K.R. MANGALAM UNIVERSITY

THE COMPLETE WORLD OF EDUCATION

School of Medical and Allied Sciences

Bachelor of Physiotherapy
(BPT)

Program Code: 13

(2021-2026)

Approved in the 26th Meeting of Academic Council Held on 11 August 2021

Academic Council
Member Secretary
K.R. Mangalam University

Registrar
K.R. Mangalam University
Sohna Road, Gurugram, (Haryana)

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PREFACE

K. R. Mangalam University envisions all its programmes in the best interest of their students and in this endeavour, it offers a new vision to all its courses. It imbibes an outcome based curriculum for all its programmes to provide a focused, student-centric syllabus with an agenda to develop healthcare professionals in a more outcome based manner.

The outcome based curriculum for BPT has been designed to strengthen students' experiences and to prepare them for being a part of a healthcare team, with emphasis on employability, sustainability and life-long learning.

Each programme reflects the promise to accomplish the learning outcomes by studying the courses. The graduate attributes encompass values related to professionalism, teamwork, ethics, critical thinking, empathy and also clinical skills for entrepreneurship.

The redesigned curriculum elaborates in-depth background knowledge required in clinical practice. Individuals who want to pursue their careers in physiotherapy will get diverse exposure to conditions, evidence-based therapy and research at KRMU. We help the students grow into skilled and proficient physiotherapists through rigorous learning, clinical training, research and intensive internship programmes.

K.R. Mangalam University hopes the outcome based curriculum will help the budding physiotherapists in making an informed decision to find their place in the healthcare sector and engage in this noble profession with competence, compassion and commitment.

ACKNOWLEDGEMENT

Programme: **Bachelor of Physiotherapy**

Year/ Semester: **4½ Years/ 9 Semesters**

Session: **2021-2026**

We acknowledge by signing below that we have received and have access to a copy of syllabus of the BPT Programme indicated above. We have redesigned the BPT syllabus in Outcome Based Evaluation format and understand the programme outcomes of the BPT Programme. Furthermore, we acknowledge that the contents of the BPT syllabus have been explained and/or read to us. We understand the requirements concerning textbook(s), assignments, practicum, evaluation and how the final grades will be determined with respect to achieving Course Outcomes.

Faculty Signature:

Dean

Prof. (Dr.) Arun Garg

Assistant Professor

Ms. Mamta Shankar

Ms. Divya Aggarwal

CONTENT

1. INTRODUCTION

The K.R. Mangalam Group has made a name for itself in the field of education. The K.R. Mangalam story goes back to the chain of schools that offered an alternative option of world-class education, pitching itself against the established elite schools, which had enjoyed a position of monopoly till then. Having blazed a new trail in school education, the focus of the group was aimed at higher education.

K.R. Mangalam University is the fastest-growing higher education institute in Gurugram, India. K. R. Mangalam University was established under the Haryana Private University Act 2006, received the approval of Haryana Legislature vide Amendment Act # 36 of 2013 and consent of the Hon'ble Governor of Haryana on 11th April 2013, which was published in the Gazette notification vide Leg. No.10/2013, dated 3rd May 2013.

Since its inception in 2013, the University has been striving to fulfil its prime objective of transforming young lives through ground-breaking pedagogy, global collaborations, and world-class infrastructure. Resources at K.R Mangalam University have been continuously upgraded to optimize opportunities for the students. Our students are groomed in a truly interdisciplinary environment where they grow up with integrative skills through interaction with students from engineering, social sciences, management and other study streams.

K. R. Mangalam University is unique because of its

1. Enduring legacy of providing education to high achievers who demonstrate leadership in diverse fields.

2. Protective and nurturing environment for teaching, research, creativity, scholarship, social and economic justice.

2. OBJECTIVES

1. Enhance leadership qualities among the youth having understanding of ethical values and environmental realities.
2. Foster employability and entrepreneurship through futuristic curriculum and progressive pedagogy with cutting-edge technology.
3. Instill notion of lifelong learning through stimulating research, outcomes-based education and innovative thinking.
4. Integrate global needs and expectations through collaborative programs with premier universities, research centers, industries and professional bodies.

3. ABOUT THE SCHOOL OF MEDICAL AND ALLIED SCIENCES

3.1 School Vision

To contribute towards healthcare needs of the society by producing a skilled, motivated and accessible workforce dedicated towards achieving health for all.

3.2 School Mission

M1: To produce self-motivated, self-reliant and socially sensitive young healthcare professionals catering to the needs of academia, industry and research.

M2: To create a centre of excellence for learning and research in the field of pharmaceutical and allied health sciences with inter-disciplinary approach in emerging area of science and technology with focus on industry-academia interaction.

M3: To nurture transformational research for the benefit of the society.

M4: To interlink pharmaceutical and allied health sciences with interdisciplinary life sciences.

3.3. Aims of Bachelor Degree Programme

Since 2019 the School of Medical & Allied Sciences is committed towards establishing a centre of excellence in an environment fostering independent thought and a commitment towards society. The department inculcates evidence based practice in order to serve the needs of the population through skilled, efficient and accessible care.

The School offers diverse courses that are designed to develop and enhance clinical and diagnostic skills, nurture research oriented practices and promote learning of life skills that are essential for the development of ethical, empathetic and skilled physiotherapy professionals.

3.4 Graduate Attributes

The graduate attributes of Department of Physiotherapy are as follows:

GA 1: Personal attributes: Self-awareness, empathy, compassion, honesty and integrity.

GA 2: Knowledge of Physiotherapy: Strong theoretical, practical and clinical knowledge for prevention, diagnosis, treatment and rehabilitation.

GA 3: Patient relationship: Capability to understand a patient's problems and goals, respecting their privacy and choices.

GA 4: Professionalism: Confidence about role in healthcare team and ability to co-ordinate with other health professionals.

GA 5: Research Related Skills: Scientific attitude, capable of instigating and interpreting research and applying it towards evidence-based practice.

GA 6: Contribution to Society: Strong moral and ethical code, dedication towards providing healthcare to all.

3.5 Program Educational Objectives (PEOs)

PEO 1: Effective communication and interpersonal skills which are adapted to meet the needs of diverse individuals and groups.

PEO 2: Adherence to safe, ethical and legal standards of current practice (as identified by professional organizations, federal and state law and accrediting bodies)

PEO 3: Diagnosis and Plan of Care: Development of physiotherapy diagnoses and an individualized plan of care for the management and prevention of movement dysfunction across the lifespan.

PEO 4: Effective participation as an intra- and inter-professional team member.

PEO 5: Effective clinical practice management for delivery of physiotherapy services in

diverse settings.

PEO 6: Application of teaching and learning principles in educational, practice, and community settings.

PEO 7: Application of principles of critical thinking and clinical reasoning to evidence-based physiotherapist practice.

PEO 8: Responsibility and commitment to the profession and society through life –long learning and involvement in activities beyond the job responsibilities.

3.6 Program Outcomes (POs)

Students of Bachelor of Physiotherapy (BPT) at the time of graduation will be able to:

PO1. Physiotherapy Knowledge: Develop skills related to physiotherapy and apply them for assessment, treatment and prevention. Recognize the role of physiotherapy in the context of the health needs of the community and national priorities in the health sector.

PO2. Multidisciplinary/ Medical knowledge: Acquire knowledge of basic medical sciences, human movement sciences, various medical conditions and surgical treatments to identify psychological, social, economic, cultural aspects of diseases and their impact on the community.

PO3. Clinical and Practical Skills: Analyze and interpret physical assessment and diagnosis and set appropriate short and long term goals, develop patient interaction skills and be able to apply modalities and manual techniques for treatment and rehabilitation.

PO4. Utilisation of Modern Technology: Be familiar with developments in technology related to assessment, diagnosis and treatment.

PO5. Evidence Based Practice: Interpret research and implement clinical practice that is proven to be safe, efficient, patient-centred and documented.

PO6. Life Skills: Develop critical thinking and communication skills, acknowledge role towards the environment and sustainability, demonstrate professional and ethical behavior, be a valuable member of the community and develop an empathetic attitude, show curiosity and be a lifelong learner.

4. PROGRAMMES OFFERED BY DEPARTMENT OF PHYSIOTHERAPY

4.1 Bachelor of Physiotherapy (BPT)

This programme aims at complete development of the student into a competent and skilled physiotherapist, particularly acquiring knowledge and skills in diverse conditions and areas of healthcare. Students are also given an orientation to the traditional systems of medicine. The programme prepares the students to be skilled clinicians, with the expertise to examine, evaluate, diagnose, plan, execute and document physiotherapy treatment independently and competently. The programme includes Clinical Education and a six-month internship.

4.2 Eligibility Criteria

Applicant should be 10+2 pass from Board of School Education, Haryana or equivalent qualification as determined by the Association of Indian Universities with at least 50% marks in Physics, Chemistry and Biology taken together and must have passed in the subject of Physics, Chemistry, Biology and English individually in the qualifying examination. Candidates are eligible if they have passed the Senior Secondary school Examination of National Open School with a minimum of 5 subjects with any of the following group subjects-English, Physics, Chemistry, Botany, Zoology/ English, Physics, Chemistry, Biology and any other language.

4.3 Career Opportunities

Physiotherapists are employed in all general, specialty and super specialty hospitals, run by both government and non-government organizations. They have an integral role in critical care and early intervention programs as a part of the healthcare delivery team. Many physiotherapists are engaged in private practice, carrying out first contact practice as well as referrals. Foreign employment and professional upgradation programs are also accessible to qualified physiotherapists.

4.4 Program Specific Outcomes (PSOs)

PSO1. Assessment and Management: Develop the ability to collect history, perform relevant clinical assessment and frame appropriate electrotherapeutic and exercise therapy management for the patients.

PSO2. Teamwork: Work effectively in various inter professional collaborative settings like hospitals, rehabilitation centres, special schools, educational institutions, health and fitness centers, geriatric centers, ergonomic consultant in corporate sectors, private consultation, home care services, sports management, etc.

PSO3. Research and Entrepreneurial Skills: Enable to understand different research methods, conducting research work, prepare research papers and develop entrepreneurial skills.

5 CLASS TIMINGS

Classes will be held from Monday to Friday from 9.10 A.M. to 4.10 P.M.

6 PROGRAMME DURATION

The programme duration of Bachelor of Physiotherapy is

Name of the Programme	Duration
Bachelor of Physiotherapy	4½ Years/ 9 Semesters

7 SCHEME OF STUDIES AND SYLLABI

The syllabi of the BPT programme offered by School of Medical and Allied Sciences are given in the following pages:

FOUR AND A HALF YEAR BPT PROGRAMME AT A GLANCE

	Sem I	Sem II	Sem III	Sem IV	Sem V	Sem VI	Sem VII	Sem VIII	Sem IX	Total
Courses	10	11	11	10	7	7	7	8	1	72
Credits	26	26	29	26	24	23	24	23	20	221

COURSE STRUCTURE FOR BPT PROGRAMME

		Semester I				
S.No.	**Course Code**	**Course Title**	**L**	**T**	**P**	**Credits**
1	MAPT101A	Human Anatomy-I	3	-	-	3
2	MAPT103A	Human Physiology-I	4	-	-	4
3	MAPT105A	Biochemistry	3	-	-	3
4	MAPT107A	Sociology	3	-		3
5	MACH125A	Environmental Studies	3	-	-	3
6	MAPT109A	Introduction to Physiotherapy-I	2	-	-	2
7	MAEL155A	Communication Skills	4			4
8	MAPT151A	Human Anatomy-I Lab	-	-	4	2
9	MAPT153A	Human Physiology-I Lab	-	-	2	1
10	MAPT159A	Introduction to Physiotherapy-I Lab	-	-	2	1
		TOTAL	22	0	8	**26**

		Semester II				
S.No.	**Course Code**	**Course Title**	**L**	**T**	**P**	**Credits**
1	MAPT102A	Human Anatomy-II	3	1	-	4
2	MAPT104A	Human Physiology-II	3	1	-	4
3	MAPT106A	Introduction to Physiotherapy-II	2	1	-	3
4	MAPT108A	Introduction to Emergency and Patient Care	2			2
5	MAPT110A	Medical Terminology and Record Keeping	2	-	-	2
6	MAPT112A	Psychology	3	1	-	4
7	MAPT152A	Human Anatomy-II Lab	-	-	4	2
8	MAPT154A	Human Physiology-II Lab	-	-	2	1
9	MAPT156A	Introduction to Physiotherapy-II Lab	-	-	2	1
10	MAPT158A	Introduction to Emergency and Patient Care Lab	-	-	2	1
11	MAPT160A	Clinical Observation	-	-	4	2

		TOTAL	15	4	14	**26**

		Semester III				
S.No.	**Course Code**	**Course Title**	**L**	**T**	**P**	**Credits**
1	MAPT201A	Biomechanics and Kinesiology-I	3	1	-	4
2	MAPT203A	Exercise Therapy-I	2	1	-	3
3	MAPT205A	Electrotherapy-I	2	1	-	3
4	MAPT207A	Pathology	3	1	-	4
5	MAPT209A	Microbiology	2	1	-	3
6	MAPT211A	Pharmacology	3	1	-	4
7	MADM301A	Disaster Management	3	-	-	3
8	MAPT251A	Biomechanics and Kinesiology-I Lab	-	-	2	1
9	MAPT253A	Exercise Therapy-I Lab	-	-	2	1
10	MAPT255A	Electrotherapy-I Lab	-	-	2	1
11	MAPT261A	Clinical Education-I	-	-	4	2
		TOTAL	18	6	10	**29**

		Semester IV				
S.No.	**Course Code**	**Course Title**	**L**	**T**	**P**	**Credits**
1	MAPT202A	Biomechanics and Kinesiology-II	3	1	-	4
2	MAPT204A	Exercise Therapy-II	3	1	-	4
3	MAPT206A	Electrotherapy-II	3	1	-	4
4	MAPT208A	Professional Ethics and Laws	2	-	-	2
5	MACS131A	Introduction to Computers & IT, Office Automation	4	-	-	4
6	MAPT252A	Biomechanics and Kinesiology-II Lab	-	-	2	1
7	MAPT254A	Exercise Therapy-II Lab	-	-	4	2
8	MAPT256A	Electrotherapy-II Lab	-	-	4	2
9	MAPT260A	Clinical Education-II	-	-	4	2
10	MACS161A	Introduction to Computers & IT, Office Automation Lab			2	1
		TOTAL	15	3	16	**26**

		Semester V				
S.No.	**Course Code**	**Course Title**	**L**	**T**	**P**	**Credits**
1	MAPT301A	Orthopaedics	3	1	-	4

2	MAPT303A	General Medicine	3	1	-	4
3	MAPT305A	General Surgery	3	1	-	4
4	MAPT307A	Evaluation Methods and Outcome Measures	2	1	-	3
5	MAPT309A	Diagnostic Imaging for Physiotherapists	2	-	-	2
6	MAPT357A	Evaluation Methods and Outcome Measures Lab	-	-	2	1
7	MAPT361A	Clinical Education-III	-	-	12	6
		TOTAL	13	4	14	**24**

		Semester VI				
S.No.	**Course Code**	**Course Title**	**L**	**T**	**P**	**Credits**
1	MAPT302A	Neurology and Neurosurgery	3	1	-	4
2	MAPT304A	Physiotherapy in Orthopaedics and Sports	3	1	-	4
3	MAPT306A	Physiotherapy in Medical and Surgical Conditions	3	1	-	4
4	MAPT308A	Community Medicine	2	1	-	3
5	MAPT354A	Physiotherapy in Orthopaedics and Sports Lab		-	2	1
6	MAPT356A	Physiotherapy in Medical and Surgical Conditions Lab	-	-	2	1
7	MAPT360A	Clinical Education-IV	-	-	12	6
		TOTAL	11	4	16	**23**

		Semester VII				
S.No.	**Course Code**	**Course Title**	**L**	**T**	**P**	**Credits**
1	MAPT401A	Physiotherapy in Neurological Conditions	3	1	-	4
2	MAPT403A	Cardiovascular and Pulmonary Conditions	3	1	-	4
3	MAPT405A	Health Promotion and Fitness	2	1	-	3
4	MAPT407A	Research Methodology and Biostatistics	3	1	-	4
5	MAPT409A	Management and Leadership	2	-	-	2
6	MAPT451A	Physiotherapy in Neurological Conditions Lab	-	-	2	1
7	MAPT461A	Clinical Education-V	-	-	12	6
		TOTAL	13	4	14	**24**

		Semester VIII				
S.No.	**Course Code**	**Course Title**	**L**	**T**	**P**	**Credits**
1	MAPT402A	Physiotherapy in cardiovascular, pulmonary and intensive care	3	1	-	4
2	MAPT404A	Community Physiotherapy	3	1	-	4
3	MAPT406A	Clinical Reasoning and Evidence Based Physiotherapy	2	1	-	3
4	MAPT408A	Administration and Teaching Skills	2	-	-	2
5	MAPT452A	Physiotherapy in cardiovascular, pulmonary and intensive care Lab	-	-	2	1
6	MAPT454A	Community Physiotherapy Lab	-	-	2	1
7	MAPT460A	Clinical Education-VI	-	-	12	6
8.	MAPT462A	Research Project	-	-	4	2
		TOTAL	10	3	20	**23**

		Semester IX				
S.No.	**Course Code**	**Course Title**	**L**	**T**	**P**	**Credits**
1	MAPT561A	Internship	-	-	40	20
		TOTAL			40	**20**

SEMESTER I

MAPT101A	HUMAN ANATOMY-I	L	T	P	C
Version 1.0		3	0	0	3
Pre-requisites/Exposure	-				
Co-requisites	HUMAN ANATOMY –I LAB				

Course Objectives

1. Demonstrate knowledge in human anatomy
2. Understand the basic terminology and various anatomical structures of the body.
3. Application of the anatomical knowledge in physiotherapy.

Course Outcomes

Upon completion of this course the student will be able to

CO1. Understand anatomical terms.
CO2. Understand histology and embryology.
CO3. Study osteology of upper limb in detail.
CO4. Visualize muscle insertions, actions and their nerve supplies.
CO5. Learn the divisions and applied anatomy of the brachial plexus.
CO6. Apply anatomical knowledge into clinical practice.

Catalog Description

This subject is designed to introduce and reinforce the student to demonstrate knowledge in human anatomy as needed for the study and practice of physiotherapy, which should include an understanding of the basic terminology and various anatomical structures of the body. The subject provides the basic knowledge required to understand the various disciplines of physiotherapy.

Course Content

UNIT I General Anatomy 10 hours

- Introduction to Human Anatomy: Anatomical terms
- Histology: Study of the basic tissues of the body. Microscope, cell, epithelium, connective tissue, nerve tissue.
- Embryology: Formation of the germ layers and their derivations, development of bones and muscles.
- Skeleton: Bones and Joints, types of joints, Introduction to radiography
- Connective tissue, muscles, skin and fascia
- Overview of cardiovascular system, lymphatic system and nervous system

- Endocrine glands- hypothalamus and pituitary, thyroid, parathyroid, adrenal, pancreatic islets, ovaries and testes, pineal gland, thymus.

UNIT II Upper Extremity 10 hours

- Osteology: Clavicle, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, Phalanges.
- Soft parts: Breast, pectoral region, axilla, front of arm, back of arm, cubital fossa, front of fore arm, back of fore arm, palm, dorsum of hand, muscles, nerves, blood vessels and lymphatic drainage of upper extremity.
- Arches of hand, skin of the palm and dorsum of hand.

UNIT III Thorax 10 hours

- Bones and joints of the thorax.
- Thoracic wall and thoracic cavity.
- Pleura and lungs, muscles of respiration- diaphragm, intercostal and accessory muscles.
- Mediastinum and its contents
- Pericardium and heart.

Text Books:

1. Chaurasia BD, "Human Anatomy" (4 Volumes), CBS Publishers.
2. Singh Inderbir, "Textbook of Anatomy", Jaypee.

Reference Books:

1. Snell R, "Clinical Anatomy by Regions", Lippincott, Williams and Wilkins.
2. Gray's Anatomy Student Edition, Churchill Livingstone.

Mode of Evaluation: The theory and lab performance of students are evaluated separately.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and Pos		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Understand anatomical terms.	**PO2**
CO2	Understand histology and embryology.	**PO2**
CO3	Study osteology of upper limb in detail.	**PO2**
CO4	Visualize muscle insertions, actions and their nerve supplies.	**PO2**
CO5	Learn the divisions and applied anatomy of the brachial plexus.	**PO3**
CO6	Apply anatomical knowledge into clinical practice.	**PO3**

		Physiotherapy Knowledge	**Multidisciplinary/ Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT101 A	**HUMAN ANATOMY -I**		3	2				2		

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT151A	HUMAN ANATOMY-I LAB	L	T	P	C
Version 1.0		0	0	2	1
Pre-requisites/Exposure	-				
Co-requisites	HUMAN ANATOMY -I				

Course Objectives

1. Enable the students to visualize the structures of the body, with emphasis on limbs- muscles, bones and joints.
2. Through the use of different learning aids, anatomical parts should be revised such that the student can understand the mechanism of action/ movements, functions and therefore, the basis for dysfunction.

Course Outcomes

Upon completion of this course the student will be able to

CO1. Identify the bones and joints of the body using an articulated skeleton.
CO2. Learn the attachments of muscles of the upper limb.
CO3. Identify the surface landmarks of the body.
CO4. Know detailed osteology of the bones of the upper limb.
CO5. Identify the anatomical features of the lungs.
CO6. Identify the parts of the heart and demonstrate the flow of blood through it.

Catalog Description

Lab work is complimentary to the theoretical discussions in anatomy class. Hands on practice allows the students to explain, demonstrate & visualize the structures of the body, with emphasis on limbs- muscles, bones and joints. This is helpful for developing an insight on the subject.

Course Content:

The students are introduced to human anatomy through the use of several media- articulated skeleton, bones, audio visuals aids, videos and learning apps, charts, models, atlas, etc.
1. Identification and description of anatomical structures.
2. Demonstration through models, charts and audio-visual aids- upper extremity, thoracic viscera.
3. Demonstration of skeleton- articulated and disarticulated.
4. Surface anatomy- surface landmarks: bony, ligamentous and muscular, surface anatomy of major nerves, arteries of the limbs, points of palpation.

Text Books:

1. Chaurasia BD, “Human Anatomy” (4 Volumes), CBS Publishers.
2. Singh Inderbir, “Textbook of Anatomy”, Jaypee.

Reference Books:

1. Snell R, “Clinical Anatomy by Regions”, Lippincott, Williams and Wilkins.
2. Gray’s Anatomy Student Edition, Churchill Livingstone.

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination

Examination Scheme:

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	40	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and Pos		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Identify the bones and joints of the body using an articulated skeleton	PO2
CO2	Learn the attachments of muscles of the upper limb.	PO2
CO3	Identify the surface landmarks of the body.	PO2
CO4	Know detailed osteology of the bones of the upper limb.	PO2
CO5	Identify the anatomical features of the lungs.	PO3
CO6	Identify the parts of the heart and demonstrate the flow of blood through it.	PO3

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Moderen Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	Course Title	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3
MAPT151 A	HUMAN ANATOMY -I LAB		2	3			2	2	1	

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT103A	**HUMAN PHYSIOLOGY-I**	L	T	P	C
Version 1.0		3	1	0	4
Pre-requisites/Exposure	-				
Co-requisites	HUMAN PHYSIOLOGY –I LAB				

Course Objectives

1. Comprehensive understanding and visualization of the physiological processes of the body
2. Appreciation of the natural efficiency of the human body.
3. Learning the techniques used in the restoration of physical functions.

Course Outcomes

Upon completion of this course the student will be able to:

CO1. Understand the basis of normal human physiology with special emphasis on the functioning of the cardiovascular and musculo-skeletal systems.
CO2: Demonstrate an understanding of elementary human physiology and biochemistry.
CO3: Understand how abnormal Physiology affects human function and dysfunction of the human body.
CO4. Understand how individual functions of all of the body's different organs and cells are. integrated into a functional whole, the human body.
CO5. Understand the way separate organs and systems are controlled so that all are coordinated.
CO6. Correlate the knowledge of physiology as an integral base for physiotherapy practice.

Catalog Description

This subject is designed to understand the principles of the study of human physiology. The student should be able to comprehensively understand and visualize the physiological processes of the body and appreciate the natural efficiency of the human body. The subject provides the basic knowledge required to understand the various disciplines of physiotherapy.

Course Content

UNIT I General Physiology 6 hours

a) Cell: Morphology. Organelles: their structure and functions
b) Transport mechanisms across the cell membrane
c) Body fluids: Distribution, composition.

UNIT II Blood 8 hours

a) Introduction: Composition and functions of blood.
b) Plasma: Composition, functions. Plasma proteins.
c) Erythropoiesis, Haemoglobin, Anemia, Jaundice. Blood indices, PCV, ESR.
d) Immunity
e) Platelets, Hemostasis, Blood coagulation.
f) Blood Groups: Landsteiner's law. Types, significance, determination, Erythroblastosis

foetalis.

g) Blood Transfusion: Cross matching. Indications and complications.
h) Lymph: Composition, formation, circulation and functions.

UNIT III Nerve Muscle Physiology 8 hours

a) Classification of muscles
b) Skeletal muscle: Structure, properties. Smooth muscle
c) Neuromuscular junction
d) Resting membrane potential. Action potential
e) Nerves: Structure and function of neuron. Transmission. Nerve injury.

UNIT IV Cardiovascular System 8 hours

a) Introduction: Organisation of CVS. Cardiac muscles: Structure. Ionic basis of action potential and pacemaker potential. Properties.
b) Conducting system: Cardiac Cycle, Heart sounds, ECG, Heart Block.
c) Cardiac Output, Heart rate.
d) Arterial pulse, Blood Pressure, Peripheral resistance. Regulation of BP.
e) Shock
f) Cardiovascular changes during exercise.

UNIT V Respiratory System 10 hours

a) Introduction, functions of respiratory system, Respiratory muscles.
b) Mechanics of breathing: Intrapleural and Intrapulmonary pressure changes during respiration. Chest expansion. Lung compliance, Surfactant.
c) Spirometry, Lung volumes and capacities, Dead Space.
d) Pulmonary Circulation. Ventilation-perfusion ratio and its importance.
e) Transport of respiratory gases
f) Regulation of Respiration
g) Hypoxia, Hyperbaric oxygen therapy. Acclimatization, Hypercapnoea, Asphyxia, Cyanosis.
h) Disorders of Respiration: Dyspnoea, Orthopnoea, Hyperpnoea, hyperventilation, apnoea, tachypnea, periodic breathing, types of Artificial respiration
i) Respiratory changes during exercise.

Textbooks:

1. Jain AK, “Textbook of Physiology”, Avichal.
2. Sembulingam K, “Essentials of Medical Physiology”, Jaypee.

Reference Book:

1. Guyton, Hall, “Text book of Medical Physiology”, Elsevier.
2. Barrett, Barman. “Ganong’s Review of Medical Physiology”, Lange.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and Pos		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Understand the basis of normal human physiology with special emphasis on the functioning of the cardiovascular and musculo-skeletal systems.	**PO2**
CO2	Demonstrate an understanding of elementary human physiology and biochemistry.	**PO2**
CO3	Understand how abnormal Physiology affects human function and dysfunction of the human body.	**PO3**
CO4	Understand how individual functions of all of the body's different organs and cells are integrated into a functional whole, the human body.	**PO2**
CO5	Understand the way separate organs and systems are controlled so that all are coordinated.	**PO2**
CO6	Correlate the knowledge of physiology as an integral base for physiotherapy practice.	**PO2**

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT103A	**HUMAN PHYSIOLOGY – I**		**3**	**2**					**2**	

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT153A	HUMAN PHYSIOLOGY-I LAB	L	T	P	C
Version 1.0		0	0	2	1
Pre-requisites/Exposure	-				
Co-requisites	HUMAN PHYSIOLOGY-I				

Course Objectives

1. Enhance clinical skills in the assessment and examination of physiological parameters.
2. Practical Laboratory work for all the topics discussed in theory.
3. Evaluate and apply judiciously the different methods of lab testing.

Course Outcomes

Upon completion of this course the student will be able to:
CO1. Determine the level of hemoglobin in blood, bleeding time and clotting time, RBC count, blood grouping, etc.
CO2. Use the lab equipment safely, maintaining health and hygiene standards.
CO3. Perform clinical tests- recording of body temperature, blood pressure, and pulse rate.
CO4. Calculate Body Mass Index (BMI).

Catalog Description

Lab work is complimentary to the theoretical discussions in exercise therapy. Hands on practice allow them to enhance clinical skills by teaching the assessment and examination of physiological parameters. This would collate with physiotherapy assessment and provide the basis for understanding various testing processes. This is helpful for developing an insight on the subject.

Course Content:

1. Microscopic study of different tissues.
2. Estimation of hemoglobin in blood.
3. Determination of bleeding time.
4. Determination of clotting time.
5. Determination of R.B.C Count.
6. Determination of Total leucocyte count, D.L.C, E.S.R and blood grouping
7. Recording of body temperature, pulse rate, BMI etc.
8. Recording blood pressure.
9. Basic understanding of Electrocardiogram – PQRST waves and their significance.

Text Books:

1. Jain AK, “Textbook of Physiology”, Avichal.
2. Sembulingam K, “Essentials of Medical Physiology”, Jaypee.

Reference Books:

1. Guyton, Hall, “Text book of Medical Physiology”, Elsevier.
2. Barrett, Barman. “Ganong’s Review of Medical Physiology”, Lange.

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination
Examination Scheme

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	40	10	50

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Determine the level of hemoglobin in blood, bleeding time and clotting time, RBC count, blood grouping, etc.	PO2
CO2	Use the lab equipment safely, maintaining health and hygiene standards.	PO3
CO3	Perform clinical tests- recording of body temperature, blood pressure, and pulse rate	PO3
CO4	Calculate Body Mass Index (BMI)	PO3

		Physiotherapy Knowledge	Multidisciplinary / Medical knowledge	Clinical and Practical Skills	Utilisation of Moderen Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	Course Title	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3
MAPT153 A	HUMAN PHYSIOLOGY -I LAB		2	3				3		

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT109A	INTRODUCTION TO PHYSIOTHERAPY-I	L	T	P	C
Version 1.0		2	0	0	2
Pre-requisites/Exposure	-				
Co-requisites	INTRODUCTION TO PHYSIOTHERAPY-I LAB				

Course Objectives

1. Have a basic insight into the main features of Indian health care delivery system and the importance of physiotherapy.
2. Learn about basic concepts that will form a framework for the study and practice of physiotherapy.

Course Outcomes

Upon completion of this course the student will be able to:

CO1. Know about the healthcare delivery system in India.
CO2. Be aware of the AYUSH system of medicine and its components.
CO3. Understand the role and scope of physiotherapy.
CO4. Demonstrate the different planes and axes of movement of the body.
CO5. Apply the principles of gravity and levers to the human body.
CO6. Understand principles of electricity, resistance, magnetism, etc., as it applies to electrotherapy.

Catalog Description

This subject is designed to introduce the about the history of the profession and basic concepts that will form a framework for the study and practice of physiotherapy. It also enables students to have insight into the main features of Indian health care delivery system and the importance of physiotherapy. This would be helpful in integrating physiotherapy basics which will be utilised in profession.

Course Content:

UNIT I Introduction to Healthcare Delivery System

5 hours

a) Healthcare delivery system in India and other developed countries.
b) National Health Programme- National health policy, National Health Mission.
c) Introduction to AYUSH system of medicine: Ayurveda, Yoga, Naturopathy, etc.

UNIT II Orientation to Physical Therapy

5 hours

a) Introduction to Physiotherapy
b) Components of Physiotherapy Profession
c) History of Physiotherapy
d) Role of Physiotherapy in Health Care

UNIT III Fundamentals of Exercise Therapy
5 hours

a) Mechanical Basis of Movement: Force and force Systems, Motion and its Laws, Friction, Work, Energy and Power, Stress and Strain.
b) Skeletal Basis of Movement Planes and Axes, Joints and their Classification, Classification of Movement, Degrees of Freedom, Bones and their Classification.
c) Simple Machines: Levers and their Functions and classification, Pulleys and their Functions and classification, Inclined Planes and their Functions and classification.
d) Gravity Effects, Centre of gravity, Line of Gravity and their Alterations, Role in Human Body and Movement.

UNIT IV Fundamentals of Electrotherapy
5 hours

a) Physical principles, Electricity- therapeutic uses, Static electricity, Condensers, Alternating current, Magnetism, magnetic effects of electric field, Conductors and insulators, Resistance, Ohm's law, transmission of electricity through solids, liquids, gases and vacuum. Electrical supply: main supply of electric current, Dangers and precautions.
b) Effects of Current Electricity: Chemical effects, ionisation, electromagnetic induction, electromagnetic spectrum.

Text books:

1. Gardiner Dena, "Principles of Exercise Therapy", CBS.
2. Forster and Palastanga, "Clayton's Electrotherapy", CBS.

Reference books:

1. Kisner, Colby, "Therapeutic Exercise", F.A. Davis.
2. Norkin, Levangie, "Joint Structure and Function", F.A. Davis.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Know about the healthcare delivery system in India.	PO2
CO2	Be aware of the AYUSH system of medicine and its	PO2

	components.	
CO3	Understand the role and scope of physiotherapy.	**PO6**
CO4	Demonstrate the different planes and axes of movement of the body, CoG, levers.	**PO1**
CO5	Understand principles of electricity, resistance, magnetism, etc., as it applies to electrotherapy.	**PO1**

		Physiotherapy Knowledge	**Multidisciplinary/ Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT109A	**INTRODUCTION TO PHYSIOTHERAPY-I**	**3**	**2**				**1**	**3**		

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT159A	INTRODUCTION TO PHYSIOTHERAPY-I LAB	L	T	P	C
Version 1.0		0	0	2	1
Pre-requisites/Exposure	-				
Co-requisites	INTRODUCTION TO PHYSIOTHERAPY-I				

Course Objectives

1. Understand the concepts and principles of various approaches.in healthcare delivery systems.
2. Gain knowledge about the body mechanics during movements.
3. Analyse the various positions as per the muscle work for initiating physical therapy.

Course Outcomes:

Upon completion of this course the student should be able to:

CO1. Identify and demonstrate the different types of movements of the body, occurring at each joint.
CO2. Identify the planes and axes associated with body movements.
CO3. Identify and demonstrate fundamental starting positions.
CO4. Identify and demonstrate derived starting positions.

Catalog Description

This course forms a foundation of the concepts of healthcare and the place of physiotherapy in the healthcare system. The fundamentals of positioning and movements of joints are introduced to the student. Lab work is complimentary to the theoretical discussions in introduction to physiotherapy. This is helpful for developing an insight on the subject.

Course Content:

The students are expected to identify the different parts of the body on the articulated skeleton and be able to demonstrate anatomical movements for the joints of the upper and lower limbs- on themselves as well as the skeleton.

1. Demonstration of movements in different planes and axes
2. Identification of plane and axis of given movement
3. Demonstration of body movements
4. Identification of body movements
5. Fundamental and derived positions
6. Identification of Centre of Gravity

Text books:

1. Gardiner Dena, “Principles of Exercise Therapy”, CBS.
2. Forster and Palastanga, “Clayton’s Electrotherapy”, CBS.

Reference books:

1. Kisner, Colby, “Therapeutic Exercise”, F.A. Davis.
2. Norkin, Levangie, “Joint Structure and Function”, F.A. Davis.

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination
Examination Scheme:

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	40	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Identify and demonstrate the different types of movements of the body, occurring at each joint.	PO1
CO2	Identify the planes and axes associated with body movements.	PO3
CO3	Identify and demonstrate fundamental starting positions.	PO3
CO4	Identify and demonstrate derived starting positions.	PO3

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	Course Title	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3
MAPT159A	INTRODUCTION TO PHYSIOTHERAPY-I LAB	3		3				3	1	

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT107A	SOCIOLOGY	L	T	P	C
Version 1.0		2	1	-	3
Pre-requisites/Exposure	-				
Co-requisites	-				

Course Objectives

1. Provide a basic insight into the main features of Indian health care delivery system and the importance of physiotherapy.
2. Teach basic concepts that will form a framework for the study and practice of physiotherapy.

Course Outcomes

Upon completion of this course the student will be able to:

CO1. Apply knowledge of sociology in physiotherapy practice.
CO2. Understand the role of the family and community in socialization.
CO3. Be familiar with the scientific methods used in sociology.
CO4. Understand the importance and functions of social groups.
CO5. Observe and analyse the social evils prevalent in society and be able to empathise with the vulnerable population in society.
CO6. Understand the role of medical social worker.

Catalog Description

This subject is designed to introduce students the basic sociology concepts, principles and social processes, social institutions in relation to the individual, family and community and the various social factors affecting the family in rural and urban communities in India. This would be helpful in integrating physiotherapy basics which will be utilised in profession in accordance with societal norms and culture.

Course Content:

UNIT I Introduction

4 hours

Definition and scope of sociology, Methods of Sociological investigations.

UNIT II Socialization and Social Groups

6 hours

a) Meaning and nature of socialization. Primary, secondary and anticipatory socialization.
b) Social groups: Concepts of social groups, role of social groups in the hospital and rehabilitation setup.
c) Family: Meaning and definitions, Influence of family on the individuals health and nutrition, the effects of sickness in the family and its importance to physiotherapy.

UNIT III Community Health and Culture

6 hours

a) Meaning and definitions, Classification of community, Concept of Health, Health hazards of rurality, urban areas and tribal communities.
b) Concept of Culture, Culture and Health disorders.

UNIT IV Social change 8 hours

a) Meaning of social changes, Factors of social changes, Human adaptation and social change, social change and stress, Social change and deviance, Social change and health programme, The role of social planning in the improvement of health and rehabilitation.

UNIT V Social Problems, Social Security and Social Work 6 hours

a) Consequences of the following social problems in relation to sickness and disability, remedies to prevent these problems- Population explosion, Poverty and unemployment, Beggary, Juvenile delinquency, Prostitution, Alcoholism, Problems of women in employment, Geriatric problems, Problems of underprivileged.
b) Social Security: Social security and social legislation in relation to the disabled.
c) Social worker: Meaning of social work, The role of medical social worker.

Text books:

1. Malhotra V, "Handbook of Medical Sociology", Jaypee.
2. Khanna P, "Sociology for Physiotherapists", AITBS Publishers.

Reference book:

1. Horton, Hunt, "Sociology", McGraw Hill.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Quiz II	Mid Term Exam	Presentation/ Assignment/ etc.	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and Pos		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Apply knowledge of sociology in physiotherapy practice.	PO6
CO2	Understand the role of the family and community in socialization.	PO2
CO3	Be familiar with the scientific methods used in sociology.	PO2
CO4	Understand the importance and functions of social groups.	PO2
CO5	Observe and analyse the social evils prevalent in society and be able to empathise with the vulnerable population in society.	PO2
CO6	Understand the role of medical social worker.	PO2

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT107A	**SOCIOLOGY**		**3**				**2**		**2**	

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT105A	BIOCHEMISTRY	L	T	P	C
Version 1.0		2	1	0	3
Pre-requisites/Exposure	-				
Co-requisites	-				

Course Objectives: The course aims to provide students with an advanced integrated knowledge and understanding of core topics, with general principles set in particular contexts.

Course Outcomes:

Upon completion of this course the student will be able to:

CO1. Be acquainted with important biomolecules of human diet and their physiological implications.
CO2. Understand the components of a balanced diet and, the role of vitamins and their deficiency manifestations.
CO3. Know about important enzymes, hormones and their functions.
CO4. Know the importance of water and electrolytes and their role in buffer system of body.
CO5. Understand the biochemical basis of muscular contraction.
CO6. Learn the normal levels of blood and urine constituents used in clinical biochemistry.

Catalog Description

This subject is designed to impart fundamental knowledge food chemistry with respect to their pharmacokinetic aspects. It also helps in understanding fundamental of digestive system with their applications in various illnesses. The subject provides the basic knowledge required understanding the various types of food and their associated disorders.

Course Content:

UNIT I Nutrition

Introduction, Importance of nutrition. Calorific values, Respiratory quotient– Definition, and its significance, Energy requirement of a person, Basal metabolic rate: Definition, Normal values, factors affecting BMR.
Physical activities- Energy expenditure for various activities. Calculation of energy requirement of a person
Balanced diet- Recommended dietary allowances, Role of nutrients, Nutritional disorders.
Digestion and Absorption- Digestion and absorption of carbohydrates, proteins and lipids. Disorders of digestion and absorption– Lactose intolerance.

UNIT II Nutrient Chemistry and Metabolism

Carbohydrates: Structures, composition, sources, properties and functions of Monosaccharides, Disaccharides, Oligosaccharides and Polysaccharides; Glycosaminoglycan (mucopolysaccharides); Glycolysis – Aerobic, Anaerobic Citric acid cycle, Substrate level

phosphorylation; Glycogen metabolism – Glycogenesis, Glycogenolysis, Metabolic disorders; Hormonal regulation of glucose, Glycosuria, Diabetes mellitus.
Lipids: Definition, classification, properties and functions of Fatty acids, Triacylglycerol, Phospholipids, Cholesterol; Essential fatty acids and their importance; Lipoproteins; Introduction to lipid metabolism, Lipolysis, Oxidation of fatty acids; Lipogenesis; Cholesterol metabolism; Hypercholesterolemia, Fatty liver.

Amino acids: Definition, Classification; Peptides: Definition, Biologically important peptides; Protein chemistry: Definition, Classification, Functions of proteins, Catabolism of amino acids.
Vitamins and minerals: Definition, classification according to solubility; Individual vitamins - Sources, Coenzyme forms, functions, RDA, digestion, absorption and transport, deficiency and toxicity; Minerals: Definition, Sources, RDA, Digestion, absorption, transport, excretion, functions, disorders.

UNIT III Enzymes and Hormones

Definition, Classification with examples, Factors effecting enzyme activity, Enzyme inhibition and significance, Isoenzymes, Diagnostic enzymology (clinical significance of enzymes).
Definition, classification, Mechanism of hormone action.

UNIT IV Biochemistry of Connective tissue

Introduction, various connective tissue proteins: Collagen, elastin
Muscle Contraction: Contractile elements in muscle, process of muscle contraction, Energy for muscle contraction.

UNIT V Clinical Biochemistry

Normal levels of blood and urine constituents.
Liver function tests, Renal function tests.

Text book:

Murray, “Harper’s Biochemistry”, Lange Medical Books.

Reference books:

Vasudevan D, “Text Book of Biochemistry for Medical students”, Jaypee.
“Harper’s Illustrated Biochemistry”, Lange.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and Pos		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Be acquainted with important biomolecules of human diet and their physiological implications.	**PO2**
CO2	Understand the components of a balanced diet and, the role of vitamins and their deficiency manifestations.	**PO2**
CO3	Know about important enzymes, hormones and their functions.	**PO2**
CO4	Know the importance of water and electrolytes and their role in buffer system of body.	**PO2**
CO5	Understand the biochemical basis of muscular contraction.	**PO2**
CO6	Learn the normal levels of blood and urine constituents used in clinical biochemistry.	**PO2**

		Physiotherapy Knowledge	**Multidisciplinary/ Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT105A	**BIOCHEMISTRY**		**3**					**1**		

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAEL155A	COMMUNICATION SKILLS	L	T	P	C
Version 1.0		4	-	-	4
Pre-requisites/Exposure	-				
Co-requisites	-				

Course Objectives:

1. Able to execute professionalism to reflect in his/her communication skills.
2. Learn to Communicate effectively to the team
3. Develop efficient techniques for all forms of written and verbal communication

Course Outcomes:

Upon completion of this course the student should be able to do

CO1. Know the basic principles of effective communication.
CO2. Understand the barriers in communication and how they can be overcome.
CO3. Realise the importance of communication skills as an essential component of physiotherapy practice.
CO4. Build personal vocabulary including homonyms, homophones, synonyms and antonyms, foreign words, phrasal words, idioms, etc.
CO5. Appreciate the nuances of grammar and be able to identify common grammatical errors.
CO6. Build self-esteem and confidence through personality development techniques.

Catalog description:

Communication plays an important role in clinical, educational and entrepreneurial aspects of a physiotherapist's profession. This course aims to help the students enhance their communication skills. Personality development and presentation skills are also to be included.

Course Contents:

UNIT I Introduction to Communication 10 hours

Meaning, Forms & Types of Communication; Process of Communication; Principles of Effective Communication/7Cs, Barriers in Communication.

Emily Dickinson: "A Bird Came Down the Walk"

UNIT II Essentials of Grammar 10 hours

Parts of Speech: Noun, Pronoun, Adjective, Verb, Adverb, Preposition, Conjunction, Interjection; Using tenses; Articles; Types of sentences; Reported Speech; Punctuation.

Robert Frost: "Stopping by Woods"

UNIT III Building Vocabulary 10 hours

Word Formation (by adding suffixes and prefixes); Common Errors; Words Often Confused; One word substitution, Homonyms and Homophones; Antonyms &Synonyms, Phrasal Verbs, Idioms & Proverbs (25 each); Commonly used foreign words(15 in number).

O'Henry: *The Gift of Magi*

UNIT IV Personality Development 10 hours

Etiquette & Manners; Leadership; Inter & intra personal skills; Attitude, Self-esteem & Self-reliance; Public Speaking; Body Language: Posture, Gesture, Eye Contact, Facial Expressions; Presentation Skills/ Techniques.

Rabindranath Tagore: "My Prayer to Thee"

Text book:

1. Kumar, Sanjay and Pushplata. Communication Skills. Oxford University Press, 2015.

Reference books/Sites:

1. Mitra, Barun K. Personality Development and Soft Skills. Oxford University Press, 2012.
2. Tickoo, M.L., A. E. Subramanian and P.R. Subramaniam. Intermediate Grammar, Usage and Composition. Orient Blackswan, 1976.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Know the basic principles of effective communication.	PO6
CO2	Understand the barriers in communication and how they can be overcome.	PO6
CO3	Realise the importance of communication skills as an essential component of physiotherapy practice.	PO6
CO4	Build personal vocabulary including homonyms, homophones, synonyms and antonyms, foreign words, phrasal words, idioms, etc.	PO6
CO5	Appreciate the nuances of grammar and be able to identify common grammatical errors.	PO6
CO6	Build self-esteem and confidence through personality development techniques.	PO6

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO1**	**PSO2**	**PSO3**
MAEL 155A	**COMMUNICATION SKILLS**						**3**		**3**	

1= Addressed to small extent
2= Addressed significantly
3= Major part of course

MACH125A	ENVIRONMENTAL SCIENCES	L	T	P	C
Version 1.0		**3**	**-**	**-**	**3**
Pre-requisites/Exposure	-				
Co-requisites	-				

Course Objectives:

1. Create the awareness about environmental problems among learners.
2. Impart basic knowledge about the environment and its allied problems.
3. Develop an attitude of concern for the environment.
4. Motivate learner to participate in environment protection and environment improvement.

Course Outcomes:

Upon completion of this course the student should be able to do

CO1. Know multidisciplinary nature of Environmental studies, its scope and importance.
CO2. Understand and explain the various natural resources, Ecosystems, Environmental Pollutions and their control measures.
CO3. Understand various social issues, like Global warming, Acid rain, Climate change and disaster management.
CO4. Identify the various Environmental problems and their possible solutions.
CO5. Analyze various social issues and their possible solutions.
CO6. Discuss and analyze the problems related to different types of Pollution and their control measures.

Catalog description:

This course aims to help the students to acquire skills to help the concerned individuals in identifying and solving environmental problems and strive to attain harmony with Nature.

Course Contents:

UNIT I The Multidisciplinary nature of environmental studies 10 hours

- Natural Resources
- Renewable and non-renewable resources
- Natural resources and associated problems: Forest resources; Water resources; Mineral resources; Food resources; Energy resources; Land resources
- Role of an individual in conservation of natural resources.

UNIT II Ecosystems 10 hours

- Concept of an ecosystem.
- Structure and function of an ecosystem.
- Introduction, types, characteristic features, structure and function of the ecosystems: Forest ecosystem; Grassland ecosystem; Desert ecosystem; Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

UNIT III Environmental Pollution 10 hours

- Air pollution
- Water pollution; Soil pollution

Text book:

1. Y.K. Sing, Environmental Science, New Age International Pvt, Publishers, Bangalore
2. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.

Reference books/Sites:

1. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad – 380 013, India,
2. Clark R.S., Marine Pollution, Clanderson Press Oxford

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Know multidisciplinary nature of Environmental studies, its scope and importance.	PO6
CO2	Understand and explain the various natural resources, Ecosystems, Environmental Pollutions and their control measures.	PO6
CO3	Understand various Social issues, like Global warming, Acid rain, Climate change and disaster management.	PO2
CO4	Identify the various Environmental problems and their possible solutions	PO6
CO5	Analyze various social issues and their possible solutions	PO3
CO6	Discuss and analyze the problems related to different types of Pollution and their control measures.	PO6

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MACH125A	**ENVIRONMENTAL SCIENCES**		**2**	**2**			**3**		**3**	

1= weakly mapped 2= moderately mapped 3= strongly mapped

SEMESTER II

MAPT102A	HUMAN ANATOMY-II	L	T	P	C
Version 1.0		3	1	0	4
Pre-requisites/Exposure	HUMAN ANATOMY -I				
Co-requisites	HUMAN ANATOMY –II LAB				

Course Objectives

1. Gain knowledge of human anatomy
2. Understand the basic terminology and various anatomical structures of the body.
3. Application of the anatomical knowledge in physiotherapy.

Course Outcomes

Upon completion of this course the student will be able to:
CO1. Learn osteology of lower limb in detail.
CO2. Understand the anatomical structures of soft parts of the lower limb- femoral triangle, popliteal fossa.
CO3. Learn the structure and functions of the peritoneum.
CO4. Visualize the nine regions of the abdomen.
CO5. Understand the osteology of the skull and mandible.
CO6. Understand neuroanatomy, including blood supply to the brain, pyramidal and extrapyramidal pathways, cerebral cortex, cerebellum, pons, medulla, etc.
CO7. Learn the osteology and soft parts of the trunk and pelvis.

Catalog Description

This subject is designed to introduce and reinforce the student to demonstrate knowledge in human anatomy as needed for the study and practice of physiotherapy, which should include an understanding of the basic terminology and various anatomical structures of the body. The subject provides the basic knowledge required to understand the various disciplines of physiotherapy.

Course Content

UNIT I Abdomen

8 hours

- Peritoneum: Parietal peritoneum, visceral peritoneum, folds of peritoneum, functions of peritoneum.
- Large blood vessels of the gut.
- Location, size, shape, features, blood supply, nerve supply and functions of the following: stomach, liver, spleen, pancreas, kidney, urinary bladder, intestines, gall bladder.

UNIT II Lower limb

10 hours

- Osteology: Hip bone, femur, tibia, fibula, patella, tarsals, metatarsals and phalanges.
- Soft parts: Gluteal region, front and back of the thigh (Femoral triangle, femoral canal and inguinal canal), medial side of the thigh (Adductor canal), lateral side of the thigh, popliteal fossa, anterior and posterior compartment of leg, sole of the foot, lymphatic drainage of lower limb, venous drainage of the lower limb, arterial supply of the lower limb, arches of foot, skin of foot.
- Joints: Hip Joint, Knee joint, Ankle joint, joints of the foot.

UNIT III Trunk and Pelvis

8 hours

- Osteology: Cervical, thoracic, lumbar, sacral and coccygeal vertebrae and ribs.
- Soft tissue: Pre and Para vertebral muscles, intercostals muscles, anterior abdominal wall muscles, Inter-vertebral disc.
- Pelvic girdle and muscles of the pelvic floor.
- Pelvis: Position, shape, size, features, blood supply and nerve supply of the male and female reproductive system.

UNIT IV Head and Neck

6 hours

- Osteology: Mandible and bones of the skull.
- Soft parts: Muscles of the face and neck and their nerve and blood supply-extra ocular muscles, triangles of the neck.
- Gross anatomy of eyeball, nose, ears and tongue.

UNIT V Neuroanatomy

8 hours

- Organization of Central Nervous system - Spinal nerves and autonomic nervous system mainly pertaining to cardiovascular, respiratory and urogenital system.
- Cranial nerves
- Peripheral nervous system, Peripheral nerves, Neuromuscular junction, Sensory end organs.
- Spinal segments and areas
- Brain Stem, Cerebellum, Inferior colliculi, Superior Colliculi, Thalamus, Hypothalamus, Corpus striatum, Cerebral hemispheres, Lateral ventricles, Basal Ganglia
- Blood supply to brain
- The pyramidal system, extra pyramidal systems
- Anatomical integration

Text Books:

1. Chaurasia BD, “Human Anatomy” (4 Volumes), CBS Publishers.
2. Singh Inderbir, “Textbook of Anatomy”, Jaypee.

Reference Books:

1. Snell R, “Clinical Anatomy by Regions”, Lippincott, Williams and Wilkins.
2. Gray’s Anatomy Student Edition, Churchill Livingstone.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Learn osteology of lower limb in detail.	**PO2**
CO2	Understand the anatomical structures of soft parts of the lower limb- femoral triangle, popliteal fossa.	**PO2**
CO3	Learn the structure and functions of the peritoneum	**PO2**
CO4	Visualize the nine regions of the abdomen.	**PO2**
CO5	Understand the osteology of the skull and mandible.	**PO2**
CO6	Understand neuroanatomy, including blood supply to the brain, pyramidal and extrapyramidal pathways, cerebral cortex, cerebellum, pons, medulla, etc.	**PO2**
CO7	Learn the osteology and soft parts of the trunk and pelvis.	**PO2**

		Physiotherapy Knowledge	**Multidisciplinary/ Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**

Course Code	Course Title	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3
MAPT102 A	**HUMAN ANATOMY -II**		**3**					**2**		

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT152A	HUMAN ANATOMY-II LAB	L	T	P	C
Version 1.0		0	0	4	2
Pre-requisites/Exposure	HUMAN ANATOMY –I LAB				
Co-requisites	HUMAN ANATOMY –II				

Course Objectives

1. Enable the students to visualize the structures of the body, with emphasis on limbs- muscles, bones and joints.
2. Through the use of different learning aids, anatomical parts should be revised such that the student can understand the mechanism of action/ movements, functions and therefore, the basis for dysfunction.

Course Outcomes

Upon completion of this course the student will be able to:

CO1. Identify bony prominences on inspection and by palpation.
CO2. Demonstrate parts of a skeleton- articulated and disarticulated.
CO3. Identify features of bones of the lower limb, pelvis, skull and spine.
CO4. Identify parts of abdominal viscera.
CO5. Perform surface marking of the liver, spleen, kidney, etc.
CO6. Identify the parts and areas of the brain.

Catalog Description

Lab work is complimentary to the theoretical discussions in anatomy class. Hands on practice allow the explain and demonstrate & visualize the structures of the body, with emphasis on limbs- muscles, bones and joints. This is helpful for developing an insight on the subject.

Course Content:

1. Lower limb- Learning of surface landmarks with special emphasis on bones, joints, muscles, and
Nerves.
2. Demonstration of skeleton articulated and disarticulated. Osteology of lower limb.
3. Identification of body prominences on inspection and by palpation, especially of extremities.
4. Points of palpation of nerves and arteries
5. Abdomen- abdominal viscera. Identification of parts.
6. Surface marking of the lung, pleura, fissures and lobes of lungs, heart, liver, spleen, Kidney.
7. Head, neck and brain- Demonstration and identification of parts.
8. Cranial nerves, spinal nerves and important blood vessels.
9. Trunk and Pelvis- Learning of surface landmarks with special emphasis on bones, joints, muscles, and nerves.
10.Osteology of spine- differences between cervical, thoracic and lumbar vertebrae.

Text Books:

1. Chaurasia BD, “Human Anatomy” (4 Volumes), CBS Publishers.
2. Singh Inderbir, “Textbook of Anatomy”, Jaypee.

Reference Books:

1. Snell R, “Clinical Anatomy by Regions”, Lippincott, Williams and Wilkins.
2. Gray’s Anatomy Student Edition, Churchill Livingstone.

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination

Examination Scheme:

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	40	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Identification of bony prominences on inspection and by palpation.	PO3
CO2	Demonstration of parts of a skeleton- articulated and disarticulated.	PO2
CO3	Identify features of bones of the lower limb, pelvis, skull and spine.	PO2
CO4	Identify parts of abdominal viscera.	PO2
CO5	Perform surface marking of the liver, spleen, kidney, etc.	PO2
CO6	Identify the parts and areas of the brain.	PO2

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Moden Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	Course Title	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3
MAPT152 A	HUMAN ANATOMY - II LAB		3	2				2	1	

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT104A	HUMAN PHYSIOLOGY-II	L	T	P	C
Version 1.0		3	1	0	4
Pre-requisites/Exposure	HUMAN PHYSIOLOGY –I				
Co-requisites	HUMAN PHYSIOLOGY-II LAB				

Course Objectives

1. Comprehensively understand and visualize the physiological processes of the body
2. Appreciate the natural efficiency of the human body.
3. Learn the techniques in the restoration of physical functions.

Course Outcomes

Upon completion of this course the student will be able to:

CO1.Understand the physiology of the senses- vision, taste, audition, smell and the vestibular apparatus.
CO2. Know about the organization of the central nervous system.
CO3. Correlate the knowledge of anatomy and physiology to get a clear understanding of the working of the body.
CO4. Understand the renal system including applied physiology.
CO5. Differentiate between the male and female reproductive systems.
CO6. Apply the knowledge of physiology of exercise to concepts of muscle structure and function.
CO7. Assimilate the physiological effects of exercise on different systems of the body.

Catalog Description

This subject is designed to understand the principles of the study of human physiology. The student should be able to comprehensively understand and visualize the physiological processes of the body and appreciate the natural efficiency of the human body. The subject provides the basic knowledge required to understand the various disciplines of physiotherapy.

Course Content

UNIT I

Nervous System 10 hours

- Introduction: Organisation of CNS – central and peripheral nervous system. Functions of nervous system. Synapse.
- Sensory Mechanism: Sensory receptors, Sensory pathways. Sensory cortex. Somatic sensations. Pain sensation. Gate control theory of pain. Tabes dorsalis, sensory ataxia.
- Motor Mechanism: Motor Cortex. Motor pathway: The descending tracts – pyramidal tracts, extrapyramidal tracts. Upper motor neuron and lower motor neuron. Paralysis, monoplegia, paraplegia, hemiplegia and quadriplegia. Reflex Action: Components, Stretch reflex, Muscle tone, UMNL and LMNL.
- Spinal cord Lesions: Complete transection and Hemisection of the spinal cord.
- Cerebellum: Functions. Cerebellar ataxia. Posture and Equilibrium.
- Thalamus and Hypothalamus: Nuclei. Functions. Thalamic syndrome

- Reticular Formation and Limbic System: Components and Functions.
- Basal Ganglia: Structures included and functions. Parkinson's disease.
- Cerebral Cortex: Lobes. Brodmann's areas and their functions. Higher functions of cerebral cortex – learning, memory and speech.
- EEG: Waves and features. Sleep: REM and NREM sleep, CSF: Formation, composition, circulation and functions. Lumbar puncture and its significance. Blood brain barrier. Hydrocephalus.
- ANS: Features and actions of parasympathetic and sympathetic nervous system.
- Special Senses: Vision, Audition, Taste, Smell.
- Vestibular Apparatus

UNIT II **8 hours**

Renal System

- Physiological anatomy. Nephrons, Glomerular membrane. Renal blood flow and its regulation. Functions of kidneys.
- Mechanism of Urine Formation: Glomerular Filtration: Mechanism of glomerular filtration. GFR.
- Tubular Reabsorption: Filtered load. Glucose clearance, Tubular Secretion, Mechanism of concentrating and diluting the Urine, Micturition.
- Regulation of water excretion. Diuresis. Diuretics.
- Acid-Base balance, Artificial Kidney (haemodialysis)
- Skin and temperature regulation.

UNIT III

Reproductive System **8 hours**

- Physiological anatomy of reproductive organs. Sex determination. Sex differentiation. Disorder
- Male Reproductive System: Functions of testes. Pubertal changes in males. Spermatogenesis. Testosterone: action. Regulation of secretion. Semen.
- Female Reproductive System: Functions of ovaries and uterus. Pubertal changes in females. Oogenesis. Hormones: estrogen and progesterone-action. Regulation of secretion. Menstrual Cycle. Menarche. Menopause. Pregnancy: Pregnancy tests. Physiological changes during pregnancy. Functions of placenta. Lactation. Contraception methods.

UNIT IV

Physiology of exercise **6 hours**

- Effects of acute and chronic exercise on O_2 transport, Muscle strength/power/endurance, B.M.R. /R.Q., Hormones and metabolism, Cardiovascular system, Respiratory system, Body fluids and electrolytes.

- Effect of gravity / altitude /acceleration / pressure on physical parameters
- Physiology of Age

UNIT V
Applied Physiology
8 hours

- Pulmonary Functions: Respiratory adjustments in exercises, Artificial respiration, Breath sounds.
- Cardio vascular Functions: Blood flow, Circulation of Lymph, Oedema, Factors affecting cardiac output, Circulatory adjustment in exercise and in postural and gravitational changes, Pathophysiology of fainting and heart failure.
- Muscles and Nervous System Functions: Peripheral nervous system, neuromuscular transmission, Types of nerve fibers, Action potential, Strength-duration curve, ECG, EMG, VEP, NCV; Degeneration and regeneration of nerve, Reactions of denervation, Posture, Balance and Equilibrium/Coordination of voluntary movement. Voluntary motor action, clonus, Rigidity, incoordination.

Textbooks:

1. Jain AK, “Textbook of Physiology”, Avichal.
2. Sembulingam K, “Essentials of Medical Physiology”, Jaypee.

Reference Book:

1. Guyton, Hall, “Text book of Medical Physiology”, Elsevier.
2. Barrett, Barman. “Ganong’s Review of Medical Physiology”, Lange.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Understand the physiology of the senses- vision, taste, audition, smell and the vestibular apparatus.	**PO2**
CO2	Know about the organization of the central nervous system.	**PO2**
CO3	Correlate the knowledge of anatomy and physiology to get a clear understanding of the working of the body.	**PO1**
CO4	Understand the renal system including applied physiology.	**PO2**
CO5	Differentiate between the male and female reproductive systems.	**PO2**
CO6	Apply the knowledge of physiology of exercise to concepts of muscle structure and function.	**PO1**
CO7	Assimilate the physiological effects of exercise on different systems of the body.	**PO1**

		Physiotherapy Knowledge	**Multidisciplinary/ Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT104A	**HUMAN PHYSIOLOGY-II**	**2**	**3**					**2**		

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT154A	HUMAN PHYSIOLOGY-II LAB	L	T	P	C
Version 1.0		0	0	2	1
Pre-requisites/Exposure	HUMAN PHYSIOLOGY –I LAB				
Co-requisites	HUMAN PHYSIOLOGY –II				

Course Objectives

1. Enhance clinical skills in the assessment and examination of physiological parameters.
2. Practical Laboratory work for all the topics discussed in theory.
3. Evaluate and apply judiciously the different methods of lab testing.

Course Outcomes

Upon completion of this course the student will be able to:

CO1. Perform detailed clinical examination- radial pulse, blood pressure.
CO2. Perform physiological examination of the CVS, respiratory system, sensory system, motor system.
CO3. Examine reflexes.
CO4. Obtain working knowledge of function of spirometer.
CO5. Describe ECG, Artificial Respiration, Perimetry, Mosso's Ergometry.

Catalog Description

Lab work is complimentary to the theoretical discussions in exercise therapy. Hands on practice allow them to enhance clinical skills by teaching the assessment and examination of physiological parameters. This would collate with physiotherapy assessment and provide the basis for understanding various testing processes. This is helpful for developing an insight on the subject.

Course Content:

1. Examination of Radial pulse.
2. Recording of blood pressure
3. Examination of CVS
4. Examination of Respiratory system
5. Examination of Sensory system
6. Examination of Motor System
7. Examination of reflexes
8. Examination of cranial nerves
9. Recommended Demonstrations:
    - Spirometry
    - Artificial Respiration
    - ECG
    - Perimetry
    - Mosso's Ergometry

Textbooks:

1. Kisner, Colby, "Therapeutic Exercise", F.A. Davis.
2. Norkin C, "Measurement of Joint Motion- A Guide to Goniometry", Jaypee Publications.

3. Hollis M, “Practical Exercise Therapy”, Blackwell Sciences Publication.

Reference Book:

1. Casser MP, “Handbook of Clinical Massage”, Elsevier Publication.

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination

Examination Scheme:

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	40	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Perform detailed clinical examination- radial pulse, blood pressure.	**PO3**
CO2	Perform physiological examination of the CVS, respiratory system, sensory system, motor system.	**PO2**
CO3	Examine reflexes.	**PO2**
CO4	Obtain working knowledge of function of spirometer.	**PO2**
CO5	Describe ECG, Artificial Respiration, Perimetry, Mosso’s Ergometry.	**PO3**

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT154A	**HUMAN PHYSIOLOGY-II LAB**		**3**	**3**				**2**	**1**	

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT106A	INTRODUCTION TO PHYSIOTHERAPY-II	L	T	P	C
Version 1.0		2	1	0	3
Pre-requisites/Exposure	INTRODUCTION TO PHYSIOTHERAPY-I				
Co-requisites	INTRODUCTION TO PHYSIOTHERAPY-II LAB				

Course Objectives

1. Learn the basics of biomechanics and kinesiology.
2. They will get a theoretical as well as clinical overview of fundamentals of exercise therapy and biophysics.
3. Be familiar with commonly used modalities and instruments used in physiotherapy clinics

Course Outcomes

Upon completion of this course the student will be able to:

CO1. Recall the biophysical principles as applicable in electrotherapy.
CO2. Understand the application of basic biomechanics to physiotherapy techniques.
CO3. Explain joint and muscle structure and function.
CO4. Formulate an assessment format according to patient condition and physiotherapy setting.
CO5. Plan physiotherapy treatment based on the assessment.
CO6. Be familiar with modalities and tools present in a physiotherapy clinic.

Catalog Description

This subject is designed to understand the basics of biomechanics and kinesiology. They will get a theoretical as well as clinical overview of fundamentals of exercise therapy and biophysics. Commonly used modalities and instruments used in physiotherapy clinics will be demonstrated, to familiarize the students with the tools of the profession. The subject provides the basic knowledge required to understand the clinical aspects of physiotherapy.

Course Content

UNIT I 8 hours

Basic Concepts in Biomechanics

- Kinematics and Kinetics: Types of Motion, Location of Motion, Direction of Motion, Magnitude of Motion, Definition and types of Forces, Force components.
- Joint structure and Function: Joint design, Materials used in human joints, General properties of connective tissues, Human joint design, Joint function, Joint motion, General effects of disease, injury and immobilization.
- Muscle structure and function: Mobility and stability functions of muscles, Elements of muscle structure, Muscle function, Effects of immobilization, injury and aging.

UNIT II

Basic Concepts of Exercise Therapy 8 hours

The techniques of Exercise Therapy, Approach to patient's problems, Assessment of patient's condition – Measurements of Vital parameters, Starting Positions – Fundamental positions & derived Positions, Planning of Treatment.

UNIT III

Electrotherapeutic Agents 8 hours

- Thermal agents: Physical Principles of cold, Superficial and deep heat.
- Ultrasound: Physical Principles of Sound
- Electro- magnetic Radiation: Physical Principles and their Relevance to Physiotherapy Practice
- Electric Currents: Physical Principles and their Relevance to Physiotherapy Practice.

UNIT IV

Orientation to Physiotherapy Labs 6 hours

- Exercise therapy equipment: Suspension, pulleys, Shoulder wheel and ladder, weights, bands and balls.
- Electrotherapy modalities: Diathermy, heat and cold therapy, traction, Ultrasound, IFT, TENS, Stimulators, etc.
- Tools of a physiotherapist: Mobilization belt, reflex hammer, goniometers, etc.

Text Books:

1. Forster and Palastanga, "Clayton's Electrotherapy", CBS.
2. Norkin, Levangie, "Joint Structure and Function", F.A. Davis.

Reference Book:

1. Kisner, Colby, "Therapeutic Exercise", F.A. Davis.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Recall the biophysical principles as applicable in electrotherapy.	**PO2**
CO2	Understand the application of basic biomechanics to physiotherapy techniques.	**PO1**
CO3	Explain joint and muscle structure and function	**PO1**
CO4	Formulate an assessment format according to patient condition and physiotherapy setting.	**PO1**
CO5	Plan physiotherapy treatment based on the assessment.	**PO3**
CO6	Be familiar with modalities and tools present in a physiotherapy clinic.	**PO4**

		Physiotherapy Knowledge	**Multidisciplinary/ Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT106A	**INTRODUCTION TO PHYSIOTHERAPY-II**	**3**	**1**	**2**	**2**			**3**		

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT156A	INTRODUCTION TO PHYSIOTHERAPY-II LAB	L	T	P	C
Version 1.0		0	0	2	1
Pre-requisites/Exposure	INTRODUCTION TO PHYSIOTHERAPY-I				
Co-requisites	INTRODUCTION TO PHYSIOTHERAPY-II				

Course Objectives

1. be oriented of the different components of physiotherapy.
2. learn the basics of assessment and the tools used for assessment.

Course Outcomes

Upon completion of this course the student will be able to:

CO1.Analyse movements using kinematics and kinetics.
CO2. Make models of joints and muscles using biomechanical knowledge.
CO3. Assess and evaluate real/ mock patients.
CO4. Compare different types of pain scales and assessment forms used by physiotherapists.
CO5. Demonstrate basic techniques- stretching, mobilization.
CO6. Identify different modalities and tools used in physiotherapy clinics.

Catalog Description

Lab work is complimentary to the theoretical discussions in electrotherapy. Hands on practice allow the student to be in orientation of the different components of physiotherapy. This course aims to teach a student the basics of assessment and the tools used for assessment. An introduction to electrotherapy modalities and basic exercise techniques should further familiarize the student with the functions of a physiotherapist.

Course Content:

1. Models of Joints and Muscles (Group activity)
2. Kinematics and kinetics- video analysis.
3. Assessment and evaluation of mock/ real patients.
4. Different types of assessment forms
5. Pain scales
6. Demonstration of Basic exercise techniques- Stretching, mobilization.
7. Orientation to electrotherapy modalities.
8. Familiarization with equipment

Text Books:

1. Forster and Palastanga, “Clayton’s Electrotherapy”, CBS.
2. Norkin, Levangie, “Joint Structure and Function”, F.A. Davis.

Reference Book:

1. Kisner, Colby, “Therapeutic Exercise”, F.A. Davis

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination
Examination Scheme

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	40	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Analyse movements using kinematics and kinetics.	PO3
CO2	Make models of joints and muscles using biomechanical knowledge.	PO1
CO3	Assess and evaluate real/ mock patients.	PO3
CO4	Compare different types of pain scales and assessment forms used by physiotherapists.	PO3
CO5	Demonstrate basic techniques- stretching, mobilization.	PO1
CO6	Identify different modalities and tools used in physiotherapy clinics.	PO4

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	Course Title	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3
MAPT156A	INTRODUCTION TO PHYSIOTHERAPY-II LAB	2		3	2			3	2	

1= Addressed to small extent 2= Addressed significantly 3= Major part of course

MAPT110A	MEDICAL TERMINOLOGY AND RECORD KEEPING	L	T	P	C
Version 1.0		2	0	0	2
Pre-requisites/Exposure	-				
Co-requisites	-				

Course Objectives

1. Learn the elements of medical terminology.
2. Emphasis is placed on building familiarity with medical words through knowledge of roots, prefixes, and suffixes.

Course Outcomes

Upon completion of this course the student will be able to:

CO1. Be familiar with terminology used by medical professionals.
CO2. Interpret basic medical abbreviations/ symbols.
CO3. Form medical terms utilizing roots, prefixes, suffixes and combining roots.
CO4. Be familiar with data entry on electronic health record system.

Catalog Description

This subject is designed to introduce the elements of medical terminology. Emphasis is placed on building familiarity with medical words through knowledge of roots, prefixes, and suffixes. Topics include origin, word building, abbreviations and symbols, terminology related to the human anatomy, reading medical orders and reports, and terminology specific to the student's field of study. Spelling is critical and will be counted while grading.

Course Content:

UNIT I 8 hours

- Derivation of medical terms.
- Define word roots, prefixes, and suffixes.
- Conventions for combined morphemes and the formation of plurals.
- Basic medical terms in health care and physiotherapy.
- Form medical terms utilizing roots, suffixes, prefixes, and combining roots.

UNIT II
6 hours

- Interpret basic medical abbreviations/symbols.
- Utilize diagnostic, surgical, and procedural terms and abbreviations related to the integumentary system, musculoskeletal system, respiratory system, cardiovascular system, nervous system, and endocrine system.
- Interpret medical records/reports.

UNIT III
6 hours

- Data entry and management on electronic health record system.

Text Books:

1. Gylys B., Wedding M, "Medical Terminology Systems", F.A. Davis.
2. Kunders GD, "Hospital Facilities Planning and Management", McGraw Hill.

Reference Book:

1. Losse L, Friberg D., "Managerial and Supervisory Principles for Physical Therapists", Lippincott Williams & Wilkins.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Be familiar with terminology used by medical professionals.	PO6
CO2	Interpret basic medical abbreviations/ symbols	PO2
CO3	Form medical terms utilizing roots, prefixes, suffixes and combining roots.	PO2
CO4	Perform data entry on electronic health record system.	PO2

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	Course Title	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3
MAPT110 A	MEDICAL TERMINOLOG		3				1		2	

	Y AND RECORD KEEPING									

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT112A	**PSYCHOLOGY**	L	T	P	C
Version 1.0		3	1	0	4
Pre-requisites/Exposure	-				
Co-requisites	-				

Course Objectives

1. Gain knowledge about Human Psychology.
2. Helps to study the of various behavioural patterns of individuals, theories of development, normal and abnormal aspects of motor, social, emotional and language development, communication and interaction skills appropriate to various age groups
2. Focus on the important and relevant topics related to psychological aspects in healthcare.

Course Outcomes

Upon completion of this course the student will be able to:

CO1. Appreciate the importance of study of psychology for a physiotherapist.
CO2. Have a broad understanding of the history of psychology and its various applications.
CO3. Know the different stages of development and the role of heredity and environment through the life cycle.
CO4. Differentiate between sensation, attention and perception.
CO5. Understand the different areas of applied psychology and the basics of psychotherapy.
CO6. Analyze emotions and recommend strategies for management of stress.

Catalog Description

This subject is designed to study Human Psychology involves the study of various behavioural patterns of individuals, theories of development, normal and abnormal aspects of motor, social, emotional and language development, communication and interaction skills appropriate to various age groups. The study of these subjects will help the student to understand their patients during assessment and while planning appropriate treatment methods. basic knowledge on legal responsibility and professional culture. The subject provides the insights for rules and regulations of governing bodies of Physiotherapy

Course Content:

UNIT I Introduction to Psychology 8 hours

a) Schools: Structuralism, functionalism, behaviourism, Psychoanalysis.
b) Methods: Introspection, observation, inventory and experimental method.
c) Branches: Pure psychology and applied psychology
d) Psychology and physiotherapy

UNIT II Developmental Psychology 6 hours

a) Life span: Different stages of development
b) Heredity and environment: role of heredity and environment in physical and psychological development
c) 'Nature vs. Nurture' controversy

UNIT III General Psychology 10 hours

a) Sensation, attention and perception, Illusion and hallucination.
b) Motivation: Maslow's theory of need hierarchy
c) Frustration and conflict, conflict management
d) Emotions, Stress and its management
e) Intelligence, thinking and reasoning, learning. Theories of learning: trial and error learning, classical conditioning, Operant conditioning, insight learning, social learning theory. The effective ways to learn: Massed/Spaced, Whole/Part, Recitation/Reading, Serial/Free recall, Incidental/Intentional learning, Knowledge of results, association, organization, and mnemonic methods.

UNIT IV Social psychology 8 hours

a) Personality: Approaches to personality, Personality assessment
b) Defense Mechanisms: denial of reality, rationalization, projection, reaction formation, identification, repression, regression, intellectualization, undoing, introjection, acting out.
c) Leadership: Different types of leaders. Different theoretical approaches to leadership.
d) Attitude: development of attitude. Change of attitude

UNIT V Clinical Psychology 8 hours

Models of training, abnormal behavior assessment, clinical judgement, psychotherapy, self-management methods, physiotherapist patient interaction, aggression, self-imaging, stress management, assertive training, Group therapy, Body awareness, Pediatric, child and geriatric clinical psychology.

Text Book:

1. Morgan et al, "Introduction to Psychology", Tata McGraw Hill.

Reference Books:

1. Feldman RH, "Understanding Psychology", Tata McGraw Hill
2. Atkinson, "Dictionary of Psychology".

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Appreciate the importance of study of psychology for a physiotherapist	**PO2**
CO2	Have a broad understanding of the history of psychology and its various applications.	**PO2**
CO3	Know the different stages of development and the role of heredity and environment through the life cycle.	**PO2**
CO4	Differentiate between sensation, attention and perception	**PO2**
CO5	Understand the different areas of applied psychology and the basics of psychotherapy	**PO3**
CO6	Analyze emotions and recommend strategies for management of stress.	**PO3**

		Physiotherapy Knowledge	**Multidisciplinary/ Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT112A	**PSYCHOLOGY**		**3**	**1**				**1**	**1**	

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT160A	CLINICAL OBSERVATION	L	T	P	C
Version 1.0		0	0	4	2
Pre-requisites/Exposure	-				
Co-requisites	-				

Course Objectives

1. Give the students an exposure to the different types of settings that a physiotherapist works in,
2. Knowledge about the variation in clinical styles and approaches.

Course Outcomes

Upon completion of this course the student will be able to:

CO1. Observe physiotherapists working in different settings like private clinics, government hospitals, district health centres, etc.
CO2. Be familiar with exercise therapy tools and electrotherapy modalities.
CO3. Understand through observation the process of assessment, evaluation and PT treatment of patients.
CO4. Imbibe professional values seen in practicing clinicians.
CO5. Appreciate the importance of multidisciplinary teamwork in healthcare.
CO6. Be aware of and spread awareness regarding the importance of physiotherapy.

Catalog Description

Clinical observational training ensures the students to give an exposure to the different types of settings that a physiotherapist works in, and the variation in clinical styles and approaches. The students would also be able to see different equipment and its relative usage in a clinical setting.
students to acquire the geographical orientation of the various concerned sections of the physiotherapy departments. This subject helps to get the overall idea about the graduate program & its scope in the professional practice.

Course Content:

- Visit to Physiotherapy department/ clinic/ OPD- introduction to electrotherapy modalities, special machines being used.
- Interaction with Physiotherapists- discusses different aspects, scope of physiotherapy and avenues.
- Clinical Assessment- types of assessment forms, machines and tools being used.

Infrastructure- Different types of set-ups like government hospitals, private clinics, specialty clinics, etc.

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination
Examination Scheme

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	40	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Observe physiotherapists working in different settings like private clinics, government hospitals, district health centres, etc.	**PO3**
CO2	Be familiar with exercise therapy tools and electrotherapy modalities.	**PO1**
CO3	Understand through observation the process of assessment, evaluation and PT treatment of patients.	**PO3**
CO4	Imbibe professional values seen in practicing clinicians.	**PO6**
CO5	Appreciate the importance of multidisciplinary teamwork in healthcare.	**PO6**
CO6	Be aware of and spread awareness regarding the importance of physiotherapy.	**PO6**

		Physiotherapy Knowledge	**Multidisciplinary / Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT160A	**CLINICAL OBSERVATION**	**3**		**3**			**2**	**2**	**2**	

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT108A	INTRODUCTION TO EMERGENCY AND PATIENT CARE	L	T	P	C
Version 1.0		2	0	0	2
Pre-requisites/Exposure	-				
Co-requisites	INTRODUCTION TO EMERGENCY AND PATIENT CARE LAB				

Course Objectives

1. Gain basic knowledge of patient care system, BLS and first aid
2. Receive training in dealing with emergency situations.

Course Outcomes

Upon completion of this course the student will be able to:

CO1. Have a basic overview of NABH guidelines and Quality improvement tools.
CO2. Assess vital signs and perform a primary assessment.
CO3. Be conversant with basic emergency care, first aid and infection prevention and control.
CO4. Know the basics of biomedical waste management.

Catalog Description

This subject is designed to make understand the student to demonstrate and understand the principles of first aid and demonstrate skill in giving first aid treatment in emergencies that may be met in the community and in his/her practice as therapist. The subject provides the basic knowledge required to understand the various disciplines of emergency care as physiotherapists.

Course Content:

UNIT I

- **Quality assurance and management** **5 hours**
  Concepts of Quality of Care, Quality Improvement Approaches, Standards and Norms, Quality Improvement Tools, Introduction to NABH guidelines

UNIT II 5 hours

- **Basics of emergency care and life support skills**
  Vital signs and primary assessment, Basic emergency care – first aid and triage, Ventilations including use of bag-valve-masks (BVMs), Choking, rescue breathing methods, One- and Two-rescuer CPR, Using an AED (Automated external defibrillator). Managing an emergency including moving a patient

UNIT III 5

hours

- **Bio medical waste management and environment safety**
  Definition of Biomedical Waste, Waste minimization, BMW – Segregation, collection, transportation, treatment and disposal (including color coding), Liquid BMW, Radioactive waste, Metals / Chemicals / Drug waste **,** BMW Management & methods of disinfection, Modern technology for handling BMW, Use of Personal protective equipment (PPE), Monitoring & controlling of cross infection (Protective devices)

UNIT IV
5 hours

- **Infection prevention and control**
  Evidence-based infection control principles and practices [such as sterilization, disinfection, effective hand hygiene and use of Personal protective equipment (PPE)], Prevention & control of common healthcare associated infections, Components of an effective infection control program, and **Guidelines** (NABH and JCI) for Hospital Infection Control

Text Books:

1. Yalayyaswamy NN, "First Aid and Emergency Nursing", CBS Publishers.
2. Francis, CN, "Hospital Administration", Jaypee Publications.

Reference Book:

1. Kelly DL, "Applying Quality Management in Healthcare: A Process for Improvement", Neha Publishers and Distributors.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Have a basic overview of NABH guidelines and Quality improvement tools.	PO2
CO2	Assess vital signs and perform a primary assessment	PO3
CO3	Be conversant with basic emergency care, first aid and infection prevention and control	PO6

CO4	Know the basics of biomedical waste management	**PO2**

		Physiotherapy Knowledge	**Multidisciplinary/ Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT108A	**INTRODUCTION TO EMERGENCY AND PATIENT CARE**		**3**	**2**			**1**	**2**	**1**	

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT158A	INTRODUCTION TO EMERGENCY AND PATIENT CARE LAB	L	T	P	C
Version 1.0		0	0	2	1
Pre-requisites/Exposure					
Co-requisites	INTRODUCTION TO EMERGENCY AND PATIENT CARE				

Course Objectives
Practical aspects of emergency management, care and BLS to handle emergencies.

Course Outcomes
Upon completion of this course the student will be able to:
CO1. Be able to check vital signs and perform primary assessment.
CO2. Understand the principles of CPR.
CO3. Implement segregation and management of biomedical waste.
CO4. Understand the process and importance of sterilization and disinfection.

Catalog Description
Lab work is complimentary to the theoretical discussions in electrotherapy. Hands on practice allows the students to demonstrate the skill and excel in giving first aid treatment in emergencies that may be met in the community and in his/her practice as therapist This is helpful for developing an insight on the subject in community care.

Course Content:

1. Vital signs and primary assessment
2. Basic emergency care – first aid and triage
3. Demonstration of Ventilation: use of bag-valve-masks (BVMs)
4. Demonstration of Choking, rescue breathing methods
5. Demonstration of One- and Two-rescuer CPR
6. Demonstration of Use of Personal protective equipment (PPE)
7. Segregation of waste
8. Sterilization, disinfection, effective hand hygiene and use of Personal protective equipment

Text Books:
1. Yalayyaswamy NN, “First Aid and Emergency Nursing”, CBS Publishers.
2. Francis, CN, “Hospital Administration”, Jaypee Publications.

Reference Book:
1. Kelly DL, “Applying Quality Management in Healthcare: A Process for Improvement”, Neha Publishers and Distributors

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination
Examination Scheme:

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	40	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Be able to check vital signs and perform primary assessment	**PO3**
CO2	Understand the principles of CPR.	**PO6**
CO3	Implement segregation and management of biomedical waste.	**PO2**
CO4	Understand the process and importance of sterilization and disinfection.	**PO6**

		Physiotherapy Knowledge	**Multidisciplinary/ Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT158 A	**INTRODUCTION TO EMERGENCY AND PATIENT CARE LAB**		**3**	**1**			**3**	**2**	**2**	

1= weakly mapped 2= moderately mapped 3= strongly mapped

SEMESTER III

MAPT201A	BIOMECHANICS AND KINESIOLOGY-I	L	T	P	C
Version 1.0		3	1	0	4
Pre-requisites/Exposure	HUMAN ANATOMY				
Co-requisites	BIOMECHANICS AND KINESIOLOGY-I LAB				

Course Objectives

1. To be able to visualise normal and abnormal kinematics of the upper limb, vertebral column and thorax.
2. To differentiate between normal and abnormal movement patterns.
3. Understand the forces associated with movement.
4. To assess movement dysfunction on the basis of biomechanical knowledge.

Course Outcomes

On completion of this course, the students will be able to

CO1. Understand the biomechanics of the vertebral column.
CO2. Observe and utilize the concepts of biomechanical analysis in assessment of patients.
CO3. Visualise the structures of the upper limb and normal biomechanics.
CO4. Recognize variations and abnormal biomechanics in the movements of the upper limb.
CO5. Extrapolate knowledge of normal biomechanics to diagnose and evaluate movement dysfunction.
CO6. Enhance powers of observation to aid in assessment.

Catalog Description

This course introduces and reinforces kinetics and kinematics, fundamental to the knowledge of joint and muscle function. After the completion of this course, students will be able to understand the mechanism of movement of the body in relation to the forces acting on it, and the application of this knowledge in physiotherapy.

Course Content

UNIT I Biomechanics of the vertebral column 10 lecture hours

a) General structure and function
b) Regional structure and function – Cervical region, thoracic region, lumbar region, sacral region
c) Muscles of the vertebral column
d) General effects of injury and aging

UNIT II Thorax and Chest Wall 8 lecture hours

Structure and function of rib cage, muscles; Ventilatory motions, Pathological changes.

UNIT III Temporomandibular Joint Biomechanics 6 lecture hours

Structure and function of TMJ, Mandibular motions, Age related changes in TMJ, Dysfunction.

UNIT IV Upper limb Biomechanics 16 lecture hours

a) The shoulder complex: Structure and components of the shoulder complex and their integrated function
b) The elbow complex: Structure and function of the elbow joint – humeroulnar and humeroradial articulations, superior and inferior radioulnar joints; mobility and stability of the elbow complex; the effects of immobilization and injury.
c) The wrist and hand complex: Structural components and functions of the wrist complex; structure of the hand complex; functional position of the wrist and hand.

Text Books

1. Norkin C, "Joint Structure and Function", Jaypee Publication.

Reference Books/Materials

1. Brunstrom, "Clinical Kinesiology", Jaypee Publication.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Understand the biomechanics of the vertebral column.	PO1
CO2	Observe and utilize the concepts of biomechanical analysis in assessment of patients.	PO3
CO3	Visualise the structures of the upper limb and normal biomechanics.	PO1

CO4	Recognize variations and abnormal biomechanics in the movements of the upper limb.	**PO1**
CO5	Extrapolate knowledge of normal biomechanics to diagnose and evaluate movement dysfunction.	**PO3**
CO6	Enhance powers of observation to aid in assessment.	**PO3**

		Physiotherapy Knowledge	**Multidisciplinary/ Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT201A	BIOMECHANICS AND KINESIOLOGY-I	**3**		**1**				**2**		**1**

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT251A	BIOMECHANICS AND KINESIOLOGY-I LAB	L	T	P	C
Version 1.0		-	-	2	1
Pre-requisites/Exposure	HUMAN ANATOMY				
Co-requisites	BIOMECHANICS AND KINESIOLOGY-I				

Course Objectives

1. To demonstrate normal kinematics of the upper limb, vertebral column and thorax.
2. Analysis of normal and abnormal movement patterns.
3. Understand the forces associated with movement.
4. To assess movement dysfunction on the basis of biomechanical knowledge.

Course Outcomes

On completion of this course, the students will be able to

CO1. Apply theoretical concepts to assessment of movement dysfunction.
CO2. Identify biomechanical changes due to pain, injury, or disease.
CO3. Use the knowledge of biomechanics to formulate a treatment plan.

Catalog Description

This course aims to enhance the observation skill of the student in determining movement patterns, analyzing posture, gait, ADLs, etc. and to determine the forces involved during activities and as the causes of injury.

Course Content

1. Analysis of joint movement- joints of the upper limb, thorax and spine.
2. Biomechanical analysis of posture.
3. Demonstration of ADLs and patterns of movement.
4. Determination of muscle work involved in different movements.

Text Books

1. Norkin C, “Joint Structure and Function”, Jaypee Publication.

Reference Books/Materials

1. Brunstrom, “Clinical Kinesiology”, Jaypee Publication.

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination

Examination Scheme:

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	**40**	**10**	**50**

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Apply theoretical concepts to assessment of movement dysfunction.	**PO3**
CO2	Identify biomechanical changes due to pain, injury, or disease.	**PO1**
CO3	Use the knowledge of biomechanics to formulate a treatment plan.	**PO3**

		Physiotherapy Knowledge	**Multidisciplinary/ Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT251A	**BIOMECHANICS AND KINESIOLOGY -I LAB**	**2**		**3**				**2**		**2**

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT203A	EXERCISE THERAPY-I	L	T	P	C
Version 1.0		2	1	0	3
Pre-requisites/Exposure	INTRODUCTION TO PHYSIOTHERAPY				
Co-requisites	EXERCISE THERAPY-I LAB				

Course Objectives

1. To assess and examine a patient using evidence based tests and outcome measures.
2. Learn and be able to teach methods of relaxation.
3. Perform goniometry and muscle testing to aid in assessment and evaluation.
4. To apply principles of exercise therapy in designing exercise protocols.

Course Outcomes

On completion of this course, the students will be able to

CO1. Understand the theoretical basis for tests for assessment of patient- functional tests, MMT, anthropometric measurements, speed, endurance and power tests, etc.
CO2. Study the different techniques of relaxation and be able to ascertain the importance of relaxation and stress management.
CO3. Perform Active movement, Passive movement, Active assisted movement, Resisted movement.
CO4. Learn the principles of measurement of joint Range of Motion through Goniometry.
CO5. Understand the physiological effects of the different techniques of massage and be able to prescribe the correct method according to the condition.
CO6. Be able to develop a free exercise programme, for general population as well as patient specific.

Catalog Description

In this course, the students will learn the principles and effects of exercise as a therapeutic modality and will learn the techniques in the restoration of physical functions.

Course Content

UNIT I Methods of Testing 12 hours

a) Functional tests
b) Measurement of Joint range: ROM-Definition, Normal ROM for all peripheral joints & spine, Goniometer-parts, types, principles, uses, Limitations of goniometry, Techniques for measurement of ROM for all peripheral joints
c) Tests for neuromuscular efficiency
d) Electrical tests
e) Manual Muscle Testing: Introduction to MMT, Principles & Aims, Indications & Limitations, Techniques of MMT for group & individual: Techniques of MMT for upper limb / Techniques of MMT for lower limb / Techniques of MMT for spine.
f) Anthropometric Measurements: Muscle girth – biceps, triceps, forearm, quadriceps, calf
g) Static power Test, Dynamic power Test, Endurance test, Speed test, Tests for Co-ordination, Tests for sensation, Pulmonary Function tests
h) Measurement of Limb Length: true limb length, apparent limb length, segmental limb length

i) Measurement of the angle of Pelvic Inclination

UNIT II Relaxation 3 hours

Definitions: Muscle Tone, Postural tone, Voluntary Movement, Degrees of relaxation, Pathological tension in muscle, Stress mechanics, types of stresses, Effects of stress on the body mechanism, Indications of relaxation, Methods & techniques of relaxation- Principles & uses: General, Local, Jacobson's, Mitchel's, additional methods.

UNIT III Movements and Exercises 10 hours

a) Passive movements: Causes of immobility, Classification of Passive movements, Specific definitions related to passive movements, Principles of giving passive movements, Indications, contraindications, effects of uses, Techniques of giving passive movements.
b) Active movements: Definition of strength, power & work, endurance, muscle actions, Physiology of muscle performance: structure of skeletal muscle, chemical & mechanical events during contraction &relaxation, muscle fiber type, motor unit, force gradation, Causes of decreased muscle performance, Physiologic adaptation to training: Strength & Power, Endurance, Types of active movements.
c) Free exercise: Classification, principles, techniques, indications, contraindications, effects and uses.
d) Active Assisted Exercise: Principles, techniques, indications, contraindications, effects and uses Assisted-Resisted Exercise: principles, techniques, indications, contraindications, effects and uses.
e) Resisted Exercise: Definition, principles, indications, contraindications, precautions & techniques, effects and uses. Types of resisted exercises: Manual and Mechanical resistance exercise, Isometric exercise, Dynamic exercise: Concentric and Eccentric, Dynamic exercise: Constant versus variable resistance, Isokinetic exercise, Open-Chain and Closed-Chain exercise.

UNIT IV Therapeutic Massage 5 hours

a) History and Classification of Massage Technique
b) Principles, Indications and Contraindications
c) Technique of Massage Manipulations
d) Physiological and Therapeutic Uses of Specific Manipulations

Textbooks:

1. Kisner, Colby, "Therapeutic Exercise", F.A. Davis.
2. Norkin C, "Measurement of Joint Motion- A Guide to Goniometry", Jaypee Publications.
3. Hollis M, "Practical Exercise Therapy", Blackwell Sciences Publication.

Reference Book:

1. Casser MP, "Handbook of Clinical Massage", Elsevier Publication.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam

Weightage (%)	**10**	**10**	**20**	**10**	**50**

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Understand the theoretical basis for tests for assessment of patient- functional tests, MMT, anthropometric measurements, speed, endurance and power tests, etc.	**PO1**
CO2	Study the different techniques of relaxation and be able to ascertain the importance of relaxation and stress management.	**PO1**
CO3	Perform Active movement, Passive movement, Active assisted movement, Resisted movement.	**PO3**
CO4	Learn the principles of measurement of joint Range of Motion through Goniometry.	**PO3**
CO5	Understand the physiological effects of the different techniques of massage and be able to prescribe the correct method according to the condition.	**PO1**
CO6	Be able to develop a free exercise programme, for general population as well as patient specific.	**PO3**

		Physiotherapy Knowledge	**Multidisciplinary / Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT203A	**EXERCISE THERAPY-I**	**3**		**2**			**1**	**2**		**1**

1= weakly mapped 2= moderately mapped 3. Strongly mapped

MAPT253A	EXERCISE THERAPY-I LAB	L	T	P	C
Version 1.0		-	-	2	1
Pre-requisites/Exposure	HUMAN ANATOMY				
Co-requisites	EXERCISE THERAPY-I				

Course Objectives

1. To develop physiotherapy knowledge and application.
2. Assess and examine a patient using standardised tests.
3. Use exercise therapy equipment.
4. Be capable of customising exercise protocols according to patient condition.

Course Outcomes

On completion of this course, the students will be able to

CO1. Practice the Active movements, Passive movements, Active-assisted movements, Resisted movement.
CO2. Demonstrate the various relaxation techniques that help a person to relax; to attain a state of increased calm.
CO3. Perform tests for assessment of patient- functional tests, MMT, anthropometric measurements, speed, endurance and power tests, goniometry, etc.
CO4. Demonstrate the different techniques of massage and be able to prescribe the correct method according to the condition.

Catalog Description

The students of exercise therapy are to be trained in Practical Laboratory work for all the topics discussed in theory. The student must be able to evaluate and apply judiciously the different methods of exercise therapy techniques on the patients.

Course Content

1. Measure joint ROM using a goniometer.
2. Determine muscle strength through Manual Muscle Testing. Perform other tests for determining different parameters like endurance, power, etc.
3. Demonstrate relaxation techniques.
4. Demonstrate the application of techniques of passive and active movements.
5. Demonstrate massage technique application according to body parts.

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination

Examination Scheme:

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	40	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Practice the Active movements, Passive movements, Active-assisted movements, Resisted movement.	PO3
CO2	Demonstrate the various relaxation techniques that help a person to relax; to attain a state of increased calm	PO3
CO3	Perform tests for assessment of patient- functional tests, MMT, anthropometric measurements, speed, endurance and power tests, goniometry, etc.	PO3
CO4	Demonstrate the different techniques of massage and be able to prescribe the correct method according to the condition	PO3

		Physiotherapy Knowledge	Multidisciplinary / Medical knowledge	Clinical and Practical Skills	Utilisation of Moderen Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	Course Title	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3
MAPT253A	EXERCISE THERAPY-I LAB			3				2		2

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT205A	ELECTROTHERAPY-I	L	T	P	C
Version 1.0		2	1	0	3
Pre-requisites/Exposure	INTRODUCTION TO PHYSIOTHERAPY				
Co-requisites	ELECTROTHERAPY-I LAB				

Course Objectives

1. Principles, Techniques, Effects, Indication, Contra-Indication and application of electrotherapy modalities.
2. Choice of modality according to the condition.
3. Understanding of basic physics principles of electrotherapy
4. Evidence based practice and application.

Course Outcomes

On completion of this course, the students will be able to

CO1. Understand the theory behind use of low frequency currents for diagnosis and treatment.
CO2. Apply modalities after understanding the indications and contra-indications to electrotherapy.
CO3. Understand the working of TENS, Superficial heat modalities, hydrotherapy and cryotherapy.
CO4. Explain and demonstrate principles of nerve-muscle physiology with electrical stimulation.

Catalog Description

In this course the student will learn the Principles, Techniques, Effects, Indication, Contra-Indication and the dosage parameter for various indications of electro therapeutic modalities in the restoration of physical function.

Course Content

UNIT I Low frequency Currents 10 hours

a) Basic types of current: Direct Current: types, physiological & therapeutic effects. Alternating Current.
b) Types of Current used in Therapeutics: Modified D.C- Faradic Current, Galvanic Current; Modified A.C-Sinusoidal Current, Diadynamic Current.
c) Faradic Current: Definition, Modifications, Techniques of Application of Individual, Muscle and Group Muscle stimulation, Physiological & Therapeutic effects of Faradic Current, Precautions, Indications & Contra-Indications, Dangers.
d) Galvanic Current: Definition, Modifications, Physiological & Therapeutic effects of Galvanic Current, Indications & Contra-Indications, Dangers, Effect of interrupted galvanic current on normally innervated and denervated muscles and partially denervated muscles.
e) Sinusoidal Current & Diadynamic Current in Brief.
f) HVPGS – Parameters & its uses.
g) Ionization / Iontophoresis: Techniques of Application of Iontophoresis, Indications, Selection of Current, Commonly used Ions (Drugs) for pain, hyperhydrosis, would healing.

h) Cathodal / Anodal galvanism.
i) Micro Current & Macro Current
j) Types of Electrical Stimulators a. NMES- Construction component. b. Neuro muscular diagnostic stimulator- construction component. c. Components and working Principles.
k) Principles of Application: Electrode tissue interface, Tissue Impedance, Types of Electrode, Size & Placement of Electrode – Water bath, Unipolar, Bi-polar, Electrode coupling, Current flow in tissues, Lowering of Skin Resistance.

UNIT II Nerve Muscle Physiology 4 hours

Action Potential, Resting membrane potential, Propagation of Action Potential, Motor unit, synapse, Accommodation, Stimulation of Healthy Muscle, Stimulation of Denervated Muscle, Stimulation for Tissue Repair.

UNIT III TENS 6 hours

Define TENS, Types of TENS, Conventional TENS, Acupuncture TENS, Burst TENS, Brief & Intense TENS, Modulated TENS. Types of Electrodes & Placement of Electrodes, Dosage parameters, Physiological & Therapeutic effects, Indications & Contraindications.
Pain: Define Pain, Theories of Pain (Outline only), Pain Gate Control theory in detail.

UNIT IV Superficial heating Modalities 10 hours

a) Wax Therapy: Principle of Wax Therapy application – latent Heat, Composition of Wax Bath Therapy unit, Methods of application of Wax, Physiological & Therapeutic effects, Indications & Contraindication, Dangers.
b) Contrast Bath: Methods of application, Therapeutic uses, Indications & Contraindications.
c) Moist Heat Therapy: Hydro collator packs – in brief, Methods of applications, Therapeutic uses, Indications & Contraindications.
d) Cyclotherm: Principles of production, Therapeutic uses, Indications & Contraindications.
e) Fluidotherapy: Construction, Method of application, Therapeutic uses, Indications & Contraindications.
f) Whirl Pool Bath: Construction, Method of Application, Therapeutic Uses, Indications & Contraindications.
g) Cryotherapy: Define- Cryotherapy, Principle- Latent heat of fusion, Physiological & Therapeutics effects, Techniques of Applications, Indications & Contraindications, Dangers, Methods of application with dosages.

Text Books:

1. Low & Reed, “Electrotherapy Explained”, Butterworth Heinemann.
2. Forster and Palastanga, “Clayton’s Electrotherapy”, CBS.

Reference Books:

1. Kahn J, “Principles and Practice of Electrotherapy”.
2. Nelson & Currier, “Clinical Electro Therapy”.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Understand the theory behind use of low frequency currents for diagnosis and treatment.	**PO1**
CO2	Apply modalities after understanding the indications and contra-indications to electrotherapy.	**PO3**
CO3	Understand the working of TENS, Superficial heat modalities, hydrotherapy and cryotherapy	**PO1**
CO4	Explain and demonstrate principles of nerve-muscle physiology with electrical stimulation.	**PO1**

		Physiotherapy Knowledge	Multidisciplinary / Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT205A	**ELECTROTHERAPY-I**	**3**		**2**				**2**		**1**

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT255A	ELECTROTHERAPY-I LAB	L	T	P	C
Version 1.0		-	-	2	1
Pre-requisites/Exposure	Introduction to Physiotherapy				
Co-requisites	Electrotherapy-I				

Course Objectives

1. Operate electrotherapy modalities.
2. Analyse the need and select appropriate treatment method.
3. Incorporate clinical skills from other aspects and integrate.
4. Be capable of customising treatment protocols according to patient condition.

Course Outcomes

On completion of this course, the students will be able to

CO1. Locate and stimulate different motor points of muscles region wise, including the upper & lower limb, trunk.
CO2. Apply different low frequency currents plot SD curves, and treat patient using Faradic foot bath, Faradism under pressure and Iontophoresis.
CO3. Apply superficial heat region wise for various conditions.
CO4. Apply TENS on various regions of the body according to the condition.

Catalog Description

The student of Electrotherapy must be able to demonstrate the use of electrotherapy modalities applying the principles of electrotherapy with proper techniques, choice of dosage parameters and safety precautions.

Course Content

1. Demonstration of the technique for patient evaluation – receiving the patient and positioning the patient for treatment using electrotherapy.
2. Collection of materials required for treatment using electrotherapy modalities and testing of the apparatus.
3. Demonstration of placement of electrodes for various electrotherapy modalities
4. Electrical stimulation for the muscles supplied by the peripheral nerves
5. Faradism under Pressure for UL and LL
6. Plotting of SD curve with chronaxie and rheobase
7. Demonstration of FG test
8. Technique of treatment and application of TENS, Hydrocollator packs, cryotherapy, contrast bath, wax therapy
9. Demonstration of the treatment method using whirl pool bath
10. Winding up procedure after any electrotherapy treatment method.

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination
Examination Scheme:

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	40	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Locate and stimulate different motor points of muscles region wise, including the upper & lower limb, trunk.	**PO3**
CO2	Apply different low frequency currents plot SD curves, and treat patient using Faradic foot bath, Faradism under pressure and Iontophoresis.	**PO3**
CO3	Apply superficial heat region wise for various conditions.	**PO3**
CO4	Apply TENS on various regions of the body according to the condition.	**PO3**

		Physiotherapy Knowledge	Multidisciplinary / Medical knowledge	Clinical and Practical Skills	Utilisation of Moderen Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT255A	ELECTROTHERAPY-I LAB			**3**				**2**		**1**

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT207A	PATHOLOGY	L	T	P	C
Version 1.0		3	1	0	4
Pre-requisites/Exposure	HUMAN ANATOMY				
Co-requisites	HUMAN PHYSIOLOGY				

Course Objectives

1. This course forms a vital link between preclinical subjects and clinical subjects. Pathology involves the study of causes and mechanisms of diseases.
2. The knowledge and understanding of Pathology of diseases is essential to institute appropriate treatment or to suggest preventive measures to the patient.
3. Particular effort is made in this course to avoid burdening the student.

Course Outcomes

On completion of this course, the students will be able to
CO1. Understand the fundamental cellular and tissues responses to pathologic stimuli.
CO2. Build on the knowledge of physiology to ascertain the body's response to injury or disease.
CO3. Comprehend the inflammatory response and repair process.
CO4. Correlate multi-system effects of diseases and appreciate the interdependence and linkage of the body systems.
CO5. Have an overview of genetic and growth disorders, nutritional disorders, growth disturbances and neoplasia.
CO6. Demonstrate knowledge of systemic pathology and its relevance as a base for understanding medical conditions.

Catalog Description

This course provides in depth knowledge about the various disease and their pathogenesis. The course is specially designed to explain the causes, sign and symptoms and major organs affected by these disorders.

Course Content

Unit I: General Pathology 9 hours

a) Introduction to Pathology
b) Cell injuries: Cellular swellings, Necrosis & Gangrene, Autolysis. Pathologic calcification, Intracellular Accumulations.
c) Inflammation and Repair: Acute inflammation, Chronic inflammation, Repair, Wound healing by primary and secondary union, factors promoting and delaying the process. Healing in specific sites, including bone healing.
d) Immunopathology: Immune system, Hypersensitivity: type and examples, antibody and cell mediated tissue injury with examples. Secondary immunodeficiency including HIV infection. Auto-immune disorders: Basic concepts and classification, SLE. AIDS-Aetiology, Modes of transmission, Diagnostic procedures, handling of infected material and health education.

Unit II: Infectious diseases 9 hours

a) Mycobacterial diseases: Tuberculosis, Leprosy and Syphilis.

b) Bacterial disease: Pyogenic, Diphtheria, Gram negative infection, Bacillary dysentery.
c) Viral diseases: Poliomyelitis, Herpes, Rabies, Measles, Rickettsia, Chlamydial infection, HIV infection.
d) Fungal disease and opportunistic infections.
e) Parasitic diseases: Malaria, Filaria, Amoebiasis, Kala-azar, Cysticercosis, Hydatid cyst.

Unit III: Growth Disturbances and Neoplasia 9 hours

a) Atrophy, Hypertrophy, Hyperplasia, Aplasia, Hypoplasia, Metaplasia, Malformation, agenesis, dysplasia.
b) Neoplasia: Definition, classification, Biological behaviour: Benign and Malignant, Carcinoma and Sarcoma.
c) Malignant Neoplasia: Grades and Stages, Local & Distant spread.
d) Carcinogenesis: Environmental carcinogens, chemical, viral, occupational. Heredity and cellular oncogenes and prevention of cancer.

Unit IV: Systemic pathology 9 hours

a) Hematology: Constituents of blood and bone marrow, Anemia: Classification, clinical features & lab diagnosis. Types of anaemia,
b) Respiratory System: Pneumonia, Bronchitis, Bronchiectasis, Asthma, Tuberculosis, Carcinoma of lungs, Occupational lung diseases.
c) Cardiovascular Pathology: Congenital Heart diseases, Endocarditis. Rheumatic Heart disease, Vascular diseases, Ischemic heart Disease: Myocardial infarction. Hypertension and hypertensive heart disease. Circulatory disturbance: Hyperemia/Ischemia and Haemorrhage, Edema, Chronic venous congestion, Thrombosis and Embolism, Infarction, Shock.
d) Alimentary tract: Oral Pathology, Gastritis, Ulcer & Tumours, Pancreatitis and pancreatic tumours, Hepato-biliary pathology: Jaundice, Hepatitis, Alcoholic liver disease, Cirrhosis.
e) Lymphatic System: Hodgkin's and Non hodgkin's Lymphomas, Metastatic Tumours.
f) Musculoskeletal System: Osteomyelitis, Metabolic diseases: Rickets/ Osteomalacia, osteoporosis, Hyperparathyroidism, Paget's disease. Tumours, Arthritis: Suppurative, Rheumatoid. Osteoarthritis, Gout.
a) Endocrine pathology: Diabetes Mellitus: Types, Pathogenesis, Pathology, Laboratory diagnosis; Non-neoplastic lesions of Thyroid: Iodine deficiency goiter, autoimmune Thyroiditis, Thyrotoxicosis, myxedema, Hashimoto's thyroiditis. Adrenal diseases: cortical hyperplasia, atrophy, tuberculosis.

Unit V: Neuropathology 4 hours

a) Inflammations and Infections: TB Meningitis, Pyogenic Meningitis, viral meningitis and Brain Abscess
b) Tuberculosis, Cysticercosis

CNS Tumors, Astrocytoma, Neuroblastoma, Meningioma, Medulloblastoma

Textbook:

1. Mohan H, “Textbook of Pathology”, Jaypee Brothers.

Reference Books:

1. Robbins & Cotran, “Pathologic Basis of Disease”, Elsevier.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and Pos		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Understand the fundamental cellular and tissues responses to pathologic stimuli.	**PO2**
CO2	Build on the knowledge of physiology to ascertain the body's response to injury or disease.	**PO2**
CO3	Comprehend the inflammatory response and repair process	**PO2**
CO4	Correlate multi-system effects of diseases and appreciate the interdependence and linkage of the body systems.	**PO6**
CO5	Have an overview of genetic and growth disorders, nutritional disorders, growth disturbances and neoplasia.	**PO2**
CO6	Demonstrate knowledge of systemic pathology and its relevance as a base for understanding medical conditions.	**PO2**

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**

MAPT207	**PATHOLOGY**		**3**				**1**	**2**	**1**	

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT211	**PHARMACOLOGY**	**L**	**T**	**P**	**C**
Version 1.0		**3**	**1**	**0**	**4**
Pre-requisites/Exposure	HUMAN ANATOMY				
Co-requisites	PATHOLOGY				

Course Objectives

1. This course introduces the student to basic pharmacology of common drugs used, their importance in the overall treatment including Physiotherapy.
2. The student after completing the course will be able to understand the general principles of drug action and the handling of drugs by the body.
3. The student will be aware of the contribution of both drug and physiotherapy factors in the outcome of treatment.

Course Outcomes

On completion of this course, the students will be able to

CO1. Possess a relevant knowledge in basic principles of pharmacology and its recent advances.
CO2. Understand the basic pharmacology of common drugs used, their importance in the overall treatment including Physiotherapy.
CO3. Understand the general principles of drug action and the handling of drugs by the body.
CO4. Understand the contribution of both drug and physiotherapy factors in the outcome of treatment.
CO5. Appreciate the multidisciplinary approach to helping a patient deal with diseases, disorders and pain.
CO6. Collate the knowledge gained through the study of physiology, pathology, and microbiology as a base for comprehension of mechanism of action of drugs.

Catalog Description

This course imparts information regarding drugs used for the treatment and management of various ailments. The subject is designed to provide in depth knowledge about the mechanism of action of various drugs, their side effects, and dose in which they should be taken to prevent the disease progression.

Course Content

Unit I: General Pharmacology 9 hours

Introduction, Definitions, Classification of drugs, Sources of drugs, Routes of drug administration, Distribution of drugs, Metabolism and Excretion of drugs Pharmacokinetics, Pharmacodynamics, Factors modifying drug response, Adverse effects.

Unit II: Neuropharmacology 9 hours

a) Somatic Nervous System, Cholinergic and Anti-Cholinergic drugs, Adrenergic and Adrenergic blocking drugs, Peripheral muscle relaxants.
b) Disorders of Movement: Drugs used in Treatment of Parkinson ’s disease, Antiepileptic Drugs, Spasticity and Skeletal Muscle Relaxants.
c) Geriatric pharmacology: Adverse effects of special concern in the Elderly, Dementia, Postural hypotension.

Unit III: Cardiorespiratory Pharmacology 9 hours

a) Drugs used in the treatment of heart failure: Digitalis, Diuretics, Vasodilators, ACE inhibitors Antihypertensive Drugs: Diuretics, Beta Blockers, Calcium Channel Blockers, ACE Inhibitors, Central Acting Alpha Agonists, Peripheral Alpha Antagonists, Direct acting Vasodilators.
b) Antiarrhythmic Drugs
c) Drugs used in the treatment of vascular disease and tissue ischemia: Vascular Disease, Hemostasis Lipid-Lowering agents, Antithrombotics, Anticoagulants and Thrombolytics Ischemic Heart Disease – Nitrates, Beta-Blockers, Calcium Channel Blockers, Cerebral Ischemia Peripheral Vascular Disease.
d) Respiratory Pharmacology: Obstructive Airway Diseases, Drugs used in Treatment of Obstructive airway Diseases, Allergic Rhinitis

Unit IV: Musculoskeletal Pharmacology 9 hours

a) Inflammatory/Immune Diseases: Non-narcotic Analgesics and Nonsteroidal Anti-Inflammatory Drugs: Acetaminophen, NSAIDs, Aspirin, Nonaspirin NSAIDs, drug Interactions with NSAIDs
b) Glucocorticoids: Pharmacological Uses of Glucocorticoids, adverse effects, Physiologic Use of Glucocorticoids
c) Drugs Used in Treatment of Arthritic Diseases: Rheumatoid Arthritis, Osteoarthritis, Gout
d) Drugs Used in the Treatment of Neuromuscular Immune/Inflammatory Diseases: Myasthenia gravis, Idiopathic Inflammatory Myopathies, systemic lupus Erythematous, Scleroderma, Demyelinating Disease

Unit V: Digestion and Metabolism 4 hours

Gastrointestinal Pharmacology: Peptic Ulcer Disease, Constipation, Diarrhea Drugs Used in Treatment of Diabetes Mellitus: Insulin, Oral Hypoglycemics.

Text Books

1. Tripathi KD, “Essentials of Medical Pharmacology”, Jaypee Publications.
2. Udaykumar P, “Textbook of Pharmacology for Physiotherapy”, Jaypee Publications.

Reference Books/Materials

1. Rang HP, Dale MM et al, “Pharmacology”, Churchill Livingstone.
2. Panda UN, “Handbook of Pharmacology”, AITBS Publication.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and Pos		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Possess a relevant knowledge in basic principles of pharmacology and its recent advances	**PO2**
CO2	Understand the basic pharmacology of common drugs used, their importance in the overall treatment including Physiotherapy	**PO6**
CO3	Understand the general principles of drug action and the handling of drugs by the body.	**PO2**
CO4	Understand the contribution of both drug and physiotherapy factors in the outcome of treatment.	**PO6**
CO5	Appreciate the multidisciplinary approach to helping a patient deal with diseases, disorders and pain.	**PO2**
CO6	Collate the knowledge gained through the study of physiology, pathology, and microbiology as a base for comprehension of mechanism of action of drugs.	**PO2**

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT211A	**Pharmacology**		**3**				**1**	**2**	**1**	**1**

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT209A	MICROBIOLOGY	L	T	P	C
Version 1.0		2	1	0	3
Pre-requisites/Exposure	HUMAN PHYSIOLOGY				
Co-requisites	PATHOLOGY				

Course Objectives

1. Microbiology involves the study of common organisms causing diseases including nosocomial infections and precautionary measures to protect one from acquiring infections.
2. The knowledge and understanding of Microbiology are essential to institute appropriate treatment or suggest preventive measures to the patient.

Course Outcomes

On completion of this course, the students will be able to
CO1. Understand the routes of infection and spread.
CO2: Know the basic principles of immunology.
CO3: Learn bacteriology and comprehend the basis of bacterial infections.
CO4. Learn virology and mycology to understand common viral and fungal infections.
CO5. Be able to recognize the basis of disease processes studied in applied microbiology.
CO6. Collate the knowledge of physiology ad pathology to have a clear picture about the effects of infections on the body.

Catalog Description

This course imparts knowledge of the various parasites and vectors responsible for the infectious diseases and to understand the involved pathological and physiological mechanisms. The subject also deals with the concepts of immunology in order to comprehend the origin of infections.

Course Content

UNIT I General Microbiology 5 hours

a) Definitions: infections, parasite, host, vector, fomite, contagious disease, infectious disease, epidemic, endemic, pandemic, Zoonosis, Epizootic, Attack rate.
b) Normal flora of the human body.
c) Routes of infection and spread; endogenous and exogenous infections; source at reservoir of infections.
d) Bacterial cell. Morphology limited to recognizing bacteria in clinical samples Shape, motility and arrangement. Structures, which are virulence, associated.
e) Physiology: Essentials of bacterial growth requirements.
f) Sterilization, disinfection and universal precautions in relation to patient care and disease prevention. Definition of asepsis, sterilization, disinfection.
g) Antimicrobials: Mode of action, interpretation of susceptibility tests, resistance spectrum of activity.

UNIT II Immunology 5hrs

a) Basic principles of immunity immunobiology: lymphoid organs and tissues. Antigen, Antibodies, antigen and antibody reactions with relevance to pathogenesis and serological diagnosis.
b) Humoral immunity and its role in immunity Cell mediated immunity and its role in

immunity. Immunology of hypersensitivity, Measuring immune functions.

UNIT III Bacteriology 8 hours

Morphology, classification according to pathogenicity, mode of transmission, methods of prevention, collection and transport of samples for laboratory diagnosis, interpretation of laboratory reports.

a) Staphylococci, Streptococci and Pneumococci.
b) Mycobacteria: Tuberculosis, M.leprae, atypical mycobacteria, Enterobacteriaceae,
c) Vibrio: V. cholerae and other medically important vibrios, Campylobacters and Helicobacters, Pseudomonas.
d) Bacillus anthracis, Sporing and non-sporing anaerobes: Clostridia, Bacteroides and Fusobacteria.

UNIT IV General Virology and Mycology 8 hours

a) General properties: Basic structure and broad classification of viruses. Pathogenesis and pathology of viral infections. Immunity and prophylaxis of viral diseases. Principles of laboratory diagnosis of viral diseases. List of commonly used antiviral agents.
b) General properties of fungi. Classification based on disease: superficial, subcutaneous, deep mycoses opportunistic infections including Mycotoxins, systemic mycoses. General principles of fungal diagnosis, Rapid diagnosis. Method of collection of samples. Antifungal agents.

UNIT V Clinical/Applied Microbiology 8 hours

a) Streptococcal infections: Rheumatic fever and Rheumatic heart disease, Meningitis.
b) Tuberculosis,
c) Pyrexia of unknown origin, leprosy,
d) Sexually transmitted diseases, Poliomyelitis,
e) Hepatitis,
f) Acute-respiratory infections, Central nervous System infections, Urinary tract infections,
g) Pelvic inflammatory disease, Wound infection, Opportunistic infections, HlV infection,
h) Malaria, Filariasis, Zoonotic diseases.

Text Books

1. Ananthanarayan & Paniker, “Textbook of Microbiology”, Universal Press.

Reference Books/Materials

1. Baveja CP & Baveja V. Textbook of Microbiology for Physiotherapy. Arya Pub

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and Pos		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Understand the routes of infection and spread.	**PO2**
CO2	Know the basic principles of immunology.	**PO2**
CO3	Learn bacteriology and comprehend the basis of bacterial infections.	**PO2**
CO4	Learn virology and mycology to understand common viral and fungal infections.	**PO2**
CO5	Be able to recognize the basis of disease processes studied in applied microbiology.	**PO2**
CO6	Collate the knowledge of physiology ad pathology to have a clear picture about the effects of infections on the body.	**PO6**

		Physiotherapy Knowledge	**Multidisciplinary/ Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT209A	**MICROBIOLOGY**		**3**				**1**	**2**	**1**	

1= weakly mapped 2= moderately mapped 3= strongly mapped

MADM301A	**DISASTER MANAGEMENT**	L	T	P	C
Version 1.0		3	-	-	3
Pre-requisites/Exposure	-				
Co-requisites	-				

Course Objectives:

1. Encouraging culture of disaster preparedness.
2. Institutionalisation of disaster management.
3. Safety and quick decision making.
4. Post disaster medical help and first aid.

Course Outcomes:

Upon completion of this course the student should be able to do

CO1. Provide students an exposure to disasters, their significance and types.
CO2. Ensure that the students begin to understand the relationship between vulnerability, disasters, disaster prevention and risk reduction.
CO3. Provide the students a preliminary understanding of approaches of Disaster Risk Reduction (DRR)
CO4. Develop rudimentary ability to respond to their surroundings with potential disaster response in areas where they live, with due sensitivity.

Catalog description:

The objective of the course is to create awareness about various types of disasters and to educate the learners about basic disaster management strategies. The course examines disaster profile of our country and illustrates the role played by various governmental and non- governmental organizations in its effective management. It also acquaints learners with the existing legal frame work for disaster management.

Course Content:

UNIT I Introduction to Disasters 8 hours

Concept and definitions- Disaster, Hazard, vulnerability, resilience, risks.

Different Types of Disaster: Causes, effects and practical examples for all disasters.

- Natural Disaster: such as Flood, Cyclone, Earthquakes, Landslides etc
- Man-made Disaster: such as Fire, Industrial Pollution, Nuclear Disaster, Biological Disasters, Accidents (Air, Sea, Rail & Road), Structural failures (Building and Bridge), War & Terrorism etc.

UNIT- II Disaster Preparedness and Response Preparedness 8 hours

- Disaster Preparedness: Concept and Nature
- Disaster Preparedness Plan
- Prediction, Early Warnings and Safety Measures of Disaster.
- Role of Information, Education, Communication, and Training, Role of Government, International and NGO Bodies.
- Role of IT in Disaster Preparedness
- Role of Engineers on Disaster Management.

- Relief and Recovery
- Medical Health Response to Different Disasters

UNIT III Rehabilitation, Reconstruction and Recovery 6 hours

- Reconstruction and Rehabilitation as a Means of Development.
- Damage Assessment
- Post Disaster effects and Remedial Measures.
- Creation of Long-term Job Opportunities and Livelihood Options,
- Disaster Resistant House Construction
- Sanitation and Hygiene
- Education and Awareness,
- Dealing with Victims' Psychology,
- Long-term Counter Disaster Planning
- Role of Educational Institute.

UNIT IV Disaster Management in India 8 hours

- **Disaster Management Act, 2005:**
  Disaster management framework in India before and after Disaster Management Act, 2005, National Level Nodal Agencies, National Disaster Management Authority
- **Liability for Mass Disaster**
  - Statutory liability
  - Contractual liability
  - Tortious liability
  - Criminal liability
  - Measure of damages
- **Epidemics Diseases Act, 1897: Main provisions, loopholes.**

Project Work: The project/ field work is meant for students to understand vulnerabilities and to work on reducing disaster risks and to build a culture of safety. Projects must be conceived based on the geographic location and hazard profile of the region where the institute is located.

Text book:

1.Government of India, Department of Environment, Management of Hazardous Substances Control

Reference books/Sites:

1.Act and Structure and Functions of Authority Created Thereunder.
2. Indian Chemical Manufacturers' Association & Loss Prevention Society of India, Proceedings of the National Seminar on Safety in Road Transportation of Hazardous Materials: (1986).

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Provide students an exposure to disasters, their significance and types.	PO6
CO2	Ensure that the students begin to understand the relationship between vulnerability, disasters, disaster prevention and risk reduction.	PO6
CO3	Provide the students a preliminary understanding of approaches of Disaster Risk Reduction (DRR)	PO6
CO4	Develop rudimentary ability to respond to their surroundings with potential disaster response in areas where they live, with due sensitivity.	PO6

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO1**	**PSO2**	**PSO3**
MADM301A	**DISASTER MANAGEMENT**						**3**		**2**	

1= Addressed to small extent
2= Addressed significantly
3= Major part of course

MAPT261A	CLINICAL EDUCATION-I	L	T	P	C
Version 1.0		0	0	4	2

Pre-requisites/Exposure	CLINICAL OBSERVATION
Co-requisites	-

Course Objectives

1. Continue the clinical training so that each student can learn from the experience of assessment and treatment planning, goal setting and execution of treatment under supervision.
2. Learn practical skills to manage patient's condition.

Course Outcomes

Upon completion of this course the student should be able to

CO1. Assist physiotherapists working in different clinical settings.
CO2. Be familiar with different types of assessment forms.
CO3. Perform basic mobilization and stretching techniques under supervision.
CO4. Imbibe professional values seen in practicing clinicians.
CO5. Appreciate the importance of multidisciplinary teamwork in healthcare.
CO6. Be aware of and spread awareness regarding the importance of physiotherapy.

Catalog Description

Clinical training ensures the students to acquire the geographical orientation of the various concerned sections of the physiotherapy departments. This subject helps to get the overall idea about the graduate program & its scope in the professional practice.

Course Content:

Clinical posting in general and specialized Physiotherapy Departments, including clinical visits. Students should observe and assist the clinicians in:
1. Assessment
2. Diagnosis
3. Treatment planning and
4. Execution.

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination
Examination Scheme:

Components	**Internal Practical**	**Attendance**	**End Term Exam**
Weightage (%)	**40**	**10**	**50**

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Assist physiotherapists working in different clinical settings.	**PO6**

CO2	Be familiar with different types of assessment forms.	**PO3**
CO3	Perform basic mobilization and stretching techniques under supervision.	**PO3**
CO4	Imbibe professional values seen in practicing clinicians.	**PO6**
CO5	Appreciate the importance of multidisciplinary teamwork in healthcare.	**PO6**
CO6	Be aware of and spread awareness regarding the importance of physiotherapy.	**PO6**

		Physiotherapy Knowledge	**Multidisciplinary/ Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT261A	**CLINICAL EDUCATION-I**			**3**			**3**	**3**	**2**	**2**

1= weakly mapped 2= moderately mapped 3= strongly mapped

SEMESTER IV

MAPT202A	BIOMECHANICS AND KINESIOLOGY-II	L	T	P	C
Version 1.0		3	1	0	4
Pre-requisites/Exposure	BIOMECHANICS AND KINESIOLOGY-I				
Co-requisites	BIOMECHANICS AND KINESIOLOGY-II LAB				

Course Objectives

1. Explain the kinetics and kinematics acting on the human body.
2. Describe the fundamentals of joint and muscle function.
3. Understand the mechanism of movement of the body in relation to the forces acting on it.
4. Application of the biomechanics knowledge in physiotherapy.

Course Outcomes

On completion of this course, the students will be able to

CO1. Recall principles of biomechanics and physics applicable to the human body.
CO2. Observe and utilize the concepts of biomechanical analysis in assessment of patients.
CO3. Visualise the structures of the lower limb and normal biomechanics.
CO4. Recognize variations and abnormal biomechanics in the movements of the lower limb.
CO5. Extrapolate knowledge of normal biomechanics to diagnose and evaluate movement dysfunction.
CO6. Analyse normal and abnormal posture and gait.

Catalog Description

This subject is designed to introduce and reinforce kinetics and kinematics, fundamental to the knowledge of joint and muscle function. It helps in understanding the mechanism of movement of the body in relation to the forces acting on it. The subject provides the basic knowledge required to understand the various disciplines of physiotherapy.

Course Content

UNIT I 10 hours

- **The Hip Complex**

Structure and function of the hip joint, Hip joint pathology- arthrosis, fracture, bony abnormalities of the femur

UNIT II 10 hours

- **The Knee Complex**

Structure and function of the knee joint – tibiofemoral joint and patellofemoral joint, effects of injury and disease.

UNIT III 10 hours

- **The Ankle and Foot Complex**
  Structure and function of the ankle joint, subtalar joint, talocalcaneonavicular joint, transverse tarsal joint, tarsometatarsal joints, metatarsophalangeal joints, interphalangeal joints. Structure and function of the plantar arches. Muscles of the ankle and foot. Deviations from normal structure and function – Pes Planus and Pes Cavus

UNIT IV
10 hours

- **Posture**
  Analysis of Posture– Static and dynamic posture, postural control, kinetics and kinematics of posture, ideal posture analysis of posture, effects of posture on age, pregnancy, occupation and recreation.

- **Gait**
  General features of gait, gait initiation, kinematics and kinetics of gait, energy requirements, kinematics and kinetics of the trunk and upper extremities in relation to gait, stair case climbing and running, effects of age, gender, assistive devices, disease, muscle weakness, paralysis, asymmetries of the lower extremities, injuries and malalignments in gait.

- **Movement Analysis**
  ADL activities like sitting – to standing, lifting, various grips, pinches.

Textbook:
1. Norkin C, “Joint Structure and Function”, Jaypee Publication.

Reference Book:
1. Brunstrom, “Clinical Kinesiology”, Jaypee Publication.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and Pos		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Recall principles of biomechanics and physics applicable to the human body.	**PO2**
CO2	Observe and utilize the concepts of biomechanical analysis in assessment of patients	**PO3**
CO3	Visualise the structures of the lower limb and normal biomechanics	**PO1**
CO4	Recognize variations and abnormal biomechanics in the movements of the lower limb	**PO1**
CO5	Extrapolate knowledge of normal biomechanics to diagnose and evaluate movement dysfunction.	**PO3**
CO6	Analyse normal and abnormal posture and gait.	**PO1**

		Physiotherapy Knowledge	**Multidisciplinary/ Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT202A	**BIOMECHANICS AND KINESIOLOGY -II**	**3**	**1**	**2**				**2**		**2**

1=Addressed to small extent 2= Addressed significantly 3=Major part of course

MAPT252A	BIOMECHANICS AND KINESIOLOGY-II LAB	L	T	P	C
Version 1.0		0	0	2	1
Pre-requisites/Exposure	BIOMECHANICS AND KINESIOLOGY-I LAB				
Co-requisites	BIOMECHANICS AND KINESIOLOGY-II				

Course Objectives

1. Analysis for activities of daily living – ADL.
2. Explain and demonstrate the movements occurring at the joints, the muscles involved, the movements or muscle action produced, and mention the axis and planes through which the movements occur.

Course Outcomes

On completion of this course, the students will be able to

CO1. Perform assessment of posture.
CO2. Analyse the different phases of the gait cycle and diagnose abnormal gair patterns.
CO3. Observe and analyse the biomechanics of the lower limb.
CO4. Diagnose the abnormalities in movement related to lower limb.

Catalog Description

Lab work is complimentary to the theoretical discussions in biomechanics & kinesiology. . Hands on practice allow the explain and demonstrate the movements occurring at the joints, the muscles involved, the movements or muscle action produced, and mention the axis and planes through which the movements occur. This is helpful for developing an insight on the subject.

Course Content:

1. Analysis of joint movement- joints of the lower limb.
2. Biomechanical analysis of posture- static and dynamic.
3. Biomechanical analysis and assessment of gait.
4. Demonstration of ADLs and patterns of movement.
5. Determination of muscle work involved in different movements.

Textbook:

1. Norkin C, “Joint Structure and Function”, Jaypee Publication.

Reference Book:

1. Brunstrom, “Clinical Kinesiology”, Jaypee Publication.

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination

Examination Scheme:

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	**40**	**10**	**50**

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Perform assessment of posture.	**PO3**
CO2	Analyse the different phases of the gait cycle and diagnose abnormal gair patterns.	**PO3**
CO3	Observe and analyse the biomechanics of the lower limb.	**PO1**
CO4	Diagnose the abnormalities in movement related to lower limb.	**PO3**

		Physiotherapy Knowledge	**Multidisciplinary/ Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT252A	**BIOMECHANICS AND KINESIOLOGY -II LAB**	**1**		**3**				**3**		**2**

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT204A	EXERCISE THERAPY-II	L	T	P	C
Version 1.0		3	1	0	4
Pre-requisites/Exposure	EXERCISE THERAPY-I				
Co-requisites	EXERCISE THERAPY-II LAB				

Course Objectives

1. Understand the principles and effects of exercise as a therapeutic modality.
2. Learn the techniques in the restoration of physical functions.

Course Outcomes

Upon completion of this course the student will be able to

CO1. Comprehend the normal disposition, inter-relationships, gross, functional and applied anatomy of the musculoskeletal system, locomotion, posture, gait and various organs in the body.
CO2. Understand the concepts of Proprioceptive Neuromuscular Facilitation and apply these principles according to the condition.
CO3. Understand the principles of suspension therapy and its application.
CO4. Learn and practice different techniques of mobilization and strengthening.
CO5. Perform thorough assessment of posture.
CO6. Determine the requirement for manual therapy and be able to decide the technique recommended depending on the case.

Catalog Description

This subject is designed to understand the principles and effects of exercise therapeutically. It helps in understanding the mechanism of basic concepts used in exercise therapy and their application & requirement according to the condition The subject provides the basic knowledge required to understand the various disciplines of physiotherapy.

Course Content

UNIT I 10 hours

- **Exercise types and regimens**
  Determinants of an Exercise Program, The Exercise Program

- **Aerobic Exercise**
  Examination and evaluation of aerobic capacity – Exercise Testing, Normal and abnormal response to acute aerobic exercise, Physiological changes that occur with training, Application of Principles of an Aerobic conditioning program for patients – types and phases of aerobic training.

- **Functional Re-education**
  Lying to sitting: Activities on the Mat/Bed, Movement and stability at floor level; Sitting activities and gait; Lower limb and Upper limb activities.

- **Specific exercise regimes**
  Isotonic-de Lormes, Oxford, MacQueen, Circuit weight training; Isometric: BRIME

(Brief Resisted Isometric Exercise), Multiple Angle; Isokinetic regimens.

- **Hydrotherapy**
  Definitions, Goals and Indications, Precautions and Contraindications, Properties of water, Use of special equipment, techniques, Effects and uses, merits and demerits.

- **Individual and Group Exercises**
  Advantages and Disadvantages, Organization of Group exercises, Recreational Activities and Sports.

UNIT II **5 hours**

- **Proprioceptive Neuromuscular Facilitation**
  Definitions & goals, Basic neurophysiologic principles of PNF: Muscular activity, Diagonals patterns of movement: upper limb, lower limb, Procedure: components of PNF Techniques of facilitation: Mobility: Contract relax, Hold relax, Rhythmic initiation; Strengthening: Slow reversals, repeated contractions, timing for emphasis, rhythmic stabilization Stability: Alternating isometric, rhythmic stabilization; Skill: timing for emphasis, resisted progression Endurance: slow reversals, agonist reversal

UNIT III **3 hours**

- **Suspension Therapy**
  Definition, principles, equipment & accessories, Indications & contraindications, Benefits of suspension therapy, Types of suspension therapy: axial, vertical, pendular Techniques of suspension therapy for upper limb Techniques of suspension therapy for lower limb

UNIT IV **12 hours**

- **Manual Therapy & Peripheral Joint Mobilization**
  Schools of Manual Therapy, Principles, Grades, Indications and Contraindications, Effects and Uses – Maitland, Kaltenborn, Mulligan. Biomechanical basis for mobilization,
  Effects of joint mobilisation, Indications and contraindications, Grades of mobilization, Principles of mobilization, Techniques of mobilization for upper limb, lower limb, Precautions.

- **Basics in Manual Therapy & Applications with Clinical reasoning**
  Examination of joint integrity, Contractile tissue, Non contractile tissues, Mobility - assessment of accessory movement & End feel, Assessment of articular & extra-articular soft tissue status, Myofascial assessment, Acute & Chronic muscle hold, Tightness, Pain-original & referred.

- **Basic principles, Indications & Contra-Indications of mobilization skills for joints & soft tissues:** Maitland, Mulligan, Mckenzie, Muscle Energy Technique, Myofascial stretching, Cyriax, Neuro Dynamic Testing.

UNIT V **10 hours**

- **Posture**
  Posture: Definition, Active and Inactive Postures, Postural Mechanism, Patterns of

Posture, Principles of re-education: corrective methods and techniques, Patient education. Walking Aids: Types: Crutches, Canes, Frames; Principles and training with walking aids

- **Balance**
  Physiology of balance: contributions of sensory systems, processing sensory information, generating motor output, Components of balance (sensory, musculoskeletal, biomechanical) Causes of impaired balance, Examination & evaluation of impaired balance, Activities for treating impaired balance: mode, posture, movement, Precautions & contraindications, Types of Balance retraining.

- **Co-ordination Exercise**
  Anatomy & Physiology of cerebellum with its pathways Definitions: Co-ordination, Incoordination, Causes for Inco-ordination, Test for co-ordination: equilibrium test, non-equilibrium test Principles of co-ordination exercise. Frenkel's Exercise: uses of Frenkel's exercise, technique of Frenkel's exercise, progression, home exercise.

Textbooks:

1. Kisner, Colby, "Therapeutic Exercise", F.A. Davis.
2. Norkin C, "Measurement of Joint Motion- A Guide to Goniometry", Jaypee Publications.
3. Hollis M, "Practical Exercise Therapy", Blackwell Sciences Publication.

Reference Book:

1. Casser MP, "Handbook of Clinical Massage", Elsevier Publication.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and Pos		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Comprehend the normal disposition, inter-relationships, gross, functional and applied anatomy of the musculoskeletal system, locomotion, posture, gait and various organs in the body	PO1
CO2	Understand the concepts of Proprioceptive Neuromuscular Facilitation and apply these principles according to the condition.	PO1

CO3	Understand the principles of suspension therapy and its application	**PO1**
CO4	Learn and practice different techniques of mobilization and strengthening.	**PO3**
CO5	Perform thorough assessment of posture.	**PO3**
CO6	Determine the requirement for manual therapy and be able to decide the technique recommended depending on the case.	**PO5**

		Physiotherapy Knowledge	**Multidisciplinary / Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT204A	**EXERCISE THERAPY-II**	**3**		**2**		**2**		**3**		**2**

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT254A	EXERCISE THERAPY-II LAB	L	T	P	C
Version 1.0		0	0	2	1
Pre-requisites/Exposure	Exercise Therapy-I Lab				
Co-requisites	Exercise Therapy-II				

Course Objectives

1. Practical Laboratory work for all the topics discussed in theory.
2. Evaluate and apply judiciously the different methods of exercise therapy techniques on the patients.

Course Outcomes

Upon completion of this course the student will be able to do

CO1. Demonstrate the PNF techniques, Frenkel's exercises and joint mobilization techniques.
CO2. Assess and train for using walking aids, measure limb length and body circumference.
CO3. Use the technique of suspension therapy for mobilizing and strengthening joints and muscles.
CO4. Assess and evaluate posture and gait.

Catalog Description

Lab work is complimentary to the theoretical discussions in exercise therapy. Hands on practice allow the explain and demonstrate the different methods of exercise therapy techniques on the patients. This is helpful for developing an insight on the subject.

Course Content:

1. Demonstrate the PNF techniques
2. Demonstrate exercises for training co-ordination – Frenkel's exercise
3. Demonstrate the techniques of massage manipulations
4. Demonstrate techniques for functional re-education
5. Assess and train for using walking aids
6. Demonstrate mobilization of individual joint regions
7. Demonstrate to use the technique of suspension therapy for mobilizing and strengthening joints and
muscles
8. Demonstrate the techniques for muscle stretching
9. Assess and evaluate posture and gait
10. Demonstrate techniques of strengthening muscles using resisted exercises
11. Demonstrate techniques for measuring limb length and body circumference.

Textbooks:

1. Kisner, Colby, "Therapeutic Exercise", F.A. Davis.
2. Norkin C, "Measurement of Joint Motion- A Guide to Goniometry", Jaypee Publications.
3. Hollis M, "Practical Exercise Therapy", Blackwell Sciences Publication.

Reference Book:

1. Casser MP, "Handbook of Clinical Massage", Elsevier Publication

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination

Examination Scheme:

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	40	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Demonstrate the PNF techniques, Frenkel's exercises and joint mobilization techniques.	PO3
CO2	Assess and train for using walking aids; measure limb length and body circumference	PO1
CO3	Use the technique of suspension therapy for mobilizing and strengthening joints and muscles.	PO5
CO4	Assess and evaluate posture and gait	PO3

		Physiotherapy Knowledge	Multidisciplinary / Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	Course Title	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3
MAPT254A	EXERCISE THERAPY-II LAB	3		3		2		3		2

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT206A	ELECTROTHERAPY-II	L	T	P	C
Version 1.0		3	1	0	4
Pre-requisites/Exposure	ELECTROTHERAPY-I				
Co-requisites	ELECTROTHERAPY-II LAB				

Course Objectives

1. Learn the Principles, Techniques, Effects, Indication, Contra-Indication and the dosage parameter for various indications of electro therapeutic modalities in the restoration of physical function.
2. List the indications, contra indications, dosages of electrotherapy modalities, demonstrates the different techniques, and describe their effects on various conditions.

Course Outcomes

Upon completion of this course the student should be able to
CO1. Know the production, physiological and therapeutic effect of various modalities techniques of application, indications, contraindications, precautions, operational skills and patient.
preparation, like IFT, LASER.
CO2. Understand the basic physics and various electrical currents (Medium / High frequency currents).
CO3. Know the different therapeutic and physiological effect of cold and heat therapy.
CO4. Describe the contraindication, precaution of different modalities according to the different
conditions.
CO5. Think critically to modify the treatment according to their better results.
CO6. Know the principle & basic techniques of E.M.G. and N.C.V.

Catalog Description

This subject is designed to understand the principles and effects of various modalities techniques of application, indications, contraindications, precautions, operational skills and patient preparation, It helps in understanding the mechanism of basic concepts used in electrotherapy and their application & requirement according to the condition The subject provides the basic knowledge required to understand the various disciplines of physiotherapy

Course Content

UNIT I 5 hours

- **Electro-diagnosis**

FG Test, SD Curve: Methods of Plotting SD Curve, Apparatus selection, Characters of Normally innervated Muscle, Characters of Partially Denervated Muscle, Characters of Completely denervated Muscle, Chronaxie & Rheobase. Nerve conduction velocity studies. EMG: Construction of EMG equipment. Bio-feedback.

UNIT II **5 hours**

- **Medium Frequency Currents**
  Interferential Therapy: Define IFT, Principle of Production of IFT, Static Interference System, Dynamic Interference system, Dosage Parameters for IFT, Electrode placement in IFT, Physiological & Therapeutic effects, Indications & Contraindications. Russian

Current Rebox type Current

UNIT III 10 hours

- **High Frequency Currents**
  Electro Magnetic Spectrum.

- **SWD**: Define short wave, Frequency & Wavelength of SWD, Principle of Production of SWD, Circuit diagram & Production of SWD, Methods of Heat Production by SWD treatment, Types of SWD Electrode, Placement & Spacing of Electrodes, Tuning, Testing of SWD Apparatus, Physiological & Therapeutic effects, Indications & Contraindications, Dangers, Dosage parameters.

- **Pulsed Electro Magnetic Energy:** Principles, Production & Parameters of PEME, Uses of PEME.

- **Micro Wave Diathermy**: Define Microwave, Wave length & Frequency, Production of MW, Applicators, Dosage Parameters, Physiological & Therapeutic effects, Indications & Contraindications, Dangers of MWD.

UNIT IV 10 hours

- **Ultrasound**
  Define Ultrasound, Frequency, Piezo Electric effects: Direct, Reverse**,** Production of US**,** Treatment Dosage parameters: Continuous & Pulsed mode, Intensity**,** US Fields: Near field, Far field, Half value distance, Attenuation. Thermal effects, Non-thermal effects**,** Principles & Application of US: Direct contact, Coupling Media, Water bag, Water bath, Solid sterile gel pack method for wound. Uses of US, Indications & Contraindications, Dangers of Ultrasound. Phonophoresis: Define Phonophoresis, Methods of application, commonly used drugs, Uses. Dosages of US.

UNIT V Actinotherapy 10 hours

- **IRR**: Define IRR, wavelength & parameters, Types of IR generators, Production of IR, Physiological & Therapeutic effects, Duration & frequency of treatment, Indication & Contraindication.

- **UVR**: Define UVR, Types of UVR, UVR generators: High pressure mercury vapour lamp, Water cooled mercury vapour lamp, Kromayer lamp, Fluorescent tube, Theraktin tunnel, PUVA apparatus. Physiological & Therapeutic effects. Sensitizers & Filters. Test dosage calculation. Calculation of E1, E2, E3, E4 doses. Indications, contraindications. Dangers. Dosages for different therapeutic effects, Distance in UVR lamp.

- **LASER**: Define LASER. Types of LASER. Principles of Production. Production of LASER by various methods. Methods of application of LASER. Dosage of LASER. Physiological & Therapeutic effects of LASER. Safety precautions of LASER. Classifications of LASER. Energy density & power density.

Text Books:

1. Low & Reed, “Electrotherapy Explained”, Butterworth Heinemann.
2. Forster and Palastanga, “Clayton’s Electrotherapy”, CBS.

Reference Books:

1. Kahn J, “Principles and Practice of Electrotherapy”.
2. Nelson & Currier, “Clinical Electro Therapy”.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Know the production, physiological and therapeutic effect of various modalities techniques of application, indications, contraindications, precautions, operational skills and patient preparation, like IFT, LASER.	PO1
CO2	Understand the basic physics and various electrical currents (Medium / High frequency currents).	PO4
CO3	Know the different therapeutic and physiological effect of cold and heat therapy	PO3
CO4	Describe the contraindication, precaution of different modalities according to the different conditions.	PO1
CO5	Think critically to modify the treatment according to their better results.	PO5
CO6	Know the principle & basic techniques of E.M.G. and N.C.V.	PO1

		Physiotherapy Knowledge	Multidisciplinary/ Medical know	Clinical and Practical Skills	Utilisation of Modern Techno l	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills

			ledge		**ogy**					
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT206A	**ELECTROTHERAPY-II**	**3**		**2**	**2**	**2**		**3**		**2**

1=Addressed to small extent 2= Addressed significantly 3=Major part of course

MAPT256A	**ELECTROTHERAPY-II LAB**	L	T	P	C
Version 1.0		0	0	4	2
Pre-requisites/Exposure	ELECTROTHERAPY-I LAB				
Co-requisites	ELECTROTHERAPY-II				

Course Objectives

1. Practical Laboratory work for all the topics discussed in theory.
2. Demonstrate the use of electrotherapy modalities applying the principles of electrotherapy with proper techniques, choice of dosage parameters and safety precautions.

Course Outcomes

Upon completion of this course the student will be able to do
CO1. Perform patient evaluation – receiving the patient and positioning the patient for treatment using electrotherapy, check the equipment.
CO2. Apply therapeutic ultrasound for different regions-various methods of application.
CO3. Demonstrate treatment techniques using SWD, IRR and IFT.
CO4. Calculate dosage and demonstrate technique of application of UVR and LASER.

Catalog Description

Lab work is complimentary to the theoretical discussions in electrotherapy. Hands on practice allow the explain and demonstrate the use of electrotherapy modalities applying the principles of electrotherapy with proper techniques, choice of dosage parameters and safety precautions. This is helpful for developing an insight on the subject.

Course Content:

1. Demonstrate the technique for patient evaluation – receiving the patient and positioning the patient for treatment using electrotherapy.

2. Collection of materials required for treatment using electrotherapy modalities and testing of the apparatus.
3. Plotting of SD curve with chronaxie and rheobase
4. Demonstrate FG test
5. Application of Ultrasound for different regions-various methods of application
6. Demonstrate treatment techniques using SWD, IRR and Microwave diathermy
7. Demonstrate the technique of UVR exposure for various conditions – calculation of test dose.
8. Demonstrate treatment method using IFT for various regions
9. Calculation of dosage and technique of application of UVR and LASER
10. Winding up procedure after any electrotherapy treatment method.
11. Equipment care - Checking of equipment, Arrangement of exercise therapy and electro therapy equipment. Calibration of equipment, Purchase, billing, document of equipment. Safety handling of equipment. Research lab equipment maintenance.
12. Stock register, movement register maintenance

Text Books:

1. Low & Reed, "Electrotherapy Explained", Butterworth Heinemann.
2. Forster and Palastanga, "Clayton's Electrotherapy", CBS.

Reference Books:

1. Kahn J, "Principles and Practice of Electrotherapy".
2. Nelson & Currier, "Clinical Electro Therapy".

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination

Examination Scheme:

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	40	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Perform patient evaluation – receiving the patient and positioning the patient for treatment using electrotherapy, check the equipment.	PO3
CO2	Apply therapeutic ultrasound for different regions-various methods of application.	PO3
CO3	Demonstrate treatment techniques using SWD, IRR and IFT.	PO4
CO4	Calculate dosage and demonstrate technique of application of UVR and LASER.	PO5

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT256A	**ELECTROTHERAPY-II LAB**			**3**	**3**	**2**		**3**		**2**

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT208A	PROFESSIONAL ETHICS AND LAWS	L	T	P	C
Version 1.0		2	0	0	2
Pre-requisites/Exposure	-				
Co-requisites	-				

Course Objectives

1. Gain knowledge about legal and ethical considerations of good medical practice across the whole spectrum.
2. Focus on the important and relevant topics related to legal aspects in healthcare.

Course Outcomes

Upon completion of this course the student should be able to

CO1. Understand the ethical principles of physiotherapy profession.
CO2. Understand principles of management in personal management, time management and administration including budgeting.
CO3. Understand the medico-legal issues in physiotherapy.
CO4. Differentiate between medical and physiotherapy diagnosis.

Catalog Description

This course is designed to provide basic knowledge on legal responsibility and professional culture. The subject provides the insights for rules and regulations of governing bodies of Physiotherapy

Course Content:

UNIT I 5 hours

- Medical ethics versus medical law - Definition - Goal - Scope
- Introduction to Code of conduct
- Basic principles of medical ethics – Confidentiality
- Malpractice and negligence - Rational and irrational drug therapy

UNIT II 3 hours

- Autonomy and informed consent - Right of patients
- Care of the terminally ill- Euthanasia
- Organ transplantation

UNIT III 5 hours

- Medical diagnosis versus physiotherapy diagnosis.
- Medico legal aspects of medical records – Medico legal case and type- Records and document related to MLC - ownership of medical records - Confidentiality Privilege communication - Release of medical information - Unauthorized disclosure - retention of medical records - other various aspects.
- Professional Indemnity insurance policy
- Development of standardized protocol to avoid near miss or sentinel events.
- Obtaining an informed consent.

UNIT IV **5 hours**

- Biomedical ethical principles
- Code of ethics for physiotherapists
- Ethics documents for physiotherapists
- Laws affecting physiotherapy practice

UNIT V **2 hours**

- Professional values- Integrity, Objectivity, Professional competence and due care, Confidentiality. Core values- Accountability, Altruism, Compassion/ caring, excellence, integrity, professional duties, social responsibility.
- The five roles of the Physiotherapist - as Patient/Client manager, as Consultant, as Critical Inquirer ,as Administrator , as Educator

Text Books:

1 Nosse J, "Management Principles for Physical Therapists", Lippincott Williams.
2. Gabard D, Martin M, "Physical Therapy Ethics", F. A. Davis Company.

Reference Book:

1. Reinke W, "Health Planning for Effective Management", Oxford University Press

Mode of Evaluation: The theory and lab performance of students are evaluated separately.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and Pos		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Understand the ethical principles of physiotherapy profession.	**PO6**
CO2	Understand principles of management in personal management, time management and administration including budgeting.	**PO6**
CO3	Understand the medico-legal issues in physiotherapy.	**PO6**
CO4	Differentiate between medical and physiotherapy diagnosis.	**PO2**

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT208A	**PROFESSIONAL ETHICS AND LAWS**		**2**				**3**		**2**	**3**

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT260A	CLINICAL EDUCATION-II	L	T	P	C
Version 1.0		0	0	4	2
Pre-requisites/Exposure	CLINICAL EDUCATION-I				
Co-requisites	-				

Course Objectives

1. Continue the clinical training so that each student can learn from the experience of assessment and treatment planning, goal setting and execution of treatment under supervision.
2. Learn practical skills to manage patient's condition.

Course Outcomes

Upon completion of this course the student should be able to

CO1. Assist physiotherapists working in different clinical settings.
CO2. Be familiar with different types of assessment forms.
CO3. Perform basic mobilization and stretching techniques under supervision.
CO4. Imbibe professional values seen in practicing clinicians.
CO5. Appreciate the importance of multidisciplinary teamwork in healthcare.
CO6. Be aware of and spread awareness regarding the importance of physiotherapy.

Catalog Description

Clinical training ensures the students to acquire the geographical orientation of the various concerned sections of the physiotherapy departments. This subject helps to get the overall idea about the graduate program & its scope in the professional practice.

Course Content:

Clinical posting in general and specialized Physiotherapy Departments, including clinical visits. Students should observe and assist the clinicians in:
1. Assessment
2. Diagnosis
3. Treatment planning and
4. Execution.

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination
Examination Scheme:

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	40	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Assist physiotherapists working in different clinical settings.	**PO6**
CO2	Be familiar with different types of assessment forms.	**PO3**
CO3	Perform basic mobilization and stretching techniques under supervision.	**PO5**
CO4	Imbibe professional values seen in practicing clinicians.	**PO6**
CO5	Appreciate the importance of multidisciplinary teamwork in healthcare.	**PO6**
CO6	Be aware of and spread awareness regarding the importance of physiotherapy.	**PO6**

		Physiotherapy Knowledge	**Multidisciplinary/ Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT260A	**CLINICAL EDUCATION-II**			**3**		**2**	**3**	**3**	**2**	**2**

1= weakly mapped 2= moderately mapped 3= strongly mapped

MACA131A	INTRODUCTION TO COMPUTERS & IT, OFFICE AUTOMATION	L	T	P	C
Version 1.0		**3**	**1**	**-**	**4**
Pre-requisites/Exposure	**-**				
Co-requisites	INTRODUCTION TO COMPUTERS & IT, OFFICE AUTOMATION LAB				

Course Objectives:

1. To leverage the technical skills of a student
2. To introduce IT in a simple language to all undergraduate students,

Course Outcomes:

Upon completion of this course the student should be able to do
CO1. Understand basic concepts and terminology of information technology.
CO2. Have a basic understanding of personal computers and their operations.
CO3. Understand the process of algorithm development and documentation.

Catalog description:

The main objective is to introduce IT in a simple language to all undergraduate students, regardless of their specialization. It will help them to pursue specialized programs leading to technical and professional careers and certifications in the IT industry. The focus of the subject is on introducing skills relating to IT basics, computer applications, programming, interactive media, Internet basics, etc.

Course Contents:

UNIT – I 10 hours

Introduction to Computers:

The evolution of computers: Computer Generation from First Generation to Fifth Generation. Classifications of Computers: Micro, Mini, Mainframe and super computers, Distributed Computer System, Parallel Computers.
Computer Hardware: Major Components of a digital computer, Block Diagram of a computer Input devices, Output Device. Computer Memory: Memory Cell, Overview of Memory Organization, Primary Memory: RAM & ROM, Secondary memory: Magnetic tapes, Magnetic disk, Optical disks - CD ROM and it's type (CD ROM, CD ROM-R, CD ROM-EO, DVD ROM), Flash Memory, Blu-ray Disk

UNIT – II 10hours

Introduction to Computer Software: Open source Software, Copylefted and Non-copylefted Software; System Software; Application Software; Utility Software; Shareware, Firmware, Freeware, Free Software. Compiler and Interpreter, Generations of languages: Machine Level, Assembly, High Level, 4GL.
Operating System concepts: different types of operating systems, functions of operating

system, concept of multiprogramming, multitasking, multithreading, multiprocessing, time-sharing, real time, single user & multi-user operating system.

UNIT – III 10 hours

Programming Concepts & Techniques:

Algorithms, flow chart, decision tables, pseudo code, characteristics of a good programming language, Planning the Computer Program: Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation.
Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming, Advantages and disadvantages of Structured programming.

UNIT – IV 10 hours

Computer Networks & The Internet:

Basic elements of a communication system, Data transmission modes, Data transmission media, Network topologies, Network Types (LAN, WAN and MAN), Client and Servers, Intranet, Extranet.
Internet: Protocols, TCP/IP, HTTP, Internet addressing, Domain Names, DNS, URL, World Wide Web. Overview of various services on Internet: Webservers, E-mail, FTP, Telnet.

TEXTBOOKS

1. P. K. Sinha & Priti Sinha, “Computer Fundamentals”, BPB Publications.
2. Anita Goel “Computer Fundamentals”, Pearson.

REFERENCE BOOKS

1. B.Ram Computer fundamentals Architecture and Organization, New Age Intl.
2. Alex Leon & Mathews Leon, “Introduction to Computers”, Vikas Publishing.
3. Norton Peter, “Introduction to computers”, TMH.
4. Vikas Gupta, “Comdex Computer Kit”, Wiley Dreamtech, Delhi.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Understand basic concepts and terminology of information technology.	**PO4**
CO2	Have a basic understanding of personal computers and their operations.	**PO6**
CO3	Understand the process of algorithm development and documentation	**PO4**

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MACA131A	**INTRODUCTION TO COMPUTERS & IT, OFFICE AUTOMATION**				**3**		**2**		**3**	

1= Addressed to small extent
2= Addressed significantly
3= Major part of course

MACA161A	INTRODUCTION TO COMPUTERS & IT, OFFICE AUTOMATION LAB	L	T	P	C
Version 1.0		**3**	**1**	**-**	**4**
Pre-requisites/Exposure					
Co-requisites	INTRODUCTION TO COMPUTERS & IT, OFFICE AUTOMATION				

Course Objectives:

1. To leverage the technical skills of a student
2. To introduce IT in a simple language to all undergraduate students,

Course Outcomes:

Upon completion of this course the student should be able to do
CO1. Understand basic concepts and terminology of information technology.
CO2. Have a basic understanding of personal computers and their operations.
CO3. Understand the process of algorithm development and documentation.

Catalog description:

The main objective is to introduce IT in a simple language to all undergraduate students, regardless of their specialization. It will help them to pursue specialized programs leading to technical and professional careers and certifications in the IT industry. The focus of the subject is on introducing skills relating to IT basics, computer applications, programming, interactive media, Internet basics, etc.

Course Contents:

LIST OF EXPERIMENTS

1. **MS-Windows: Operating system**-Definition & functions, basics of Windows. Basic components of windows, icons, types of icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders. Control panel – display properties, adding and removing software and hardware, setting date and time, screensaver and appearance. Using windows accessories.

2. **Documentation Using MS-Word -** Introduction to Office Automation, Creating & Editing Document, Formatting Document, Auto-text, Autocorrect, Spelling and Grammar Tool, Document Dictionary, Page Formatting, Bookmark, Advance Features of MS-Word-Mail Merge, Macros, Tables, File Management, Printing, Styles, linking and embedding object, Template.

3**. Electronic Spread Sheet using MS-Excel -** Introduction to MS-Excel, Creating & Editing Worksheet, Formatting and Essential Operations, Formulas and Functions, Charts, Advance features of MS-Excel-Pivot table & Pivot Chart, Linking and Consolidation, Database Management using Excel-Sorting, Filtering, Table, Validation, Goal Seek, Scenario.

4. Presentation using MS-PowerPoint: Presentations, Creating, Manipulating & Enhancing Slides, Organizational Charts, Excel Charts, Word Art, layering art Objects, Animations and Sounds, Inserting Animated Pictures or Accessing through Object, Inserting Recorded Sound Effect or In-Built Sound Effect.

5. Hand-on experience on Outlook Application Software: Calendar to organize day-to-day activities, Creating an appointment & Repetitive Appointment, Working with event, Planning a meeting, create, view and delete group schedule.

6. Access Application Software: Creating form, Reports and database management using queries

TEXTBOOKS

1. P. K. Sinha & Priti Sinha, "Computer Fundamentals", BPB Publications.
2. Anita Goel "Computer Fundamentals", Pearson.

REFERENCE BOOKS

1. B.Ram Computer fundamentals Architecture and Organization, New Age Intl.
2. Alex Leon & Mathews Leon, "Introduction to Computers", Vikas Publishing.
3. Norton Peter, "Introduction to computers", TMH.
4. Vikas Gupta, "Comdex Computer Kit", Wiley Dreamtech, Delhi.

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination
Examination Scheme:

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	40	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Understand basic concepts and terminology of information technology.	PO4
CO2	Have a basic understanding of personal computers and their operations.	PO6
CO3	Understand the process of algorithm development and	PO4

	documentation	

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Moder n Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MACA13 1A	**INTRODUCTI ON TO COMPUTERS & IT, OFFICE AUTOMATIO N LAB**				**3**		**2**		**3**	

1= weakly mapped 2= moderately mapped 3= strongly mapped

SEMESTER V

MAPT301A	ORTHOPAEDICS	L	T	P	C
Version 1.0		3	1	0	4
Pre-requisites/Exposure	HUMAN ANATOMY				
Co-requisites					

Course Objectives

1. Medical knowledge of musculoskeletal system.
2. Overview of common orthopaedic conditions.
3. Assessment, diagnosis and management of soft tissue injuries.
4. Concepts of patient care.

Course Outcomes

On completion of this course, the students will be able to

CO1. Accurately interpret and identify features of common orthopaedic conditions.
CO2. Identify and classify traumatic injuries including fractures and soft tissue injuries.
CO3. Understand the clinical features, complications, medical and surgical management of deformities.
CO4. Demonstrate a detailed knowledge of inflammatory and degenerative conditions.
CO5. Provide a differential diagnosis of regional conditions.
CO6. Identify the treatment of choice for common orthopaedic conditions.

Catalog Description

After completion of the lectures and discussion of this course, the student will be able to demonstrate an understanding of orthopedic conditions causing disability, list the etiology, clinical features and methods of investigations and management.

Course Content

UNIT I Introduction to Orthopaedics 8 hours

- Introduction to Orthopaedics: Clinical examination in an Orthopedic patient. Common investigative procedures. Radiological and Imaging techniques in Orthopaedics. Inflammation and repair, Soft tissue healing.
- Orthopedic Surgeries: Indications, Classification, Types, Principles of management of the following Surgeries: Arthrodesis. Arthroplasty (partial and total replacement). Osteotomy, External fixators. Spinal stabilization surgeries (Harrington's, Luque's, Steffi plating), etc., Limb re attachments.
- Disease of Bones and Joints: Infective conditions, Bone Tumors, Perthe's disease, Slipped Capital Femoral Epiphysis and Avascular Necrosis. Metabolic Bone Diseases.
- Neuromuscular Disorders: Definition, causes, clinical feature, complications, management. (Multidisciplinary approach) medical and surgical of the following conditions: Cerebral palsy. Poliomyelitis. Spinal Dysraphism. Leprosy.

UNIT II Traumatology 10 hours

- Fracture: definition, types, signs and symptoms, Fracture healing, Complications of fractures, Conservative and surgical approaches, Principles of management – reduction (open/closed, immobilization etc.), Subluxation/ dislocations – definition, signs and symptoms, management (conservative and operative).
- Fractures and dislocations of Upper Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management.
- Fracture of Cervical Spine - Mechanism of injury, clinical feature, complications (quadriplegia); Management for stabilization, management of complication (bladder and bowel, quadriplegia). Fracture of Thoracic and Lumbar Regions - Mechanism of injury, clinical features, and management— conservative and surgical of common fractures around thoracic and lumbar regions. Fracture of coccyx.
- Fracture of Rib Cage, Pelvis and Lower Limb - Mechanism of injury, clinical features, management
- Dislocations of Lower Limb - mechanism of injury, clinical features, complications, management of the following dislocations of lower limb.
- Soft Tissue Injuries: Define terms such as sprains, strains, contusion, tendinitis, rupture, tenosynovitis, tendinosis, bursitis.
- Hand Injuries: Mechanism of injury, clinical features, and management of the following – Crush injuries. Flexor and extensor injuries. Burn injuries of hand.
- Traumatic Spinal Cord Injuries: Clinical features, complications, medical and surgical management of Paraplegia and Quadriplegia.

UNIT III Amputations and Deformities 6 hours

- Definition, levels of amputation of both lower and upper limbs, indications, complications.
- Clinical features, complications, medical and surgical management of the following Congenital and Acquired deformities: Congenital Deformities: CTEV. CDH. Torticollis. Scoliosis. Flat foot. Vertical talus. Hand anomalies- syndactyly, polydactyly and ectrodactyly. Arthrogryposis multiplex congenita (amyoplasia congenita). Limb deficiencies- Amelia and Phocomelia. Klippel feil syndrome. Osteogenesis imperfecta (fragile ossium). Cervical rib. Acquired Deformities – Acquired Torticollis. Scoliosis. Kyphosis. Lordosis. Genu varum. Genu valgum. Genu recurvatum, Coxa vara. Pes cavus. Hallux rigidus. Hallux valgus. Hammer toe. Metatarsalgia.

UNIT IV Inflammatory and Degenerative Conditions 6 hours

Causes, clinical features, complications, deformities, radiological features, management-conservative and surgical for the following conditions:

- Osteoarthritis. Rheumatoid arthritis. Ankylosing spondylitis Gouty arthritis. Psoriatic arthritis. Hemophilic arthritis. Still’s disease (juvenile rheumatoid arthritis). Charcot’s joints.
- Connective Tissue Disorders- Systemic Lupus Erythematosis, Scleroderma, Dermatomyositis, Poliomyelitis, Mixed connective tissue Disease (MCTD)

UNIT V Regional Conditions 10 hours

- Definition, Clinical features and management of the following: Regional conditions: Shoulder: Periarthritic shoulder (adhesive capsulitis). Rotator cuff tendinitis. Supraspinatus Tendinitis. Infraspinatus Tendinitis. Bicipital Tendinitis. Subacromial Bursitis; Elbow: Tennis Elbow. Golfer's Elbow. Olecranon Bursitis (student's elbow). Triceps Tendinitis; Wrist and Hand: De Quervain's Tenosynovitis. Ganglion. Trigger Finger/ Thumb. Mallet Finger, Carpal Tunnel Syndrome, Dupuytren's Contracture; Pelvis and Hip: IT Band Syndrome. Piriformis Syndrome. Trochanteric Bursitis. Knee: Osteochondritis Dissecans. Prepatellar and Suprapatellar Bursitis. Popliteal Tendinitis. Patellar Tendinitis. Chondromalacia Patella. Plica Syndrome. Fat Pad Syndrome (Hoffa's syndrome). Ankle and Foot: Ankle Sprains. Plantar Fasciitis / Calcaneal Spur. Tarsal Tunnel Syndrome. Achilles Tendinitis. Metatarsalgia. Morton's Neuroma.
- Causes, Clinical features, complications, management- conservative and surgical of the following: Cervico brachial syndrome. Thoracic outlet syndrome. Vertebro- basilar syndrome. Scalenus syndrome. Costo clavicular syndrome. Levator scapulae syndrome. Piriformis syndrome.
- Cervical and Lumbar Pathology: Causes, clinical feature, patho-physiology, investigations, management-Medical and surgical for the following: Prolapsed intervertebral disc (PID), Spinal Canal Stenosis. Spondylosis (cervical and lumbar) Spondylolysis. Spondylolisthesis. Lumbago/ Lumbosacral strain. Sacralisation. Lumbarisation. Coccydynia. Hemivertebra.

Text Books

1. Maheshwari J, (2012), Essentials Orthopedics, 4th Edition, Jaypee Brothers Medical Publishers (P)Ltd. New Delhi.
2. Ebnezar John, (2012), Essentials of Orthopedics for Physiotherapists, 2nd Edition, Jaypee Brothers Medical Publishers (P)Ltd, New Delhi.

Reference Books/Materials

1. John Crawford Adams, Outline of Orthopaedics, Churchill Livingstone,2007.
2. Natarajan MV, (2018), Textbook of Orthopaedics and Traumatology, 8th Edition, Wolters Kluwer India Private Limited.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Accurately interpret and identify features of common orthopaedic conditions.	**PO2**
CO2	Identify and classify traumatic injuries including fractures and soft tissue injuries.	**PO2**
CO3	Understand the clinical features, complications, medical and surgical management of deformities.	**PO2**
CO4	Demonstrate a detailed knowledge of inflammatory and degenerative conditions.	**PO2**
CO5	Provide a differential diagnosis of regional conditions.	**PO3**
CO6	Identify the treatment of choice for common orthopaedic conditions.	**PO6**

		Physiotherapy Knowledge	**Multidisciplinary/ Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT301A	**ORTHOPAEDICS**		**3**	**1**			**2**	**2**	**2**	

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT303A	GENERAL MEDICINE	L	T	P	C
Version 1.0		3	1	0	4
Pre-requisites/Exposure	PATHOLOGY				
Co-requisites	GENERAL SURGERY				

Course Objectives

1. Overview of general medicine.
2. Introduction to paediatrics.
3. Assessment, diagnosis and management of psychiatric conditions.
4. Concepts of patient care.

Course Outcomes

On completion of this course, the students will be able to

CO1. Accurately interpret and identify features of common medical conditions.
CO2. Identify and list the aetiology of infections, poisoning and nutritional diseases.
CO3. Demonstrate knowledge of diseases of skin, digestive system, endocrine system and blood.
CO4. Recognise developmental delay in children.
CO5. Perform a differential diagnosis of learning and behavioural problems.
CO6. Identify clinical manifestations of psychiatric disorders.

Catalog Description

This course enables the student to list the etiology, pathology, clinical features and treatment methods for various medical, pediatric and psychiatric conditions.

Course Content

UNIT I General Medicine 10 hours

- Infection: Effects of Infection on the body – Pathology – source and spread of infection – vaccinations – generalized infections – rashes and infection – food poisoning and gastroenteritis – sexually transmitted diseases – HIV infections and AIDS.
- Poisoning: Clinical features – general management – common agents in poisoning – pharmaceutical agents – drugs of misuse – chemical pesticides – Envenomation.
- Food and Nutrition: Assessment – Nutritional and Energy requirements; Deficiency diseases – clinical features and treatment; Protein – Energy Malnutrition: Clinical features and treatment; Obesity and its related disorders: Causes – Complications – benefits of weight loss – management of Obesity – diet, exercise and medications.

UNIT II Medical Conditions 10 hours

- Endocrine diseases: Common presenting symptoms of endocrine disease – common classical disease presentations, clinical features and its management; Diabetes Mellitus: Etiology and pathogenesis of diabetes – clinical manifestations of the disease – management of the disease – Complications of diabetes.
- Diseases of the blood: Examinations of blood disorders – Clinical manifestations of blood disease; Anemia – signs and symptoms – types and management; Hemophilia - Cause –

clinical features severity of disease – management – complications due to repeated hemorrhages – complications due to therapy.

- Diseases of the digestive system : Clinical manifestations of gastrointestinal disease – Etiology, clinical features, diagnosis, complications and treatment of the following conditions : Reflux Oesophagitis, Achalasia Cardia, Carcinoma of Oesophagus, GI bleeding, Peptic Ulcer disease, Carcinoma of Stomach, Pancreatitis, Malabsorption Syndrome, Ulcerative Colitis, Peritonitis, Infections of Alimentary Tract ; Clinical manifestations of liver diseases - Aetiology, clinical features, diagnosis, complications and treatment of the following conditions : Viral Hepatitis, Wilson's Disease, Alpha1-antitrypsin deficiency, Tumors of the Liver, Gall stones, Cholecystitis.
- Diseases of the Skin: Examination and clinical manifestations of skin diseases; Causes, clinical features and management of the following skin conditions: Leprosy, Psoriasis, Pigmentary Anomalies, Vasomotor disorders, Dermatitis, Coccal and Fungal Parasitic and Viral infections.

UNIT III Pediatrics 10 hours

- Problems and management of LBW infants, Perinatal problems and management, Congenital abnormalities and management, Respiratory conditions of childhood.
- Cerebral Palsy – causes, complications, clinical manifestations, treatment
- Spina Bifida – management and treatment
- Epilepsies – types, diagnosis and treatment
- Recognizing developmental delay, common causes of delay
- Orthopedic and Neuromuscular disorders in childhood, clinical features and management
- Sensory disorders – problems resulting from loss of vision and hearing.
- Learning and behavioural problems – Hyperactivity, Autism, Challenging behaviours, Educational delay, The Clumsy Child.

UNIT IV Psychiatric Disorders 10 hours

- Classifications, Causes, Clinical manifestations and treatment methods used in Psychiatry. Modalities of psychiatric treatment, Psychiatric illness and physiotherapy
- Brief description of Etio-pathogenesis, manifestations, and management of psychiatric illnesses -. Anxiety neurosis, Depression, Obsessive compulsive neurosis, Psychosis, Maniac-depressive psychosis, Post-traumatic stress disorder,
- Psychosomatic reactions: Stress and Health, theories of Stress – Illness.
- Etio-pathogenesis, manifestations, and management of psychiatric illness: Drug dependence and alcoholism, Somatoform and Dissociate Disorders – conversion reactions, Somatization, Dissociate Amnesia, and Dissociate Fugue, Personality disorders
- Child psychiatry - manifestations, and management of childhood disorders -attention deficit syndrome and behavioral disorders.
- Geriatric psychiatry.

Text Books

1. Innes Alastair J, 2015, Davidson's Essentials of Medicine, 2nd Edition, Elsevier Health-UK

Reference Books/Materials

1. Golwalla F Aspi, 2017, Medicine for students, 25th Edition, Jaypee Brothers Medical Publishers.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Accurately interpret and identify features of common medical conditions.	PO2
CO2	Identify and list the aetiology of infections, poisoning and nutritional diseases.	PO2
CO3	Demonstrate knowledge of diseases of skin, digestive system, endocrine system and blood.	PO2
CO4	Recognise developmental delay in children.	PO3
CO5	Perform a differential diagnosis of learning and behavioural problems.	PO3
CO6	Identify clinical manifestations of psychiatric disorders.	PO6

		Physiotherapy Knowledge	Multidisciplinary / Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	Course Title	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3
MAPT303A	GENERAL MEDICINE		3	2			2	2	1	

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT305A	GENERAL SURGERY	L	T	P	C
Version 1.0		3	1	0	4
Pre-requisites/Exposure	HUMAN ANATOMY				
Co-requisites	GENERAL MEDICINE				

Course Objectives

1. Indications for surgery, etiology, clinical features and surgical methods for various conditions.
2. Foundation for understanding the role of a physiotherapist in pre and post-operative care.
3. Overview of ENT, Ophthalmology and Gynaecology-Obstetrics.

Course Outcomes

On completion of this course, the students will be able to

CO1. List the reasons for surgery and post-operative complications.
CO2. Differentiate between different types of incisions and drainage systems.
CO3. Demonstrate knowledge of surgical oncology.
CO4. Classify burns and determine type of grafting.
CO5. Demonstrate knowledge of common ENT and ophthalmic problems.
CO6. Demonstrate knowledge of obstetrics and gynecology.

Catalog Description

This course provides knowledge about the causes and types of surgical procedures performed in different specialisations. It orients the students towards multidisciplinary knowledge and helps to augment a physiotherapists role in a hospital.

Course Content

UNIT I General Surgery 10 hours

- Fluid, Electrolyte and Acid-Base disturbances, Nutrition in the surgical patient; Wound healing, Scars – types and treatment. Hemostasis, Transfusion therapy in surgery; Surgical Infections; General Post – Operative Complications and its management.
- Reasons for Surgery; Types of anaesthesia and its effects on the patient; Types of Incisions; Clips Ligatures and Sutures; General Thoracic Procedures – Radiologic Diagnostic procedures, Endoscopy – types, Biopsy – uses and types. Overview and Drainage systems and tubes used in Surgery.
- Causes, Clinical Presentation, Diagnosis and treatment of the following Thoracic Trauma situations – Airway obstruction, Pneumothorax, Hemothorax, Cardiac Tamponade, Tracheobronchial disruption, Aortic disruption, Diaphragmatic disruption, Esophageal disruption, Cardiac and Pulmonary Contusions.
- Surgical Oncology – Cancer – definition, types, clinical manifestations of cancer, Staging of Cancer, surgical procedures involved in the management of cancer.
- Disorders of the Chest Wall, Lung and Mediastinum
- Thoracic surgeries – Thoracotomy – Definition, Types of Incisions with emphasis to the site of incision, muscles cut and complications. Lung surgeries: Pneumonectomy,

Lobectomy, segmentectomy – Indications, Physiological changes and Complications; Thoracoplasty, Pleurectomy, Pleurodesis and Decortication of the Lung. Cardiac surgeries – An overview of the Cardio-Pulmonary Bypass Machine – Extracardiac Operations, Closed Heart surgery, Open Heart surgery. Transplant Surgery – Heart, Lung and Kidney – Indications, Physiological changes and Complications.

- Diseases of the Arteries and Veins: Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases : Arteriosclerosis, Atherosclerosis, Aneurysm, Buerger's disease, Raynaud's Disease, Thrombophlebitis, Deep Vein Thrombosis, Pulmonary Embolism, Varicose Veins.
- Definition, Indication, Incision, Physiological changes and Complications following Common operations like Cholecystectomy, Colostomy, Ileostomy, Gastrectomy, Hernias, Appendicectomy Mastectomy, Nephrectomy, Prostatectomy.

UNIT II Burns 10 hours

- Definition, Classification, Causes, Prevention, Pathological changes, Complications, Clinical Features and Management.
- Skin Grafts – Types, Grafting Procedures, Survival of Skin Graft; Flaps – Types and uses of Flaps.

UNIT III ENT and Ophthalmology 10 hours

- Common problems of ear, otitis media, Otosclerosis, functional achonia and deafness, management facial palsy classification, medical and surgical management of lower motor neuron type of facial palsy.
- Ophthalmology: Ophthalmologic surgical conditions, refraction's, conjunctivitis, glaucoma, corneal ulcer, iritis, cataract, retinitis, detachment of retina, defects of extra-ocular muscles-surgical management.

UNIT IV Obstetrics and Gynecology 10 hours

- Anatomy and physiology of the female reproductive organs. Puberty dynamics, Physiology of menstrual cycle – ovulation cycle, uterine cycle, Cx cycle, duration, amount, Hormonal regulation of menstruation,
- Hormonal disorders of females-obesity and female hormones
- Pregnancy: Diagnosis of pregnancy, Abortion, Physiological changes during pregnancy, Importance of antenatal care exercise, High risk pregnancy, prenatal common complications – investigation and management, Musculoskeletal disorders during pregnancy, Multiple child birth, Normal labor, Surgical procedures involving child birth.
- Child birth complications, investigation and management, Normal puerperium, lactation and importance of post-natal exercises, Menopause: Its effect on emotions and musculoskeletal system, Family planning, Medical termination of pregnancy
- Infection of female genital tract including sexually transmitted diseases, low backache.
- Prolapse of uterus and vagina, Urogenital dysfunction – pre and post-natal condition.

- Principle of common gynaecological operations – hysterectomy, D&C, D&E, Pop smear. Definition, Indications and Management of the following surgical procedures – pelvic repair, caesarian section, nephrectomy, Hysterosalpingography, Dilatation and Curettage, Laparoscopy, Colposcopy, Hysterectomy.
- Sterility: Pathophysiology, investigations, management, Malnutrition and deficiencies in females.
- Carcinoma of female reproductive organs – surgical management in brief Mastectomy – Simple, radical. Hysterectomy. Incontinence – Types, Causes, Assessment and Management.

Text Books

1. Das S, (2018), A concise textbook of Surgery, 10th Edition, Dr Somen das Publishers, Kolkata.

Reference Books/Materials

1. William S Norman, (2018), Bailey & Love's Short practice of Surgery, Volume 1 and 2, 27th Edition, CRC Press.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	List the reasons for surgery and post-operative complications.	PO6
CO2	Differentiate between different types of incisions and drainage systems.	PO3
CO3	Demonstrate knowledge of surgical oncology.	PO2
CO4	Classify burns and determine type of grafting.	PO2
CO5	Demonstrate knowledge of common ENT and ophthalmic problems.	PO2
CO6	Demonstrate knowledge of obstetrics and gynecology.	PO2

		Physiotherapy Knowledge	Multidisciplinary / Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT305 A	**GENERAL SURGERY**		**3**	**1**			**1**	**2**	**2**	

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT307A	EVALUATION METHODS AND OUTCOME MEASURES	L	T	P	C
Version 1.0		2	1	0	3
Pre-requisites/Exposure	EXERCISE THERAPY				
Co-requisites	EVALUATION METHODS AND OUTCOME MEASURES LAB				

Course Objectives

Implement methods to assess individual and collective outcomes of patients/clients with disorders of the musculoskeletal, neuromuscular, cardiovascular-pulmonary and integumentary systems using valid and reliable measures that take into account the setting in which patients/clients receive services, the variables of cultural competence, and the effect of societal factors.

Course Outcomes

On completion of this course, the students will be able to
CO1. Identify the principles of assessment.
CO2. Develop an assessment proforma.
CO3. Set long term and short term goals.
CO4. Demonstrate knowledge of outcome measures.
CO5. Perform orthopaedic, neurological and pediatric assessment competently.

Catalog Description

This course has been designed to inculcate evidence based practice and research orientation in the students of physiotherapy by understanding the importance of thorough assessment and appropriate outcome measures for goals setting.

Course Content

UNIT I Assessment and Evaluation 6 hours

a) Principles of Assessment
b) Types of Assessment formats
c) Developing an assessment proforma

UNIT II Outcome Measures 6 hours

a) What are Outcome Measures?
b) Treatment Goals and Planning

UNIT III Orthopaedic Assessment 10 hours

a) Special tests: Upper limb, lower limb, spine
b) Diagnostic tests
c) Provisional diagnosis

UNIT IV Neurological Assessment 8 hours

a) Parameters of Neurological Assessment
b) Paediatric and Geriatric Assessment

Text Books

1. David J. Magee, Orthopeadic Physical Assessment, Saunders ,5th ed,2008.

Reference Books/Materials

.1. Stokes, E. Rehabilitation Outcome Measures. Churchill Livingstone, 2010.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Identify the principles of assessment.	PO2
CO2	Develop an assessment proforma	PO2
CO3	Set long term and short term goals.	PO2
CO4	Demonstrate knowledge of outcome measures	PO3
CO5	Perform orthopaedic, neurological and pediatric assessment competently.	PO3

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	Course Title	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3
MAPT307A	EVALUATION METHODS AND OUTCOME MEASURES		2	2				3	1	3

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT357A	EVALUATION METHODS AND OUTCOME MEASURES LAB	L	T	P	C
Version 1.0		-	-	2	1
Pre-requisites/Exposure	EXERCISE THERAPY				
Co-requisites	EVALUATION METHODS AND OUTCOME MEASURES				

Course Objectives

1. Practice methods used in the assessment and evaluation of patients.
2. Appreciate the distinctions between different types of assessment formats.
3. Utilise appropriate outcome measures for goal setting.

Course Outcomes

On completion of this course, the students will be able to

CO1. Fill up assessment proformas in different formats.
CO2. Perform special tests to assess and evaluate orthopaedic conditions.
CO3. Confidently assess neurological and paediatric cases.
CO4. Set long term and short term goals of treatment.

Catalog Description

This course has been designed to provide practical training to the students for inculcating evidence based practice and research orientation in the students of physiotherapy by understanding the importance of thorough assessment and appropriate outcome measures for goals setting.

Course Content

1. Filling up of different types of assessment forms.
2. Critical analysis of components of assessment.
3. Development of comprehensive assessment proforma.
4. Assessment of mock/ real patients and goal setting.
5. Determining outcome measures based on goals and conditions.
6. Orthopaedic assessment- Special tests for upper limb, lower limb and spine.
7. Neurological assessment.
8. Pediatric assessment.
9. Geriatric assessment

Text Books

1. David J. Magee, Orthopeadic Physical Assessment, Saunders ,5th ed,2008.

Reference Books/Materials

.1. Stokes, E. Rehabilitation Outcome Measures. Churchill Livingstone, 2010.

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination

Examination Scheme:

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	40	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Fill up assessment proformas in different formats.	PO3
CO2	Perform special tests to assess and evaluate orthopaedic conditions.	PO5
CO3	Confidently assess neurological and paediatric cases.	PO3
CO4	Set long term and short term goals of treatment	PO3

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	Course Title	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3
MAPT357 A	EVALUATION METHODS AND OUTCOME MEASURES LAB			3		3		3		3

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT309A	DIAGNOSTIC IMAGING FOR PHYSIOTHERAPISTS	L	T	P	C
Version 1.0		2	-	-	2
Pre-requisites/Exposure	HUMAN ANATOMY				
Co-requisites	-				

Course Objectives

1. Acquaint the students with diagnostic imaging and its requirements.
2. Overview of different techniques and equipment used in imaging.
3. Risks, costs, indications and contraindications of different techniques.
4. Interpretation of imaging and its role in assessment and diagnosis.

Course Outcomes

On completion of this course, the students will be able to

CO1. Demonstrate knowledge of medical imaging and its importance.
CO2. List the indications and contraindications of radiography and mammography.
CO3. Determine use and benefit of diagnostic imaging.
CO4. Interpret the results of imaging.

Catalog Description

This course covers the study of common diagnostic and therapeutic imaging tests. At the end of the course students will be aware of the indications and implications of commonly used diagnostic imaging tests as they pertain to patient's management. The course will cover how X-Ray, CT, MRI, Ultrasound and other medical images are created and how they help the health professionals to save lives.

Course Content

UNIT I Image Interpretation 3 hours

a) History
b) A New Kind of Ray
c) How a Medical Image Helps
d) What Imaging Studies Reveal

UNIT II Radiography and Mammography 2 hours

a) Equipment components
b) Procedures for Radiography & Mammography
c) Benefits versus Risks and Costs
d) Indications and contraindications.

UNIT III Fluoroscopy, Endoscopy and Ultrasound 5 hours

a) What is Fluoroscopy? Equipment used for fluoroscopy, Indications and Contra indications, How it helps in diagnosis, The Findings in Fluoroscopy, Benefits versus Risks and Costs.
b) What is Endoscopy? Equipment used for Endoscopy, Indications and Contra indications, How it helps in diagnosis, The Findings in Endoscopy, Benefits versus Risks and Costs.
c) What is Ultrasound? Equipment used for Ultrasound, Indications and Contra indications, How it helps in diagnosis, The Findings in Ultrasound, Benefits versus Risks and Costs.

UNIT IV Computed Tomography (CT) and MRI 5 hours

a) What is Computed Tomography? Equipment used for Computed Tomography, Indications and Contra indications, How it helps in diagnosis, The Findings in Computed Tomography, Benefits versus Risks and Costs.
b) What is MRI? Equipment used for MRI, Indications and Contra indications, How it helps in diagnosis, The Findings in MRI, Benefits versus Risks and Costs, Functional MRI.

UNIT V Nuclear Medicine 5 hours

a) What is Nuclear Medicine?
b) Equipment used for Nuclear Medicine.
c) Indications and Contra indications
d) How it helps in diagnosis.
e) Benefits versus Risks and Costs.

Text Books

1. Sutton David, 2003, Text book of Radiology & imaging, Vol. 1 and 2, 7th Edition, Elsevier Publications

Reference Books/Materials

1.Grainger & Allison, 2016, Diagnostic Radiology, Vol. 1 and 2, 6th Edition, Elsevier Publications.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Demonstrate knowledge of medical imaging and its importance.	PO4

CO2	List the indications and contraindications of radiography and mammography.	**PO2**
CO3	Determine use and benefit of diagnostic imaging.	**PO5**
CO4	Interpret the results of imaging.	**PO4**

		Physiotherapy Knowledge	**Multidisciplinary/ Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT309A	**DIAGNOSTIC IMAGING FOR PHYSIOTHERAPISTS**		**2**		**3**	**2**		**3**		**2**

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT361A	**CLINICAL EDUCATION-III**	L	T	P	C
Version 1.0		**-**	**-**	**12**	**6**
Pre-requisites/Exposure	CLINICAL EDUCATION-II				
Co-requisites	-				

Course Objectives:

1. Training on bed side approach & patient assessment.
2. Ability to perform special tests and designing treatment protocol.
3. Evidence based practice will be part of training.

Course Outcomes:

On completion of this course, the students will be able to
CO1. Assist physiotherapists working in different clinical settings.
CO2. Be familiar with different types of assessment forms.
CO3. Perform basic mobilization and stretching techniques under supervision.
CO4. Imbibe professional values seen in practicing clinicians.
CO5. Appreciate the importance of multidisciplinary teamwork in healthcare.
CO6. Be aware of and spread awareness regarding the importance of physiotherapy.

Catalog description:

The aim of this course is to continue the clinical training so that each student can learn from the experience of assessment and treatment planning, goal setting and execution of treatment under supervision.

Course Content:

Clinical posting in general and specialized Physiotherapy Departments, including clinical visits. Students should observe and assist the clinicians in:

1. Assessment
2. Diagnosis
3. Treatment planning and
4. Execution.

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination

Examination Scheme:

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	40	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Assist physiotherapists working in different clinical settings.	PO3
CO2	Be familiar with different types of assessment forms.	PO1
CO3	Perform basic mobilization and stretching techniques under supervision.	PO3
CO4	Imbibe professional values seen in practicing clinicians.	PO6
CO5	Appreciate the importance of multidisciplinary teamwork in healthcare.	PO6
CO6	Be aware of and spread awareness regarding the importance of physiotherapy.	PO6

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT 361A	**CLINICAL EDUCATION-III**	**2**		**3**			**3**	**3**	**2**	**2**

1= weakly mapped 2= moderately mapped 3= strongly mapped

SEMESTER VI

MAPT302A	NEUROLOGY AND NEUROSURGERY	L	T	P	C
Version 1.0		3	1	0	4
Pre-requisites/Exposure	HUMAN ANATOMY				
Co-requisites	-				

Course Objectives:

1. Medical knowledge of neurological system.
2. Overview of common neurological condition & surgeries .
3. Assessment, diagnosis and management of neurological injuries.
4. Concepts of patient care.

Course Outcomes:

On completion of this course, the students will be able to

CO1. Identify, analyse and apply the neuro anatomical basis of brain for various clinical neurological conditions.
CO2. Becomes familiar with neuro physiological basis of neurological conditions which drives the students to evaluate the patients with certain disorders.
CO3. Become aware of the causes, signs, symptoms, clinical management of the cerebro-vascular accidents, head and spinal cord injury.
CO4. Understand the clinical features and management of the paediatric, adult neurological conditions that includes congenital & acquired disorders.
CO5. Identify the motor, sensory perceptual dysfunction of the adult and paediatric neurological conditions.

Catalog Description

After completion of the lectures and discussion of this course, the student will be able to demonstrate an understanding of the diseases the therapist would encounter in their practice and list the etiology, clinical features and methods of investigations and management for various neurological conditions

Course Content:

UNIT I — 8 lecture hours

Neurological anatomy & assessment: Principles of clinical diagnosis, higher mental function, assessment of brain & spinal cord function, evaluation of cranial nerves and evaluation of autonomic nervous system.

Investigations: principles, methods, views, normal/abnormal values/features, types of following investigative procedures- skull x-ray, CT, MRI, evoked potentials, lumbar puncture, CSF examination, EMG, NCV.

UNIT II — 8 lecture hours

Cerebro-vascular diseases& Head injury: Etiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications.

Higher cortical, neuro psychological and neurobehavioral disorders: classification, clinical features, investigations, medical& surgical management of following disorders: of blackouts, Epilepsy, Non-epileptic attacks of childhood, Seizers, management of Perceptual disorders and Speech disorders, Dementia, Obsessive-compulsive disorders. Neural basis of consciousness, causes &investigations of Coma, criteria for diagnosis of Brain death.

UNIT III **8 lecture hours**

Movement disorders: Parkinson's disease, Dystonia, Chorea, Ballism, Athedosis, Tics, Myoclonus and Wilson's disease. Cerebellar and coordination disorders- Congenital ataxia, Friedreich's ataxia, Ataxia telangiectasia, Metabolic ataxia, Hereditary cerebellar ataxia, Tabes dorsalis and Syphilis.

Paediatric neurology: Cerebral palsy, Hydrocephalus, Arnold-Chiari malformation, Basilar impression, Klippel-Feil syndrome, Achondroplasia, Cerebral malformations, Autism, Dandy walker syndrome and Down's syndrome.

UNIT IV **8 lecture hours**

Spinal cord disorders: Anatomy & Functions of tracts, Spinal cord injury, Compression by IVD prolapse, Spinal epidural abscess, Transverse myelitis, Viral myelitis, Syringomyelia, Spina bifida, Sub acute combined degeneration of the cord, Hereditary spastic paraplegia, Radiation myelopathy, Progressive encephalomyelitis, Conus medullaris syndrome, Bladder & bowel dysfunction, and Sarcodosis.

CNS Tumors & infections :Brain tumors and spinal tumors, Meningitis, Encephalitis, Poliomyelitis and Post-polio syndrome. Complications of systemic infections on nervous system – Septic encephalopathy, AIDS, Rheumatic fever, Brucellosis, Tetanus, and Pertussis.

Toxic, metabolic and environmental disorders: Encephalopathy, Alcohol toxicity, Recreational drug abuse, Toxic gases & Asphyxia, Therapeutic & diagnostic agent toxicity, Metal toxicity, Pesticide poisoning, Environmental & physical insults, Pant & Fungal poisoning, Animal poisons, & Complications of organ transplantation.

UNIT V **8 lecture hours**

Degenerative disorders: Motor neuron diseases: Amyotrophic lateral sclerosis, Spinal muscular atrophy, Hereditary bulbar palsy, Neuromyotonia and Post-irradiation lumbosacral polyradiculopathy. Multiple sclerosis

Neuromuscular disorders: Disorders of neuromuscular junction -Myasthenia gravis, Eaton-Lambert syndrome, and Botulism. Muscular dystrophy, Myotonic dystrophy, myopathy, Non-dystrophic myotonia. Polyneuropathies, Guillain-Barre syndrome, Focal peripheral neuropathy: Clinical diagnosis of focal neuropathy, neurotmesis, Axonotmesis, Neuropraxia, Peripheral nerve palsies.

Neurosurgery: Introduction, Indications and Complications of following: Craniotomy, Cranioplasty, Stereotactic surgery, Deep brain stimulation, Burr-hole, Shunting, Laminectomy, Hemilaminectomy, Rhizotomy, Microvascular decompression surgery, Endarterectomy, Embolization, Pituitary surgery, Ablative surgery - Thalamotomy and Pallidotomy, Coiling of aneurysm, Clipping of aneurysm, and Neural implantation.

Textbook:

1. Susan B'O' Sullivan, Physical rehabilitation, Jaypee, 6th ed. – 2014
2. Kenneth W Lindsay, Neurology and Neurosurgery – illustrated, Churchill Livingston, 5Ed, 2010.

Reference Book:

1. Sir Ruger Bannister, Brain and Bannister's Clinical Neurology, Oxford,7th Edition, 1992.
2. Raymond D. Adams, Principles of Neurology, 5th Edition, 1993.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Identify, analyze and apply the neuro anatomical basis of brain for various clinical neurological conditions.	PO2
CO2	Becomes familiar with neuro physiological basis of neurological conditions which drives the students to evaluate the patients with certain disorders	PO2
CO3	Become beware of the causes, signs, symptoms, clinical management of the cerebro vascular accidents, head and spinal cord injury	PO3
CO4	Understand the clinical features and management of the paediatric, adult neurological conditions that includes congenital & acquired disorders.	PO3
CO5	Identify the motor, sensory perceptual dysfunction of the adult and paediatric neurological conditions	PO1

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT302A	**NEUROLOGY AND NEUROSURGERY**	**2**	**3**	**2**				**3**	**1**	

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT304A	PHYSIOTHERAPY IN ORTHOPEDICS & SPORTS	L	T	P	C
Version 1.0		3	1	0	4
Pre-requisites/Exposure	ORTHOPAEDICS				
Co-requisites	PHYSIOTHERAPY IN ORTHOPEDICS & SPORTS LAB				

Course Objectives:

1. Medical knowledge incorporated for various orthopaedic conditions
2. Physiotherapy management of orthopaedic conditions.
3. Physiotherapy Assessment, diagnosis and management of orthopaedic & sports injuries.
4. Concepts of patient care & assessment.

Course Outcomes:

On completion of this course, the students will be able to

CO1. Assess, diagnose and plan the physiotherapy treatment for various musculo skeletal problems gained.
CO2. Physiotherapy management for various fractures are understood.
CO3. Knowledge about physiotherapy management for various orthopaedic surgeries gained.
CO4. Know about the different types of postural deformities and correction of postural deformities.
CO5. Physiotherapy management for various degenerative disorders of bones and joints & amputation are understood.
CO6. Knowledge about soft tissue injury diagnosis and physiotherapy management gained.

Catalog description:

The objective of the course is that after the lectures and demonstrations the student will be able to identify disabilities due to musculoskeletal dysfunction, plan and set treatment goals and apply the skills gained in exercise therapy and electrotherapy in these clinical situations to restore musculoskeletal function.

Course Content:

UNIT I 8 hours

Assessment: Orthopedic PT assessment for conditions
Orthopedic surgeries: Pre and post-operative PT assessment, goals, precautions and PT management of following surgeries such as: Arthrodesis, Osteotomy, Arthroplasty-partial and total - Excision arthroplasty, excision arthroplasty with implant, interpositional arthroplasty and total replacement; Tendon transplant, Soft tissue release- tenotomy, myotomy, lengthening; Arthroscopy, Spinal stabilization, Re-attachment of limbs, External fixators, Synovectomy.

UNIT II 8 hours

Fractures: Types, classification, signs and symptoms, complications. Factors affecting fracture healing. Principles of fracture management**,** PT management in complications Physiotherapy assessment in fracture cases. Aims of PT management in fracture cases - short- and long-term goals. Principles of PT management in fractures. PT assessment and

management of upper limb fractures and dislocations, lower limb fractures and dislocations including pelvis & spinal fractures.

Deformities: PT assessment and management of the following conditions: Congenital: CTEV, CDH, Torticollis, pes planus, pes cavus and other common deformities. Acquired: scoliosis, kyphosis, coxa vara, genu varum, valgum and recurvatum.

UNIT III **8 hours**

Regional orthopedics: Shoulder instabilities, TOS, RSD, Impingement syndrome, Rotator cuff tears-conservative and surgical repair. Post-operative PT management of Total shoulder replacement and Hemi replacement, AC joint injuries, Subacromial decompression., Total elbow & wrist arthroplasty. Repair of ruptured extensor tendons. Carpal tunnel syndrome. rehabilitation of hemi and total hip replacement, Tendonitis and bursitis. Lateral retinacular release, Realignment of extensor mechanism. ACL and PCL reconstruction surgeries. Meniscectomy and meniscal repair, TKR, Patellar tendon ruptures and Patellectomy. Ankle instability& Ligamentous tears.

Spinal conditions: PT assessment and management and home program of the following conditions: Cervical spondylosis, Lumbar spondylosis, Spondylolisthesis, Spinal canal stenosis, Spondylolysis, Sacro-iliac joint dysfunction, Sacralisation, Lumbarisation, Intervertebral disc prolapse, Coccydynia, Spina bifida occulta. Spinal traction- effects, types, modes of application, indications, contraindications, precautions & limitations of traction.

UNIT IV **8 hours**

Degenerative and inflammatory conditions: PT assessment and management and home program for the following conditions – Osteoarthritis - emphasis mainly on knee, hip and hand, Rheumatoid Arthritis, Ankylosing spondylitis, Gout, Perthes disease, Peri arthritic shoulder. Osteomyelitis – acute and chronic, Septic arthritis, pyogenic arthritis, TB spine and major joints - knee and hip. Osteoporosis- causes, predisposing factors, investigations and treatment. Poliomyelitis & Leprosy- PT assessment and management after surgical procedures such as tendon transfer both pre and post operatively.

Amputations: Definition, levels, indications, types, PT assessment, aims, management pre and post operatively. PT management with emphasis on stump care and bandaging. Pre and post prosthetic training, checking out prosthesis, complications of amputations and its management.

UNIT V **8 hours**

Bioengineering: Introduction & Classification of Orthoses and prostheses; Biomechanical principles of orthotic and prosthetic application; Designing of upper extremity, lower extremity and spinal orthosis, indications and check out; Designing of upper extremity and lower extremity prostheses, indications and check out; Psychological aspects of orthotic and prosthetic application; prescription and designing of footwear and modifications; Designing and construction of adaptive devises.

Sports Physiotherapy: Physical fitness. Stages of soft tissue healing. Treatment guidelines for soft tissue injuries- Acute, Sub acute and chronic stages. Repair of soft tissues- rupture of muscle, tendon and Ligamentous tears. PT Assessment & management of common Soft tissue injuries- Lateral ligament sprain of ankle. Rotator cuff injuries.

Textbook:

1. David J Magee, Orthopaedic Physical assessment, Saundres, 5th edition, 2008

Reference Book:

1. William A Mc Ardle, Exercise physiology, Lippincott, 7thed, 2010.
2. David, Sports Injuries assessment and Rehab – CBS, 1st Ed, 2004.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Assess, diagnose and plan the physiotherapy treatment for various musculo skeletal problems gained.	PO1
CO2	Physiotherapy management for various fractures are understood	PO3
CO3	Knowledge about physiotherapy management for various orthopaedic surgeries gained.	PO1
CO4	Know about the different types of postural deformities and correction of postural deformities	PO3
CO5	Physiotherapy management for various degenerative disorders of bones and joints & amputations are understood.	PO1
C06	Knowledge about soft tissue injury diagnosis and physiotherapy management gained.	PO1

		Physiotherapy Knowledge	Multidisciplinary / Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT304A	**PHYSIOTHERAPY IN ORTHOPEDICS & SPORTS**	**3**		**2**				**3**	**2**	**2**

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT306A	PHYSIOTHERAPY IN MEDICAL AND SURGICAL CONDITIONS	L	T	P	C
Version 1.0		3	1	0	4
Pre-requisites/Exposure	GENERAL SURGERY				
Co-requisites	PHYSIOTHERAPY IN MEDICAL AND SURGICAL CONDITIONS LAB				

Course Objectives:

1. Medical knowledge for various surgical conditions
2. Physiotherapy management of gynaecological conditions.
3. Physiotherapy Assessment, diagnosis and management of burns
4. Concepts of patient care & assessment in various medical cases.

Course Outcomes:

On completion of this course, the students will be able to

CO1. Understand the basis of applying the concept of physiotherapy during pregnancy and delivery.
CO2. Become familiar with care given to infants and children.
CO3. Become aware of the physiotherapy management of the elderly causes and concerns.
CO4. Understand the rehabilitation done in pre and post-surgical cases.
CO5. Identify the various approaches used in burns and wound care management.

Catalog description

At the end of the course the student will be able to identify discuss and analyze physiotherapy requirements based on pathophysiological principles and arrive at appropriate functional diagnosis, execute effective physiotherapeutic measures and exercise, conditioning in general medical and surgical conditions. The student should be able to acquire the knowledge of evaluation and physiotherapeutic treatment for obstetric and gynecological conditions, and evaluate, grade and treat non healing wounds.

Course Content:

UNIT I 10 hours

Physiotherapy in mother and child care – ante and post-natal management, early intervention and stimulation therapy in child care (movement therapy)

Geriatrics – handling of old patients and their problems.

UNIT II 10 hours

Physiotherapy in surgical cases: Complication common to all operations, Abdominal incisions. Physiotherapy in pre- and post-operative stages. Operations on upper G.I.T.- oesophagus, stomach, duodenum. Operations on large and small intestine – Appendisectomy,

cholecystectomy, partial colectomy, ileostomy, hernia and herniotomy, herniorrhaphy, hernioplasty.

UNIT III 10 hours

a) Physiotherapy in dentistry
b) Physiotherapy intervention in the management of Medical, Surgical and Radiation Oncology Cases.
c) Physiotherapy in dermatology -Documentation of assessment, treatment and follow up skin conditions. U.V.R therapy in various skin conditions; Vitiligo; Hair loss; Pigmentation; Infected wounds ulcers. Faradic foot bath for Hyperhydrosis. Massage maneuvers for cosmetic purpose of skin; use of specific oil as medium; Care of anesthetic hand and foot; Evaluation, planning and management of leprosy-prescription, fitting and training with prosthetic and orthotic devices.
d) ENT – sinusitis, non-suppurative and chronic suppurative otitis media, osteosclerosis, labyrinthitis, mastoidectomy, chronic rhinitis, laryngectomy, pharyngeo – laryngectomy, facial palsy.

UNIT IV 10 hours

Burns and its treatment – physiotherapy in burns, skin grafts, and reconstructive surgeries.

Management of wound ulcers- Care of ulcers and wounds - Care of surgical scars- U.V. R and other electro therapeutics for healing of wounds, prevention of Hyper-granulated Scars Keloids, Electrotherapeutics measures for relief of pain during mobilization of scars tissues.

Textbook:

1. Tidy's Physiotherapy, Mosby Pub, 15th Ed, 2013.

Reference Book:

1. S.Das , A practical guide to operational surgery,4th Edition SD publications,2004

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Understand the basis of applying the concept of physiotherapy during pregnancy and delivery.	**PO1**
CO2	Become familiar with care given to infants and children.	**PO1**
CO3	Become aware of the physiotherapy management of the elderly causes and concerns.	**PO1**
CO4	Understand the rehabilitation done in pre and post-surgical cases.	**PO3**
CO5	Identify the various approaches used in burns and wound care management.	**PO3**

		Physiotherapy Knowledge	**Multidisciplinary / Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT306A	**PHYSIOTHERAPY IN MEDICAL AND SURGICAL CONDITIONS**	**3**		**3**				**3**	**1**	**1**

1= weakly mapped
2= moderately mapped
3= strongly mapped

MAPT308A	COMMUNITY MEDICINE	L	T	P	C
Version 1.0		2	1	0	3
Pre-requisites/Exposure	-				
Co-requisites	-				

Course Objectives:

1. Knowledge about impairment, disability, handicap
2. Physiotherapy role in community management.
3. Addressing community issues such as immunization, disease prevention & health care
4. Education & awareness about various health programs & mission.

Course Outcomes:

On completion of this course, the students will be able to

CO1. Epidemiological implications of impairment and handicap and disability, health Statistics.
CO2. National health schemes and its benefits.
CO3. Immunization programmes – malnutrition and early detection of disabling conditions. and Intervention.
CO4. Categorizes various rehabilitations and describes its advantages and disadvantages.
CO5. Explains about communicable and non-communicable diseases and its implications.
CO6. Influence of nutritional factors on disability.
CO7. Role of community leaders and health professionals in health education.

Catalog Description: This course follows the basic science subjects to provide the knowledge about conditions the therapist would encounter in their practice in the community. The objective of this course is that after lectures and discussion the student will be able to demonstrate an understanding of various aspects of health and disease list the methods of health administration, health education and disease preventive measures.

Course Content:

UNIT I 4 hours

Health and Disease

Definitions, Concepts, Dimensions and Indicators of Health, Concept of well-being, Spectrum and Determinants of Health, Concept and natural history of Disease, Concepts of disease control and prevention, Modes of Intervention, Population Medicine, The role of socio-economic and cultural environment in health and disease.

UNIT II 8 hours

Introduction to Epidemiology: Definition and scope. Principles of Epidemiology and Epidemiological methods: Components and Aims, Basic measurements, Methods, Uses of Epidemiology, Infectious disease epidemiology, Dynamics and modes of disease transmission, Host defenses and Immunizing agents, Hazards of Immunization, Disease prevention and control, Disinfection. Screening for Disease: Concept of screening, Aims and Objectives, Uses and types of screening.

Epidemiology of communicable disease: Respiratory infections, Intestinal infections, Arthropod-borne infections, Zoonoses, Surface infections, Hospital acquired infections Epidemiology of chronic non-communicable diseases and conditions: Cardio vascular diseases: Coronary heart disease, Hypertension, Stroke, Rheumatic heart disease, Cancer, Diabetes, obesity, Blindness, Accidents and Injuries.

UNIT III 8 hours

Public health administration: An overview of the health administration set up at Central and state levels. The national health programme-highlighting the role of social, economic and cultural factors in the implementation of the national programmes. Health problems of vulnerable groups- pregnant and lactating women, infants and pre-school children, occupational groups.

Health programmes in India: Vector borne disease control programme, National leprosy eradication programme, National tuberculosis programme, National AIDS control programme, National programme for control of blindness, Iodine deficiency disorders (IDD) programme, Universal Immunisation programme, Reproductive and child health programme, National cancer control programme, National mental health programme. National diabetes control programme, National family welfare programme, National sanitation and water supply programme, Minimum needs programme.

UNIT IV 4 hours

Demography and Family Planning: Demographic cycle, Fertility, Family planning-objectives of national family planning programme and family planning methods, A general idea of advantage and disadvantages of the methods.

Preventive Medicine in Obstetrics, Paediatrics and Geriatrics: MCH problems, Antenatal, Intranatal and post-natal care, Care of children, Child health problems, Rights of child and National policy for children, MCH services and indicators of MCH care, Social welfare programmes for women and children, Preventive medicine and geriatrics.

UNIT V 6 hours

Aspects of Health: Nutrition and Health: Classification of foods, Nutritional profiles of principal foods, Nutritional problems in public health, Community nutrition programs. Environment and Health: Components of environment, Water and air pollution and public health: Pollution control, Disposal of waste, Medical entomology. Occupational Health: Occupational environment hazards &diseases, Prevention of occupational diseases. Social security and other measures for the protection from occupational hazard accidents and diseases. Details of compensation acts. Mental Health: Characteristics of a mentally healthy person, Types of mental illness, causes, Prevention, Mental health services, Alcohol and drug dependence. Emphasis on community aspects of mental health. Role of Physiotherapist in mental health problems such as mental retardation.

Health Education: Concepts, aims and objectives, Approaches to health education, Models of health education, Contents of health education, Principles of health education, Practice of health education.

Textbooks:

1. Park's Text Book of preventive and Social Medicine – K Park, 24TH ED, BDB Publishers,2017.
2. Prabhakar, Short text book of preventive and social medicine, Jaypee, 2nd Ed 2012Tidys Physiotherapy, Mosby Pub, 15th Ed, 2013.

Reference Book:

1. Retan, Handbook of preventive and social medicine, 9th ed, 2007

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Epidemiological implications of impairment and handicap and disability, health statistics.	PO2
CO2	National health schemes and its benefits.	PO6
CO3	Immunization programmes – malnutrition and early detection of disabling conditions and Intervention.	PO6
CO4	Categorizes various rehabilitations and describes its advantages and disadvantages.	PO1
CO5	Explains about communicable and non-communicable diseases and its implications.	PO2
CO6	Influence of nutritional factors on disability.	PO2
CO7	Role of community leaders and health professionals in health education.	PO6

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Moder n Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT308A	**COMMUNITY MEDICINE**	**2**	**1**				**3**		**2**	**1**

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT354A	PHYSIOTHERAPY IN ORTHOPAEDICS AND SPORTS LAB	L	T	P	C
Version 1.0		-	-	2	1
Pre-requisites/Exposure	ORTHOPAEDICS				
Co-requisites	PHYSIOTHERAPY IN ORTHOPAEDICS AND SPORTS				

Course Objectives:

1. Practical knowledge for managing various orthopaedic conditions
2. Physiotherapy management of orthopaedic conditions.
3. Hands on approach for various sports injuries
4. Physiotherapy Assessment, diagnosis and management of orthopaedic & sports injuries.

Course Outcomes:

On completion of this course, the students will be able to

CO1. Knowledge about assess, diagnose and plan the physiotherapy treatment for various musculo skeletal problems gained.
CO2. Physiotherapy management for various fractures are understood.
CO3. Knowledge about physiotherapy management for various orthopaedic surgeries gained.
CO4. To Know about the different types of postural deformities and correction of postural deformities.
CO5. Physiotherapy management for various degenerative disorders of bones and joints & amputation are understood.
CO6. Knowledge about soft tissue injury diagnosis and physiotherapy management gained.

Catalog description:

The objective of the lab is that after the demonstrations the student will be able to identify disabilities due to musculoskeletal dysfunction, plan and set treatment goals and apply the hands-on skills gained in exercise therapy and electrotherapy in these clinical situations to restore musculoskeletal function.

Course content:

Practical shall be conducted for all the relevant topics discussed in theory in the following forms:

1. Bedside case presentations and case discussions

2. Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination

Examination Scheme:

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	40	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Knowledge about assess, diagnose and plan the physiotherapy treatment for various musculo skeletal problems gained.	PO1
CO2	Physiotherapy management for various fractures are understood	PO3
CO3	Knowledge about physiotherapy management for various orthopaedic surgeries gained.	PO4
CO4	To Know about the different types of postural deformities and correction of postural deformities	PO3
CO5	Physiotherapy management for various degenerative disorders of bones and joints & amputations are understood.	PO1
C06	Knowledge about soft tissue injury diagnosis and physiotherapy management gained.	PO5

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	Course Title	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3
MAPT354 A	PHYSIOTHERAPY IN ORTHOPAEDICS AND SPORTS	3		2	2	1		3	1	1

	LAB									

MAPT356A	**PHYSIOTHERAPY IN MEDICAL AND SURGICAL CONDITIONS LAB**	L	T	P	C
Version 1.0		-	-	2	1
Pre-requisites/Exposure	GENERAL SURGERY				
Co-requisites	PHYSIOTHERAPY IN MEDICAL AND SURGICAL CONDITIONS				

Course Objectives:

1. Practical knowledge for assessment of pre & post op surgical conditions.
2. Physiotherapy management of gynaecological conditions.
3. Physiotherapy Assessment, diagnosis and management of burns
4. Concepts of patient care & assessment in various medical cases.

Course Outcomes:

On completion of this course, the students will be able to

CO1. Understand the basis of applying the concept of physiotherapy during pregnancy and delivery.
CO2. Become familiar with care given to infants and children.
CO3. Become aware of the physiotherapy management of the elderly causes and concerns.
CO4. Understand the rehabilitation done in pre and post-surgical cases.
CO5. Identify the various approaches used in burns and wound care management.

Catalog description

This lab work will enable students to identify discuss and analyze physiotherapy requirements based on pathophysiological principles and arrive at appropriate functional diagnosis, execute effective physiotherapeutic measures and exercise, conditioning in general medical and surgical conditions. The student should be able to acquire the knowledge of evaluation and physiotherapeutic treatment for obstetric and gynecological conditions, and evaluate, grade and treat non healing wounds.

Course Content:

Practical shall be conducted for all the relevant topics discussed in theory in the following forms:

1. Bedside case presentations and case discussions

2. Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination

Examination Scheme:

Components	**Internal Practical**	**Attendance**	**End Term Exam**

Weightage (%)	**40**	**10**	**50**

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Understand the basis of applying the concept of physiotherapy during pregnancy and delivery.	**PO1**
CO2	Becomes familiar with care given to infants and children.	**PO3**
CO3	Become aware of the physiotherapy management of the elderly causes and concerns.	**PO3**
CO4	Understand the rehabilitation done in pre and post-surgical cases.	**PO5**
CO5	Identify the various approaches used in burns and wound care management.	**PO3**

		Physiotherapy Knowledge	**Multidisciplinary/ Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT356A	**PHYSIOTHERAPY IN MEDICAL AND SURGICAL CONDITIONS LAB**	**2**		**3**		**2**		**3**	**1**	**1**

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT360A	CLINICAL EDUCATION-IV	L	T	P	C
Version 1.0		-	-	4	2
Pre-requisites/Exposure	CLINICAL EDUCATION-III				
Co-requisites	-				

Course Objectives: The aim of this course is to continue the clinical training so that each student can learn from the experience of assessment and treatment planning, goal setting and execution of treatment under supervision.

Course Outcomes:

CO1. Assist physiotherapists working in different clinical settings.
CO2. Be familiar with different types of assessment forms.
CO3. Perform basic mobilization and stretching techniques under supervision.
CO4. Imbibe professional values seen in practicing clinicians.
CO5. Appreciate the importance of multidisciplinary teamwork in healthcare.
CO6. Be aware of and spread awareness regarding the importance of physiotherapy.

Course Content:

Clinical posting in general and specialized Physiotherapy Departments, including clinical visits. Students should observe and assist the clinicians in:
1. Assessment
2. Diagnosis
3. Treatment planning and
4. Execution.

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination

Examination Scheme:

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	**40**	**10**	**50**

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Assist physiotherapists working in different clinical settings.	**PO3**
CO2	Be familiar with different types of assessment forms.	**PO3**
CO3	Perform basic mobilization and stretching techniques under supervision.	**PO3**
CO4	Imbibe professional values seen in practicing clinicians.	**PO6**
CO5	Appreciate the importance of multidisciplinary teamwork in healthcare.	**PO6**
CO6	Be aware of and spread awareness regarding the importance of physiotherapy.	**PO6**

		Physiotherapy Knowledge	**Multidisciplinary/ Medical knowledge**	**Clinical and Practical Skills**	**Utilisation of Modern Technology**	**Evidence Based Practice**	**Life Skills**	**Assessment and Management**	**Teamwork**	**Research and Entrepreneurial Skills**
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT360A	**CLINICAL EDUCATION-IV**			**3**			**3**	**3**	**2**	**2**

1= weakly mapped 2= moderately mapped 3= strongly mapped

SEMESTER VII

MAPT401A	PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS	L	T	P	C
Version 1.0		3	1	0	4
Pre-requisites/Exposure	NEUROLOGY AND NEUROSURGERY				
Co-requisites	PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS LAB				

Course Objectives:

1. Able to identify disabilities due to neurological dysfunction,
2. Planning and setting treatment goals according to neurological conditions
3. Assessment & care to the patients with varied neurological dysfunctions.

Course Outcomes:

Upon completion of this course the student should be able to do

CO1. Demonstrate knowledge about the analysis of the different aspects of the neurological physiotherapy assessment which includes assessment of Central nervous system and peripheral nervous system.
CO2. Learn about the principles of various treatment techniques and thereby students will be able to construct their own treatment protocol for neurological conditions.
CO3. Identify the motor, sensory perceptual dysfunction of the adult and paediatric neurological conditions.
CO4. Know about the clinical approaches to address the weakness, abnormal tone, posture and motor control deficits and lack of endurance.
CO5. Become aware of neuro-intensive care unit patients and physiotherapy management of the cerebrovascular accidents, Head injury and spinal cord injury in the intensive care unit.
CO6. Practical application of integrated approach like MRP, Bobath, Brunnstroms and Roods approach.

Catalog description:

The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to identify disabilities due to neurological dysfunction, plan and set treatment goals and apply the skills gained in exercise therapy and electrotherapy in these clinical situations to restore neurological function.

Course Content:

UNIT I 10 hours

Neurological Assessment: Chief complaints, History taking, Observation, Palpation, Higher mental function – Consciousness, Orientation, Wakefulness, memory, Speech, Reading, Language, Writing, Calculations, Perception, Left right confusion, Reasoning, and Judgment, Motor Examination – Muscle power, Muscle tone, Spasticity, Flaccidity, Reflexes – Developmental reflexes, deep tendon & Superficial reflexes, Sensory examination –

Superficial, Deep and Cortical sensations, Special tests – Romberg's, Kernig's sign, Brudzinski sign, Tinel's sign, Slump test, Lhermitte's sign, Bells Phenomenon, Gower's sign, Sun set sign, Battle's sign, Glabellar tap sign, etc.,

Functional assessment: Balance examination, coordination examination, Gait analysis – Kinetics & Kinematics (Quantitative & Qualitative analysis), Functional Analysis, Assessment tools & Scales – Modified Ashworth scale, Berg balance scale, FIM, Barthel index, Glasgow coma scale, Mini mental state examination, Rancho Los Amigos Scale for Head injury, APGAR score, ASIA scale, Reflex Grading. Differential diagnosis.

UNIT II 10 hours

Neuro physiological Techniques: Concepts, Principles, Techniques, Effects of following Neurophysiological techniques: NDT, PNF, Vojta therapy, Rood's Sensory motor Approach, Sensory Integration Approach, Brunnstorm movement therapy, Motor relearning program, Contemporary task-oriented approach, Muscle re-education approach and Constraint induced movement therapy.

Paediatric Neurology: Paediatric Examination, Developmental milestones and reflexes, Neuro developmental screening tests. Assessment & Use of various Neurophysiological approaches & Modalities in Risk babies, Minimum brain damage, Developmental disorders, Cerebral palsy, Autism, Down's Syndrome, Hydrocephalus, Chorea, Spina bifida, and syringomyelia.

UNIT III 10 hours

Neurological disorders: - Assessment and Use of various Neurophysiological approaches& Modalities in

- Evaluation and Management of Brain and Spinal Cord Disorders- Cerebro vascular Accident, Meningitis, Encephalitis, Head Injury, Brain Tumors, Perceptual disorders, Amyotrophic lateral sclerosis, and Multiple sclerosis.
- Evaluation and Management of Cerebellar, Spinal Cord and Muscle Disorders - Ataxia, Sensory Ataxia, Parkinson's disease, Muscular dystrophy (DMD), Myasthenia Gravis, Eaton-Lambert Syndrome, Spinal tumors, Spinal cord injury, Transverse myelitis, Bladder & Bowel Dysfunction, Spinal muscular atrophies, Poliomyelitis, Post-Polio Syndrome.
- Evaluation and Management of Peripheral Nerve Injuries and Disorders: Hereditary motor sensory neuropathy, Guillain-Barre syndrome, Peripheral Nerve Palsies.

UNIT IV 10 hours

Assessment and management of Neurological gaits: Quantitative and Qualitative (Kinetic & Kinematics) analysis, List of Problems, short & Long Term goals, Management of following Neurological Gaits - Hemiplegic gait, Parkinson gait, High step gait, Hyperkinetic gait, Hypokinetic gait, Waddling gait, Scissoring gait, Spastic gait, Choreiform Gait, Diplegic Gait, and Myopathic Gait.

Pre and post-surgical assessment and treatment: Spinal disc herniation, Spinal stenosis, Spinal cord trauma, Head trauma, Brain tumors, Tumors of the spine, Spinal cord and peripheral nerves, Cerebral aneurysms, Subarachnoid hemorrhages, epilepsy, Parkinson's disease, Chorea, Hemiballism, Psychiatric disorders, Malformations of the nervous system, Carotid artery stenosis, Arteriovenous malformations, and Spina bifida.

Textbook:

1. Susan B'O' Sullivan, Physical rehabilitation, Jaypee, 6th ed. – 2014

Reference Book:

1. Jan Stephen Tecklin, Pediatric Physical Therapy, Lippincott Williams & Wilkins, 3rd Edition,1999.
2. Sophie Levitt, Cerebral Palsy – Treatment of cerebral palsy and motor delay, Blackwell sciences,5Ed, 2013.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Demonstrate knowledge about the analysis of the different aspects of the neurological physiotherapy assessment which includes assessment of Central nervous system and peripheral nervous system.	**PO1**
CO2	Learn about the principles of various treatment techniques and thereby students will be able to construct their own treatment protocol for neurological conditions.	**PO1**
CO3	Identify the motor, sensory perceptual dysfunction of the adult and paediatric neurological conditions.	**PO3**
CO4	Know about the clinical approaches to address the weakness, abnormal tone, posture and motor control deficits and lack of endurance.	**PO3**
CO5	Become aware of neuro-intensive care unit patients and physiotherapy management of the cerebrovascular accidents, Head injury and spinal cord injury in the intensive care unit.	**PO1**
CO6	Practical application of integrated approach like MRP, Bobath, Brunnstroms and Roods approach.	**PO5**

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT 401A	**PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS**	**3**		**3**		**2**		**3**	**1**	

1= Addressed to small extent
2= Addressed significantly
3= Major part of course

MAPT403A	CARDIOVASCULAR AND PULMONARY CONDITIONS	L	T	P	C
Version 1.0		3	1	0	4
Pre-requisites/Exposure	HUMAN PHYSIOLOGY				
Co-requisites	-				

Course Objectives:

1. Medical knowledge of cardiovascular & pulmonary system.
2. Overview of common cardiac & pulmonary condition & surgeries.
3. Assessment, diagnosis and management of cardiac & pulmonary condition injuries.
4. Concepts of patient care.

Course Outcomes:

On completion of this course, the students will be able to

CO1. The cardiac conditions pathology like infectious diseases ischemic diseases
CO2. Lung infections and diseases its pathology is clearly studied.
CO3. Management of pulmonary surgeries, transplantation and ventilator care.
CO4. Endotracheal tubes, tracheostomy procedures.
CO5. Chest deformities and spinal deformities.
CO6. Movements and muscles responsible for respiration and thoracic cage.

Catalog description:

The objective of this course is that after lectures and demonstration in addition to clinics the student will be able to demonstrate an understanding of Cardio-thoracic conditions causing disability and their management. Particular effort is made in this course to avoid burdening the student with any detail pertaining to diagnosis which will not contribute to their understanding of the limitations imposed by cardiovascular pathology on the functioning of the individual.

Course Content:

UNIT I Anatomy and Physiology 8 hours

Respiratory system: Upper respiratory tract, Lower respiratory tract – Trachea, Bronchial tree, Bronchopulmonary segments, Respiratory unit, hilum of lung, Muscles of respiration, Pleura, intra pleural space, intra pleural pressure, surfactant, Mechanics of respiration, Neural & chemical regulation of respiration, Lung volumes and lung capacities, Spiro meter, lung function test, Pulmonary circulation, Lung sounds, cough reflex. Chest Radiographs, Arterial Blood Gas Analysis.

Cardiovascular system: Chambers of heart, semi lunar and atria ventricular valves, Coronary circulation, conductive system of heart, Cardiac cycle, ECG, Heart sounds, Blood pressure, pulse, cardiac output. Investigations: ECG, Exercise Stress Testing, Radiology

UNIT II 8 hours

Cardiovascular diseases & conditions: - Definition, etiology, pathogenesis, clinical features, complications, Conservative and surgical management of the following conditions: Ischemic heart disease, Myocardial infarction, Heart failure, Cardiac arrest, Rheumatic fever,

Hypertension, Infective endocarditis, Myocarditis & cardiomyopathy. Pericarditis, Myocarditis, Endocarditis, Rheumatic Fever – resulting in valve disorders, Ischemic Heart Disease, Coronary Valve Disease, Congenital disorders of the Heart, Cardiac Arrest; Examination and Investigations of diseases of arteries and veins ; Hypertension.

UNIT III **8 hours**

Disorders of the Heart – Definition, Clinical features, diagnosis and choice of management for the following disorders : Congenital Heart diseases – Acyanotic congenital heart disease & Cyanotic congenital heart disease : Patent Ductus Arteriosus, Coarctation of Aorta, Atrial Septal Defect, Ventricular Septal Defect, Tetralogy of Fallot, Transposition of Great Vessels ; Acquired Heart Disease – Mitral Stenosis & Insufficiency, Aortic Stenosis and Insufficiency, Ischemic Heart Disease – Coronary Artery Disease, Cardiac tumors.

UNIT IV **8 hours**

Respiratory System Disease :; Patterns of lung disease – Chronic Obstructive Lung Disease and Restrictive Lung Disease ; Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following lung diseases : Chronic Bronchitis, Emphysema, Asthma, Bronchiectasis, Cystic Fibrosis, Upper Respiratory Tract Infections, Pneumonia, Tuberculosis, Fungal Diseases, Interstitial Lung Diseases, Diseases of the pleura, diaphragm and chest wall ; Respiratory failure – Definition, types, causes, clinical features, diagnosis and management.

UNIT V **8 hours**

Chest wall disorders- Definition, Clinical features, diagnosis and choice of management for the following disorders – chest wall deformities, chest wall tumors, Spontaneous Pneumothorax, Pleural Effusion, Empyema Thoracis, Lung abscess, Bronchiectasis, Tuberculosis, Bronchogenic Carcinoma, Bronchial Adenomas, Metastatic tumors of the Lung, tracheal Stenosis, Congenital tracheomalacia, Neoplasms of the trachea, Lesions of the Mediastinum. Carcinoma of the female breast.

Textbook:

1. Downie, Cash text book of chest, Heart & Vascular disorders –ELBS, 1 Ed,

Reference Book:

1. Berne, Cardio Vascular Physiology ,Mosby, 4Ed, 2012.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	The cardiac conditions pathology like infectious diseases ischemic diseases	**PO2**
CO2	Lung infections and diseases its pathology is clearly studied.	**PO2**
CO3	Management of pulmonary surgeries, transplantation and ventilator care.	**PO3**
CO4	Endotracheal tubes, tracheostomy procedures	**PO3**
CO5	Chest deformities and spinal deformities.	**PO2**
C06	Movements and muscles responsible for respiration and thoracic cage.	**PO2**

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT403A	**CARDIOVASCULAR AND PULMONARY CONDITIONS**		**3**	**2**				**2**	**2**	

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT407A	RESEARCH METHODOLOGY AND BIOSTATISTICS	L	T	P	C
Version 1.0		3	1	0	4
Pre-requisites/Exposure	-				
Co-requisites	-				

Course Objectives:

1. Understand basic principle of research
2. Learn about various research methods & designs.
3. To be able to read the research articles & write on your own.
4. Learn the concept of research writing.

Course Outcomes:

On completion of this course, the students will be able to

CO1. Implement hypothesis testing.
CO2. Important concepts relating to research design and measurements and scaling. techniques.
CO3. To analyze experimental and observational study
CO4. Knowledge of Processing and analyzing data can be gained.
CO5. Interpretation and Report Writing can be well understood.
CO6. Desire to face the challenge in solving the unsolved problems and to be of service to society

Catalog Description:

The objective of this module is to help the students understand the basic principles of research and methods applied to draw inferences from the research findings.

Course Content:

UNIT I 8 hours

Introduction to Research methodology: Meaning of research, objectives of research, Motivation in research, Types of research & research approaches, Research methods vs methodology, Criteria for good research, Problems encountered by researchers in India.

Research problem: Statement of research problem., Statement of purpose and objectives of research problem, Necessity of defining the problem.

Research design: Meaning of research design, Need for research design, Features for good design, Different research designs, Basic principles of research design.

UNIT II 8 hours

Sampling Design: Criteria for selecting sampling procedure, Implications for sample design, steps in sampling design, characteristics of good sample design, Different types of sample design.

Measurement & scaling techniques: Measurement in research- Measurement scales, sources of error in measurement, Technique of developing measurement tools, Meaning of scaling, its classification. Important scaling techniques.

Methods of data collection: collection of primary data, collection data through questionnaires & schedules, Difference between questionnaires & schedules.
Sampling fundamentals, need for sampling & some fundamental definitions, important sampling distributions.

UNIT III 8 hours

Processing & analysis of data: Processing operations, problems in processing, Types of analysis, Statistics in research, Measures of central tendency, Dispersion, Asymmetry, relationship.

Testing of hypothesis: What is hypothesis? Basic concepts concerning testing of hypothesis, Procedure of hypothesis testing, measuring the power of hypothesis test, Tests of hypothesis, limitations of the tests of hypothesis.

Computer technology: Introduction to Computers, computer application in research, computers & researcher.

UNIT IV 8 hours

Biostatistics: Introduction: Meaning, definition, characteristics of statistics., Importance of the study of statistics, Branches of statistics, Statistics and health science including physiotherapy, Parameters and Estimates, Descriptive and inferential statistics, Variables and their types, Measurement scales.

Tabulation of Data: Basic principles of graphical representation, Types of diagrams – histograms, frequency polygons, smooth frequency polygon, cumulative frequency curve, Normal probability curve.

Measure of Central Tendency: Need for measures of central Tendency, Definition and calculation of mean – ungrouped and grouped, Meaning, interpretation and calculation of median ungrouped and grouped., Meaning and calculation of mode, Comparison of the mean, median and mode, Guidelines for the use of various measures of central tendency.

UNIT V 8 hours

Probability and Standard Distributions: Meaning of probability of standard distribution, the binominal distribution, the normal distribution, Divergence from normality – skew ness, kurtosis.

Sampling techniques: Need for sampling - Criteria for good samples, Application of sampling in community, Procedures of sampling and sampling designs errors, Sampling variation and tests of significance.

Analysis of variance & covariance: Analysis of variance (ANOVA), what is ANOVA? Basic principle of ANOVA, ANOVA technique, Analysis of Co variance (ANACOVA). Format of scientific documents. (Structure of protocols, formats reporting in scientific journals, systematic reviews and meta-analysis).

Textbook:

1. B.L Agarwal, Basic statistics, New Age International Publication.2012.

Reference Book:

1. Sundarrao, Introduction to biostatistics and Research Methodology, CBS, 1Ed, 2002.

2. C.R Kothari, Research methodology, New Age international publication, 3Ed, 2014.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	The student will be able to implement hypothesis testing	PO2
CO2	Important concepts relating to research design and measurements and scaling techniques.	PO2
CO3	To analyze experimental and observational study.	PO5
CO4	Knowledge of Processing and analyzing data can be gained	PO5
CO5	Interpretation and Report Writing can be well understood	PO5
CO6	Desire to face the challenge in solving the unsolved problems and to be of service to society.	PO5

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT 407A	**RESEARCH METHODOLOGY AND BIOSTATISTICS**		**2**			**3**	**3**			**3**

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT405A	**HEALTH PROMOTION AND FITNESS**	L	T	P	C
Version 1.0		**2**	**1**	**-**	**3**
Pre-requisites/Exposure	-				
Co-requisites	-				

Course Objectives:

1. Learn about health & healthcare system.
2. Acknowledge the role of physiotherapist in society.
3. Evaluate the level of fitness & principles of fitness training.
4. Address the various issues pertaining to health& fitness

Course Outcomes:

On completion of this course, the students will be able to

CO1. Importance of health in the society.
CO2 Definition of fitness, principles of exercises and testing of endurance and strength.
CO3.Understand the types of exercises and detail knowledge of aerobics and anaerobic exercises.
CO4. Knowledge of various health issues in adolescent, adulthood& pregnancy.
CO5. Understand the preventive aspects of managing deterioration in health sector.

Catalog description:

This course includes discussion on the theories of health and wellness, including motivational theory, locus of control, public health initiative, and psycho-Social, spiritual and cultural consideration. Health risks, screening, and assessment considering epidemiological principles are emphasized. Risk reduction strategies for primary and secondary prevention, including programs for special populations are covered.

Course Content:

UNIT I Prevention practice: a holistic perspective for physiotherapy 6 hours

a) Defining Health
b) Predictions of Health Care
c) Comparing Holistic Medicine and Conventional Medicine
d) Distinguishing Three Types of Prevention Practice.

UNIT II Healthy People 6hours

a) Definition of healthy people
b) Health education Resources
c) Physiotherapist role for a healthy community.

UNIT III Key concepts of Fitness & Fitness training 6 hours

a) Defining & Measuring Fitness
b) Assessment of Stress with a Survey
c) Visualizing Fitness
d) Screening for Mental and Physical Fitness
e) Body Mass Index calculations.
f) Physical Activities Readiness Questionnaire
g) Physical Activities Pyramid
h) Exercise Programs
i)Evidence-Based Practice.

UNIT IV 6 hours

a) Health, fitness, and wellness issues during childhood and adolescence
b) Health, fitness, and wellness during adulthood
c) Women's health issues: focus on pregnancy:
d) Prevention practice for older adults
e) Resources to optimize health and wellness.
f) Health protection.

UNIT V 6 hours

a) Prevention practice for musculoskeletal conditions, cardiopulmonary conditions, neuromuscular conditions, Prevention practice for integumentary disorders, Prevention practice for individuals with developmental disabilities
b) Marketing health and wellness.

Textbook:

1. Park's Text Book of preventive and Social Medicine – K Park, 24TH ED, BDB Publishers,2017.
2. McArdle, Exercise Physiology, ELBS, 5th Ed, 2011.

Reference Book:

1. Mary Beth Allan, Sports, Exercise, and Fitness: A Guide to Reference and Information

Sources, Libraries unlimited publishers, 1st Ed, 2005.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Importance of health in the society.	PO6
CO2	Definition of fitness, principles of exercises and testing of endurance and strength.	PO1
CO3	Understand the types of exercises and detail knowledge of aerobics and anaerobic exercises.	PO1
CO4	Knowledge of various health issues in adolescent, adulthood& pregnancy.	PO6
CO5	Understand the preventive aspects of managing deterioration in health sector.	PO6

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT 405A	**HEALTH PROMOTION AND FITNESS**	**2**					**3**	**2**	**1**	

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT409A	MANAGEMENT AND LEADERSHIP	L	T	P	C
Version 1.0		**2**	**-**	**-**	**2**
Pre-requisites/Exposure	-				
Co-requisites	-				

Course Objectives:

1. Provide knowledge about the basic principles of Management.
2. Knowledge of leadership qualities.
3. Practical aspect of management of an organization.

Course Outcomes

On completion of this course, the students will be able to

CO1.To understand the concept of principles of management.
CO2. To be well versed in the types of management
CO3. To clearly explain the research methods for management.
CO4. Understand the roles of group & teams work.
CO5. Knowledge about leadership qualities.

Catalog description:

This course allows student to understand the various aspects of management & rules defining the infrastructure of an organization. The leadership qualities & managerial roles will be inculcated in students through these course & discussions.

Course Content:

1.Introduction to management
2. Strategic Management
3. Foundations of Planning
4. Planning Tools and Techniques
5. Decision Making, conflict and stress management
6. Managing Change and Innovation
7. Understanding Groups and Teams
8. Leadership
9. Time Management
10. Cost and efficiency

CRITIQUE ENQUIRY, CASE PRESENTATION AND CASE DISCUSSION

Textbook:

1. Larry J Nosse, Management Principles for Physical therapist, Lippincott Williams,2nd Ed, 2005

Reference Book:

1. Elaine Lynne, Management in Health Care, Macmillan Publisher,4th Ed,1994.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	To understand the concept of principles of management	PO2
CO2	To be well versed in the types of management	PO2
CO3	To clearly explain the research methods for management.	PO5
CO4	Understand the roles of group & teams work.	PO6
CO5	Knowledge about leadership qualities.	PO6

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT 409A	**MANAGEMENT AND LEADERSHIP**		**2**			**1**	**3**		**3**	**3**

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT451A	PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS LAB	L	T	P	C
Version 1.0		**-**	**-**	**2**	**1**
Pre-requisites/Exposure	NEUROLOGY AND NEUROSURGERY				
Co-requisites	PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS				

Course Objectives:

1. Practical knowledge to identify disabilities due to neurological dysfunction,
2. Planning and setting treatment goals according to neurological conditions
3. Assessment & care to the patients with varied neurological dysfunctions.

Course Outcomes:

On completion of this course, the students will be able to
CO1. Learn about the principles of various treatment techniques
CO2. Construct a customised treatment protocol for neurological conditions.
CO3. Be well versed in PT evaluation in Neurological conditions.
CO4. Acquire knowledge about development milestones & paedriatic conditions.

Catalog description:

The objective of this lab work is to demonstrate the various methods to identify disabilities due to neurological dysfunction, plan and set treatment goals and apply the skills gained in exercise therapy and electrotherapy in these clinical situations to restore neurological function.

Course Content:

Practical shall be conducted for all the relevant topics discussed in theory in the following forms:
1. Bedside case presentations and case discussions
2. Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination

Examination Scheme:

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	**40**	**10**	**50**

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	To learn about the principles of various treatment techniques	**PO1**
CO2	To enable students to construct their own treatment protocol for neurological conditions.	**PO3**
CO3	To be well versed in PT evaluation in Neurological conditions.	**PO3**
CO4	To acquire knowledge about development milestones & paedriatic conditions.	**PO3**

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT 451A	**PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS LAB**	**2**		**3**				**3**	**2**	**1**

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT461A	CLINICAL EDUCATION-V	L	T	P	C
Version 1.0		**-**	**-**	**12**	**6**
Pre-requisites/Exposure	CLINICAL EDUCATION-IV				
Co-requisites	-				

Course Objectives:

1. Training on bed side approach & patient assessment.
2.ability to perform special tests and designing treatment protocol.
3.Evidence based practice will be part of training.

Course Outcomes:

On completion of this course, the students will be able to
CO1. Assist physiotherapists working in different clinical settings.
CO2. Be familiar with different types of assessment forms.
CO3. Perform basic mobilization and stretching techniques under supervision.
CO4. Imbibe professional values seen in practicing clinicians.
CO5. Appreciate the importance of multidisciplinary teamwork in healthcare.
CO6. Be aware of and spread awareness regarding the importance of physiotherapy.

Catalog description:

The aim of this course is continuing the clinical training so that each student can learn from the experience of assessment and treatment planning, goal setting and execution of treatment under supervision.

Course Content:

Students will be posted in rotation in the following areas/wards. The students will be clinically trained to provide physiotherapy care for the patients under supervision. They will be trained on bed side approach, patient assessment, performing special tests, identifying indications for treatment, ruling out contraindications, decision on treatment parameters, dosage and use relevant outcome measures under supervision. Evidence based practice will be part of training.

1. Physiotherapy OPD
2. Neurology, Neurosurgery & Neuro ICU
3. Community-PHC
4. Orthopedics
5. General Medicine & MICU
6. General Surgery & CTS ICU
7. Developmental Pediatrics & Child Guidance Clinic
8. OBG
9. Geriatric – Old Age Homes
10. Industrial Visits - Ergonomics

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination

Examination Scheme:

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	40	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Assist physiotherapists working in different clinical settings.	PO5
CO2	Be familiar with different types of assessment forms.	PO5
CO3	Perform basic mobilization and stretching techniques under supervision.	PO3
CO4	Imbibe professional values seen in practicing clinicians.	PO3
CO5	Appreciate the importance of multidisciplinary teamwork in healthcare.	PO6
CO6	Be aware of and spread awareness regarding the importance of physiotherapy.	PO6

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT 360A	**CLINICAL EDUCATION-V**			**3**		**3**	**3**	**3**	**3**	**3**

1= weakly mapped 2= moderately mapped 3= strongly mapped

SEMESTER VIII

MAPT402A	PHYSIOTHERAPY IN CARDIOVASCULAR, PULMONARY AND INTENSIVE CARE	L	T	P	C
Version 1.0		**3**	**1**	**-**	**4**
Pre-requisites/Exposure	CARDIOVASCULAR AND PULMONARY CONDITIONS				
Co-requisites	PHYSIOTHERAPY IN CARDIOVASCULAR, PULMONARY AND INTENSIVE CARE LAB				

Course Objectives:

1. Able to identify need of cardiac physiotherapy care upon assessing patient in ICU.
2. Planning and setting treatment goals according to cardiac conditions
3. Assessment & care to the patients with varied cardiac dysfunctions.

Course Outcomes:

Upon completion of this course the student should be able to do

CO1. Acknowledge the cardiac conditions pathology & lung infections and diseases.
CO2. Learn the physiotherapy techniques to restore respiration.
CO3. Learn the Intensive care for pediatric cases.
CO4. Management of pulmonary surgeries, transplantation and ventilator care.
CO5. Management of neonatal & paediatric cardiac care

Catalog description: The objective of this course is that after lectures and demonstration in addition to clinics the student must be able to reassess the patient as necessary, to monitor the patient in regard to treatment, to monitor the patient's vital signs, student must know emergency drugs indication and contra-indication, care in intensive care unit (ICU) and to provide appropriate interventions to the patient.

Course Content:

UNIT I 8 hours

PT Assessment:- Anatomical and Physiological differences between the Adult and Pediatric lung. Bedside assessment of the patient-Adult & Pediatric. Investigations and tests – Exercise tolerance Testing – Cardiac & Pulmonary, Radiographs, PFT, ABG, ECG, Hematological and Biochemical Tests.

Drug therapy – Drugs to prevent and treat inflammation, Drugs to treat Bronchospasm, Drugs to treat Breathlessness, Drugs to help sputum clearance, Drugs to inhibit coughing, Drugs to improve ventilation, Drugs to reduce pulmonary hypertension, Drug delivery doses, Inhalers and Nebulisers.

UNIT II
8 hours

Physiotherapy techniques to increase lung volume – controlled mobilization, positioning, breathing exercises, Neurophysiological Facilitation of Respiration, Mechanical aids - Incentive Spirometry, CPAP, IPPB.

Physiotherapy techniques to decrease the work of breathing – Measures to optimize the balance between energy supply and demand, positioning, Breathing re-education – Breathing control techniques, mechanical aids – IPPB, CPAP, BiPAP.

Physiotherapy techniques to clear secretions – Hydration, Humidification & Nebulisation, Mobilisation and Breathing exercises, Postural Drainage, Manual techniques – Percussion, Vibration and Shaking, Rib Springing, ACBT, Autogenic Drainage, Mechanical Aids – PEP, Flutter, IPPB, Facilitation of Cough and Huff, Nasopharyngeal Suctioning.

UNIT III

8 hours

Respiratory conditions: Physiotherapy in Obstructive lung conditions, Restrictive lung conditions. Management of breathlessness. Pulmonary Rehabilitation. Physiotherapy following Lung surgeries Respiratory failure – Oxygen Therapy and Mechanical Ventilation.

Cardiovascular conditions: Physiotherapy management following cardiac surgeries. Cardiac Rehabilitation. Physiotherapy management following PVD.

UNIT IV

8 hours

Miscellaneous: Abdominal Surgeries - Management of Pulmonary Restorative Dysfunction following surgical procedures on Abdomen and Thorax. Management of Amputations following Diabetes, PVD - Prosthesis in amputations of lower limbs following ulcers and gangrenes. Home program and education of family members in patient care. Treatment, Response to exercise and Implications of Physiotherapy in the following disease conditions: Hypertension, Diabetes, Renal Failure and Obesity.

UNIT V

8 hours

Introduction to ICU: ICU monitoring –Apparatus, Airways and Tubes used in the ICU - Physiotherapy in the ICU – Common conditions in the ICU – Tetanus, Head Injury, Lung Disease, Pulmonary Oedema, Multiple Organ Failure, Neuromuscular Disease, Smoke Inhalation, Poisoning, Aspiration, Near Drowning, ARDS, Shock; Dealing with an Emergency Situation in the ICU.

Neonatal and Pediatric Physiotherapy: Chest physiotherapy for children, The neonatal unit, Modifications of chest physiotherapy for specific neonatal disorders, Emergencies in the neonatal unit.

Textbook:

1. Amrohit, Text book of chest physiotherapy, Jaypee ,1st ed, 2010,
2. Madhuri, Text book of physiotherapy for cardiothoracic surgery condition, CBS, 1st ed , 2008Susan B'O' Sullivan, Physical rehabilitation, Jaypee, 6th ed. – 2014

Reference Book:

1. Patricia Downie, Cash's Text Book of chest heart and vascular disorders for Physiotherapists ,Jaypee, 4th ed, 1993.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written

Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Acknowledge the cardiac conditions pathology & lung infections and diseases.	PO2
CO2	Learn the physiotherapy techniques to restore respiration.	PO1
CO3	Learn the Intensive care for pediatric cases.	PO1
CO4	Management of pulmonary surgeries, transplantation and ventilator care.	PO3
CO5	Management of neonatal & paediatric cardiac care	PO3

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO1**	**PSO2**	**PSO3**
MAPT 402A	**PHYSIOTHERAPY IN CARDIOVASCULAR, PULMONARY AND INTENSIVE CARE**	**3**	**2**	**2**				**3**	**3**	**2**

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT404A	COMMUNITY PHYSIOTHERAPY	L	T	P	C
Version 1.0		**3**	**-**	**1**	**4**
Pre-requisites/Exposure	COMMUNITY MEDICINE				
Co-requisites	COMMUNITY PHYSIOTHERAPY LAB				

Course Objectives:

1. Understanding of various aspects of health and disease.
2. List the methods of health administration, health education and disease preventive measures.
3. Screening& rehabilitation of pediatric & geriatric disorders.
4. Physiotherapy role in efficient ergonomics care.

Course Outcomes:

Upon completion of this course the student should be able to do

CO1. Understand about the members of rehabilitation team and their role in rehabilitating the patient.
CO2. Geriatric assessment, evaluation and rehabilitation can be known.
CO3. Understand about the importance of therapeutic exercise in treating various condition like diabetes, hypertension, obesity etc.
CO4. Communication and behavioral disorders can be well understood.
CO5. Understand about the principles of disability evaluation.
CO6. The knowledge of role of physiotherapy in managing cancer patients can be gained.

Catalog description:

The objective of this course is that after the specified hours of lectures and demonstrations the student will be able to identify rehabilitation methods to prevent disabilities and dysfunctions due to various disease conditions and plan and set treatment goals and apply the skills gained in rehabilitating and restoring functions.

Course Content:

UNIT I

Rehabilitation: Definition, Types. Community: Definition of Community, Multiplicity of Communities, The Community based approach, Community Entry strategies, CBR and Community development, Community initiated versus community-oriented programme, Community participation and mobilization. Extension services and mobile units:

Introduction, Need, Camp approach. Vocational training in rehabilitation: Introduction, Need, Vocational evaluation, Vocational rehabilitation services.

Community Based Rehabilitation: Definition, Historical review, Concept of CBR, Need for CBR, Difference between Institution based and Community based Rehabilitation, Objectives of CBR, Scope of CBR, Members of CBR team, Models of CBR. Principles of Community based Rehabilitation. W.H.O.`s policies-about rural health care-concept of primary /tertiary health centers-district hospitals etc.-Role of P.T.-Principles of a team work of Medical person/P.T./O.T. audiologist/speech therapist /P.&O./vocational guide in C.B.R. of physically handicapped person, Agencies involved in rehabilitation of physical handicapped - Legislation for physically handicapped. Concept of multipurpose health worker. Role of family members in the rehabilitation of a physically handicapped. Planning and management of CBR Programmes,

UNIT II

Disability: Definition of Impairment, Handicap and Disability, Difference between impairment, handicap and disability, Causes of disability, Types of disability, Prevention of disability, Disability in developed countries, Disability in developing countries. Disability Surveys: Demography. Screening: Early detection of disabilities and developmental disorders, Prevention of disabilities- Types and levels.

Disability Evaluation: Introduction, What, Why and How to evaluate, Quantitative versus Qualitative data, Uses of evaluation findings.

UNIT III

a) Role of Government in CBR: Laws, Policies, Programmes, Human Rights Policy, Present rehabilitation services, Legal aspects of rehabilitation.
b) Role of Social work in CBR: Definition of social work, Methods of social work, History of social work, Role of social worker in rehabilitation.
c) Role of voluntary Organizations in CBR: Charitable Organizations, Voluntary health agencies – National level and International NGO's, Multilateral and Bilateral agencies. International Health Organizations: WHO, UNICEF, UNDP, UNFPA, FAO, ILO, World bank, USAID, SIDA, DANIDA, Rockefeller, Ford foundation, CARE, RED CROSS.
d) National District Level Rehabilitation Programme: Primary rehabilitation unit, Regional training center, District rehabilitation center, Primary Health center, Village rehabilitation worker, Anganwadi worker
e) Role of Physiotherapy in CBR: Screening for disabilities, Prescribing exercise programme, Prescribing and devising low cost locally available assistive aids, Modifications physical and architectural barriers for disabled, Disability prevention, Strategies to improve ADL, Rehabilitation programmes for various neuro-musculoskeletal and cardiothoracic disabilities.

UNIT IV

Screening and rehabilitation of paediatric disorders in the community: Early detection of high risk babies, Maternal nutrition and education, Rehabilitation of Cerebral Palsy, Polio, Downs Syndrome, Muscular Dystrophies etc., Prevention and rehabilitation of mental retardation and Behavioural disorders, Immunization programmes, Early intervention in high risk babies, Genetic counselling.

Geriatrics- Physiology of Aging /degenerative changes-Musculoskeletal /Neuromotor /cardio – respiratory-/Metabolic, Endocrine, Cognitive, Immune systems. Role of Physio Therapy in Hospital based care, Half-way homes, Residential homes, Meals on wheels etc. Home for the aged, Institution based Geriatric Rehabilitation. Few conditions: - Alzheimer's disease, Dementia, Parkinson's Disease, Incontinence, Iatrogenic drug reactions, etc. Ethics of Geriatric Rehabilitation.

UNIT V

Industrial Health & Ergonomics - Occupational Hazards in the industrial area -- Accidents due to: Physical agents-e.g.-Heat/cold, light, noise, Vibration, U.V. radiation, Ionizing radiation; Chemical agents-Inhalation, local action, ingestion; Mechanical hazards-overuse/fatigue injuries due to ergonomic alteration & ergonomic evaluation of work place-mechanical stresses per hierarchy – sedentary table work –executives, clerk; inappropriate seating arrangement- vehicle drivers; constant standing- watchman- Defense forces, surgeons; Over-exertion in laborers,-common accidents –Role of P.T.-Stress management. Psychological hazards- e.g.-executives, monotonicity & dissatisfaction in job, anxiety of work completion with quality, Role of P.T. in Industrial setup & Stress management-relaxation modes. Biological Hazards.

Textbook:

1. Waqar Naqvi, Physiotherapy in community health and rehabilitation, JP Brothers, 1 st Ed, 2011

Reference Book:

1. Judith Pitt-Brooke, Rehabilitation of movement – Theoretical Basis of clinical practice, W.B.Saunders,2 Ed, 2002

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Understand about the members of rehabilitation team and their role in rehabilitating the patient.	PO6

CO2	Geriatric assessment, evaluation and rehabilitation can be known	**PO3**
CO3	Understand about the importance of therapeutic exercise in treating various condition like diabetes, hypertension, obesity etc.	**PO1**
CO4	Communication and behavioral disorders can be well understood.	**PO2**
CO5	Understand about the principles of disability evaluation.	**PO3**
CO6	The knowledge of role of physiotherapy in managing cancer patients can be gained.	**PO1**

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO1**	**PSO2**	**PSO3**
MAPT 404A	**COMMUNITY PHYSIOTHERAPY**	**3**	**2**	**2**			**3**	**3**	**3**	

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT406A	CLINICAL REASONING AND EVIDENCE BASED PHYSIOTHERAPY PRACTICE	L	T	P	C
Version 1.0		2	1	0	3
Pre-requisites/Exposure	RESEARCH METHODOLOGY				
Co-requisites	-				

Course Objectives:

1. Emphasize the importance of patient consent & Identify situations beyond the scope of Physiotherapists.
2. Identify and manage ambiguity and ambiguous patient problem.
3. Incorporate evidence based practice into clinical decisions of patient care and Management.

Course Outcomes:

Upon completion of this course the student should be able to do

CO1. Define evidence based practice & gain confidence in making clinical decisions on diagnosis and treatment.
CO2. Make complex decision from heuristic decision.
CO3. Make decisions based on prescriptive, descriptive and artificially added approach & categorize the subjects and objects of knowledge.
CO4. Differentiate between screening and diagnosis & understand the importance of history taking and physical examination
CO5. Differentiate types of research methods, Modification and justification of physiotherapy treatment approaches.
CO6. Identify and appreciate ethical principles in physiotherapy.

Catalog Description:

The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to understand and apply the concepts of best practice and evidence based physiotherapy.

Course Content:

UNIT I Evidence based Practice 10 hours

a) Introduction to Evidence Based Practice: Definitions, Evidence Based Practice,
b) Concepts of Evidence based Physiotherapy: Awareness, Consultation, Judgement, and Creativity
c) Development of Evidence based knowledge, The Individual Professional, Professionals within a discipline, and Professionals across disciplines
d) Evidence Based Practitioner: The Reflective Practitioner, The E Model, Using the E Model

UNIT II Finding the Evidence 10 hours

a) Measuring outcomes in Evidence Based Practice, Measuring Health Outcomes, Measuring clinical outcomes, Inferential statistics and Causation

b) Searching for the Evidence: Asking Questions, Identifying different sources of evidence, Electronic Bibliographic databases and World Wide Web, Conducting a literature search. Step by-step search for evidence
c) Assessing the Evidence: Evaluating the evidence; Levels of evidence in research using quantitative methods, Levels of evidence classification system, Outcome Measurement, Biostatistics, The critical review of research using qualitative methods
d) Systematically reviewing the evidence: Stages of systematic reviews, Meta-analysis, The Cochrane collaboration
e) Economic evaluation of the evidence: Types of economic evaluation, conducting economic evaluation, critically reviewing economic evaluation, locating economic evaluation in the literature.

UNIT III Using the Evidence **10 hours**

a) Building evidence in practice; Critically Appraised Topics (CATs), CAT format, Using CATs, Drawbacks of CATs
b) Practice guidelines, algorithms, and clinical pathways: Recent trends in health care, Clinical Practice Guidelines (CPG), Algorithms, Clinical pathways, Legal implications in clinical pathways and CPG, Comparison of CPGs, Algorithms and Clinical Pathways
c) Communicating evidence to clients, managers and funders: Effectively communicating evidence, Evidence based communication in the face of uncertainty; Evidence based communication opportunities in everyday practice
d) Research dissemination and transfer of knowledge: Models of research transfer, Concrete research transfer strategies, Evidence based policy

Textbook:

1. Sackeit DL, Evidence Based Medicine-How to practice and teach, Churchill livingstone,2ED 1995
2. Bury TJ, Mead JM, Evidence based health care: a practical guide for therapists. Butter worth – Heinemann, oxford Pub,1998

Reference Book:

1. Edwards A, Elwyng –Evidence based patient choice, oxford university press, oxford 2001

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Define evidence based practice & gain confidence in making clinical decisions on diagnosis and treatment.	**PO5**
CO2	Make complex decision from heuristic decision	**PO3**
CO3	Make decisions based on prescriptive, descriptive and artificially added approach & categorize the subjects and objects of knowledge	**PO5**
CO4	Differentiate between screening and diagnosis & understand the importance of history	**PO3**
CO5	Differentiate types of research methods, Modification and justification of physiotherapy treatment approaches.	**PO5**
CO6	Identify and appreciate ethical principles in physiotherapy,	**PO6**

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO1**	**PSO2**	**PSO3**
MAPT 406A	**CLINICAL REASONING AND EVIDENCE BASED PHYSIOTHERAPY PRACTICE**			**2**		**3**	**2**	**2**		**3**

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT408A	ADMINISTRATION AND TEACHING SKILLS	L	T	P	C
Version 1.0		**2**	**-**		**2**
Pre-requisites/Exposure	-				
Co-requisites	-				

Course Objectives:

1. Understand the role of administrator & responsibilities in hospital /clinic administration.
2. Knowledge about organization of physiotherapy department.
3. Learn about concepts of physiotherapy teaching & education.

Course Outcomes:

Upon completion of this course the student should be able to do

CO1. Become an effective organizer for hospital care management. .
CO2. Well versed with financial planning.
CO3. Become familiar with planning and organizing of clinical resources.
CO4. Understand about the organization of physiotherapy department.
CO5. Well versed with various methods of teaching by involving in group activities, role plays
CO6. Gain knowledge about various methods of imparting teaching & education.

Catalog Description: This course includes discussion on the aspects of administration & organization. The students will have insights upon managing & understanding key roles & responsibilities in physiotherapy department organization as in clinics or hospital. The course will enable student to understand the basic concepts of physiotherapy teaching & education including curriculum& utilization of various resources for efficient working.

Course Content:

UNIT I Introduction 15 hours

a) Branches of administration, Nature and scope of administration, How to be an effective administrator, Planning hospital administration as part of a balanced health care program.
b) Principles of hospital administration and its applications to physiotherapy.
c) Planning and organization: Planning cycle, Principles of organizational charts, Resource and quality management, planning change -innovation
d) Financial issues including budget and income generation
e) Hospital administration: Organization, Staffing, Information, Communication, Coordination, Cost of services, Monitoring and evaluation.
f) Organization of physiotherapy department: Planning, Space, Manpower, Other basic resources.
g) Organizing meetings, committees, and negotiations
h) Personnel management: Personnel performance appraisal system, Quality care delivery from the staff.

UNIT II Aims of physiotherapy education 15 hours

a) Concepts of teaching and learning

b) Curriculum development
c) Principles and methods of academic and clinical teaching
d) Measurement and evaluation
e) Guidance and counseling
f) Faculty development program
g) Administration in clinical setting
h) Use of A-V aids in teaching
i) Taxonomy of education

Textbook:

1. Elaine Lynne, Management in Health Care, Macmillan Publisher,4th Ed,1994.

.

Reference Book:

1. William A. Reinke, Health Planning for Effective Management, Oxford University Press,3rd Ed,1988.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Quiz I	Assignment/ Presentation etc.	Mid Term	Attendance	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Become an effective organizer for hospital care management. .	PO3
CO2	Well versed with financial planning.	PO6
CO3	Become familiar with planning and organizing of clinical resources.	PO6
CO4	Understand about the organization of physiotherapy department.	PO6
CO5	Well versed with various methods of teaching by involving in group activities, role plays.	PO4
CO6	Gain knowledge about various methods of imparting teaching & education	PO4

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO1**	**PSO2**	**PSO3**
MAPT 408A	**ADMINISTRATION AND TEACHING SKILLS**			**2**	**2**		**3**		**3**	**2**

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT452A	PHYSIOTHERAPY IN CARDIO VASCULAR PULMONARY AND INTENSIVE CARE LAB	L	T	P	C
Version 1.0		**-**	**-**	**2**	**1**
Pre-requisites/Exposure	CARDIOVASCULAR AND PULMONARY CONDITIONS				
Co-requisites	PHYSIOTHERAPY IN CARDIO VASCULAR PULMONARY AND INTENSIVE CARE				

Course Objectives:

1. Practical knowledge about cardiac physiotherapy care upon assessing patient in ICU.
2. Planning and setting treatment goals according to cardiac conditions
3. Assessment & care to the patients with varied cardiac dysfunctions

Course Outcomes:

CO1.To gain knowledge about physiotherapy management of cardiac conditions.
CO2. To be well-versed in the types of management of various pulmonary conditions
CO3. To clearly explain the principles of ICU care.
CO4. To become perfectly oriented with various chest physiotherapy techniques.

Catalog description:

The course is intended to provide some knowledge about the basic principles of physiotherapy management of cardiac, pulmonary and ICU care.

Course Content:

Practical shall be conducted for all the relevant topics discussed in theory in the following forms:
1. Bedside case presentations and case discussions
2. Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.

Textbook:

1. Amrohit , Text book of chest physiotherapy, Jaypee ,1st ed, 2010,

Reference Book:

1. Madhuri , Text book of physiotherapy for cardiothoracic surgery condition ,CBS, 1st ed , 2008Susan B'O' Sullivan, Physical rehabilitation, Jaypee, 6th ed. – 2014.

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination

Examination Scheme:

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	**40**	**10**	**50**

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	To gain knowledge about physiotherapy management of cardiac conditions.	**PO3**
CO2	To be well-versed in the types of management of various pulmonary conditions	**PO3**
CO3	To clearly explain the principles of ICU care.	**PO3**
CO4	To become perfectly oriented with various chest physiotherapy techniques.	**PO5**

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO1**	**PSO2**	**PSO3**
MAPT 452A	**PHYSIOTHERAPY IN CARDIO VASCULAR PULMONARY AND INTENSIVE CARE LAB**			**3**		**2**		**3**	**1**	

1= Addressed to small extent
2= Addressed significantly
3= Major part of course

MAPT454A	COMMUNITY PHYSIOTHERAPY LAB	L	T	P	C
Version 1.0		**-**	**-**	**2**	**1**
Pre-requisites/Exposure	COMMUNITY MEDICINE				
Co-requisites	COMMUNITY PHYSIOTHERAPY				

Course Objectives:

1. Understanding the key role of physiotherapist as healthcare provider
2. Orientation to community health care services .
3. Knowledge about Screening& rehabilitation of pediatric & geriatric disorders.
4. Physiotherapy role in efficient ergonomics care.

Course Outcomes:

Upon completion of this course the student should be able to do:

CO1. To get experience with field visits for Community based rehabilitation
CO2. To enable students to construct their own protocol for community rehabilitation.
CO3. To be well versed in community health care services.
CO4. Knowledge about various health issues & screening & evaluation of community based issues.

Course Content:

This will consist of Field visits to urban and rural PHC's., Visits to regional rehabilitation training center, Regular mobile camps, Disability surveys in villages, Disability screening, Demonstration of Evaluation and Physiotherapy prescription techniques for musculoskeletal, neuromuscular, cardio-respiratory, paediatric, gynecological and geriatric problems in community, Demonstration of evaluation and prescription techniques for ambulatory and assistive devices, Fabrication of low cost assistive devices with locally available materials.

Textbook:

1. Waqar Naqvi, Physiotherapy in community health and rehabilitation, JP Brothers, 1 st Ed, 2011

Reference Book:

1. Judith Pitt-Brooke , Rehabilitation of movement – Theoretical Basis of clinical practice, W.B.Saunders,2 Ed, 2002

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination

Examination Scheme:

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	**40**	**10**	**50**

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	To get experience with field visits for Community based rehabilitation	**PO6**
CO2	To enable students to construct their own protocol for community rehabilitation.	**PO3**
CO3	To be well versed in community health care services.	**PO3**
CO4	Knowledge about various health issues & screening & evaluation of community based	**PO3**

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PSO1**	**PSO2**	**PSO3**
MAPT 454A	**COMMUNITY PHYSIOTHERAPY LAB**			**3**			**2**	**3**	**3**	

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT460A	CLINICAL EDUCATION-VI	L	T	P	C
Version 1.0		**-**	**-**	**12**	**6**
Pre-requisites/Exposure	CLINICAL EDUCATION-V				
Co-requisites	-				

Course Objectives:

1. Training on bed side approach & patient assessment.
2. Ability to perform special tests and designing treatment protocol.
3. Evidence based practice will be part of training.

Course Outcomes:

On completion of this course, the students will be able to
CO1. Assist physiotherapists working in different clinical settings.
CO2. Be familiar with different types of assessment forms.
CO3. Perform basic mobilization and stretching techniques under supervision.
CO4. Imbibe professional values seen in practicing clinicians.
CO5. Appreciate the importance of multidisciplinary teamwork in healthcare.
CO6. Be aware of and spread awareness regarding the importance of physiotherapy.

Catalog description: The aim of this course is continue the clinical training so that each student can learn from the experience of assessment and treatment planning, goal setting and execution of treatment under supervision.

Course Content:

Students will be posted in rotation in the following areas/wards. The students will be clinically trained to provide physiotherapy care for the patients under supervision. They will be trained on bed side approach, patient assessment, performing special tests, identifying indications for treatment, ruling out contraindications, decision on treatment parameters, dosage and use relevant outcome measures under supervision. Evidence based practice will be part of training.

1. Physiotherapy OPD
2. Neurology, Neurosurgery & Neuro ICU
3. Community-PHC
4. Orthopedics
5. General Medicine & MICU
6. General Surgery & CTS ICU
7. Developmental Pediatrics & Child Guidance Clinic
8. OBG
9. Geriatric – Old Age Homes
10. Industrial Visits - Ergonomics

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination

Examination Scheme:

Components	Internal Practical	Attendance	End Term Exam

Weightage (%)	**40**	**10**	**50**

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Assist physiotherapists working in different clinical settings.	**PO2**
CO2	Be familiar with different types of assessment forms.	**PO2**
CO3	Perform basic mobilization and stretching techniques under supervision.	**PO3**
CO4	Imbibe professional values seen in practicing clinicians.	**PO5**
CO5	Appreciate the importance of multidisciplinary teamwork in healthcare.	**PO5**
CO6	Be aware of and spread awareness regarding the importance of physiotherapy	**PO6**

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT 460A	**CLINICAL EDUCATION-VI**		**2**	**3**		**2**	**2**	**3**	**2**	**2**

1= weakly mapped 2= moderately mapped 3= strongly mapped

MAPT561A	INTERNSHIP	L	T	P	C
Version 1.0		**-**	**-**	**40**	**20**
Pre-requisites/Exposure					
Co-requisites	-				

Course Objectives:

1. Culmination of programme with consolidation of knowledge.
2. Preparation for professional career.

Course Outcomes:

On completion of this course, the students will be able to
CO1. Independently assess patients.
CO2. Perform evaluation and diagnostic tests.
CO3. Plan goals for treatment.
CO4. Imbibe professional values seen in practicing clinicians.
CO5. Administer physiotherapy treatment independently.

Catalog description

The mandatory six month internship provides an opportunity to the students to work as a professional in a clinical environment, in preparation for the career ahead. They are expected to learn, apart from competency and independent handling of patients, professionalism, morality and ethics befitting a member of the healthcare team.

Course Content:

The internship time provides the students the opportunity to continue to develop confidence and increased skill in simulation and treatment delivery. Students will demonstrate competence in beginning, intermediate, and advanced procedures in both areas. Students will participate in advanced and specialized treatment procedures. The student will complete the clinical training by practicing all the skills learned in classroom and clinical instruction. The students are expected to work for minimum 8 hours per day.

1. **Initial Assessment Documentation:** Clinical staff must document the following information:
a. Initial assessment documented based on SOAP format.
b. Subjective examination (symptomatic)
c. Objective examination (measurable, observable)
d. Action/Analysis (interpretation of current condition/intervention provided)
e. Plan of action
f. Written or verbal feedback to the client or other relevant careers
g. Discharge plan documented
h. Agreement to treatment plan by patient or attendant

2. **Progress Documentation:** Progress documentation may include the following information:
a. Any individual intervention should be documented in SOAP format (including response to intervention/s using outcome measures)
b. Oral consent obtained and documented when there is a significant change in treatment/ treatment options/ status of patient's health.

c. Written consent obtained for designated invasive procedures
d. Change in status or events that may affect discharge plans/goals
e. Documented consultation with key clinical team members

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination
Examination Scheme:

Components	Internal Practical	Attendance	End Term Exam
Weightage (%)	40	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Independently assess patients.	PO3
CO2	Perform evaluation and diagnostic tests.	PO3
CO3	Plan goals for treatment	PO3
CO4	Imbibe professional values seen in practicing clinicians.	PO6
CO5	Administer physiotherapy treatment independently	PO5

		Physiotherapy Knowledge	Multidisciplinary/ Medical knowledge	Clinical and Practical Skills	Utilisation of Modern Technology	Evidence Based Practice	Life Skills	Assessment and Management	Teamwork	Research and Entrepreneurial Skills
Course Code	**Course Title**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO 1**	**PSO 2**	**PSO 3**
MAPT 561A	**INTERNSHIP**			**3**		**2**	**2**	**3**	**2**	**2**

1= weakly mapped 2= moderately mapped 3= strongly mapped