of pediatric disorders and counseling 3. Describe the various congenital and acquired orthopaedic problems physiotherapy management. 4. Define JRA and Limb Deficiencies. Design the assessment and rehabilita 5. Describe amputation and congenital disorders of bones. 6. Define the pediatric burn. List the Lund and Browder chart. Design the a
MPTP 203	Physiotherapy For Paediatric Cardio-	1. List the concepts and principles of various approaches. 2. Describe the clinical reasoning and clinical decision making. 3. Describe the various congenital and acquired cardiac disease

	Respiratory Conditions	physiotherapy management. 4. Describe the various respiratory problems and its medical, sur 5. List the neonatal care. Describe the management of high risk 6. Describe the Intensive care management of high risk babies.
MPS201	Traumatology: Orthopedic & community medicine Physical Therapy	1. To enumerate the assessment principles of spine, hip & thigh, knee & l forearm, wrist & hand in sports person. 2. To understand common back problems & injuries in sports person. 3. To illustrate lower limb problems & injuries common in sports person. 4. To analyze upper limb problems & injuries common in sports person. 5. To evaluate common fractures & dislocation in sports person. 6. To plan basic diagnosis and management of skin condition of athlete diseases like common col amoebiasiss tree ulcers etc.
MPS202	Fundamentals in sports	1. To define brief idea about some common sports terminology, methodo sports like basket Ball, hockey, tennis, badminton, wrestling ,boxing ,tra 2. To summarize physics in sports and its application like types of motion, law of inertia, force and its characteristics, classification of force system 3. To apply and illustrate biomechanics in different sporting events like r also to analyze equipment. 4. To explain the importance of psychological aspects in sports, dop enhancing drugs. 5. To evaluate special aids in performance, to measure body composition, rank protective equipment in sports. 6. To define the concept of fundamental in sports
MPS203	Rehabilitation in sports	1. To describe physiological responses to exercise and its effects on r cardiovascular changes, second wind, electrolyte regulations during spor 2. To summarize responses to injury in muscles, bones, ligaments and its e to explain mechanical properties & injuries to articular cartilage. 3. To discover various prevention of injuries and its risk factors along with

		4. To analyze injury and managing sporting emergencies, On field asse management etc. 5. To summarize various nutrition in sports based on the requirement carbohydrates loading. 6. To design various trainings in sports like plyometric and to generalize popular sports along with their management like in football & soccer, volleyball, gymnastics etc.
MPC 201	Medical And Surgical Management Of Disorders Of The Cardiopulmonary System	1. To describe the applied anatomy and physiology of cardio-thoracic and ventilation. 2. To understand the radiological anatomy for clinical assessment, ECG cardiac catheterization, stress testing and medical management of disord 3. To demonstrate the symptoms assessment of the heart disease like car arrest, shock, RHD,CHD, diseases of heart valves, IHD, hypertension, h 4. To classify the disease conditions related to the pulmonary system lik pulmonary systems, interstitial pulmonary disease, vascular disease, skeletal disorders leading to pulmonary conditions. 5. To evaluate the concept of various cardiothoracic surgery pre and p surgery, emergencies in CTVS, heart transplant, left ventricle assis artificial airway removal etc. 6. To define concept of Medical And Surgical Management Of Disorders C
MPC 202	Physiotherapy Management And Principles Of Cardiopulmonary System	1. To describe the physiotherapy assessment, exercise testing and training p 2. To understand the concepts and physiological effects of various equipme therapy and oxygen delivery devices in respiratory disease. 3. To demonstrate the airway clearance techniques like postural draina percussion, shaking, vibration and biofeedback. 4. To classify the role of physiotherapy in ICU and diabetes. 5. To evaluate the concept of respiratory muscles training, ventilator strengthening exercise. 6. To design the prescription in Cardiac and Pulmonary rehabilitation.

MPC 203	Cardio-Pulmonary Rehabilitation And Acute Cardio Respiratory Practice	1. To describe the exercise physiology, patient evaluation for exercis programme planning and implementation. 2. To understand the phase wise protocols in MI, beneficial effects of a various aspect of cardiac rehabilitation also to study the rehabilitation in 3. To demonstrate the respiratory muscle training in pediatric patient conditions and study of interventions in various pulmonary conditions. 4. To classify the goals and physiotherapy treatment in acute cardio res infection control in ICU, principles of oxygen administration andapplica 5. To evaluate the concept of fitness training, health promotion, stress mod scientific basis for exercise programs. 6. To design the fitness programme for cardiac patients with normal and vascular system, also to prescribe the exercises by exercise testing usi on body and nutrition intake.

UNERGRADUATE PROGRAM

1. BMRIT Program Outcome

PO-1	Acquire knowledge of radiology and relationship between physics and imaging techniques
PO-2	Problem Analysis:Identify, understand, formulate and solve problems related to radiological equipment
PO-3	Design and development of solutions in case of emergency condition during radiological examination.
PO-4	Develop an understanding to conduct investigation of complex problems.

PO-5	Recognize the basic and advanced knowledge of hardware, software and applications of computers in health care systems
PO-6	The radiographer and skill: understanding to evaluate the factors affecting technical quality of images and various pathological conditions.
PO-7	The radiographer and society: Apply reasoning informed by contextual knowledge to asses health, safety, legal and cultural issues and the consequent responsibility relevant to impact of radiation on society.
PO-8	Ethics:Understand their ethical and legal responsibilities as a radiographer.
PO-9	Individual and Team Work **:** Understand the importance of teamwork while handling patients with drugs & equipment in general as well as in emergency situations.
PO-10	Laws: Develop understanding of laws/provisions for radiation safety by various regulatory bodies.
PO-11	Implement and follow standard protocols while doing various radiological procedures and scans
PO-12	Maintenance : Maintain quality assurance, quality control measures, safety procedures and maintenance of radiological equipment.

Course Code	Course Name	Course Outcome
BMRT-101	Human Anatomy	1. To outline introduction of anatomy, classification and development of bones and joints. 2. To summarize osteology and joints associated with upper limb of human body. 3. To determine osteology and joints associated with lower limb of human body. 4. To illustrate osteology, soft tissues and joints associated with trunk, head and neck portion of body. 5. To assess organs present in thorax portion of the body like pleura, lungs, mediastinum, pericardium, heart, trachea and oesophagus.

		6. To write about abdomen portion of the body and neuro anatomy.
BMRT-102	Human Physiology	1. To memorize physiology and composition of blood and CVS, blood groups, cardiac cycle and E.C.G. 2. To summarize mechanism of respiration, capacity of lung volume, introduction of digestive system, functions of organs and glands associated with digestive system. 3. To determine general principle of endocrinology, structure and function of skin 4. To illustrate physiology of kidney and reproductive system, KFT and constituents of urine. 5. To review reflex arc, physiology of CNS, physiology of sympathetic and parasympathetic nervous system and to assess function of different parts of brain. 6. To facilitate experimental handling by doing TLC, DLC, RBC, Hb, ESR, BP etc. during lab sessions
BMRT-103	Preventive Medicine and Health Care	1. To outline about water, air and noise pollution. 2. To associate with hygiene and sanitation. 3. To examine infection and control like microbial pathogenicity and source and spread of infection. 4. To illustrate about epidemiology, surveillance, methods of prevention and control of infection. 5. To debate on prophylactic immunization. 6. To write about role of balanced diet and yoga for health care and health planning and management.
BMRT-104	Basic Physics	1. To define basic concepts of atomic structure, ionization, excitation, basic units and measurements. 2. To interpret practical aspects behind electromagnetic induction, capacitance, circuit laws, impedance and power factors. 3. To examine the phenomenon of Radioactive decay, production of radioisotopes and fission products. 4. To explain the process of radiation production and interpret properties of X- rays. 5. To debate on the interaction of radiation with matter and outline measurement units like absorbed dose & RAD. 6. To write about measurement of radiation dose through different radiation detectors.
BMRT-105	Orientation of Diagnostic Radiology and Para clinical Sciences	1. To Describe the use x-ray exposure switches 2. To classify the equipment maintenance of equipment procedure of X-ray machine and cooling method. 3. To Demonstrate workflow digital/equipment handling. 4. To assess the importance of radiographic exposure

		5. To evaluate the radiographic image quality 6. To design the parameter for identification of radiographic image quality
BMRT-201	Orientation in Para clinical Sciences	1. To identify parasitology of Entamoeba Histolytica, Leishmania, Material Parasites of Man, Helminthology, Taenia Saginata, Taenia Soleum, Echinococcus Granuloses, Ascaris Lumbricoides, Ancylostoma Duodenale, Strongylids Stercoralis 2. To interpret microbiology of Morphology & physiology of Bacteria, Staphylococcus, Streptococcus, Mycobacterium Tuberculosis, Spirochetes, Corynebacterium Diphtheria 3. To examine general properties of Herpes, Polio, Hepatitis, Oncogenic and HIV viruses. 4. To explain pathology of Inflammation, Osteomyelitis, Fractures, Osteoporosis, Rickets, Osteomalacia, Tumours of Bone, Rheumatoid Arthritis, Gout Osteoarthritis. 5. To mind map pharmacology of drugs like absorption, metabolism and excretion of drugs. 6. To write about adverse drugs, reaction & its Management
BMRT-202	Special Radiological Equipment and Radiation Protection	1. To outline about two different modalities of radiography i.e. Fluoroscopy and mammography. 2. To done contrasting between computed and digital radiography. 3. To examine physical characteristics of ultrasound and Doppler techniques. 4. To link between data communication in the radiology department and computers in radiology. 5. To comment on Tele radiology system and review various principles of radiation protection. 6. To manage shielding materials, radiation survey meters and personnel monitoring devices.
BMRT-203	Radiographic Techniques	1. To Describe the professional laws and ethics. 2. To discuss the legal aspect and medical ethics in health setup 3. To Demonstrate patient handling and preparation. 4. To assess the importance Chest, abdomen, pelvis and extremities Radiography. 5. To evaluate the radiographic image quality 6. To design the parameter for identification of radiographic image quality
BMRT-204	Special Radiological Procedures	1. To Describe the properties of contrast media. 2. To discuss the legal aspect and medical ethics in health setup 3. To Demonstrate patient handling and preparation. 4. To assess the importance of Radiological Procedure done in Radiology Department. 5. To evaluate the radiographic image quality

		6. To design the parameter for identification of radiographic image quality
BMRT-205	Advances Techniques and Instrumentation of CT and MRI	1. To outline developments, Principe and various generations of computed tomography. 2. To interpret technical aspects behind instrumentation of CT scan, advancements in detector technology, helical CT, and HRCT. 3. To implement standard protocols of CT angiography, CT guided biopsies, CT guided FNAC, adult and paediatric whole body CT. 4. To illustrate the basic concept behind principle of MRI, precession, TR, T1 weighted, T2 weighted and proton density. 5. To assess basic and advanced pulse sequences, MR angiography and MR spectroscopy. 6. To write about standard protocols of MRI, artifact's and safety aspects of MRI and advantages of MRI over CT.
BMRT-301	Orientation in Clinical Sciences	1. To outline clinical features and lab investigations of Pericarditis, Valvular diseases, Rheumatic Heart Disease, Heart failure, Hypertension 2. To interpret clinical features and lab investigations of Chronic Bronchitis, Emphysema, Bronchiectasis, Pneumonia, Tuberculosis, Pleura effusion, Empyema, Spontaneous Pneumothorax 3. To determine clinical features and lab investigations of Achalasia Cardia, Peptic ulcer, Intestinal obstruction, Crohn's disease, Ulcerative Colitis, Pancreatitis, Portal Hypertension, Ascites, Cirrhosis, Cholecystitis 4. To illustrate clinical features and lab investigations of UTI, Glomerulonephritis, Nephrotic syndrome, Urinary Calculi, Polycystic Kidney disease, Cerebral Vascular Disorders, Meningitis, Encephalitis. 5. To assess clinical features and lab investigations of Type Mechanism, Healing, Delayed Union, Non-complication**,** Injuries of the shoulder gridle, Dislocation of shoulder, # of Humerus, Elbow Forearm, Of Distal Radius & Ulna, Injuries of the Capos, Dislocation of Hip, # Femur, Tibia, Ankle, Calcaneum, Acute & chronic osteoarthritis, Rheumatoid arthritis, Paget's Disease, Ankylosing spondylitis, Club foot, Bone Tumour- Benign, Malignant 6. aTo write about clinical features and lab investigations of Cholelithiasis, Peritonitis, Subphrenic Abscess, Appendicitis, Hydronephrosis, Benign Hypertrophy prostatye, Sinusitis, Diagnosis of Pregnancy

BMRT-302	Radiotherapy Planning and Radiation Therapy	1. To define role of radiotherapy, its planning and procedures. 2. To express proper simulation techniques. 3. To efficiently present terminology of radiotherapy 4. To organize treatment setup efficiently with use of proper immobilization devices. 5. To measure percentage of radiation dose at particular depth. 6. To write about physical properties of particular phantom, bolus and shell immobilization devices.
BMRT-303	Equipment for Radiotherapy including Newer Developments	1. Define kilo voltage and ortho voltage techniques of radiotherapy. 2. Interpret design and construction of various Radiotherapy machines associated with Radiotherapy techniques. 3. Examine different types of Radio frequency generators can be used in radiotherapy. 4. Illustrate clinical applications of internal radiation therapy. 5. Experiment techniques for administration of internal radiation therapy. 6. Write about working principal of the gamma knife.
BMRT-304	Interventional Radiological Procedures and Techniques	1. To define role of interventional radiology, IR machine handling, DSA, different IR procedures and modalities. 2. To exemplify equipment used in IR procedures like Cath Lab/ DSA, C-arm equipment etc. 3. To efficiently present principles of Pre, intra and Post IR procedures. 4. To organize treatment setup efficiently by understanding vascular and non-vascular anatomy and pathology, clinical applications and sterile techniques in angiography procedures. 5. To distinguish anaesthesia and emergency drugs in IR. 6. To write about emboli zing agents, radiation safety aspects in IR department, OT instruments and sterility.
BMRT-305	Patient Care and Radiation Protection in Diagnostic Radiology	1. To describe the Importance of the Professional Laws &Ethics. 2. To discuss the legal aspect and medical ethics in health setup 3. To demonstrate body mechanics & transferring of patient. 4. To assess the Knowledge of departmental safety and infection control. 5. To evaluate the roll of Radiological exposure & protection principle. 6. To design the parameter for identification of patient care responsibility & health care

		facility of a radiographer.

2. B.Sc Medical Microbiology
Program Outcome

PO-1	Apply knowledge and technical skills associated with Medical Microbiology for delivering quality clinical investigations support.
PO-2	Recognize routine clinical laboratory procedures within acceptable quality control parameters in medical microbiology lab (serology, virology, bacteriology, Immunology, Molecular microbiology).
PO-3	Communicate technical skills, social behaviour and professional awareness for functioning effectively.
PO-4	Apply problem solving techniques in identification and correction of pre analytical, post analytical & analytical variables
PO-5	Demonstrate an understanding of essential basic pathological process including cell death problems.

PO-6	Identification of common pathogenic bacterial agents and associated disease, their specific mechanisms.
PO-7	Develop an understanding of the patterns of clinical procedures of diagnosis of Microbial infections & infestations.
PO-8	Demonstrate an understanding pathogenic viruses and associated diseases
PO-9	Function as a leader or team member in diverse professionals and medical research areas.
PO-10	Function in an ethical and professional manner without bias against any ethnicity, race, religion, caste or gender.
PO-11	Work on career enhancement by adapting to professional and social needs engaged in lifelong learning.
PO-12	Practice professional and ethical responsibilities with high degree of credibility, integrity and social concern.

Course Code	Course Name	Course Outcome
BMM 101	Human Anatomy & Physiology	1. To outline introduction of medical science, organization and physiology of human body and primary defence mechanism of human body. 2. To interpret about gross anatomy and histology of respiratory system, digestive system, alimentary system, and physiology of digestion and absorption. 3. To examine morphology and distribution of cells and organs of immune system, Gross anatomy and physiology of reticulo-endothelial system and physiology of various body fluids. 4. To illustrate gross anatomy and physiology of excretory system, cardiovascular system. 5. To assess gross anatomy, and physiology of musculo-skeletal system, nervous system. 6. To write about gross anatomy, histology and physiology of reproductive system, endocrine system.

BMM 102	Basic pathology	1. To describe the concepts of haematology. 2. To explain the basics of haematology and quality assurance. 3. To demonstrate the methods of histopathological staining, haemoglobinometry and haemo-cytoglobinometry. 4. To analyse the various types of immunity and mechanisms of antigen and antibody reactions. 5. To evaluate the pathology of microbial infections, pathogenesis of tumours and oncogenesis. 6. To develop an understanding of immunohistopathology, immunohistochemistry and blood banking technology.
BMM 103	Clinical Biochemistry	1. To define concepts and principles of biochemistry, correlations of biomolecules: carbohydrates, proteins, lipids, Nucleic acids with cellular and molecular processes involved in health and in disease states for clinical problem solving. 2. To express fundamental aspects of enzymology with mode of action, clinical application. 3. To determine basics of clinical Biochemistry and technology in safety and hazards. 4. To correlate the normal ranges and abnormal ranges of b Interpreting of principle of biochemical Clinical bio criteria's 5. To evaluate an analytical judgment, interpreting technic Colorimeters, analytical balance, flame photometer. 6. To devise the importance of Sterilization and disinfectio concept of application of biophysics, clinical sensitivity,
BMM 104	Preventive Medicine & Health care	1. To Introduce the air and noise pollution and their preventions. 2. To associating the microbial pathogenicity source and spread of infections in community. 3. To determine the Epidemiology, surveillance and control of community infections. 4. To divide Prophylactic Immunization and vaccines and hazards of immunization. Various national immunization programs and vaccine schedules. 5. To detect health care by balance diet and yoga. 6. To program health planning & management.
BMM 105	Fundamentals of Medical Microbiology	1. To Introduce the Discovery of micro-organism. Contribution of various scientist. 2. To associating the anatomy of bacterial cell, bacterial reproduction, morphological study of bacteria. 3. To determine the culture media and its type (liquid and solid media). Common ingredients of cultural media. Cultivation of bacteria. 4. To divide Maintenance & Preservation of pure cultures. Collection, transport processing & storage of clinical

		samples for Microbiological Analysis. 5. To measure immunological tests, antigen test, antibodies reaction and antigen antibody reaction. 6. To Formulate disinfectants, antiseptics chemotherapeutic agents: Future development of chemotherapy.
BMM 106	Instrumentation Techniques In Medical Microbiology	1. To list the study of Microscope & its types. 2. To describe preparation of Stains, making of Films, Staining Methods, Mounting Media, Stains (Gram stains, AFB Stains, Capsule, Spores Stains.) 3. To operate the study of Microbiological Instruments. Instruments used in Immunology. 4. To question about the Care & Management Of Experimental animals. 5. To select the safety Measure in Microbiology Laboratory. 6. To investigate the culture, Isolation & Identification of Pathogens & Drug Sensitivity test.
BMM 201	Bacterial Pathogens & Associated Diseases	1. To Memorize the normal microflora of Human Body(Skin, Respiratory, Gastrointestinal, genitourinary tracts.) 2. To recognize the Pathogenicity, mode of infection etc. Staphylococcus, , Pneumococcus, etc 3. To implement the host Parasite in bacterial infection. 4. To test the , Pathogenicity, mode of infection etc. Coryne bacteria, Anthrax bacillus, a typical mycobacteria etc. 5. To value the physiology & biochemistry of bacteria 6. To develop the incubation Period & Toxigenecity of bacteria
BMM 202	Systematic Bacteriology	1. To repeat the role of Laboratory in the diagnosis and control of Infection. 2. To Classify the management and Quality control of Medical Microbiology laboratory. 3. To examine the specimen Collection from Patients, Epidemiological investigations. 4. To experiment the isolation of Pure Culture and its Preservation. 5. To select the morphology of bacteria , stain cultural character, selective cultural media, biochemical reaction. 6. To assemble the microbiology Drug sensitivity test and its clinical interpretation.
BMM 203	Miscellaneous Microbes, Fungal Pathogens and Associated Diseases.	1. To examine the principle and mode of action of antibiotics. 2. To classify the pathogens in terms of their pathogenesis, mode of infection and toxigenicity. 3. To demonstrate the clinical presentation and pathology of miscellaneous microbial pathogens.

		4. To explain the pathogenic features of spirochetes and fungal microbes. 5. To evaluate the clinical characters and pathology of pathogenic and non-pathogenic fungi. 6. To develop an understanding of the classification, pathogenicity and diagnosis of pathogenic fungus and various insects.
BMM204	Lab Diagnosis of Microbial Diseases	1. To examine the etiopathogenesis, pathology, clinical features and Lab diagnosis of osteomyelitis, sore throat, scarlet fever, acute glomerulonephritis, pneumonia, rheumatic fever and whooping cough. 2. To classify the Gram-positive and Gram-negative bacterial infections causing bacteria in terms of pathogenesis, clinical features and Lab diagnosis. 3. To illustrate the clinical importance of the disease: Diptheria, Tuberculosis, skin, ulcers and leprosy, malignant pustules and isortiers disease. 4. To analyse pathogenic features and lab diagnosis of brucellosis, plague, genital infections, typhus, oral thrush, ringworms and mycetoma. 5. To assess the laboratory identification methods of typhoid and paratyphoid fever, bacterial food poisoning, bacillary dysentery, gastroenteritis, and cholera. 6. To develop the understanding of disease with the help of pathogenesis, pathology, clinical features and lab diagnosis of Tetanua, botulism, wound infections, aspergillosis and blastomycosis.
BMM 205	Human Parasitology	1. To describe the introduction and classification of Protozoa. 2. To classify the phylum Protozoa with reference to classes: Rhizopoda, Mastigophora. Sporozoa and Cilliata. 3. To demonstrate the clinical importance of Sacocysts, Pneumocystis and Toxoplasma. 4. To analyse the pathogenic features of class Cestoidea and trematoda. 5. To evaluate the lab diagnosis, pathogenesis of Nematodes and their plan of treatment. 6. To generalise the lab diagnostic procedures and analysis of clinical samples.
BMM 206	Applied Medical Microbiology	1. To examine the microbial specimens, their collection technique and lab diagnostic procedures. 2. To describe the process of documentation and preservation of microorganisms. 3. To illustrate the significance of infective syndromes their diagnostic procedures and the strategy

		of antimicrobial therapy. 4. To analyse in detail the epidemiology markers of micro-organisms, passive prophylactic mass immunization and nosocomial infections. 5. To evaluate the diagnosis, treatment and control of common infections and manifestations. 6. To design the specific serological methods for diagnosis and drug sensitivity methods.
BMM 301	Pathogenic Viruses and Associated Diseases	1. To describe the pathogenesis, life cycle and treatment of Pox and Herpes virus. 2. To explain the pathogenicity and treatment of adenoviruses. 3. To demonstrate the patterns of orthomyxovirus and paramyxovirus disease causing abilities and interventions to prevent the infection. 4. To classify miscellaneous viruses, Picorna viruses and rhinoviruses in terms of their pathogenesis. 5. To summarize the clinical manifestations and treatment plan of Hepatitis viruses, arbo viruses and rhabdo viruses. 6. To develop an understanding of slow and oncogenic viruses and cell culture studies.
BMM 302	Applied Immunology & Serodiagnosis	1. To describe the basic concepts of immunology and analytical techniques. 2. To explain the mechanisms of antibody production, its clinical significance and various viral markers for identification. 3. To demonstrate the importance of autoimmune disorders, pathogenesis, clinical features and its markers. 4. To explain the concept of immunological techniques with principle and applications. 5. To summarize the methods and principle of serological tests and HIV I & 2 screening. 6. To develop an understanding of tumor markers, their clinical significance, antibiotic preparation and vaccine production.
BMM 303	Advanced Diagnostic Technology	1. To memorize the clinical significance of bacteriophages and concept of DNA and Protein synthesis mechanisms. 2. To explain the importance of TORCH profile and kit based study to identify the *M. tuberculosis.* 3. To demonstrate the identification techniques of Hepatitis A, B, C virus immunoglobulins. 4. To explain the concept of viral serological techniques: ELFA, DLISIA. 5. To assess the presence of HIV, autoimmune disorder and chlamydia serologically. 6. To compile the serological diagnostic tests used

		for the identification of Dengue, Steller test and important immunoglobulins.
BMM 304	Automation & Computerization Medical Microbiology	1. To Introduce the Introduction to Computer Hardware central processing Unit (CPU), input drives, storage and output devices. Binary decimal, octal and hexadecimal system 2. To associate the Computer programs for simple problems such as Matrix addition Multiplication and Transposition, trace of Matrix Chi sq.test. Fitting a straight light line (using principal of least square fit). 3. To determine the Computer Application and their use in Medical Microbiology: Features of Computers. Application areas of Computers involved in data processing common activities in processing. 4. To divide Classification of software, system software, application software, Operating Systems, computer Viruses, Precautions against Viruses Dealing with Viruses Computers in Medical Electronics, 5. To measure Internet basics of Microbiologists. Electronic Mail, Electron Mail servers. Down Loading, file with anonymous FTP. 6. To Formulate Medical documents, contents of medical case sheet, Goals of Medical Transcription training? Basic Guidelines for medical transcription. Pronunciation guidelines. Basic elements of a medical world.
BMM 305	Molecular Biology & Clinical Lab Technology	1. To list Determination of Blood Glucose by various methods. Glucose tolerance test. 2. To describe the Function test ,Blood urea, Serum Creatinine, Uric acid and various ice test. 3. To operate the spinal and other body fluids analysis. (Normal & Abnormal values & Clinical significance). 4. To question the Quality assurance and safety measures in Blood Banking. Organization. Operation and administration of Bank. 5. To select the Tissue Processing Dehydration, clearing & impregnation in wax & Decalcification. 6. To investigate the Exfoliative cytology, FNAC and cervical cytology, Techniques, applications and interpretation of results.

3. B.Sc MLT (M301) Program Outcome

PO-1	Provide the healthcare community with graduate's expertise in the knowledge and skills to display ethical, professional conduct in education and clinical settings.
PO-2	Perform analytical tests including quality control on biological specimens; including collecting and processing of biological specimens for analysis and interpret.
PO-3	Demonstrate conceptual knowledge in haematology, blood chemistry, clinical Biochemistry, Immunology, immune haematology and pathogenic Microbiology.
PO-4	Recognize factors that affect laboratory procedures and results and take appropriate action, within predetermined limits.
PO-5	Acquire basic knowledge of human Anatomy and Physiology to integrate both the functional and structural aspects of a Human body.
PO-6	Acquire knowledge and application of the principle of biostatistics for the purpose of establishment and maintenance of Quality Controls (instruments and diagnostic tests).

PO-7	Recognize factors that affect laboratory procedures, results and take appropriate action, within predetermined limits and safety.
PO-8	Describe the principles of learning technology in application. Take interactive classroom lectures, small group discussions (debate), Seminars etc.
PO-9	Apply basic scientific principles in learning new techniques and procedures of advanced Lab technology and inculcate the knowledge of handling of automatic analyzers, organization and management of clinical laboratory.
PO-10	Provide a high quality, educational program that prepares the student to achieve competent skills essential for employment as Medical laboratory technicians or researchers in diverse clinical areas.
PO-11	Provide guidance to Medical Laboratory Technology program which assist them in pursuing educational and occupational opportunities that maximize their professional potential.
PO-12	Assessing analytically and critically while solving problems and making decisions during daily practice with major focus on public health care, quality diagnostic protocols and safety.

Course Code	Course Name	Course Outcome
BMLT101	Human Anatomy & Physiology	1. To outline introduction of medical science, organization and physiology of human body and primary defence mechanism of human body. 2. To interpret about gross anatomy and histology of respiratory system, digestive system, alimentary system, and physiology of digestion and absorption. 3. To examine morphology and distribution of cells and organs of immune system, Gross anatomy and physiology of reticulo-endothelial system and physiology of various body fluids. 4. To illustrate gross anatomy and physiology of excretory system, cardiovascular system. 5. To assess gross anatomy, histology and physiology of musculo-skeletal system, nervous system.

		6. To write about gross anatomy, histology and physiology of reproductive system, endocrine system.
BMLT 102	Basic Pathology	1. To describe the concepts of haematology. 2. To explain the basics of haematology and quality assurance. 3. To demonstrate the methods of histopathological staining, haemoglobinometry and haemo-cytoglobinometry. 4. To analyse the various types of immunity and mechanisms of antigen and antibody reactions. 5. To evaluate the pathology of microbial infections, pathogenesis of tumours and oncogenesis. 6. To develop an understanding of immunohistopathology, immunohistochemistry and blood banking technology.
BMLT-103	Clinical Biochemistry	1. To define concepts and principles of biochemistry, correlations of bio molecules: carbohydrates, proteins, lipids, Nucleic acids with cellular and molecular processes involved in health and in disease states for clinical problem solving 2. To express fundamental aspects of enzymology with mode of action, clinical application 3. To determine basics of clinical Biochemistry and medical lab technology in safety and hazards 4. To correlate the normal ranges and abnormal ranges of biochen Interpreting of principle of biochemical Clinical biochemistry t 5. To evaluate an analytical judgment, interpreting technical/principles of laboratory instrumentation like Colorimeters, analytical balance, flame photometer 6. To devise the importance of Sterilization and disinfection and its application in clinical lab & develop concept of application of biophysics, clinical sensitivity, specificity
BMLT 104	Preventive Medicine and Healthcare	1. To Introduce the air and noise pollution and removal of water hardness, purification. 2. To associate Sanitation barriers, excreta disposal and disposal of hospital waste, Incineration and disinfection. 3. To determine the emergence of drug resistance. Methods of prevention & control- isolation of patients, quarantine & incubation periods of various infectious diseases. 4. To divide Various national immunization programs and vaccine schedules. 5. To detect health care by balance diet and yoga.: Normal constituents of diet, various diet programs 6. To program health planning & management.
BMLT 105	Microbial Biology	1. To Introduce the Discovery of micro-organism. Contribution of various scientist. 2. To associating the anatomy of bacterial cell, bacterial reproduction, morphological study of bacteria. 3. To determine the culture media and its type (liquid and solid

		media). Common ingredients of cultural media. Cultivation of bacteria. 4. To divide Maintenance & Preservation of pure cultures. Collection, transport processing & storage of clinical samples for Microbiological Analysis. 5. To measure immunological tests, antigen test, antibodies reaction and antigen antibody reaction. 6. To Formulate disinfectants, antiseptics chemotherapeutic agents: Future development of chemotherapy.
BMLT 106	Technical Methods In Microbial Biology	1. To definestudy of Microscope & its types. 2. To compare preparation of Stains, making of Films, Staining Methods, Mounting Media, Stains (Gram stains, AFB Stains, Capsule, Spores Stains.) 3. To examine the study of Microbiological Instruments. Instruments used in Immunology. 4. To organize Care & Management Of Experimental animals. 5. To measure Safety Measure in Microbiology Laboratory. 6. To investigate culture, Isolation & Identification of Pathogens & Drug Sensitivity test.
BMLT-201	Clinical Biochemistry I	1. To highlights the basics of separative and instrumental techniques applied in clinical Biochemistry and medical lab technology 2. To infer concepts and principles of lab techniques like chromatography, electrophoresis with protocols and specific tests implementations in healthy and disease states for clinical diagnosis 3. To articulate fundamental aspects of colorimeter, spectrophotometer and flame photometer with clinical application and daily maintenance 4. To correlate the normal ranges and abnormal ranges of biochemical components, interpreting principles of Clinical biochemistry tests to be processed by applying above lab techniques and procedure 5. To review an analytical judgment, interpreting technical/principles of laboratory instrumentation in Immuno-chemistry, osmometry etc 6. To build the concepts, principles and applications of molecular lab instrumentation like Coulter counters, ELISA, RIA and PCR
BMLT-202	Clinical Biochemistry II	1. To highlights the basics of Metabolic and Blood Chemistry techniques applied in Clinical Biochemistry Lab 2. To associate fundamental aspects of metabolic pathways carried by biomolecues like carbohydrates, protein, lipids with their clinical implication on dysfunction 3. To determine pathways of the intermediary metabolism along with their individual and integrated regulation and relate that

		in insightful functioning of the body. 4. To attribute the principles, procedures and clinical implications of biochemical daily routine tests components such as glucose, protein, urea, creatinine, bilirubin, electrolytes classified as pivotal diagnostic/prognostic markers 5. To measure with all the advanced biochemical tests and clinical importance of acid base balance, Xylose, insulin Urea and creatinine clearance tests 6. To lead the importance of Organ Functions Tests in integrating and correlating the quality of diagnostic outcomes.
BMLT 203	Medical Microbiology- I	1. To recall the pathogenicity, mode of infection and toxigenicity of normal microflora of the Human Body (Skin, Respiratory,Gastrointestinal, genitourinary tracts). 2. To understand the host-parasite interaction in bacterial infection. 3. To illustrate the pathogenic role of certain bacteria. 4. To differentiate the bacteria on the basis of description, Pathogenicity, mode of infection etc.*Corynebacteria, Anthrax bacillus, a typical Mycobacteria* etc., 5. To evaluate the biochemistry of antigens. 6. To investigate the bacterial pathogenicity in terms of toxigenicity, mode of infection and incubation period.
BMLT 204	Medical Microbiology-II	1. To list the role of Laboratory in the diagnosis and control of Infection. 2. To classify the management and Quality control of Medical Microbiology laboratory. 3. To ues the specimen Collection from Patients, Epidemiological investigations. 4. To relate the isolation of Pure Culture and its Preservation. 5. To value the morphology, staining cultural character, selective cultural media, biochemical reaction. 6. To design the microbiology Drug sensitivity test and its clinicalinterpretation.
BMLT 205	Pathology And Allied Subject- I	1. To describe the coagulation disorders and bleeding disorders with its mechanism. 2. To explain the mechanism of platelet disorders and types of anaemia. 3. To illustrate the causes and significance of Leucocytosis and neutropenia. 4. To compare the identification features and types of malignancies. 5. To Evaluate the haematological changes leading to haematological disorders. 6. To design the basic procedures to maintain the quality control, safety and management of blood bank.

BMLT 206	Pathologyand Allied Subject II	1. To identify the various histopathological steps in recording and labelling the specimens. 2. To Understand the working principle and maintenance of decalcification of specimen and microtome preparation. 3. To illustrate the importance of methods and equipments involved in microtome preparation. 4. To classify the staining techniques used in histopathology lab. 5. To evaluate the role of controls used in staining procedures carried in histopathology lab. 6. To plan the various methods such as autoradiography museum techniques, specimen photography and microphotography.
BMLT-301	Clinical Biochemistry II	1. To outline knowledge and concepts of biostatistics for evaluation and interpretation of quality Controls 2. To infer tools and rules applied for accessing and maintaining quality Control for clinical diagnosis 3. To present skills for clinical diagnosis, testing, understanding of biochemical conditions and diagnostic service with reference to normal ranges of various bio-metabolites 4. To illustrate skills in Automation techniques, its advantages with impetus on its working and managing hospital laboratory 5. To review an analytical judgment, interpreting clinical significance of lab findings on toxicology, drug abus 6. To build the concepts, principles and role of Endocrinology in clinical diagnosis and prognosis of diseases
BMLT-302	Clinical Biochemistry II	1. To highlights the basics of clinical techniques and tests applied in Clinical Biochemistry Lab 2. To summarize fundamental aspects of enzymology, regulatory factors, mechanism affecting enzyme activity 3. To determine the clinical importance of Isoenzymes and interpretation 4. To attribute the importance of advance tests in clinical Lab like Fructosamine test in semen,analysis of renal biliary and prostatic stones, alpha-foetoprotein, lactogen and their clinical significanc 5. To review knowledge about recent advances and trends in research in the field of clinicalBiochemistry with all the advanced biochemical tests and clinical importance of infertile, thyroid profiles. 6. To collaborate the principles of teaching -learning technology towards application. Take interactive classroom lectures, conduct small group discussions, Seminars and research presentations

BMLT 303	Medical Microbiology I	1. To describe the pathogenesis, lab diagnosis and pathology of bacteria. 2. To explain the pathogenic role of adenovirus, herpesvirus. 3. To apply the conceptual knowledge on the topic: pathogenicity of orthomyxovirus and paramyxovirus. 4. To distinguish the viruses on the basis of their multiplication cycle, lab diagnosis and treatment. 5. To evaluate the infectivity of hepatitis, Arbo and Rhabdo virus. 6. To develop an understanding of Cell Culture and observation of effect of viruses on cell: Technique, procedure and interpretation of results.
BMLT 304	Medical Microbiology II	1. To examine the microbial specimens, their collection technique and lab diagnostic procedures. 2. To describe the process of documentation and preservation of microorganisms. 3. To illustrate the parasitology of Protozoa, Rhizopoda and helminths. 4. To analyse in detail the epidemiology markers of micro-organisms, passive prophylactic mass immunization and nosocomial infections. 5. To evaluate the diagnosis, treatment and control of common infections and manifestations. 6. To design the specific serological methods for diagnosis and drug sensitivity methods.
BMLT 305	Pathology And Allied Subject I	1. To gain knowledge on the concept of antigen and antibodies. 2. To develop an understanding on types of immune response, allergic Reactions and rheumatological diseases. 3. To illustrate the mechanisms of infectious cycle, cancer immunology markers. 4. To analyse the role of cell-mediated immune response and Laboratory investigations in megaloblastic anaemias. **5.** To evaluate the Pathogenesis and laboratory investigation in Leukaemia and Laboratory investigation in coagulation disorder, bleeding disorder, disseminated intravascular coagulation (DIC), Platelet functions etc. **6.** To design the plan of work to study Cytogenetics in haematology and Radioisotopes and their applications.

BMLT 306	Pathology And Allied Subject II	1. To describe the Types of tissue seen in histopathology and Handling of fresh histological specimen (Tissues) cryo/frozen sections of fresh and fixed tissues, freezing drying. 2. To explain the identification methods and various staining techniques for tissue identification. 3. To illustrate the mechanism of neuropathological techniques and special treatment required for tissues i.e. eyeball B.M. biopsy, undecalcified bones. 4. To analyse the methods involved in enzyme histochemistry and electron microscopy. 5. To evaluate the principle and procedure of immunohistochemistry and Hormonal assessment. 6. To develop an understanding on the Demonstration of sex chromatin and Aspiration cytology principles indication.

4. B.Sc. OptometryProgram Outcome

PO-1	Acquire knowledge to perform theability todiagnoseandmanagevarious vision abnormalitiesincludingrefractiveerrorsaswellasvariouseye diseases

PO-2	Demonstrate the application abilities Developingtheabilitytopracticevarioussub-specialitiesofEyecare Industrylikecontactlens,spectacledispensing,orthoptics,low vision management
PO-3	Design and Development of basic skills on environmental consciousness and society &community eye concerns in achieving the goal of vision for all.
PO-4	Develop an understanding to conduct investigation of complex problems.
PO-5	Demonstrate an understanding of learning to upgrade one-self with eye care innovations
PO-6	Developing and applying computer skills in eye care system and taking entrepreneurial decisions.
PO-7	Applying systematized problem-solving techniques to identify and correct procedural errors to verify the accuracy of ophthalmic diagnosis obtained
PO-8	Demonstrate the application abilities regarding eye tests to determine the occular problems and explain their clinical significance and pathophysiology
PO-9	Individual and Team Work **:** Extend the concepts of the ability to communicate effectively both with the patients as well as with in the organization for effective team work .
PO-10	Assist the student to learn to maintain collaborative relationship with the members of other disciplines to improve health care
PO-11	Implement and follow standard protocols while doing various Work effectively in teams to develop national programs for the prevention of blindness
PO-12	Maintenance : Application of advanced technical skills to make appropriate and effective on-the-job professional decisions. Performance and interpretation of commonly employed procedures in the ophthalmology department.

Course Code	Course Name	Outcome
BSO 101	Human anatomy & Physiology	1. To understand the concept & terminology of Human anatomy & Physiology 2. To explain the structure, function & location of cells,

		tissues and major human organs system/part 3. To classify the function of various organ systems and employing its knowledge to identify diseases related to them. 4. To explain interrelation between different organ system. 5. To differentiate various organs and organ system. 6. To justify the various joints, muscle and nerves
BSO 102	Ocular anatomy, Pathology and Microbiology	1. To understand relationship between different ocular structure. 2. To compare the concepts and terminology of ocular anatomy. 3. To demonstrate the structure, functions and locations of different parts of eye. 4. To recognize the different ocular structure. 5. To gain essential knowledge about the characteristics of bacteria, vireo and fungi 6. To analyze the clinical features of blood cells.
BSO 103	Ocular physiology & biochemistry including binocular reflexes and its maintenance	1. To understand the concept and terminology of ocular physiology. 2. To explain the normal functioning of all structures of the eye and their interactions. 3. To organize functions of various ocular structure and applying this knowledge to identify disease related to them . 4. To explain the inter relationships between different ocular structure.. 5. To classify the phenomenon of vision. 6. To inspect physiology of extra ocular muscles...
BSO 104	Optics	1. To define the concepts and theories of light, its nature & properties 2. To choose the concepts and theories of interference, polarization & Diffraction 3. To build the concept of schematic and Reduce eye and Visual acuity 4. To explain the concept of Image formation by different types of lenses 5. To distinguish the concept of refractive error and its management options 6. To classify the concept of Accommodation & Presbyopia
BSO 201	Pharmacy and Pharmacology Sciences	1. To understand the concept & terminologies of Pharmacology and ocular preparations. 2. To illustrate the routes of drug administration in ophthalmology. 3. To apply of different pharmaceutical agents in the management of Ocular diseases. 4. To analyze and applying diagnostic and therapeutic drugs in ophthalmology. 5. To conduct the procedure for installing cycloplegics

		and mydratics to see the effect of drugs. 6. To prepare various ways of disinfection
BSO 202	Refraction (Including prescription, making & fitting of glasses)	1. To name the various optical constant of eye & their measurements. 2. To rephrase about various refractive anomalies of the eye. 3. To apply all the theoretical skills on practical purpose. 4. To examine the concept of different types and design of ophthalmic lenses. 5. To categorize the various aspects of vision and measuring visual acuity. 6. To detect knowledge about various optical defects of eye.
BSO 203	Investigative Ophthalmology	1. To choose the general concept of orthoptics. 2. To understand the anatomy of extra ocular muscles and their movement. 3. To assess the pediatric visual acuity and rerfraction. 4. To explain the causes and treatment of amblyopia. 5. To decide the use of synaptophore and its advantages. 6. To analyze the binocular single vision and their grades.
BSO 204	Ophthalmic Instrument and Appliances	1. To define the method of using indirect ophthalmoscope and their advantage. 2. To compare the difference between contact and non contact tonometer. 3. To explain the advantage of automated perimetry over manual. 4. To discover the use of orthoptics instruments. 5. To examine and describe colour vision test. 6. To determine the knowledge of slit lamp examination.
BSO 301	Clinical & Advanced & Optics & Orthoptics	1. To discuss the classification of strabismus. 2. To interpret the disorders of accommodation. 3. To assess the convergence anomalies and their clinical significance. 4. To distinguish the causes, treatment and management of amblyopia. 5. To examine the difference between paralytic and non paralytic squint. 6. To discuss the classification of strabismusradiographic image quality
BSO 302	Clinical Refraction & contact lenses	1. To understand about soft contact lenses material and their properties 2. To explain complication and their management of contact lenses 3. To organize about RGP contact lens material and their properties. 4. To divide the indications and contraindications of contact lenses 5. To analyze the post-operative refractive error. 6. To conclude the concept of convergence.
7. BSO 303	8. Community	1. To understand the role of optometrist in public health.

	ophthalmology & eye banking	2. To classify the basic definition and classification of LOW vision. 3. To develop the basic concept of eye banking. 4. To explain the National programme for control of blindness. 5. To examine the difference between subjective and objective refraction. 6. To conclude the procedure and storage of eye in EYE BANK. Safety aspects in IR department, OT instruments and sterility.
7. BSO 304	8. Investigations in clinical ophthalmology & management of OT	1. To recall the syringing and lacrimal functions test. 2. To understand the role of specular microscopy. 3. To describe the Optical coherence tomography. 4. To divide the fundus photography. 5. To explain the ophthalmic drugs and dyes used in OT. 6. To analyze the angle of anterior chamber through gonioscopic lenses.

5.BACHELOR OF PHYSIOTHERAPY

Programme name	BPT
Programme Code	M101

Students will be able to

PO1	Knowledge :Better understanding of the structures & physiological studies of mechanical,physical & biochemical functions of human body along with their functions of major body systems.

PO2	Problem analysis: Develop a clinical or counseling services assess and treat mental,emotional & behavioral disorders.
PO3	Development of solutions: Foundation for understanding all biological process that provide explanations for the causes of many diseases in human body.
PO4	Practical application: to describe the concept of posture and function of joints and muscles. Prescribed to correct impairments,restore muscular and skeletal functions,improvement in gait and balance , prevention and promotion of health,wellness & fitness
PO5	Skills: Facilitate muscle relaxation,prevention of atrophy,muscle rehabilitation and re-education by electrical muscle stimulations
PO6	Design : Evaluate skilled movement patterns which can be employed for many different purposes including pain reduction & functional improvement using various force systems.
PO7	Basics: Acquire the knowledge of cell injuries and changes. Gained knowledge through pharmacological studies which provides significant positive impact on human health.
PO8	Clinical enhancement: Understand the mechanism of injuries and learn how to diagnose and manage orthopedic conditions. Focused on assessing and treating patient with neurological disorders. Understand patient's conditions related to heart,lungs and thorax
PO9	Management: Assess the individual with the aim of diagnosis ,treatment and preventing disease that leads to illness. Assess the individual with the pre and post operative indications for all types of surgeries.
PO10	Skill Practise: Treatment and rehabilitate of musculoskeletal systems that has been subject to injury and trauma, Gain maximum potential,independence and optimize the quality of life in patient with neurological conditions.
PO11	Life long outcome: Provide rehabilitation process to cure medical conditions and pre -post operative surgeries. Performed to prevent cardiac and respiratory problems or minimize the risk of reoccurrence with the help of rehabilitation .
PO12	Ethics: Provide an opportunity to investigate a clinically relevant topic and to meaningful contribute to the profession.

Course Code	**Course Name**	**Course Outcome**

BP101	Human Anatomy	1. To describe about the scope of Anatomy, organs and systems, structure of skin, muscles bones and joints. 2. To explain about the regional anatomy of upper Extremity-its osteology, soft tissue parts and joints. 3. To demonstrate about the osteology, soft tissue parts and joints of lower extremity. 4. To explain about the osteology, soft tissue parts and joints of the trunk head and neck. 5. To summarize about the thoracic region and abdomen of human body. 6. To compile about the basic concepts of Neuro anatomy of human body.
BP102	Human Physiology	1. To describe the physiology of muscle and blood cells structures and functions like: type of contractions, muscle tone, blood pressure; and nerve cell physiology like: nerve degeneration and reaction of degeneration. 2. To demonstrate the mechanism of respiratory and digestive system like; lung volume, capacities and factors, affecting the respiration, absorption and metabolism. 3. To understand the physiology of endocrinal and urogenital system like; pituitary gland, pineal gland, urine formation, functions of kidney. 4. To describe the physiology of skin and its functions. 5. To evaluate the physiology of nervous system like; reflex arc, central and peripheral nervous system 6. To facilitate experimental handling by doing TLC, DLC, RBC, Hb, ESR, BP etc. during lab sessions

BP103	General, Social & Clinical Psychology	1. To describe about the natural of Psychology, its fields and also about the schools of Psychology. 2. To describe about motivation and emotions in terms of various principle of Homeostasis, and relationship of emotions with Autonomic nervous system, etc. 3. To demonstrate conflict and frustration, common defensive mechanism, learning role in human life and its various methods and techniques. 4. To analyze about various mode of memory and its types, role and principles of perceptual grouping, illusion and hallucinations. 5. To evaluate Intelligence and personality. Different types of approach and trait approach of personality biological and social factors. 6. To develop various emotional reactions to various illnesses, understand various defense mechanisms used by patients in physical illness and mental status.
BP104	Biochemistry	1. To describe biochemical organization of human cell and classify the structure of protein. 2. To understand the definition and composition of enzymes and hormones, mode of action and chemical composition. 3. To describe the biochemical aspects of hemoglobin and myoglobin and their role in physical activities. 4. To classify the biochemical aspect of connective tissue, nervous tissue and muscle. 5. To evaluate the basic concept of metabolic chemistry like; intermediary metabolism, protein metabolism, carbohydrate metabolism, lipid metabolism. 6. To generalize about the hormones and its classification and compose ideal nutrition with the physiotherapeutic view point-eg. Protein disorders, vitamins-minerals-fibers.

BP105	Basic Principles in Physiotherapy	1. To define Physiotherapy, and describe their branches & Scope 2. To Explain electrotherapy and classify various modalities, Basic electricity, Transformers, AC, amplitude Etc. DC electricity, Capacitance and potential difference Etc. Effects of electric currents, Shock, Magnetism. Thermionic valves and Semi-conductors. 3. To illustrate Galvanic & Faradic currents, basic principles in light & sound, therapeutic & physiological effects of heat and cold, introduction to Exercise therapy. 4. To Explain Basic modalities of electrotherapy & exercise therapy, traction, tilt table, C.P.M., quadriceps table & Shoulder wheels Etc. 5. To evaluate the use of SWD, UST, TENS, IFT, Wax Bath, MHT etc. 6. To design the practical demonstration OF basic principle of physiotherapy
BP201	Exercise Therapy, Massage And Yoga	1. To define the principle, type, indication and application method of exercise therapy neuromuscular efficacy test, joint range test and test for co-ordination. 2. To describe the evaluation methods, principle and technique of relaxation, passive movement, active movement and hydrotherapy. 3. To demonstrate the different aspect of proprioceptive neuromuscular facilitation, suspension therapy, functional re-education and aerobic exercises. 4. To classify the stretching, mobilizing technique, balance, co-ordination exercise and posture principles.. 5. To evaluate the concept of walking aids, massage, individuals and group exercise. 6. To design the practical demonstration of all the topics discussed in theory like coordination, mat exercise, breathing exercise, traction, posture, yoga etc.
BP202	Electrotherapy	1. To define the basic physics related to physiotherapy like electricity, condenser, transformer, magnetism, ionization also the prevention and management of burn and shock. 2. To explain the principle and application of low and median frequency current like direct current, indirect current, TENS, pain mechanism, IFT,etc and electro-diagnosis like FG test, SD curve, and biofeedback.

		3. To demonstrate the principle and use of High frequency current like SWD, MWD,ultrasound, LASER, UVR, IRR etc. 4. To explain the Superficial heating Modalities like PWB, contrast bath, moist heat therapy, fuidotherpay. 5. To evaluate the principle and application superficial heating modalities. Describe PWB, Contrast Bath, Moist heat Therapy, Fluid therapy, whirlpool and cry therapy.. 6. To design the application of all the electrotherapy modalities according to patient condition.
BP203	Biomechanics & Kinesiology	1. To define study of kinesiology and various fundamental concepts like starting positions, gravity ,planes and axis of motion along with fundamental movement of major body segments. 2. To describe about muscular system, the joints and neuromuscular functions. 3. To apply the concept of the machinery of the musculo- skeletal system like levers, pulleys and the fundamental principles of motion. Also to illustrate the fundamental principles of force and components of muscular force and also to use the confused effects of two or more forces. 4. To analyze the principles of stability covering postures in different segments of human body like vertebral column, upper and lower limbs. 5. To evaluate the application of kinesiology to locomotion, occupational therapy, daily life skills and selection and evaluation of exercise for various faulty postures. 6. To design principle of Biomechanics & Kinesiology
BP204	Pathology And Microbiology	1. To describe the etiology and classification of disease, inflammation-acute, sub-acute and chronic type; bacteria, fungal, viral; and types of wound. 2. To understand the degenerative process, disorders of growth, metabolic disease of bone, tumors of bones, myopathies, disease of C.N.S. and peripheral nerves. 3. To illustrate the disease condition related various system like; respiratory system, cardiovascular system, musculoskeletal system and circulatory system. 4. To analyze the role of Pasteur, Koch, Lister etc., and their

		contribution in the history of microbiology. 5. To evaluate and assess the basic techniques for growth of bacteria, types of infections associated with and the methods of control. 6. To design the lab diagnostic procedures for identification of the bacterial, viral and fungal diseases and role of immunity to suppress the diseases.
BP205	Pharmacology	1. To define the scope of pharmacology in Physiotherapy, Processes of drug absorption, Biotransformation and models of Drug administration. 2. To explain the drug toxicity, Allergy and resistance, pharmacodynamics of drug also to describe the mechanism of drug action, and factor effecting drug action. 3. To demonstrate the concepts General and local anesthetics, anxiolytics, Lytics, anticonvulsants, sedatives, anti-inflammatory analgesic agents, neuromuscular blockers and muscle relaxants. 4. To analyze the effect and side effects of some common groups of drugs. 5. To illustrate the action of drug absorption 6. To design the basic principle of drug reaction
BP301	Clinical Orthopaedics	1. To describe the general terminology and techniques related to orthopedics, deformities, etiology, pathology, clinical features, investigation and management of common infection of Bones and joints. 2. To understand the disease course of bones and connective tissue also to describe the regional disorders, etc. 3. To demonstrate the generalized out line of fracture and dislocation, its types, complications, symptoms, common investigations and its management. 4. To classify the conditions related the spinal column like; common fracture, dislocation, PIVD, sacralization, spondylolisthesis, scoliosis, lordosis, kyphosis, LBA, etc 5. To evaluate and asses the pathologies related to shoulder girdle and arms, pathologies related to wrist and hand; Pathologies related to lower

		limb. 6. To evaluate the classification, pathology, clinical features, investigation and management of amputation, poliomyelitis, peripheral nerve injury, cerebral palsy, etc.
BP302	Clinical Neurology And Psychiatry	1. To describe neuro-anatomy & neurophysiology, to tell about formation & circulation of CSF. Also to define about cerebrum, brainstem and neural 2. To explain about blood supply of Spinal cord, cerebrum, internal capsule and circle of willis. 3. To illustrate congenital and childhood disorders, clinical features and their management ofcerebral ischemia &infarction, embolism &hemorrhage. Also toillustrate cerebrovascular accidents, clinical features, investigation and their management 4. To explain trauma, head injury, spinal cord injuries and their pathophysiology clinical features, investigation, management 5. To evaluate infections related to CNS, lesions of cerebellum & lesions of cranial nerves, assessment their management. Also to assess peripheral nerve disorders. 6. To write about psychiatry, defense mechanism causes&types of mental disorders, psychosomatic complications. Also to write about Schizophrenic , psychoneurosis and MR.
BP303	Clinical Cardiothoracic Conditions	1. C01: To describe the anatomy and physiology of pulmonary segment, lung, heart and thorax and also to assess the basic principles of cardiothoracic sciences like; examination of respiratory system, cardiac system disorders, investigation techniques. 2. To understand the common deformities related to thoracic cage and

		common conditions related to cardio vascular system like; cardiac failure, rheumatic fever, IHD, hypertension, myopathies, pericarditis, atherosclerosis, etc 3. To demonstrate and understand the definition, etiology, clinical feature, diagnosis of respiratory disease conditions like; bronchitis, COPD, restrictive disease, pneumonia,etc 4. To classify the common surgical procedure related to cardiac and thoracic regions, its indication, contraindication, types, sites of incision, management and complications. Examples of the surgeries are; open heart surgery, coronary angioplasty, cardiac transplant, etc. 5. To evaluate and describe the procedures like; Management of ET tubes, tracheal suction, extubation, CPR, ICU,ICCU care, etc. 6. To evaluate and understand the emergences and clinical of cardiothoracic patient.
BP304	Physiotherapy In General Medicine, Skin & Paediatrics	1. To define about Infectious diseases, Measles, Enteric fever, Tuberculosis, leprosy, malaria, Amoebiasis, etc. 2. To describe about common heart and respiratory conditions like- IHD, Hypertension,Valvular heart diseases,COPD,Asthma, Bronchiectasis, Pneumonia, etc 3. To demonstrate about conditions related to Digestive and Kidney system like- Reflex esophagitis, Ulcerative colitis Hepatitis, Jaundice, Nephritic syndrome, Renal failure, etc. 4. To classify about various Endocrine, Metabolic and blood diseases like- Diabetes Mellitus, hyperthyroidism, Anemia, Leukemia, Hemophilia, etc. 5. To evaluate Diseases of the connective tissues, Joints, bones and skin like- Arthritis, Spondylitis, Arthritis, Vasculitis, Osteoporosis, Rickets, Acne, Psoriasis, Dermatitis, etc. 6. To evaluate the Pediatrics Mile stone & reflexes, Poliomyelitis, Vitamin deficiency disorders, etc.
BP305	General Surgery, Obs, Gynae, Ent& Plastic Surgery	1. To describe the Types, Clinical Features, Pathology &Management of Shock, Hemorrhage, and Pain Relief, etc. 2. To explain about the Wounds, Tissue repair, scars, acute and chronic wounds management, Ulcers, Burns, etc. 3. To

		illustrate about the causes, clinical presentation, diagnosis and treatment of various ENT related conditions, sinusitis, Rhinitis, Vertigo, etc 4. To explain about the various disorders related to Pregnancy & labor : Rectal Prolapse, Uterine Prolapse,Incontinence, Pelvicinflammatory diseases 5. To explain patient care related to General Surgery, Obs, Gynae, Ent & Plastic Surgery 6. To illustrate the causes of General Surgery, Obs, Gynae, Ent & Plastic Surgery
BP306	Disability, Prevention And Rehabilitation	1. To describe the principle of practical application, history and development of occupation therapy and physiotherapy ,also to describe the rehabilitation of the handicapped, scope of rehabilitation organization and structure of rehabilitation 2. C02: To understand the administration principles of relationship between personnel with other department, institute, government bodies; also to understand the principles of maintaining department secrecy, etc 3. To demonstrate and understand the principle of Physical therapy philosophy, need of rehabilitation, principle of rehabilitation nursing and mental retardation. 4. To classify and evaluate the principle in managing of social problems related to patients, rehabilitation center, community resources, etc and vocational problems. 5. To illustrate the current status of disability prevention and rehabilitation. 6. To define principle of disability prevention and rehabilitation.

BP401	PT in Orthopedics	1. To describe General PT assessment and approaches for traumatic conditions, fractures, dislocation, its causes and types, signs & symptoms, complication of fractures. 2. To discuss about specific fractures and their complete PT assessment and management. Fractures of bones and soft tissue injuries. 3. To demonstrate principles of PT assessment &management in dislocations & fracture, dislocation. 4. To explain degenerative and infective conditions, osteo-arthritis, PIVD, RA and ankylosing Spondilitis. Also to explain deformities, congenital and acquired. 5. To evaluate orthopedic surgery, pre and post-operative assessment and management. Surgeries Also to evaluate amputation with their assessment and management. 6. To write about low back ache, regional joints, bones and soft tissue, with their etiology, clinical features, investigations, differential diagnosis and PT assessment and PT management.
BP402	Pt In Neurology & Neurosurgery	1. Describe about Nervous system including CNS, peripheral nerves and ANS. 2. Describe about various techniques used assessment and treatment of nervous tissue disorders, Neuro developmental therapy, Bobath techniques, Broomstick techniques, PNF, etc. 3. Illustrate about Detailed assessment and Management of diseases of CNS 4. Analyze about the assessment and treatment of peripheral nerve injuries. Myopathies, Muscular Dystrophy, Myasthenia Gravis, Polyneuropathies, Leprosy etc. 5. Evaluate about the assessment and treatment of following; Traumatic paraplegia, quariplegia, nerve suturing, coma, and head injuries etc. 6. To define principle PT In Neurology & Neurosurgery

BP403	Pt. In Cardiothoracic Conditions	1. To describe the anatomy and physiology of pulmonary and cardiac system, peripheral vascular system, mechanism of respiration, respiratory muscles, lung volume, etc. 2. To demonstrate the basic physiotherapy techniques like postural drainage, breathing Exercise, various techniques, brief discussion of suction, MV, AMBU bag procedures, etc. 3. To demonstrate and manage the conditions related to cardiothoracic system like chest deformities, rib and sternum fractures, IHD, COPD, lung abscess, pneumonia, etc. 4. To assess and apply the pre and post-operative physiotherapy management in cardiorespiratory surgical conditions like open heart surgery, etc. 5. To identify and describe the examination procedure used to evaluate patients with heart disease 6. To discuss and demonstrate PT interventions specific for cardiopulmonary and circulatory disease.
BP404	Physiotherapy in general medicine and surgical conditions.	1. To define about oedema, inflammation, artherosclerosis, diabetes, obesity, lymphedema. 2. To describe about general surgery-wound ,ulcers, burns, pre & post-operative P.T., common abdominal incisions and surgeries with their P.T. treatment &post operative complications, hernia, skin grafting, mamoplasty. 3. To demonstrate about ante natal & post natal physiotherapy, PID, incontinence, prolapsed rectum etc. and pediatric conditions. 4. To classify about various ENT conditions and its P.T management. 5. To evaluate and prepare various programms for sportsmen like mechanism of injury, PT treatment of common sports injuries and Ergonomics 6. To define and explaine Physiotherapy in general medicine and surgical conditions.

BP405	Research methodology computer & Biostatistics	1. To describe about the measurement of central tendency, dispersion, theory of probability, its laws and theorems 2. To discuss about various test like t-test, f-test etc. sampling methods, its types and its application. 3. To illustrate about correlation and regression line-coefficient of correlation, its properties, its calculations, regressions and condition for constancy of data, coefficient of measuring associations. 4. To analyze about computers and its applications, soft & hardware, application in medicine, programming etc. Modern concept of computer technology in rehabilitation of persons with disabilities. 5. Demonstrate the ability to choose method appropriate to research aims and objective 6. To write a critical review of a literature.