K. R. MANGALAM UNIVERSITY

THE COMPLETE WORLD OF EDUCATION

SCHOOL OF MEDICAL & ALLIED SCIENCES

BACHELOR OF PHYSIOTHERAPY (BPT)

Program Code: 13

2019-24

Approved in the 20th Meeting of Academic Council
Held on 16 July 2019

Academic Council
Member Secretary
K.R. Mangalam University

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Sohna Road, Gurugram

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

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PROGRAM OVERVIEW

PROGRAM	**BACHELOR OF PHYSIOTHERAPY (BPT)**
SCHOOL	**SCHOOL OF MEDICAL AND ALLIED SCIENCES**
DURATION	**4 YEARS AND SIX MONTHS (INCLUDING 6 MONTHS INTERNSHIP)**
ANNUAL INTAKE	**60 STUDENTS PER YEAR**
EXAMINATION SYSTEM	**SEMESTER SYSTEM**


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PROGRAM DESCRIPTION

2.1Introduction to Physiotherapy

Physiotherapy means a system which includes comprehensive examination, treatment, advice and instructions to any persons preparatory to or for the purpose of or in connection with movement/functional dysfunction, bodily malfunction, physical disorder, disability, healing and pain from trauma & disease, physical and mental conditions using physical agents, activities & devices including exercise, mobilization, manipulations, electrical & thermal agents and other electro therapeutics for prevention, screening, diagnosis, treatment, health promotion and fitness.

This includes treatment preparation, planning, treatment delivery, clinical and rehabilitative care of the patient on a daily basis during treatment and immediate post treatment review. The role of the physiotherapist encompasses the safe and accurate delivery of the physiotherapy treatment. As the physiotherapy professional is in daily contact with the patient it also includes monitoring of daily improvement of the patient according to his/her condition. Furthermore the PTs liaise with all the other associated professionals in ensuring that the needs of the patient are met.

Physiotherapy Education

The BPT program at KRMU has been planned to meet the demands of the healthcare sector for professionals who are competent, efficient and skilled, and of the students who are looking for career growth and opportunities. The program is designed to develop skills and competency at par with the manpower requirements in this digital age, with adequate focus on personality development, computer proficiency and management skills over and above the theoretical and practical training provided in the latest techniques of physiotherapy.

The aims of the recommended curriculum are to produce physiotherapists (PTs) who are

- Technically and clinically competent for independent decision making;
- Enable to assess a patient;
- Aware of patient conditions and treatment along with the importance of quality assurance;
- Understand the theoretical basis for evidence based practice;
- Effective members of the multidisciplinary team;

- Prepared to participate in or initiate research into practice;

2.2Bachelors of Physiotherapy

Introduction:

Learning Objectives: The purpose of this curriculum is to delineate the cognitive, affective and psychomotor skills deemed essential for completion of this program and to perform as a competent physiotherapist. At the completion of this course, the student should be able to-

1. Examine, evaluate, diagnose, plan, execute and document physiotherapy treatment independently or along with the multidisciplinary team.
2. Evaluate patients for impairments and functional limitations and able to execute all routine physiotherapeutic procedures as per the evaluation.
3. Operate and maintain physiotherapy equipment used in treatment of patient, physiotherapy treatment planning (both electrotherapy and exercise therapy) & procedures independently.
4. Able to provide patient education about various physiotherapeutic interventions to the patient and care givers.

Expectations from the future physiotherapy graduates-

1. Coursework entitles independent physiotherapy assessment and treatment in any healthcare delivery centers in India by the graduates.

2. The coursework is designed to train students to work as independent physiotherapists or in conjunction with a multidisciplinary team to diagnose and treat movement disorders as per red and yellow flags.
3. Course works will skill the graduate's physical/ functional diagnosis, treatment planning, management, administration of physiotherapy treatment and for patient support.
4. Graduates can found employment opportunities in hospitals/nursing homes/sports teams/fitness centers/Community Rehabilitation /Health planning boards/health promotions services in both private and public sectors as well as in independent physiotherapy clinics.

5. Physiotherapy graduate is encouraged to pursue further qualification to attain senior position in the professional field and also to keep abreast with the recent advances, new technology and research. The professional should opt for continuous professional education credits offered by national and international institutes.

Terminal Objectives (Expected Outcomes):

1. The graduate will be a competent and reflective physiotherapy practitioner who can function safely and effectively while adhering to legal, ethical and professional standards of practice in a multitude of physiotherapy settings for patients and clients across the lifespan and along the continuum of care from wellness and prevention to rehabilitation of dysfunction.
2. The graduate will utilize critical inquiry and evidence based practice to make clinical decisions essential for autonomous practice.
3. The graduate will function as an active member of professional and community organizations. The graduate will be a service-oriented advocate dedicated to the promotion and improvement of community health.
4. The graduate will demonstrate lifelong commitment to learning and professional development.

2.3Eligibility for admission

- 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 who 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
- He/she has to furnish at the time of submission of application form, a certificate of Physical fitness from a registered medical practitioner and two references from persons other than relatives testifying to satisfactory general character.

- Admission to Bachelor of Physiotherapy course shall be made on the basis of eligibility and an entrance test to be conducted for the purpose. No candidate will be admitted on any ground unless he/she has appeared in the admission test (as per the syllabus under 10 +2 scheme) and/or interview.

2.4Medium of instruction

English shall be the medium of instruction for all the subjects of study and for examination of the course.

2.5Attendance Policy

i. Every student shall be required to achieve 100% attendance in all the lectures, tutorials and practicals and participate in seminars arranged in the School/ Constituent Units and events organized at the Institution/University level during the programme. However, to account for contingencies such as prolonged illness, accidents, tragedy in the family etc., a relaxation up to a maximum of 25% may be granted. Thus, the attendance requirement for appearing in the end term examinations will be a minimum of 75% of the classes actually held in each course unit separately.

ii. If a student is found to be continuously absent from the classes without any information for a period of 15 days, a notice will be sent to the student about his unauthorized absence under intimation to his guardian/parents. If he still remains absent unauthorized for another 15 days after the date of issue of the notice, the name of such a student will be struck off the rolls. Such a student may, however, apply for re-admission which may be considered by the Head of School/Constituent Unit as per prescribed procedure, and only after the Admission Committee approves such recommendations, the student will be re-admitted on payment of prescribed re- admission fee, under intimation to the University.

iii. A student with less than 75% of attendance in the lectures, seminars & practical's, separately in each course-unit in a semester/year, will be detained from appearing in the examinations of relevant course unit(s). Under no circumstances, the student shall be allowed to sit for the examination of relevant Course Unit(s) if his attendance in concerned course unit is below 75%.

iv. The Vice-Chancellor may, however, consider written requests made on very genuine grounds for the condonation of deficiency in attendance up to 15% on the recommendations of the Head of School/ Constituent Unit, before the commencement of the examinations for the reasons listed below:

- ❖ Calamity in family
- ❖ Hospitalization due to prolonged in-patient treatment
- ❖ Serious Accident
- ❖ Any other serious unavoidable circumstance(s)
- ❖ Participation in Sports/ NCC/ NSS

v. HOD/Dean of the School will announce the names of all such students who are not eligible, to appear in the end term examination, on the last day of teaching, before the exam and simultaneously intimate the same to the Controller of Examinations (COE). In such cases, the student will be awarded F grade.

vi. In case, any student, who in fact has been debarred, appears in the exam by default, his result shall be treated as null and the student will be awarded F grade.

2.6 Assessment and Evaluation

The University will adopt the guidelines issued from time to time by the UGC and other statutory bodies concerned with the conduct of examinations. The question papers for the examinations will be set in such a manner as to ensure that they cover the entire syllabus. The tests and examinations shall aim at evaluating not only the student's ability to recall information but also his/her understanding of the subject. Some of the questions will be analytical and invite original thinking or application of theory.

While the actual process of evaluation will be confidential, the system of evaluation will be sufficiently transparent. The performance of a student in a theory / lab course will be assessed through Continuous Assessment i.e. Projects, Presentations, Assignments, Lab Works, Field Reports, Class Activities and End Term Examinations. The entire evaluation system comprising of the Policies, Procedures, Mechanisms, Guidelines etc., has been designed and developed to meet the most fundamental (basic) quality

characteristics of being fair (justifiable), objective (unbiased) reliable (precise), robust (resilient), while also being flexible (responsive) and transparent (variable). It will be ensured that appropriate level of confidentiality is maintained in terms of certain specific details, in order to achieve the above quality characteristics.

For every course that a student registers for, a letter grade will be assigned based upon his/her performance over the semester. The letter grade and its `Grade Point' will indicate

the results of both qualitative and quantitative assessment of student's performance in a course. The SGPA earned by a student is a quantitative indication of his performance during a semester. For each registered course, the grade points earned are multiplied by the credits for that course. The total of all such credits earned is calculated and this grand total is divided by total credits in semester to give the Semester Grade Point Average (SGPA). The Cumulative Grade Point Average (CGPA), which indicates the overall performance of a student from the time he/she joined the University in a specific course is awarded on completion of all requirements related to the course.

All students who have registered for a particular course are eligible to write the End Term Examination for that course, unless found to be ineligible due to shortage of attendance/ acts of indiscipline/ withdrawal from a course.

The degree will be awarded only upon compliance of all the laid down requirements for the programme.

2.6.1 Evaluation

2.6.1.1. End semester examinations

The End Semester Examinations for each theory and practical course through semesters I to VIII shall be conducted by the university except for the subjects with asterix symbol (*) shall be conducted by the subject experts at School level and the marks/grades shall be submitted to the university.

2.6.1.2. Sessional Exams

Two Sessional exams shall be conducted for each theory course as per the schedule fixed by the University. The scheme of question paper for theory sessional examinations is given below. The average marks of two Sessional exams shall be computed for internal assessment. Sessional exam for theory shall be conducted for 30 marks for theory.

Question paper pattern for theory Sessional

examinations For subjects having University

examination

I. Multiple Choice Questions (MCQs)	= 10 x 1	= 10
OR		
Objective Type Questions (5 x 2)	= 05 x 2	= 10
(Answer all the questions)		
II. Long Answers (Answer 1 out of 2)	= 1 x 10	= 10

III. Short Answers (Answer 2 out of 3) = 2 x 5 = 10 Total = 30 marks

Marks for attendance shall be awarded as per the following table:

% Attendance	Marks
<60	**0**
60-70	5
70-75	6
75-80	7
80-85	8
85-90	9
>90	10

The grade awarded to a student in a practical course will be based on his performance in a regular conduct of experiments, viva-voce, laboratory report, quizzes etc., in addition, to end term practical examination.

The weightage of these components of continuous evaluation will be as follows

Conduct of Experiments/ Lab Records	10%
Attendance	10%
Quizzes, Viva-Voce	20%
End Term Examination	60%
Total	100%

2.6.2 Grading System

Based on the performance, student will be awarded a final grade at the end of the semester for each course. The total marks obtained by a student will be converted to a corresponding grade as per the UGC guidelines. This is effective from Academic Session 2019-20 for all students.


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The letter grades and the corresponding grade points are as following:-

Marks Range (%)	Letter Grade	Grade Points	Description of the Grade
%marks>90%	O	10	Outstanding
80 < %marks ≤90	A+	9	Excellent
70 < %marks ≤80	A	8	Very Good
60 < %marks ≤70	B+	7	Good
55 < %marks ≤60	B	6	Above Average
50 < %marks ≤55	C	5.5	Average
40 ≤%marks ≤50	P	5	Pass
%marks<40	F	0	Fail
	AB	-	Absent
%marks≥50	S	-	Satisfactory
%marks< 50	U	-	Unsatisfactory
	W	-	Withdrawal

2.6.3 Promotion Criteria

A student shall be eligible to carry forward all the courses of I, II and III semesters till the IV semester examinations. However, he/she shall not be eligible to attend the courses of V semester until all the courses of I and II semesters are successfully completed.

A student shall be eligible to carry forward all the courses of III, IV and V semesters till the VI semester examinations. However, he/she shall not be eligible to attend the courses of VII semester until all the courses of I, II, III and IV semesters are successfully completed.

A student shall be eligible to carry forward all the courses of V, VI and VII semesters till the VIII semester examinations. However, he/she shall not be eligible to get the course completion certificate until all the courses of I, II, III, IV, V and VI semesters are successfully completed.

A student shall be eligible to get his/her CGPA upon successful completion of the courses of I to VIII semesters and six months internship certificate within the stipulated time period.

2.6.4 Passing Criteria

A student has to fulfill the following conditions to pass any academic programme of the University:

i. Should have obtained a minimum 'P' (Pass) Grade in all the prescribed courses as per the Scheme.

ii. Should have earned minimum number of credits prescribed for the concerned programme as per the Scheme.

iii. Should have a minimum Cumulative Grade Point Average (CGPA) of 5.00 at the end of final year of the Programme.

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PROGRAM STRUCTURE

SEMESTER I

BPT							
Semester I							
S. No.	**Course Code**	**Course**	**L**	**T**	**S**	**P**	**C**
1	MAPT101A	Human Anatomy-I	3	-	-	-	3
2	MAPT151A	Human Anatomy-I Lab	-	-	-	4	2
3	MAPT103A	Human Physiology-I	4	-	-	-	4
4	MAPT153A	Human Physiology-I Lab	-	-	-	2	1
5	MAPT105A	Biochemistry	3	-	-	-	3
6	MAPT107A	Sociology	3	-	-	-	3
7	MAPT109A	Introduction to Physiotherapy-I	2	-	-	-	2
8	MAPT159A	Introduction to Physiotherapy-I Lab	-	-	-	2	1
9	MACS102A	Information Technology Fundamentals	3	-	-	-	3
10	MACS152A	Information Technology Fundamentals Lab	-	-	-	2	1
11	MAEL101A	Communication Skills	5				5
		TOTAL	**23**	**-**	**-**	**10**	**28**

BPT							
Semester II							
S. No.	**Course Code**	**Course**	**L**	**T**	**S**	**P**	**C**
1	MAPT102A	Human Anatomy-II	4	-	-	-	4
2	MAPT152A	Human Anatomy-II Lab	-	-	-	4	2
3	MAPT104A	Human Physiology-II	4	-	-	-	4
4	MAPT154A	Human Physiology-II Lab	-	-	-	2	1
5	MAPT106A	Introduction to Physiotherapy-II	3	-	-	-	3
6	MAPT156A	Introduction to Physiotherapy-I Lab	-	-	-	2	1
7	MAPT108A	Introduction to Emergency and Patient Care	2	-	-	-	2
8	MAPT158A	Introduction to Emergency and Patient Care Lab	-	-	-	2	1
9	MAPT110A	Medical Terminology and Record Keeping	2	-	-	-	2

10	MAPT112A	Psychology	4	-	-	-	4
11	MAPT160A	Clinical Observation	-	-	-	4	2
		TOTAL	**19**	**-**	**-**	**14**	**26**

BPT							
Semester III							
S. No.	**Course Code**	**Course**	**L**	**T**	**S**	**P**	**C**
1	MAPT201A	Pathology	4	-	-	-	4
2	MAPT203A	Microbiology	3	-	-	-	3
5	MAPT205A	Pharmacology	4	-	-	-	4
6	MAPT207A	Biomechanics and Kinesiology-I	4	-	-	-	4
7	MAPT257A	Biomechanics and Kinesiology-I Lab	-	-	-	2	1
8	MAPT209A	Exercise Therapy-I	3	-	-	-	3
9	MAPT259A	Exercise Therapy-I Lab	-	-	-	2	1
10	MAPT211A	Electrotherapy-I	3	-	-	-	3
11	MAPT261A	Electrotherapy-I Lab	-	-	-	2	1
12	MAPT263A	Clinical Education-I	-	-	-	4	2
		TOTAL	**21**	**-**	**-**	**12**	**26**

SEMESTER IV

BPT							
Semester IV							
S. No.	**Course Code**	**Course**	**L**	**T**	**S**	**P**	**C**
1	MAPT202A	Biomechanics and Kinesiology-II	4	-	-	-	4
2	MAPT252A	Biomechanics and Kinesiology-II Lab	-	-	-	2	1
3	MAPT204A	Exercise Therapy-II	4	-	-	-	4
4	MAPT254A	Exercise Therapy-II Lab	-	-	-	4	2
5	MAPT206A	Electrotherapy-II	4	-	-	-	4
6	MAPT256A	Electrotherapy-II Lab	-	-	-	4	2
7	MAPT208A	Professional Ethics and Laws	2	-	-	-	2
8	MAPT210A	Environmental Science	3	-	-	-	3
9	MAPT262A	Clinical Education-II	-	-	-	4	2
		TOTAL	**17**	**-**	**-**	**16**	**24**

SEMESTER V

BPT							
Semester V							
S. No.	**Course Code**	**Course**	**L**	**T**	**S**	**P**	**C**
1	MAPT301A	Orthopaedics	4	-	-	-	4
2	MAPT303A	General Medicine	4	-	-	-	4
3	MAPT305A	General Surgery	4	-	-	-	4
4	MAPT307A	Assessment and Evaluation	3	-	-	-	3
5	MAPT357A	Assessment and Evaluation Lab	-	-	-	2	1
6	MAPT309A	Diagnostic Imaging for Physiotherapists	2	-	-	-	2
7	MAPT361A	Clinical Education-III	-	-	-	12	6
		TOTAL	**17**	**-**	**-**	**16**	**24**

SEMESTER VI

BPT							
Semester VI							
S. No.	**Course Code**	**Course**	**L**	**T**	**S**	**P**	**C**
1	MAPT302A	Neurology and Neurosurgery	4	-	-	-	4
2	MAPT304A	Physiotherapy in Orthopaedics and Sports	4	-	-	-	4
3	MAPT354A	Physiotherapy in Orthopaedics and Sports Lab		-	-	2	1
4	MAPT306A	Physiotherapy in Medical and Surgical Conditions	4	-	-	-	4
5	MAPT356A	Physiotherapy in Medical and Surgical Conditions Lab	-	-	-	2	1
6	MAPT308A	Community Medicine	3	-	-	-	3
7	MAPT360A	Clinical Education-IV	-	-	-	12	6
		TOTAL	**15**	**-**	**-**	**18**	**23**

SEMESTER VII

BPT							
Semester VII							
S. No.	**Course Code**	**Course**	**L**	**T**	**S**	**P**	**C**
1	MAPT401A	Physiotherapy in Neurological Conditions	4	-	-	-	4
2	MAPT451A	Physiotherapy in Neurological Conditions Lab	-	-	-	2	1
3	MAPT403A	Cardiovascular and Pulmonary Conditions	4	-	-	-	4
4	MAPT405A	Health Promotion and Fitness	3	-	-	-	3
5	MAPT407A	Research Methodology and Biostatistics	4	-	-	-	4
6	MAPT409A	Management and Leadership	2	-	-	-	2
7	MAPT461A	Clinical Education-V	-	-	-	12	6
		TOTAL	**17**	**-**	**-**	**16**	**24**

SEMESTER VIII

BPT							
Semester VIII							
S. No.	**Course Code**	**Course**	**L**	**T**	**S**	**P**	**C**
1	MAPT402A	Physiotherapy in cardiovascular, pulmonary and intensive care	4	-	-	-	4
2	MAPT452A	Physiotherapy in cardiovascular, pulmonary and intensive care Lab	-	-	-	2	1
3	MAPT404A	Community Physiotherapy	4	-	-	-	4
4	MAPT454A	Community Physiotherapy Lab	-	-	-	2	1
5	MAPT406A	Clinical Reasoning and Evidence Based Physiotherapy	3	-	-	-	3
6	MAPT408A	Administration and Teaching Skills	2	-	-	-	2
7	MAPT460A	Research Project	-	-	-	4	2
8	MAPT462A	Clinical Education-VI	-	-	-	12	6
		TOTAL	**13**	**-**	**-**	**20**	**23**

INTERNSHIP

BPT							
Internship							
S. No.	**Course Code**	**Course**	**L**	**T**	**S**	**P**	**C**
1	MAPT561 A	Internship	-	-	-	40	20
		***TOTAL**	**-**	**-**	**-**	**40**	**20**

* Total hours for Internship are calculated on the basis of 8 hour daily schedule, for a period of 6 months, or 120 working days.

SCHEME OF EXAMINATION

	SEMESTER I						
COURSE CODE	**TITLE**	**THEORY**		**PRACTICAL**		**TOTAL**	**CREDITS**
		Int. Assessm- ent	**Ext. Assessm-ent**	**Int. Assessm-ent**	**Ext. Assessm-ent**		
MAPT101A	Human Anatomy-I	40	60			100	3
MAPT151A	Human Anatomy-I Lab			20	30	50	2
MAPT103A	Human Physiology-I	40	60			100	4
MAPT153A	Human Physiology-I Lab			20	30	50	1
MAPT105A	Biochemistry	40	60			100	3
MAPT107A	Sociology	40	60			100	3
MAPT109A	Introduction to Physiotherapy-I	20	30			50	2
MAPT159A	Introduction to Physiotherapy-I Lab			20	30	50	1
MACS102A	Information Technology Fundamentals	20	30			50	3

MACS152A	Information Technology Fundamentals Lab			20	30	50	1
MAEL101A	Communication Skills	40	60			100	5
					TOTAL	**800**	**28**

SEMESTER-II

COURSE CODE	TITLE	THEORY		PRACTICAL		TOTAL	CREDITS
		INT	EXT	INT	EXT		
MAPT102A	Human Anatomy-II	40	60			100	4
MAPT152A	Human Anatomy-II Lab			20	30	50	2
MAPT104A	Human Physiology-II	40	60			100	4
MAPT154A	Human Physiology-II Lab			20	30	50	1
MAPT106A	Introduction to Physiotherapy-II	40	60			100	3
MAPT156A	Introduction to Physiotherapy-I Lab			20	30	50	1
MAPT108A	Introduction to Emergency and Patient Care	20	30			50	2
MAPT158A	Introduction to Emergency and Patient Care Lab			20	30	50	2
MAPT110A	Medical Terminology and Record Keeping	20	30			50	1
MAPT112A	Psychology	40	60			100	4
MAPT160A	Clinical Observation			50		50	2
				TOTAL		**750**	**26**

	SEMESTER III						
COURSE CODE	**TITLE**	**THEORY**		**PRACTICAL**		**TOTAL**	**CREDITS**
		INT	EX T	INT	EXT		
MAPT201A	Pathology	40	60			100	4
MAPT203A	Microbiology	40	60			100	3
MAPT205A	Pharmacology	40	60			100	4
MAPT207A	Biomechanics and Kinesiology-I	40	60			100	4
MAPT257A	Biomechanics and Kinesiology-I Lab			20	30	50	1
MAPT209A	Exercise Therapy-I	40	60			100	3
MAPT259A	Exercise Therapy-I Lab			20	30	50	1
MAPT211A	Electrotherapy-I	40	60			100	3
MAPT261A	Electrotherapy-I Lab			20	30	50	1
MAPT263A	Clinical Education-I			50		50	2
				TOTAL		**850**	**26**

COURSE CODE	SEMESTER IV						
	TITLE	THEORY		PRACTICAL		TOTAL	CREDITS
		INT	EXT	INT	EXT		
MAPT202A	Biomechanics and Kinesiology-II	40	60			100	4
MAPT252A	Biomechanics and Kinesiology-II Lab			20	30	50	1
MAPT204A	Exercise Therapy-II	40	60			100	4
MAPT254A	Exercise Therapy-II Lab			20	30	50	2
MAPT206A	Electrotherapy-II	40	60			100	4
MAPT256A	Electrotherapy-II Lab			20	30	50	2
MAPT208A	Professional Ethics and Laws	20	30			50	2
MAPT210A	Environmental Science	20	30			50	3
MAPT262A	Clinical Education-II			100		100	2
					TOTAL	**650**	**24**

	SEMESTER V						
COURSE CODE	**TITLE**	**THEORY**		**PRACTICAL**		**TOTAL**	**CREDITS**
		INT	EXT	INT	EXT		
MAPT301A	Orthopaedics	40	60			100	4
MAPT303A	General Medicine	40	60			100	4
MAPT305A	General Surgery	40	60			100	4
MAPT307A	Assessment and Evaluation	40	60			100	3
MAPT357A	Assessment and Evaluation Lab			20	30	50	1
MAPT309A	Diagnostic Imaging for Physiotherapists	20	30			50	2
MAPT361A	Clinical Education-III			100	-	100	6
					TOTAL	**600**	**24**

COURSE CODE	SEMESTER VI						
	TITLE	THEORY		PRACTICAL		TOTAL	CREDITS
		INT	EXT	INT	EXT		
MAPT302A	Neurology and Neurosurgery	40	60			100	4
MAPT304A	Physiotherapy in Orthopaedics and Sports	40	60			100	4
MAPT354A	Physiotherapy in Orthopaedics and Sports Lab			20	30	50	1
MAPT306A	Physiotherapy in Medical and Surgical Conditions	40	60			100	4
MAPT356A	Physiotherapy in Medical and Surgical Conditions Lab			20	30	50	1
MAPT308A	Community Medicine	40	60			100	3
MAPT360A	Clinical Education-IV			100	-	100	6
				TOTAL		**600**	**23**

COURSE CODE	SEMESTER VII						
	TITLE	THEORY		PRACTICAL		TOTAL	CREDITS
		INT	EXT	INT	EXT		
MAPT401A	Physiotherapy in Neurological Conditions	40	60			100	4
MAPT451A	Physiotherapy in Neurological Conditions Lab			20	30	50	1
MAPT403A	Cardiovascular and Pulmonary Conditions	40	60			100	4
MAPT405A	Health Promotion and Fitness	40	60			100	4
MAPT407A	Research Methodology and Biostatistics	40	60			100	3
MAPT409A	Management and Leadership	20	30			50	2
MAPT461A	Clinical Education-V			100	-	100	6
				TOTAL		**650**	**24**

	SEMESTER VIII						
COURSE CODE	**TITLE**	**THEORY**		**PRACTICAL**		**TOTAL**	**CREDITS**
		INT	EXT	INT	EXT		
MAPT402A	Physiotherapy in cardiovascular, pulmonary and intensive care	40	60			100	4
MAPT452A	Physiotherapy in cardiovascular, pulmonary and intensive care Lab			20	30	50	1
MAPT404A	Community Physiotherapy	40	60			100	4
MAPT454A	Community Physiotherapy Lab			20	30	50	1
MAPT406A	Clinical Reasoning and Evidence Based Physiotherapy	40	60			100	3
MAPT408A	Administration and Teaching Skills	20	30			50	2
MAPT460A	Research Project			50		50	2
MAPT462A	Clinical Education-VI			100		100	6
				TOTAL		**600**	**23**
	SEMESTER IX						
MAPT551A	INTERNSHIP			500		500	20
		GRAND TOTAL				**6000**	**220**

Bachelor of Physiotherapy CURRICULUM

SEMESTER – I

MAPT101A	HUMAN ANATOMY-I	L	T	S	P	C
		3	-	-	-	3

Course Objectives: The objective of this course is for 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.

UNIT I General Anatomy

a) Introduction to Human Anatomy: Anatomical terms

b) Histology: Study of the basic tissues of the body. Microscope, cell, epithelium, connective tissue, nerve tissue.

c) Embryology: Formation of the germ layers and their derivations, development of bones and muscles.

d) Skeleton: Bones and Joints, types of joints, Introduction to radiography

e) Connective tissue, muscles, skin and fascia

f) Overview of cardiovascular system, lymphatic system and nervous system

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

UNIT II Upper Extremity

a) Osteology: Clavicle, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, Phalanges.

b) 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.

c) Arches of hand, skin of the palm and dorsum of hand.

UNIT III Thorax

a) Bones and joints of the thorax.
b) Thoracic wall and thoracic cavity.
c) Pleura and lungs, muscles of respiration- diaphragm, intercostals and accessory muscles.
d) Mediastinum and its contents
e) Pericardium and heart.

TEXT BOOKS:

1. Chaurasia BD, "Human Anatomy" (4 Volumes), CBS Publishers.
2. Chaurasia BD, "Handbook of General Anatomy", CBS Publishers.

REFERENCE BOOKS:

1. Snell R, "Clinical Anatomy by Regions", Lippincott, Williams and Wilkins.
2. Di Fiore M, "Di Fiore's Atlas of Histology", Lippincott, Williams and Wilkins.
3. Gray's Anatomy Student Edition, Churchill Livingstone.

MAPT151A	HUMAN ANATOMY-I LAB	L	T	S	P	C
		-	-	-	4	2

UNIT I

1. Identification and description of anatomical structures.
2. Demonstration through models, charts and audio-visual aids- upper extremity, thoracic viscera.

UNIT II

1. Demonstration of skeleton- articulated and disarticulated.
2. Surface anatomy- surface landmarks: bony, ligamentous and muscular, surface anatomy of major nerves, arteries of the limbs, points of palpation.

TEXT BOOK:

1. Goyal R.K. "Practicals in Anatomy and Physiology", B.S Shah Prakashan, Ahemdabad.

REFERENCE BOOKS:

1. Netter, "Atlas of Human Anatomy", Elsevier.

Semester I

MAPT103A	PHYSIOLOGY - I	L	T	S	P	C
		4	-	-	-	4

Course Objectives: The course in Physiology over the first year is designed to give the student an in-depth knowledge of fundamental reactions of living organisms, particularly in the human body. The course has been divided into two portions, to enable detailed coverage of concepts.

UNIT I General Physiology

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

UNIT II Blood

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

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

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

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.

TEXT BOOK:

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.

Semester I

MAPT153A	HUMAN PHYSIOLOGY-I LAB	L	T	S	P	C
		-	-	-	2	1

UNIT I

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 BOOK:

1. Goyal R.K. "Practicals in Anatomy and Physiology", B.S Shah Prakashan, Ahemdabad.

REFERENCE BOOKS:

1. Ranade VG, "Text Book of Practical Physiology", Pune Vidyarthi Griha Prakashan, Pune.
2. Difore S.H. "Atlas of Normal Histology" – Lea & Fibiger Philadelphia.
3. Guyton AC, Hall JE., "Text book of Medical Physiology", WB Saunders Company.

Semester I

MAPT105A	BIOCHEMISTRY	L	T	S	P	C
		3	-	-	-	3

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.

UNIT I Nutrition

a) 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.
b) Physical activities- Energy expenditure for various activities. Calculation of energy requirement of a person
c) Balanced diet- Recommended dietary allowances, Role of nutrients, Nutritional disorders.
d) Digestion and Absorption- Digestion and absorption of carbohydrates, proteins and lipids. Disorders of digestion and absorption– Lactose intolerance.

UNIT II Carbohydrates- Chemistry and metabolism

a) Definition, general classification with examples
b) Structures, composition, sources, properties and functions of Monosaccharides, Disaccharides, Oligosaccharides and Polysaccharides.
c) Glycosaminoglycan (mucopolysaccharides)
d) Glycolysis – Aerobic, Anaerobic Citric acid cycle, Substrate level phosphorylation.
e) Glycogen metabolism – Glycogenesis, Glycogenolysis, Metabolic disorders
f) Hormonal regulation of glucose, Glycosuria, Diabetes mellitus.

UNIT III Lipids- Chemistry and metabolism

a) Definition, classification, properties and functions of Fatty acids, Triacylglycerol, Phospholipids, Cholesterol
b) Essential fatty acids and their importance
c) Lipoproteins
d) Introduction to lipid metabolism, Lipolysis, Oxidation of fatty acids
e) Lipogenesis
f) Cholesterol metabolism
g) Hypercholesterolemia, Fatty liver

UNIT IV Amino-acids- Chemistry and metabolism

a) Definition, Classification
b) Peptides: Definition, Biologically important peptides
c) Protein chemistry: Definition, Classification, Functions of proteins,

d) Catabolism of amino acids

UNIT V Vitamins and Minerals

a) Definition, classification according to solubility
b) Individual vitamins - Sources, Coenzyme forms, functions, RDA, digestion, absorption and transport, deficiency and toxicity.
c) Minerals: Definition, Sources, RDA, Digestion, absorption, transport, excretion, functions, disorders.

UNIT VI Enzymes and Hormones

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

UNIT VII Nucleotide and Nucleic acid Chemistry

a) Nucleotide chemistry: Nucleotide composition, functions of free nucleotides in body.
b) Nucleic acid (DNA and RNA) chemistry: Difference between DNA and RNA, Structure of DNA (Watson and Crick model), Functions of DNA. Structure and functions of tRNA, rRNA, mRNA.

UNIT VIII Biochemistry of Connective tissue

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

UNIT IX Acid-base, Water and Electrolyte Balance

a) Acids, bases and buffers, pH. Acid base imbalance.
b) Water and electrolyte balance- Water distribution in the body, Regulation of water balance, Electrolyte balance- Role of aldosterone, rennin angiotensin system and ANF.

UNIT X Clinical Biochemistry

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

TEXT BOOK:

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

REFERENCE BOOKS:

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

Semester I

MAPT107A	SOCIOLOGY	L	T	S	P	C
		3	-	-	-	3

Course Objectives: Sociology will introduce students to 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 will be studied.

UNIT I Introduction

Definition and scope of sociology, Methods of Sociological investigations.

UNIT II Socialization and Social Groups

Meaning and nature of socialization. Primary, secondary and anticipatory socialization. Concepts of social groups, role of social groups in the hospital and rehabilitation setup.

UNIT III 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 IV Community Health Meaning and definitions, Classification of community, Concept of Health, Health hazards of rurality, urban areas and tribal communities. Concept of Culture, Culture and Health disorders.

UNIT V Social change

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 VI Social Problems, Social Security and Social Work

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. Social Security: Social security and social legislation in relation to the disabled. 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.

MAPT109A	INTRODUCTION TO PHYSIOTHERAPY-I	L	T	S	P	C
		2	-	-	-	2

Course Objectives: The course provides the students a basic insight into the main features of Indian health care delivery system and the importance of physiotherapy. The students learn about the history of the profession and basic concepts that will form a framework for the study and practice of physiotherapy.

UNIT I Introduction to Healthcare Delivery System

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

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

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, Fundamental and Derived Positions.

UNIT IV Fundamentals of Electrotherapy

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.

MAPT159A	INTRODUCTION TO PHYSIOTHERAPY-I LAB	L	T	S	P	C
		-	-	-	2	1

UNIT I Planes and axes

a) Demonstration of movements in different planes and axes
b) Identification of plane and axis of given movement

UNIT II Classification of movement

a) Demonstration of body movements
b) Identification of body movements

UNIT III Body positions

a) Fundamental and derived positions
b) 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.

Semester I

		L	T	P	C
MAEL101A	**COMMUNICATION SKILLS**	5			5

UNIT I

Introduction to Communication: 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: 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: 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: 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:

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.

MACS102A MACS152A	INFORMATION TECHNOLOGY FUNDAMENTALS	L	T	S	P	C
		3	-	-	2	4

Course Objectives: To familiarize physiotherapy students with the computer and its applications in day-to-day and clinical activities, with more emphasis on its practical aspect. The objective of the course is to equip students with basic computer skills necessary for physiotherapy education and practice.

UNIT I

Basics of Computers and its evolution: Evolution of computers, Data, Instruction and Information, Block diagram of a computer, Characteristics of a computer, Generations of computers, Classification of computers- Digital, Analog and Hybrid, Micro, Mini, mainframe and Super Computer, Single-board computer.

UNIT II

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

Introduction to Computer System and Operating System Overview: Instruction execution, memory hierarchy, Objectives and functions of OS, Structure of OS, Types of operating systems, Component and Services offered by OS, Layered approach of OS, Properties of OS, System boot, File Management.

UNIT III

Input and Output Devices: Keyboard, Mouse, Joystick, Digitizer, Scanner, MICR, OCR, OMR, Light Pen, Touch Screen, Bar Code and Quick Response Reader, Voice Input Device, Monitor and its types, Printer and its types, Plotter.

Computer Memory: Primary Memory (ROM and its types- PROM, EPROM, EEPROM, RAM) Secondary Memory- SASD, DASD Concept, Magnetic Disks- Hard Disks, Optical Disks- CD ROM and its types (CD ROM, CD ROM-R, CD ROM-EO, DVD ROM), Flash Memory, Blu-Ray Disk

UNIT IV

Concept of Data Communication and Networking: Networking concepts, Types of Networking (LAN, MAN and WAN), Communication Media, Mode of Transmission (Simplex, Half Duplex, Full Duplex), Analog and Digital Transmission, Synchronous and Asynchronous Transmission, Network topologies.

Introduction to Database Management System:

Introduction to Database Systems: File system versus DBMS, Architecture of

DBMS, Data Models, Schema and instances, Data independence, Advantages of a DBMS, Describing and storing data in a DBMS, Database Languages, Overview of Hierarchical, Network and Relational Database Management System.

SEMESTER – II

MAPT102A	HUMAN ANATOMY-II	L	T	S	P	C
		4	-	-	-	4

Course Objectives: The objective of this course is for 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.

UNIT I Abdomen

a) Peritoneum: Parietal peritoneum, visceral peritoneum, folds of peritoneum, functions of peritoneum.
b) Large blood vessels of the gut.
c) 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

a) Osteology: Hip bone, femur, tibia, fibula, patella, tarsals, metartarsals and phalanges.
b) 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.
c) Joints: Hip Joint, Knee joint, Ankle joint, joints of the foot.

UNIT III Trunk and Pelvis

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

UNIT IV Head and Neck

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

UNIT V Neuro Anatomy

a) Organization of Central Nervous system - Spinal nerves and autonomic nervous system mainly pertaining to cardiovascular, respiratory and urogenital system
b) Cranial nerves
c) Peripheral nervous system, Peripheral nerves, Neuromuscular junction, Sensory end organs.
d) Central Nervous System
e) Spinal segments and areas
f) Brain Stem, Cerebellum, Inferior colliculi, Superior Colliculi, Thalamus, Hypothalamus, Corpus striatum, Cerebral hemispheres, Lateral ventricles.
g) Blood supply to brain
h) Basal Ganglia
i) The pyramidal system
j) Pons, medulla, extra pyramidal systems
k) 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.

MAPT152A	HUMAN ANATOMY-II LAB	L	T	S	P	C
		-	-	-	4	2

Course Objectives: The learning of anatomy is by demonstration through dissected parts, slides, models, charts, etc. During the training more emphasis will be given on the study of bones, muscles, joints, nerve supply of the limbs.

UNIT I

Lower limb, Trunk and Pelvis- Learning of surface landmarks with special emphasis on bones, joints, muscles, and nerves.
Demonstration of skeleton articulated and disarticulated.
Identification of body prominences on inspection and by palpation, especially of extremities. Points of palpation of nerves and arteries

UNIT II

Abdomen- abdominal viscera. Identification of parts.
Surface marking of the lung, pleura, fissures and lobes of lungs, heart, liver, spleen, Kidney.

UNIT III

Head, neck and brain- Demonstration and identification of parts. Cranial nerves, spinal nerves and important blood vessels.

MAPT104A	HUMAN PHYSIOLOGY-II	L	T	S	P	C
		4	-	-	-	4

Course Objectives: The course aims to continue 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.

UNIT I Special Senses

a) Vision: Functional anatomy of eye ball. Functions of cornea, iris, pupil, aqueous humor – glaucoma, lens – cataract, vitreous humor, rods and cones. Visual Pathway and the effects of lesions, Refractive Errors: myopia, hypermetropia, presbyopia and astigmatism, Visual Reflexes: Accommodation, Pupillary and Light. Visual acuity and Visual field. Light adaptation. Dark adaptation. Colour vision – colour blindness.
b) Audition: Physiological anatomy of the ear. Functions of external ear, middle ear and inner ear. Structure of Cochlea and organ of corti. Auditory pathway. Types of Deafness. Tests for hearing. Audiometry.
c) Taste: Taste buds. Primary tastes. Gustatory pathway.
d) Smell: Olfactory membrane. Olfactory pathway.
e) Vestibular Apparatus: Crista ampullaris and macula. Functions. Disorders.

UNIT II Nervous System

a) Introduction: Organisation of CNS – central and peripheral nervous system. Functions of nervous system. Synapse: Functional anatomy, classification, Synaptic transmission. Properties.
b) Sensory Mechanism: Sensory receptors, Sensory pathways. Sensory cortex. Somatic sensations. Pain sensation: mechanism of pain. Cutaneous pain, Deep pain. Visceral pain – referred pain. Gate control theory of pain. Tabes dorsalis, sensory ataxia.
c) 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
d) Spinal cord Lesions: Complete transection and Hemisection of the spinal cord.
e) Cerebellum: Functions. Cerebellar ataxia. Posture and Equilibrium: Postural reflexes – spinal, medullary, midbrain and cerebral reflexes.
f) Thalamus and Hypothalamus: Nuclei. Functions. Thalamic syndrome
g) Reticular Formation and Limbic System: Components and Functions.
h) Basal Ganglia: Structures included and functions. Parkinson's disease.
i) Cerebral Cortex: Lobes. Brodmann's areas and their functions. Higher functions of cerebral cortex – learning, memory and speech.
j) EEG: Waves and features. Sleep: REM and NREM sleep, CSF: Formation, composition, circulation and functions. Lumbar puncture and its significance. Blood brain barrier. Hydrocephalus.
k) ANS: Features and actions of parasymapathetic and sympathetic nervous system.

UNIT III Renal System

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

UNIT IV Reproductive System

a) Physiological anatomy of reproductive organs. Sex determination. Sex differentiation. Disorder
b) Male Reproductive System: Functions of testes. Pubertal changes in males. Spermatogenesis. Testosterone: action. Regulation of secretion. Semen.
c) 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 V Physiology of exercise

a) 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.
b) Effect of gravity / altitude /acceleration / pressure on physical parameters
c) Physiology of Age

UNIT VI Applied Physiology

a) Pulmonary Functions: Respiratory adjustments in exercises, Artificial respiration, Breath sounds.
b) 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.
c) 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.

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.

MAPT154A	HUMAN PHYSIOLOGY-II LAB	L	T	S	P	C
		-	-	-	2	1

UNIT I Clinical Examination

a) Examination of Radial pulse.
b) Recording of blood pressure
c) Examination of CVS
d) Examination of Respiratory system
e) Examination of Sensory system
f) Examination of Motor System
g) Examination of reflexes
h) Examination of cranial nerves

UNIT II Recommended Demonstrations

a) Spirometry
b) Artificial Respiration
c) ECG
d) Perimetry
e) Mosso’s Ergometry

MAPT106A	INTRODUCTION TO PHYSIOTHERAPY-II	L	T	S	P	C
		3	-	-	-	3

Course Objectives: This course aims to introduce the students to 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.

UNIT I Basic Concepts in Biomechanics

a) Kinematics and Kinetics: Types of Motion, Location of Motion, Direction of Motion, Magnitude of Motion, Definition and types of Forces, Force components.
b) 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.
c) 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

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

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

UNIT IV Orientation to Physiotherapy Labs

a) Exercise therapy equipment: Suspension, pulleys, Shoulder wheel and ladder, weights, bands and balls.
b) Electrotherapy modalities: Diathermy, heat and cold therapy, traction, Ultrasound, IFT, TENS, Stimulators, etc.
c) 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.

MAPT156A	INTRODUCTION TO PHYSIOTHERAPY-II LAB	L	T	S	P	C
		-	-	-	2	1

UNIT I Biomechanics

a) Models of Joints and Muscles (Group activity)
b) Kinematics and kinetics- video analysis.

UNIT II Exercise Therapy

a) Assessment and evaluation of mock/ real patients.
b) Different types of assessment forms
c) Pain scales
d) Demonstration of Basic exercise techniques- Stretching, mobilization.

UNIT III Electrotherapy

a) Orientation to electrotherapy modalities.
b) Familiarization with equipment

MAPT110A	MEDICAL TERMINOLOGY AND RECORD KEEPING	L	T	S	P	C
		2	-	-	-	2

Course Objectives: This course introduces 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.

UNIT I

a) Derivation of medical terms.
b) Define word roots, prefixes, and suffixes.
c) Conventions for combined morphemes and the formation of plurals.
d) Basic medical terms in health care and physiotherapy.
e) Form medical terms utilizing roots, suffixes, prefixes, and combining roots.

UNIT II

a) Interpret basic medical abbreviations/symbols.

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

UNIT III

Data entry and management on electronic health record system.

MAPT108A	INTRODUCTION TO EMERGENCY AND PATIENT CARE	L	T	S	P	C
		2	-	-	-	2

Course Objectives: The student will gain basic knowledge of patient care system, BLS and first aid, and receive training in dealing with emergency situations.

UNIT I Quality assurance and management

a) Concepts of Quality of Care
b) Quality Improvement Approaches
c) Standards and Norms
d) Quality Improvement Tools
e) Introduction to NABH guidelines

UNIT II Basics of emergency care and life support skills

a) Vital signs and primary assessment
b) Basic emergency care – first aid and triage
c) Ventilations including use of bag-valve-masks (BVMs)
d) Choking, rescue breathing methods
e) One- and Two-rescuer CPR
f) Using an AED (Automated external defibrillator).
g) Managing an emergency including moving a patient

UNIT III Bio medical waste management and environment safety

a) Definition of Biomedical Waste
b) Waste minimization
c) BMW – Segregation, collection, transportation, treatment and disposal (including color coding)
d) Liquid BMW, Radioactive waste, Metals / Chemicals / Drug waste
e) BMW Management & methods of disinfection
f) Modern technology for handling BMW
g) Use of Personal protective equipment (PPE)

h) Monitoring & controlling of cross infection (Protective devices)

UNIT IV Infection prevention and control

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

UNIT V Disaster preparedness and management

a) Fundamentals of emergency management,
b) Psychological impact management,
c) Resource management,
d) Preparedness and risk reduction,
e) Key response functions (including public health, logistics and governance, recovery, rehabilitation and reconstruction), information management, incident command and institutional mechanisms.

MAPT158A	INTRODUCTION TO EMERGENCY AND PATIENT CARE LAB	L	T	S	P	C
		-	-	-	2	1

Course Objectives: Practical aspects of emergency management, care and BLS will be covered in this course to equip students to handle emergencies.

UNIT I Basics of emergency care and life support skills

a) Vital signs and primary assessment
b) Basic emergency care – first aid and triage
c) Demonstration of Ventilation: use of bag-valve-masks (BVMs)
d) Demonstration of Choking, rescue breathing methods
e) Demonstration of One- and Two-rescuer CPR

UNIT II Bio medical waste management and environment safety

a) Demonstration of Use of Personal protective equipment (PPE)
b) Segregation of waste

UNIT III Infection prevention and control

Sterilization, disinfection, effective hand hygiene and use of Personal protective equipment

MAPT112A	PSYCHOLOGY	L	T	S	P	C
		4	-	-	-	4

Course Objectives: 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.

UNIT I Introduction to Psychology

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 Growth and Development

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 Sensation, attention and perception

a) Sensation: Vision, Hearing, Olfactory, Gustatory and Cutaneous sensation, movement, equilibrium and visceral sense.
b) Attention: Types of attention, Determinants of attention (subjective determinants and objective determinants).
c) Perception: Gestalt principles of organization of perception (principle of figure ground and principles of grouping), factors influencing perception (past experience and context).
d) Illusion and hallucination: different types.

UNIT IV Motivation

a) Motivation cycle (need, drive, incentive, reward).
b) Classification of motives.
c) Maslow's theory of need hierarchy

UNIT V Frustration and conflict

a) Frustration: sources of frustration.
b) Conflict: types of conflict.
c) Management of frustration and conflict

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UNIT VI Emotions

a) Three levels of analysis of emotion (physiological level, subjective state, and overt behavior).
b) Theories of emotion
c) Stress and management of stress.

UNIT VII Intelligence

a) Theories of intelligence.
b) Distribution of intelligence.
c) Assessment of intelligence

UNIT VIII Thinking

a) Reasoning: deductive and inductive reasoning
b) Problem solving: rules in problem solving (algorithm and heuristic)
c) Creative thinking: steps in creative thinking, traits of creative people

UNIT IX Learning

a) Factors effecting learning.
b) Theories of learning: trial and error learning, classical conditioning, Operant conditioning, insight learning, social learning theory.
c) 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 X Personality

a) Approaches to personality: type & trait, behavioristic, psychoanalytic and humanistic approach.
b) Personality assessment: observation, situational test, questionnaire, rating scale, interview, and projective techniques.
c) Defense Mechanisms: denial of reality, rationalization, projection, reaction formation, identification, repression, regression, intellectualization, undoing, introjection, acting out.

UNIT XI Social psychology

a) Leadership: Different types of leaders. Different theoretical approaches to leadership.
b) Attitude: development of attitude. Change of attitude.

UNIT XII Clinical Psychology

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 BOOKS:

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".

School of Medical & Allied Sciences **Bachelor of Physiotherapy**

MAPT160A	CLINICAL OBSERVATION	L	T	S	P	C
		-	-	-	4	2

Course Objectives: Display professional behavior, including effective communication, punctuality, and respect for patients and healthcare team members. Develop the ability to observe and assess patients' physical conditions, including posture, range of motion, strength, and functional abilities in supervision of seniors and faculty.

Students will visit physiotherapy OPD to observe patient interaction, assessment, treatment planning and treatment execution. They will be familiarized with the applications of physiotherapy in healthcare.

SEMESTER III

MAPT201A	PATHOLOGY	L	T	S	P	C
		4	-	-	-	4

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

UNIT I General Pathology

a) Introduction to Pathology

b) Cell injuries: Aetiology and Pathogenesis, Reversible cell injury: Types, Sequential changes, Cellular swellings. Irreversible cell injury: Types of Necrosis & Gangrene, Autolysis. Pathologic calcification: Dystrophic and Metastatic. Intracellular Accumulations - Fatty changes, Protein accumulations, Glycogen

accumulations,

UNIT II Inflammation and Repair

a) Acute inflammation: features, causes, vascular and cellular events.
b) Inflammatory cells and Mediators.
c) Chronic inflammation: Causes, Types, Classification nonspecific and granulomatous with examples.
d) Repair, Wound healing by primary and secondary union, factors promoting and delaying the process.
e) Healing in specific site including bone healing.

UNIT III Immunopathology

a) Immune system: General concepts.
b) 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.
c) AIDS-Aetiology, Modes of transmission, Diagnostic procedures, handling of infected material and health education.

UNIT IV Infectious diseases

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

UNIT V Circulatory Disturbances

a) Hyperemia/Ischemia and Haemorrhage Edema: Pathogenesis and types. Chronic venous congestion: Lung, Liver, Spleen, Systemic Pathology Thrombosis and Embolism: Formation, Fate and Effects.
b) Infarction: Types, Common sites.
c) Shock: Pathogenesis, types, morphologic changes.

UNIT VI Growth Disturbances and Neoplasia

a) Atrophy, Hypertrophy, Hyperplasia, Aplasia, Hypoplasia, Metaplasia, Malformation, agenesis, dysplasia.
b) Precancerous lesions.

c) Neoplasia: Definition, classification, Biological behaviour : Benign and Malignant, Carcinoma and Sarcoma.

d) Malignant Neoplasia: Grades and Stages, Local & Distant spread.

e) Carcinogenesis: Environmental carcinogens, chemical, viral, occupational. Heredity and cellular oncogenes and prevention of cancer.

f) Benign & Malignant epithelial tumours Eg. Squamous papilloma, Squamous cell carcinoma, Malignant melanoma. Benign & Malignant mesenchymal tumours Eg: Fibroma, Lipoma, Neurofibroma, Fibrosarcoma, Liposarcoma, Rhabdo-myosarcoma, Teratoma.

UNIT VII Nutritional Disorders

Protein energy malnutrition: Marasmus, Kwashiorkor, and Vitamin deficiency disorders, classification with specific examples.

UNIT VIII Genetic Disorders

Basic concepts of genetic disorders and some common examples and congenital malformation.

UNIT IX Systemic pathology

a) Hematology: Constituents of blood and bone marrow, Regulation of hematopoiesis, Anemia: Classification, clinical features & lab diagnosis. Types of anaemia, Hemostatic disorders, Vascular and Platelet disorders. Coagulopathies. Leukocytic disorders, Leukemia, Blood transfusion; Grouping and cross matching, untoward reactions, transmissible infections including HIV & hepatitis, Blood-components & plasma-pheresis.

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.

d) Alimentary tract: Oral Pathology, Gastritis, Ulcer & Tumours, Pancreatitis and pancreatic tumours,

e) Hepato – biliary pathology: Jaundice, Hepatitis, Alcoholic liver disease, Cirrhosis.

f) Lymphatic System: Hodgkin's and Non hodgkin's Lymphomas, Metastatic Tumours.

g) Musculoskeletal System: Osteomyelitis, Metabolic diseases: Rickets/Osteomalacia, osteoporosis, Hyperparathyroidism, Paget's disease. Tumours, Arthritis: Suppurative, Rheumatoid. Osteoarthritis, Gout.

UNIT X Endocrine pathology

a) Diabetes Mellitus: Types, Pathogenesis, Pathology, Laboratory diagnosis

b) Non-neoplastic lesions of Thyroid: Iodine deficiency goiter, autoimmune Thyroiditis, Thyrotoxicosis, myxedema, Hashimoto's thyroiditis.

c) Tumours of Thyroid: Adenoma, Carcinoma: Papillary, Follicular, Medullary, Anaplastic. Adrenal diseases: cortical hyperplasia, atrophy, tuberculosis, tumours of cortex and medulla.

UNIT XI Neuropathology

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

b) Tuberculosis, Cysticercosis

c) CNS Tumors, Astrocytoma, Neuroblastoma, Meningioma, Medulloblastoma

UNIT XII Dermatopathology

Skin tumors: Squamos cell carcinoma, Basal cell carcinoma, Melanoma.

TEXTBOOK:

1. Mohan H, "Textbook of Pathology", Jaypee Brothers.

REFERENCE BOOKS:

1. Robbins & Cotran, "Pathologic Basis of Disease", Elsevier.

MAPT203A	MICROBIOLOGY	L	T	S	P	C
		3	-	-	-	3

Course Objectives: Microbiology involves the study of common organisms causing diseases including nosocomial infections and precautionary measures to protect one from acquiring infections. The knowledge and understanding of Microbiology is essential to institute appropriate treatment or suggest preventive measures to the patient. Particular effort is made in this course to avoid burdening the student.

UNIT I General Microbiology

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

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. Imunology of hypersensitivity, Measuring immune functions.

UNIT III Bacteriology

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) Vibrois: 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

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.

UNIT V Mycology

General properties of fungi. Classification based on disease: superficial, subcutaneous, deep mycosel opportunistic infections including Mycotoxins, systemic mycoses. General principles of fungal diagnosis, Rapid diagnosis. Method of collection of samples.
Antifungal agents.

UNIT VI Clinical/Applied Microbiology

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.

TEXTBOOK:

1. Ananthanarayan & Paniker, "Textbook of Microbiology", Universal Press.

MAPT205A	PHARMACOLOGY	L	T	S	P	C
		4	-	-	-	4

Course Objectives: This course introduces the student to basic pharmacology of common drugs used, their importance in the overall treatment including Physiotherapy. 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. The student will be aware of the contribution of both drug and physiotherapy factors in the outcome of treatment.

UNIT I General Pharmacology

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 Autonomic Nervous system

a) General considerations – The Sympathetic and Parasympathetic Systems, Receptors, Somatic Nervous System
b) Cholinergic and Anti-Cholinergic drugs, Adrenergic and Adrenergic blocking drugs, Peripheral muscle relaxants.

UNIT III Cardiovascular Pharmacology

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 Thrombolytic Ischemic Heart Disease – Nitrates, Beta-Blockers, Calcium Channel Blockers, Cerebral Ischemia Peripheral Vascular Disease.

UNIT IV Neuropharmacology

a) Sedative-Hypnotic Drugs: Barbiturates, Benzodiazepines
b) Antianxiety Drugs: Benzodiazepines, Other Anxiolytics
c) Drugs Used in Treatment of Mood Disorders: Monoamine Oxidase Inhibitors, Tricyclic Antidepressants, Atypical Antidepressants, Lithium Antipsychotic drugs

UNIT V Disorders of Movement

a) Drugs used in Treatment of Parkinson 's disease
b) Antiepileptic Drugs
c) Spasticity and Skeletal Muscle Relaxants

UNIT VI Inflammatory/Immune Diseases

a) Non-narcotic Analgesics and Nonsteroidal Anti-Inflammatory Drugs: Acetaminophen, NSAIDs, Aspirin, Nonaspirin NSAIDs, drug Interactins 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
e) Respiratory Pharmacology: Obstructive Airway Diseases, Drugs used in Treatment of Obstructive airway Diseases, Allergic Rhinitis

UNIT VII Digestion and Metabolism

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

UNIT VIII Geriatrics

Pharmacology and the geriatric Population: Adverse effects of special concern in the Elderly, Dementia, Postural hypotension.

Semester III

MAPT207A	BIOMECHANICS AND KINESIOLOGY-I	L	T	S	P	C
		4	-	-	-	4

Course Objectives: 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.

UNIT I Biomechanics of the vertebral column

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

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

UNIT III Temporomandibular Joint Biomechanics

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

UNIT IV Upper limb Biomechanics

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.

MAPT257A	BIOMECHANICS AND KINESIOLOGY-I LAB	L	T	S	P	C
		-	-	-	2	1

Practical shall be conducted for various joint movements and analysis of the same. Demonstration may also be given as how to analyze posture and gait. The student shall be taught and demonstrated to analysis for activities of daily living – ADL – (like sitting to standing, throwing, lifting etc.) The student should be able to 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. The demonstrations may be done on models or skeleton.

MAPT209A	EXERCISE THERAPY-I	L	T	S	P	C
		3	-	-	-	3

Course Objectives - 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.

UNIT I Methods of Testing

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
h) Endurance test
i) Speed test
j) Tests for Co-ordination
k) Tests for sensation
l) Pulmonary Function tests

m) Measurement of Limb Length: true limb length, apparent limb length, segmental limb length
n) Measurement of the angle of Pelvic Inclination

UNIT II Relaxation

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 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.

UNIT IV Active Movements

a) Definition of strength, power & work, endurance, muscle actions.
b) Physiology of muscle performance: structure of skeletal muscle, chemical & mechanical events during contraction &relaxation, muscle fiber type, motor unit, force gradation.
c) Causes of decreased muscle performance
d) Physiologic adaptation to training: Strength & Power, Endurance.
e) Types of active movements

UNIT V Free exercise

Classification, principles, techniques, indications, contraindications, effects and uses

UNIT VI Active Assisted Exercise

Principles, techniques, indications, contraindications, effects and uses Assisted - Resisted Exercise: principles, techniques, indications, contraindications, effects and uses 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 VII Therapeutic Massage

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

MAPT259A	EXERCISE THERAPY-I LAB	L	T	S	P	C
		-	-	-	2	1

1. Different test methods
2. Demonstrate relaxation techniques.
3. Demonstrate to apply the technique of passive movements
4. Demonstrate various techniques of Active movements
5. Demonstrate massage technique application according to body parts.

MAPT211A	ELECTROTHERAPY-I	L	T	S	P	C
		3	-	-	-	3

Course Objectives: 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. The objective of this course is for the student to be able to list the indications, contra indications, dosages of electro therapy modalities, demonstrates the different techniques, and describe their effects on various conditions.

UNIT I Low frequency Currents

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 – Waterbath, Unipolar, Bi-polar, Electrode coupling, Current flow in tissues, Lowering of Skin Resistance.

UNIT II Nerve Muscle Physiology

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

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

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.

Semester III

MAPT261A	ELECTROTHERAPY-I LAB	L	T	S	P	C
		-	-	-	2	1

Course Objectives: 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.

UNIT I

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

Collection of materials required for treatment using electrotherapy modalities and testing of the apparatus.

UNIT II

Demonstrate placement of electrodes for various electrotherapy modalities Electrical stimulation for the muscles supplied by the peripheral nerves Faradism under Pressure for UL and LL Plotting of SD curve with chronaxie and
rheobase Demonstrate FG test

UNIT III

Technique of treatment and application of Hydrocollator packs, cryotherapy, contrast bath, wax therapy

Demonstrate the treatment method using whirl pool bath Winding up procedure after any electrotherapy treatment method.

MAPT263A	CLINICAL EDUCATION-I	L	T	S	P	C
		-	-	-	4	2

Course Objectives: Display professional behavior, including effective communication, punctuality, and respect for patients and healthcare team members. Develop the ability to observe and assess patients' physical conditions, including posture, range of motion, strength, and functional abilities in supervision of seniors and faculty.

Students will undergo rotatory clinical postings in different hospitals and clinical setups to gain practical skills and knowledge of physiotherapy practice/

SEMESTER IV

MAPT202A	BIOMECHANICS AND KINESIOLOGY-II	L	T	S	P	C
		4	-	-	-	4

Course Objectives: 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.

UNIT I Lower limb biomechanics

a) The hip complex: structure and function of the hip joint; hip joint pathology- arthrosis, fracture, bony abnormalities of the femur
b) The knee complex: structure and function of the knee joint – tibiofemoral joint and patellofemoral joint; effects of injury and disease.
c) 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 II

Analysis of Posture and Gait – 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; 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.

MAPT252A	BIOMECHANICS AND KINESIOLOGY-I LAB	L	T	S	P	C
		-	-	-	2	1

Practical shall be conducted for various joint movements and analysis of the same. Demonstration may also be given as how to analyze posture and gait. The student shall be taught and demonstrated to analysis for activities of daily living – ADL – (like sitting to standing, throwing, lifting etc.) The student should be able to 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. The demonstrations may be done on models or skeleton.

Semester IV

MAPT204A	EXERCISE THERAPY-II	L	T	S	P	C
		4	-	-	-	4

Course Objectives - 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.

UNIT I Specific exercise regimens

a) Isotonic: de Lormes, Oxford, MacQueen, Circiut weight training
b) Isometric: BRIME (Brief Resisted Isometric Exercise), Multiple Angle
c) Isometrics Isokinetic regimens

UNIT II Proprioceptive Neuromuscular Facilitation

a) Definitions & goals
b) Basic neurophysiologic principles of PNF: Muscular activity, Diagonals patterns of movement: upper limb, lower limb
c) Procedure: components of PNF
d) Techniques of facilitation
e) Mobility: Contract relax, Hold relax, Rhythmic initiation
f) Strengthening: Slow reversals, repeated contractions, timing for emphasis, rhythmic stabilization Stability: Alternating isometric, rhythmic stabilization
g) Skill: timing for emphasis, resisted progression Endurance: slow reversals, agonist reversal

UNIT III Suspension Therapy

a) Definition, principles, equipments & accessories, Indications & contraindications, Benefits of suspension therapy
b) Types of suspension therapy: axial, vertical, pendular Techniques of suspension therapy for upper limb Techniques of suspension therapy for lower limb

UNIT IV

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.

Aerobic Exercise: Definition and key terms; Physiological response to aerobic exercise, Examination and evaluation of aerobic capacity – Exercise Testing, Determinants of an Exercise Program, The Exercise Program, 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.

UNIT V Manual Therapy & Peripheral Joint Mobilization

a) Schools of Manual Therapy, Principles, Grades, Indications and Contraindications, Effects and Uses – Maitland, Kaltenborn, Mulligan

b) Biomechanical basis for mobilization, Effects of joint mobilsation, Indications and contraindications, Grades of mobilization, Principles of mobilization, Techniques of mobilization for upper limb, lower limb, Precautions.

c) 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

d) 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 VI Balance and Coordination

a) Physiology of balance: contributions of sensory systems, processing sensory information, generating motor output

b) Components of balance (sensory, musculoskeletal, biomechanical)

c) Causes of impaired balance, Examination & evaluation of impaired balance, Activities for treating impaired balance: mode, posture, movement, Precautions & contraindications, Types of Balance retraining.

d) Co-ordination Exercise: Anatomy & Physiology of cerebellum with its pathways Definitions: Co-ordination, Inco-ordination, 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.

UNIT VII

a) 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

b) Hydrotherapy: Definitions, Goals and Indications, Precautions and Contraindications, Properties of water, Use of special equipment, techniques,
Effects and uses, merits and demerits

c) Individual and Group Exercises: Advantages and Disadvantages, Organization of Group exercises, Recreational Activities and Sports.

MAPT254A	EXERCISE THERAPY-II LAB	L	T	S	P	C
		-	-	-	4	2

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. They must be able to

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

Semester IV

MAPT206A	ELECTROTHERAPY-II	L	T	S	P	C
		4	-	-	-	4

Course Objective - 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. The objective of this course is that after the requisite lectures, demonstration, practical and clinics the student will be able to list the indications, contra indications, dosages of electro therapy modalities, demonstrates the different techniques, and describe their effects on various conditions.

UNIT I Electro-diagnosis

a) FG Test
b) 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.
c) Nerve conduction velocity studies
d) EMG: Construction of EMG equipment.
e) Bio-feed back.

UNIT II Medium Frequency Currents

a) 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.
b) Russian Current
c) Rebox type Current

UNIT III Thermo & Actinotherapy (High Frequency Currents)

a) Electro Magnetic Spectrum.
b) 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.

c) Pulsed Electro Magnetic Energy: Principles, Production & Parameters of PEME, Uses of PEME.

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

e) 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, Coupling Media, Thermal effects, Non-thermal effects, Principles & Application of US: Direct contact, 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.

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

g) 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.

h) 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.

Semester IV

MAPT256A	ELECTROTHERAPY-II LAB	L	T	S	P	C
		-	-	-	4	2

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.

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.

6. Plotting of SD curve with chronaxie and rheobase

7. Demonstrate FG test

8. Application of Ultrasound for different regions-various methods of application

9. Demonstrate treatment techniques using SWD, IRR and Microwave diathermy

10. Demonstrate the technique of UVR exposure for various conditions – calculation of test dose

11. Demonstrate treatment method using IFT for various regions

12. Calculation of dosage and technique of application of LASER

15. Winding up procedure after any electrotherapy treatment method.

Equipment care -

1. Checking of equipments
2. Arrangement of exercise therapy and electro therapy equipment.
3. Calibration of equipment

4. Purchase, billing, document of equipment.
5. Safety handling of equipments.
6. Research lab equipment maintenance.
7. Stock register, movement register maintenance

MAPT208A	PROFESSIONAL ETHICS AND LAW	L	T	S	P	C
		2	-	-	-	2

Course Objectives: Legal and ethical considerations are inherent and inseparable parts of good medical practice across the whole spectrum. Students will focus on the important and relevant topics related to legal aspects in healthcare.

UNIT I

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

UNIT II

a) Autonomy and informed consent - Right of patients
b) Care of the terminally ill- Euthanasia
c) Organ transplantation

UNIT III

a) Medical diagnosis versus physiotherapy diagnosis.
b) 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.
c) Professional Indemnity insurance policy
d) Development of standardized protocol to avoid near miss or sentinel events

e) Obtaining an informed consent.

UNIT IV

a) Biomedical ethical principles
b) Code of ethics for physiotherapists
c) Ethics documents for physiotherapists
d) Laws affecting physiotherapy practice

UNIT V

a) Professional values- Integrity, Objectivity, Professional competence and due care, Confidentiality. Core values- Accountability, Altruism, Compassion/ caring, excellence, integrity, professional duties, social responsibility.
b) The five roles of the Physiotherapist -

1. The Physiotherapist as Patient/Client manager
2. The Physiotherapist as Consultant
3. The Physiotherapist as Critical Inquirer
4. The Physiotherapist as Administrator
5. The Physiotherapist as Educator

MAPT210A	ENVIRONMENTAL SCIENCES	L	T	S	P	C
		3	-	-	-	3

Objectives: Upon completion of the course the student shall be able to**:**

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.

5. Acquire skills to help the concerned individuals in

identifying and solving environmental problems.

6. Strive to attain harmony with Nature.

UNIT I

The Multidisciplinary nature of

environmental studies Natural Resources

Renewable and non-renewable resources:

Natural resources and associated problems

a) Forest resources; b) Water resources; c) Mineral resources; d) Food resources; e) Energy resources; f) Land resources: Role of an individual in conservation of natural resources.

UNIT II

Ecosystems

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: Air pollution; Water pollution; Soil pollution

RECOMMENDED BOOKS:

1. Y.K. Sing, Environmental Science, New Age

International Pvt, Publishers, Bangalore

2. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.

3. Bharucha Erach, The Biodiversity of India, Mapin Pu

blishing Pvt. Ltd., Ahmedabad – 380 013, India,

4. Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p

5. Clark R.S., Marine Pollution, Clanderson Press Oxford

6. Cunningham, W.P. Cooper, T.H. Gorhani, E &

Hepworth, M.T. 2001, Environmental Encyclopedia,

Jaico Publ. House, Mumbai, 1196p

7. De A.K., Environmental Chemistry, Wiley Eastern Ltd.

8. Down of Earth, Centre for Science and Environment

MAPT262A	CLINICAL EDUCATION-II	L	T	S	P	C
		-	-	-	4	2

Course Objectives: Display professional behavior, including effective communication, punctuality, and respect for patients and healthcare team members. Develop the ability to observe and assess patients' physical conditions, including posture, range of motion, strength, and functional abilities in supervision of seniors and faculty.

Display the ability to apply electrotherapeutic modalities and perform/ teach exercises to patients under supervision.

SEMESTER V

MAPT301A	ORTHOPAEDICS	L	T	S	P	C
		4	-	-	-	4

Course Objective: The objective of this course is that after completion of the lectures and discussion 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.

UNIT I Introduction

a) Introduction to orthopaedics.
b) Clinical examination in an Orthopedic patient.
c) Common investigative procedures.
d) Radiological and Imaging techniques in Orthopeadics.
e) Inflammation and repair, Soft tissue healing.

UNIT II Traumatology

a) Fracture: definition, types, signs and symptoms.
b) Fracture healing.
c) Complications of fractures.
d) Conservative and surgical approaches.
e) Principles of management – reduction (open/closed, immobilization etc).
f) Subluxation/ dislocations – definition, signs and symptoms, management (conservative and operative).

UNIT III Fractures and Dislocations of Upper Limb

a) Fractures of Upper Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures:

(i) Fractures of clavicle and scapula.
(ii) Fractures of greater tuberosity and neck of humerus.
(iii)Fracture shaft of humerus.
(iv) Supracondylar fracture of humerus.
(v) Fractures of capitulum, radial head, olecranon, coronoid, and epicondyles.
(vi)Side swipe injury of elbow. \Both bone fractures of ulna and radius.
(vii) Fracture of forearm – monteggia, galaezzi fracture –dislocation.
(viii) Chauffer's fracture.
(ix)Colle's fracture.
(x) Smith's fracture.
(xi)Scaphoid fracture.
(xii) Fracture of the metacarpals.
(xiii)Bennett's fracture.
(xiv)Fracture of the phalanges. (Proximal and middle.)

a) Dislocations of Upper Limb –

(i)Anterior dislocation of shoulder – mechanism of injury, clinical feature, complications, conservative management (Kocher's and Hippocrates maneuver), surgical management (putti plat, bankart's) etc.
(ii)Recurrent dislocation of shoulder.
(iii)Posterior dislocation of shoulder – mechanism of injury, clinical features and management.
(iv)Posterior dislocation of elbow – mechanism of injury, clinical feature, complications & management.

UNIT IV Fracture of Spine

a)Fracture of Cervical Spine - Mechanism of injury, clinical feature, complications (quadriplegia); Management- immobilization (collar, cast, brace, traction); Management for stabilization, management of complication (bladder and bowel, quadriplegia).
(i)Clay shoveller's fracture.
(ii)Hangman's fracture.
(iii)Fracture odontoid.
(iv)Fracture of atlas.

Fracture of Thoracic and Lumbar Regions - Mechanism of injury, clinical features, and management— conservative and surgical of common fractures around thoracic and lumbar regions.

a) Fracture of coccyx.
b) Fracture of Rib Cage - Mechanism of injury, clinical features, management for Fracture Ribs, Fracture of sternum.

UNIT V Fractures and Dislocations of Lower Limb

a) Fracture of Pelvis and Lower Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures: Fracture of pelvis.Fracture neck of femur – classification, clinical features, complications, management - conservative and surgical. Fractures of trochanters. Fracture shaft femur—clinical features, mechanism of injury, complications, management-conservative and surgical. Supracondylar fracture of femur. Fractures of the condyles of femur. Fracture patella. Fractures of tibial condyles. Both bones fracture of tibia and fibula. Dupuytren's fracture, Maisonneuve's fracture. Pott's fracture – mechanism of injury, management. Bimalleolar fracture Trimalleolar fracture, Fracture calcaneum – mechanism of injury, complications and management. Fracture of talus. Fracture of metatarsals—stress fractures Jones' fracture. Fracture of phalanges.

b) Dislocations of Lower Limb - mechanism of injury, clinical features, complications, management of the following dislocations of lower limb. Anterior dislocation of hip. Posterior dislocation of hip. Central dislocation of hip. Dislocation of patella. Recurrent dislocation of patella.

UNIT VI Soft Tissue Injuries

Define terms such as sprains, strains, contusion, tendinitis, rupture, tenosynovitis, tendinosis, bursitis. Mechanism of injury of each, clinical features, managements- conservative and surgical of the following soft tissue injuries: Meniscal injuries of knee. Cruciate injuries of knee. Medial and lateral collateral injuries of knee. Lateral ligament of ankle. Strains- quadriceps, hamstrings, calf, biceps, triceps etc. Contusions- quadriceps, gluteal, calf, deltoid etc. Tendon ruptures- Achilles, rotator cuff muscles, biceps, pectorals etc.

UNIT VII Hand Injuries

Mechanism of injury, clinical features, and management of the following – Crush injuries. Flexor and extensor injuries. Burn injuries of hand.

UNIT VIII Amputations

Definition, levels of amputation of both lower and upper limbs, indications, complications.

UNIT IXT Raumatic Spinal Cord Injuries

Clinical features, complications, medical and surgical management of Paraplegia and Quadriplegia.

UNIT X Deformities

Clinical features, complications, medical and surgical management of the following Congenital and Acquired deformities.

a) Congenital Deformities: CTEV. CDH. Torticollis. Scoliosis. Flat foot. Vertical talus. Hand anomalies- syndactyly, polydactyly and ectrodactly. Arthrogryposis multiplex congenita (amyoplasia congenita). Limb deficiencies- Amelia and Phocomelia. Klippel feil syndrome. Osteogenesis imperfecta(fragile ossium). Cervical rib.
b) 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 XI Disease of Bones and Joints

Causes, Clinical features, Complications, Management- medical and surgical of the following conditions:

a) Infective conditions: Osteomyelitis (Acute / chronic). Brodie's abscess. TB spine and major joints like shoulder, hip, knee, ankle, elbow etc.
b) Arthritic conditions: Pyogenic arthritis. Septic arthritis. Syphilytic infection of joints.
c) Bone Tumors: classification, clinical features, management - medical and surgical of the following tumors: Osteoma. Osteosarcoma, Osteochondroma. Enchondroma. Ewing's sarcoma. Gaint cell tumor. Multiple myeloma.
Metastatic tumors.
d) Perthes disease, Slipped Capital Femoral Epiphysis and Avascular Necrosis.
e) Metabolic Bone Diseases: Rickets. Osteomalacia, Osteopenia. Osteoporosis.

UNIT XII Inflammatory and Degenerative Conditions

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

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

UNIT XIII Syndromes

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.

UNIT XIV Neuromuscular Disorders

Definition, causes, clinical feature, complications, management. (Multidisciplinary approach) medical and surgical of the following conditions: Cerebral palsy.

Poliomyelitis. Spinal Dysraphism. Leprosy.

UNIT XV Cervical and Lumbar Pathology

Causes, clinical feature, patho-physiology, investigations, management-Medical and surgical for the following:

a) Prolapsed interverbral disc (PID),
b) Spinal Canal Stenosis.
c) Spondylosis (cervical and lumbar)
d) Spondylolysis.
e) Spondylolisthesis.

f) Lumbago/ Lumbosacral strain.
g) Sacralisation.
h) Lumbarisation.
i) Coccydynia.
j) Hemivertebra.

UNIT XVI 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.

UNIT XVII Regional Conditions

Definition, Clinical features and management of the following regional conditions

a) Shoulder: Periarthritic shoulder (adhesive capsulitis). Rotator cuff tendinitis. Supraspinatus Tendinitis. Infraspinatus Tendinitis. Bicipital Tendinitis. Subacromial Bursitis.
b) Elbow: Tennis Elbow. Golfer's Elbow. Olecranon Bursitis (student's elbow). Triceps Tendinitis.
c) Wrist and Hand: De Quervain's Tenosynovitis. Ganglion. Trigger Finger/ Thumb. Mallet Finger, Carpal Tunnel Syndrome, Dupuytren's Contracture.
d) Pelvis and Hip: IT Band Syndrome. Piriformis Syndrome. Trochanteric Bursitis.
e) Knee: Osteochondritis Dissecans. Prepatellar and Suprapatellar Bursitis. Popliteal Tendinitis. Patellar Tendinitis. Chondromalacia Patella. Plica Syndrome. Fat Pad Syndrome (Hoffa's syndrome).
f) Ankle and Foot: Ankle Sprains. Plantar Fasciitis / Calcaneal Spur. Tarsal Tunnel Syndrome. Achilles Tendinitis. Metatarsalgia. Morton's Neuroma.

MAPT303A	GENERAL MEDICINE	L	T	S	P	C
		4	-	-	-	4

Course Objectives: The objective of this course is that discussion the student will be able to list the etiology, pathology, clinical features and treatment methods for various medical conditions.

UNIT I

1. 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.

2. Poisoning: Clinical features – general management – common agents in poisoning – pharmaceutical agents – drugs of misuse – chemical pesticides – Envenomation.

3. 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.

4. 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.

5. 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.

6. Diseases of the digestive system : Clinical manifestations of gastrointestinal disease – Etiology, clinical features, diagnosis, complications and treatment of the following conditions : Reflux Oesophagitis, Achlasia 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, Cholycystitis.

7. 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 II Pediatrics

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 III Psychiatric Disorders

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

a) Drug dependence and alcoholism,
b) Somatoform and Dissociate Disorders – conversion reactions, Somatization, Dissociate Amnesia, and Dissociate Fugue,
c) Personality disorders
d) Child psychiatry - manifestations, and management of childhood disorders - attention deficit syndrome and behavioral disorders.
e) Geriatric psychiatry.

MAPT305A	GENERAL SURGERY	L	T	S	P	C
		4	-	-	-	4

Course Objectives: The objective of this course is that after the lectures and discussion the student will be able to list the indications for surgery, etiology, clinical features and surgical methods for various conditions.

UNIT I

a) Fluid, Electrolyte and Acid-Base disturbances – diagnosis and management ; Nutrition in the surgical patient ; Wound healing – basic process involved in wound repair, basic phases in the healing process, clinical management of wounds, factors affecting wound healing, Scars – types and treatment. Hemostasis – components, hemostatic disorders, factors affecting bleeding during surgery. Transfusion therapy in surgery – blood components, complications of transfusion ; Surgical Infections ; General Post – Operative Complications and its management.

b) Reasons for Surgery; Types of anaesthesia and its affects on the patient; Types of Incisons; 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.

c) Causes, Clinical Presentation, Diagnosis and treatment of the following Thoracic Trauma situations – Airway obstruction, Pnuemothorax, Hemothorax, Cardiac Tamponade, Tracheobronchial disruption, Aortic disruption, Diaphragmatic disruption, Esophageal disruption, Cardiac and Pulmonary Contusions.

d) Surgical Oncology – Cancer – definition, types, clinical manifestations of cancer, Staging of Cancer, surgical procedures involved in the management of cancer.

e) Disorders of the Chest Wall, Lung and Mediastinum

f) Thoracic surgeries – Thoracotomy – Definition, Types of Incisions with emphasis to the site of insision, muscles cut and complications. Lung surgeries: Pnumonectomy, 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.

g) 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.

h) Definition, Indication, Incision, Physiological changes and Complications following

Common operations like Cholecystectomy, Colostomy, Ileostomy, Gastrectomy, Hernias, Appendicectomy Mastectomy, Neprectomy, Prostectomy.

UNIT II Burns

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

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 IVObstetrics and Gynecology

a) Anatomy and physiology of the female reproductive organs. Puberty dynamics
b) Physiology of menstrual cycle – ovulation cycle, uterine cycle, Cx cycle, duration, amount, Hormonal regulation of menstruation,
c) Hormonal disorders of females-obesity and female hormones
d) 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
e) Child birth complications, investigation and management
f) Normal puerperium, lactation and importance of post-natal exercises
g) Family planning.
h) Medical termination of pregnancy
i) Infection of female genital tract including sexually

transmitted diseases, low backache

j) Prolapse of uterus and vagina

k) Principle of common gynaecological operations – hysterectomy, D&C, D&E, Pop smear

l) Menopause: Its effect on emotions and musculoskeletal system

m) Urogenital dysfunction – pre and post-natal condition

n) Sterility: Pathophysiology, investigations, management,
Malnutrition and deficiencies in females.
Surgical procedures involving child birth.

o) Definition, Indications and Management of the following surgical procedures – pelvic repair, caesarian section, nephrectomy, Hysterosalphyngography, Dilatation and Curettage, Laproscopy, Colposopy, Hysterectomy.

p) Carcinoma of female reproductive organs – surgical management in brief Mastectomy – Simple, radical. Hysterectomy.

q) Incontinence – Types, Causes, Assessment and Management.

MAPT307A	ASSESSMENT AND EVALUATION	L	T	S	P	C
		3	-	-	-	3

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.

UNIT I Assessment and Evaluation

a) Principles of Assessment
b) Types of Assessment formats
c) Developing an assessment proforma

UNIT II Outcome Measures

a) What are Outcome Measures?
b) Treatment Goals and Planning

UNIT III Orthopaedic Assessment

a) Special tests: Upper limb, lower limb, spine
b) Diagnostic tests
c) Provisional diagnosis

UNIT IV Neurological Assessment

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.

MAPT357A	ASSESSMENT AND EVALUATION LAB	L	T	S	P	C
		-	-	-	2	1

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 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.

MAPT309A	DIAGNOSTIC IMAGING FOR PHYSIOTHERAPISTS	L	T	S	P	C
		2	-	-	-	2

Course Objectives: 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 that how X-Ray, CT, MRI, Ultrasound and Other Medical Images are created and how they help the health professionals to save lives.

UNIT I Image Interpretation

a) History
b) A New Kind of Ray
c) How a Medical Image Helps
d) What Imaging Studies Reveal

e) Radiography (x-rays)
f) Fluoroscopy
g) Computed Tomography (CT)
h) Magnetic Resonance Imaging (MRI)
i) Ultrasound
j) Endoscopy.

UNIT II Radiography and Mammography

a) Equipment components
b) Procedures for Radiography & Mammography
c) Benefits versus Risks and Costs
d) Indications and contraindications.

UNIT III Fluoroscopy

a) What is Fluoroscopy?
b) Equipment used for fluoroscopy
c) Indications and Contra indications
d) How it helps in diagnosis
e) The Findings in Fluoroscopy
f) Benefits versus Risks and Costs.

UNIT IV Computed Tomography (CT)

a) What is Computed Tomography?
b) Equipment used for Computed Tomography
c) Indications and Contra indications
d) How it helps in diagnosis
e) The Findings in Computed Tomography
f) Benefits versus Risks and Costs.

UNIT V Magnetic Resonance Imaging (Mri)

a) What is MRI?
b) Equipment used for MRI
c) Indications and Contra indications
d) How it helps in diagnosis
e) The Findings in MRI
f) Benefits versus Risks and Costs
g) Functional MRI.

UNIT VI Ultrasound

a) What is Ultrasound?
b) Equipment used for Ultrasound
c) Indications and Contra indications
d) How it helps in diagnosis
e) The Findings in Ultrasound
f) Benefits versus Risks and Costs.

UNIT VII Endoscopy

a) What is Endoscopy?
b) Equipment used for Endoscopy
c) Indications and Contra indications
d) How it helps in diagnosis
e) The Findings in Endoscopy
f) Benefits versus Risks and Costs.

UNIT VIII Nuclear Medicine

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.

MAPT361A	CLINICAL EDUCATION-III	L	T	S	P	C
		-	-	-		2

Course Objectives: Display professional behavior, including effective communication, punctuality, and respect for patients and healthcare team members. Develop the ability to observe and assess patients' physical conditions, including posture, range of motion, strength, and functional abilities in supervision of seniors and faculty.

Display the ability to assess the patient and apply electrotherapeutic modalities and perform/ teach exercises to patients.

SEMESTER VI

MAPT302A	NEUROLOGY AND NEUROSURGERY	L	T	S	P	C
		4	-	-	-	4

Course Objectives: The student will have a general understanding of the diseases the therapist would encounter in their practice. The objective of this course is that after 60 hrs of lectures and discussion the student will be able to list the etiology, pathology, clinical features and treatment methods for various neurological conditions.

UNIT I

a) Disorders of function in the context of Pathophysiology, Anatomy in Neurology and Cortical Mapping.
b) Classification of neurological involvement depending on level of lesion.
c) Neurological assessment: Principles of clinical diagnosis, higher mental function, assessment of brain & spinal cord function, evaluation of cranial nerves and evaluation of autonomic nervous system.

d) 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.
e) Neuro-ophthalmology: Assessment of visual function – acuity, field, colour vision, Pupillary reflex, accommodation reflex, abnormalities of optic disc, disorders of optic nerve, tract, radiation, occipital pole, disorders of higher visual processing, disorders of pupil, disorders of eye movements, central disorders of eye movement.
f) Deafness, vertigo, and imbalance: Physiology of hearing, disorders of hearing, examination & investigations of hearing, tests of vestibular function, vertigo, peripheral vestibular disorders, central vestibular vertigo.
g) Lower cranial nerve paralysis – Etiology, clinical features, investigations, and management of following disorders - lesions in trigeminal nerve, trigeminal neuralgia, trigeminal sensory neuropathy, lesions in facial nerve, facial palsy, bell's palsy, hemi facial spasm, Glossopharangial neuralgia, lesions of Vagus nerve, lesions of spinal accessory nerve, lesions of hypoglossal nerve. Dysphagia – swallowing mechanisms, causes of dysphagia, symptoms, examination, and management of dysphagia.

UNIT II Cerebro-vascular diseases

Define stroke, TIA, RIA, stroke in evolution, multi infarct dementia and Lacunar infarct. Classification of stroke – Ischemic, hemorrhagic, venous infarcts. Risk factors, cause of ischemic stroke, causes of hemorrhagic stroke.

Classification of hemorrhagic stroke, classification of stroke based on symptoms, stroke syndrome, investigations, differential diagnosis, medical and surgical management.

Head injury: Etiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications.

UNIT III

Higher cortical, neuro psychological and neurobehavioral disorders: Causes of blackouts, physiological nature of Epilepsy, classification, clinical features, investigations, medical& surgical management of following disorders – Non- epileptic attacks of childhood, Epilepsy in childhood, Seizers, and Epilepsy syndromes in adult.

Classification and clinical features of Dyssomnias, Parasomnias, Dementia, Obsessive- compulsive disorders. Neural basis of consciousness, causes &investigations of Coma, criteria for diagnosis of Brain death. Etiology, pathophysilogy, classification, clinical signs

& symptoms, investigations, differential diagnosis, management of Perceptual disorders and Speech disorders.

UNIT IVMovement disorders

Definition, etiology, risk factors, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Parkinson's disease, Dystonia, Chorea, Ballism, Athedosis, Tics, Myoclonus and Wilson's disease.

Cerebellar and coordination disorders: Etiology, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Congenital
ataxia, Friedreich's ataxia, Ataxia talengiectasia, Metabolic ataxia, Hereditary cerebellar ataxia, Tabes dorsalis and Syphilis.

UNIT V Spinal cord disorders

a) Functions of tracts, definition, etiology, risk factors, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – 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.

b) Brain tumors and spinal tumors: Classification, clinical features, investigations, medical and surgical management.

c) Infections of brain and spinal cord: Etiology, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management
surgical management and complications of following disorders – Meningitis, Encephalitis, Poliomyelitis and Post-polio syndrome. Complications of systemic infections on nervous system – Septic encephalopathy, AIDS, Rheumatic fever, Brucellosis, Tetanus, and Pertussis.

d) Toxic, metabolic and environmental disorders: Etiology, risk factors, classification, neurological signs & symptoms, investigations, management, of
following 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 VI Motor neuron diseases

a) Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications of following disorders
- Amyotrophic lateral sclerosis, Spinal muscular atrophy, Hereditary bulbar palsy, Neuromyotonia and Post-irradiation lumbosacral polyradiculopathy.

b) Multiple sclerosis - Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications.

c) Disorders of neuromuscular junction – Etiology, classification, signs & symptoms, investigations, management, of following disorders Myasthenia gravis, Eaton- Lambert syndrome, and Botulism.

d) Muscle diseases: Classification, investigations, imaging methods, Muscle biopsy, management of muscle diseases, genetic counselling. Classification, etiology, signs & symptoms of following disorders – Muscular dystrophy, Myotonic dystrophy, myopathy, Non-dystrophic myotonia.

e) Polyneuropathy – Classification of Polyneuropathies, Hereditary motor sensory neuropathy, hereditary sensory and Autonomic neuropathies, Amyloid neuropathy, acute idiopathic Polyneuropathies. Guillain-Barre syndrome – Causes, clinical features, management of GBS, Chronic Idiopathic Polyneuropathies, diagnosis of polyneuropathy, nerve biopsy.

f) Focal peripheral neuropathy: Clinical diagnosis of focal neuropathy, neurotmesis, Axonotmesis, Neuropraxia. Etiology, risk factors, classification, neurological signs & symptoms, investigations, management, of following disorders – RSD, Nerve tumors, Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions, Phrenic & Intercostal nerve lesions, Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy, Musculocutaneous nerve palsy, Anterior & Posterior interosseous nerve palsy, Axillary nerve palsy, Long thoracic nerve palsy, Suprascapular nerve palsy,

Sciatic nerve palsy, Tibial nerve palsy, Common peroneal nerve palsy, Femoral nerve palsy, Obturator nerve palsy, Pudental nerve palsy.

UNIT VII

Paediatric neurology: Neural development, Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders - Cerebral palsy, Hydrocephalus, Arnold-chiari malformation, Basilar impression, Klippel-Feil syndrome, Achondroplacia, Cerebral malformations, Autism, Dandy walker syndrome and Down's syndrome.

UNIT VIII Neurosurgery

Introduction, Indications and Complications of following Neuro surgeries: 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.

		L	T	S	P	C
MAPT304A	**PHYSIOTHERAPY IN ORTHOPEDICS & SPORTS**	**4**	**-**	**-**	**-**	**4**

Course Objectives: 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 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.

UNIT I Assessment

a) PT assessment for Orthopedic conditions - SOAP format. Subjective - history taking, informed consent, personal, past, medical and socioeconomic history, chief complaints, history of present illness.
b) Pain assessment- intensity, character, aggravating and relieving factors, site and location. Objective- on observation - body built swelling, muscle atrophy, deformities, posture and gait.
c) On palpation- tenderness-grades, muscle spasm, swelling-methods of swelling assessment, bony prominences, soft tissue texture and integrity, warmth and vasomotor disturbances.

d) On examination – ROM – active and passive, resisted isometric tests, limb length- apparent, true and segmental , girth measurement, muscle length testing- tightness, contracture and flexibility, manual muscle testing, peripheral neurological examination- dermatomes, myotomes and reflexes, special tests and functional tests.
e) Prescription of home program. Documentation of case records, and follow up.

UNIT II Fractures

a) Types, classification, signs and symptoms, complications.
b) Fracture healing - factors affecting fracture healing.
c) Principles of fracture management - reduction - open and closed, immobilization - sling, cast, brace, slab, traction - manual, mechanical, skin, skeletal, lumbar and Cervical traction, external fixation, functional cast bracing.
d) PT management in complications - early and late - shock, compartment syndrome, VIC, fat embolism, delayed and mal union, RSD, myositis ossificans, AVN, pressure sores etc. Physiotherapy assessment in fracture cases. Aims of PT management in fracture cases - short and long term goals. Principles of PT management in fractures - Guidelines for fracture treatment during period of immobilization and guidelines for treatment after immobilization period.
e) Specific fractures and dislocations: PT assessment and management of upper limb fractures and dislocations. PT assessment and management of lower limb fractures and dislocations including pelvis. PT assessment and management spinal fractures.

f) Selection and application of physiotherapeutic techniques, maneuver's, modalities for preventive, curative and rehabilitative means in all conditions.

UNIT III Degenerative and inflammatory conditions

a) Definition, signs and symptoms, clinical features, path physiology, radiological features, deformities, medical, surgical management. Describe the 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, Periarthritic shoulder.
b) Infective conditions: Definition, signs and symptoms, clinical features, pathophysiology, radiological features, medical, surgical management. Describe PT assessment and management for following conditions – Osteomyelitis – acute and chronic, Septic arthritis, pyogenic arthritis, TB spine and major joints - knee and hip.
c) Define, review the postural abnormalities of spinal column, clinical features, deformities, medical and surgical management. Describe PT assessment and management and

home program.

d) Deformities: Review in detail the causes, signs and symptoms, radiological features, medical and surgical management. Describe the 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 IV

a) Poliomyelitis: Definition, etiology, types, pathophysiology, clinical features, deformities, medical and surgical management. PT. assessment and management after surgical corrections and reconstructive surgeries - emphasis on tendon transfer and home program.

b) Leprosy: Definition, cause, clinical features, medical and surgical management. PT assessment, aims, and management after surgical procedures such as tendon transfer both pre and post operatively.

c) 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.

d) Spinal conditions: Review the causes, signs and symptoms, investigations, radiological features, neurological signs. PT assessment, aims, 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.

e) Effects of spinal traction, types of traction, modes of application, indications for spinal traction, contraindications, precautions, limitations of traction.

UNIT V

a) Osteoporosis- causes, predisposing factors, investigations and treatment.

b) 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 VI Upper extremity

a) Shoulder joint: Shoulder instabilities, TOS, RSD, Impingement syndrome - conservative and post-operative PT management. Total shoulder replacement and Hemi replacement. - Post operative PT management. AC joint injuries - rehabilitation. Rotator cuff tears-conservative and surgical repair. Subacromial decompression - Post operative PT management.
b) Elbow and forearm: Excision of radial head - Post operative PT management. Total elbow arthroplasty- Post operative PT management.
c) Wrist and Hand: Total wrist arthroplasty. Repair of ruptured extensor tendons. Carpal tunnel syndrome. Flexor and extensor tendon lacerations - Post operative PT management.

UNIT VII Lower extremity

a) Hip: Joint surgeries - hemi and total hip replacement - Post operative PT management Tendonitis and bursitis. - Management.
b) Knee: Lateral retinacular release, chondroplasty- Post operative management. Realignment of extensor mechanism. ACL and PCL reconstruction surgeries - Post operative rehabilitation. Meniscectomy and meniscal repair - Post operative management. Plica syndrome, patellar dysfunction and Hoffa's syndrome-conservative management. TKR- rehabilitation protocol. Patellar tendon ruptures and Patellectomy- rehabilitation.
c) Ankle and foot: Ankle instability. Ligamentous tears- Post operative management.

UNIT VIII Bioengineering

Introduction to Bio-Engineering; 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.

UNIT IX 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. Soft tissue injuries- prevention and rehabilitation of,

Lateral ligament sprain of ankle. Rotator cuff injuries. Collateral and Cruciate injuries of knee. Meniscal injuries of knee. Supraspinatus and Bicipital tendonitis. Pre patellar and Sub-acromial bursitis. Tennis and Golfer's elbow. Hamstring strains, Quadriceps contusion, TA rupture. De quervain's tenosynovitis. Trigger and Mallet finger. Plantar fasciitis. Wrist sprains.

		L	T	S	P	C
MAPT354A	**PHYSIOTHERAPY IN ORTHOPEDICS & SPORTS**	**-**	**-**	**-**	**2**	**1**

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.

		L	T	S	P	C
MAPT306A	**PHYSIOTHERAPY IN MEDICAL AND SURGICAL CONDITIONS**	**4**	**-**	**-**	**-**	**4**

Course Objectives: At the end of the course the candidate will be able to identify discuss and analyze cardiovascular and pulmonary dysfunctions based on pathophysiological principles and arrive at appropriate functional diagnosis, execute effective physiotherapeutic measures and exercise, conditioning in general medical and surgical conditions, acquire the knowledge of evaluation and physiotherapeutic treatment for obstetric and gynecological conditions, and evaluate, grade and treat non healing wounds.

UNIT I

a) Physiotherapy in mother and child care – ante and post-natal management, early intervention and stimulation therapy in child care (movement therapy)

b) Geriatrics – handling of old patients and their problems.

UNIT II

a) Complication common to all operations
b) Abdominal incisions.
c) Physiotherapy in pre and post-operative stages.
d) Operations on upper G.I.T.- oesophagus, stomach, duodenum
e) Operations on large and small intestine – Appendisectomy, cholecystectomy, partial colectomy, ileostomy, hernia and herniotomy, hernioraphy, hernioplasty.

UNIT III

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, labrynthitis, mastoidectomy, chronic rhinitis, laryngectomy, pharyngeo – laryngectomy, facial palsy.

UNIT IV

a) Burns and its treatment – physiotherapy in burns, skin grafts, and reconstructive surgeries.

b) 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.

MAPT356A	PHYSIOTHERAPY IN MEDICAL AND SURGICAL CONDITIONS LAB	L	T	S	P	C
		-	-	-	2	1

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.

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.

MAPT308A	COMMUNITY MEDICINE	L	T	S	P	C
		3	-	-	-	3

Course Objectives: 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.

UNIT I 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 Epidemiology

a) 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.

b) 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 Public health administration

a) 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.

b) 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

a) 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.

b) 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

a) Nutrition and Health: Classification of foods, Nutritional profiles of principal foods, Nutritional problems in public health, Community nutrition programmes.

b) Environment and Health: Components of environment, Water and air pollution and public health: Pollution control, Disposal of waste, Medical entomology.

c) Occupational Health: Occupational environment, Occupational hazards, Occupational diseases, Prevention of occupational diseases. Social security and other measures for the protection from occupational hazard accidents and diseases. Details of compensation acts.

d) Mental Health: Characteristics of a mentally healthy person, Types of mental illness, Causes of mental ill health, 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.

e) 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.

		L	T	S	P	C
MAPT360A	**CLINICAL EDUCATION-IV**	**-**	**-**	**-**	**12**	**6**

Course Objectives: Display professional behavior, including effective communication, punctuality, and respect for patients and healthcare team members. Develop the ability to and assess patients' physical conditions, including posture, range of motion, strength, and functional abilities in supervision of seniors and faculty. Display the ability to assess the patient and apply electrotherapeutic modalities and perform/ teach exercises to patients.

SEMESTER VII

		L	T	S	P	C
MAPT401A	**PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS**	**4**	**-**	**-**	**-**	**4**

Course Objectives: 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.

UNIT I Neurological Assessment

a) Required materials for examination, Chief complaints, History taking – Present, Past, medical, familial, personal histories, 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 reflexes, Superficial reflexes, Sensory examination – Superficial, Deep and Cortical sensations, Special tests – Romberg's, Kernig's sign, Brudenzki sign, Tinels's sign, Slum test, Lehermitte's sign, Bells Phenomenon, Gower's sign,set sign, Battle's sign, Glabellar tap sign, etc,

b) 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 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.

UNIT IIIPaediatric Neurology

Paediatric Examination, Developmental milestones, developmental reflexes, Neuro developmental screening tests. Evaluation & Management - History, Observation, Palpation, Milestone Examination, developmental reflex Examination, Higher mental function, Cranial nerve examination, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, 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 IV

a) Evaluation and Management ofBrain and Spinal Cord Disorders: History, Observation, Palpation, Higher mental function, Cranial nerve examination, Motor & Sensory examination, Reflex testing,

differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches& Modalities in Cerebro vascular Accident, Meningitis, Encephalitis, Head Injury, Brain Tumors, Perceptual disorders, Amyotrophic lateral sclerosis, and Multiple sclerosis.

b) Evaluation and Management of Cerebellar, Spinal Cord and Muscle Disorders : History, Observation, Palpation, Motor & Sensory examination, Reflex testing,
differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches& Modalities in 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.

c) Evaluation and Management of Peripheral Nerve Injuries and Disorders : History, Observation, Palpation, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches& Modalities in Hereditary motor sensory neuropathy, Guillain-Barre syndrome, Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions, Phrenic & intercostals nerve lesions, Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy, Musculocutaneous nerve palsy, Anterior & Posterior interosseous nerve palsy, Axillary nerve palsy, Long thoracic nerve palsy, Suprascapular nerve palsy, sciatic nerve palsy, Tibial nerve palsy, Common peroneal nerve palsy, Femoral nerve palsy, Obturator nerve palsy, and Pudental nerve palsy.

UNIT V

a) 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, Choreaform Gait, Diplegic Gait, and Myopathic Gait.

b) Pre and post-surgical assessment and treatment following conditions - 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.

		L	T	S	P	C
MAPT451A	**PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS LAB**	**-**	**-**	**-**	**2**	**1**

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.

		L	T	S	P	C
MAPT403A	**CARDIOVASCULAR AND PULMONARY CONDITIONS**	**4**	**-**	**-**	**-**	**4**

Course Objectives: Following the basic science and clinical science course, this course introduces the Student in cardio-thoracic conditions which commonly cause disability. 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.

UNIT I Anatomy and Physiology

a) 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 – Chest wall movements, lung & chest wall compliance, V/Q relationship, airway resistance, Respiratory centre, Neural & chemical regulation of respiration, Lung volumes and lung capacities, Spiro meter, lung function test, Pulmonary circulation, Lung sounds, cough reflex.

b) 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.

UNIT II Cardio Vascular system

a) 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

b) Cardiovascular Disease : Examination of the Cardiovascular System Investigations : ECG, Exercise Stress Testing, Radiology ; Clinical manifestations of Cardiovascular disease ; Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases and disorders of the heart : 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 : Definition, causes, classification, types, assessment, nvestigations and management.

c) 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, Tetraology 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 III Respiratory System

a) Respiratory Disease : Examination of the Respiratory System – Investigations : Chest Radiographs, Pulmonary Function Testing, Arterial Blood Gas Analysis ; Clinical manifestations of Lung 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.

b) 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.

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MAPT405A	HEALT PROMOTION AND FITNESS	L	T	S	P	C
		3	-	-	-	3

Course Objectives: 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.

UNIT I Prevention practice: a holistic perspective for physiotherapy

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

a) Definition of healthy people
b) Health education Resources
c) Physiotherapist role for a healthy community.

UNIT III Key concepts of fitness

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.

UNIT IV Fitness training

a) Physical Activities Readiness Questionnaire
b) Physical Activities Pyramid
c) Exercise Programs
d) Evidence-Based Practice.

UNIT V

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 VI

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.

MAPT407A	RESEARCH METHODOLOGY AND BIOSTATISTICS	L	T	S	P	C
		4	-	-	-	4

Course Objectives: 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.

UNIT I Research Methodology

a) 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.
b) Research problem: Statement of research problem., Statement of purpose and objectives of research problem, Necessity of defining the problem
c) Research design: Meaning of research design, Need for research design, Features for good design, Different research designs, Basic principles of research design
d) 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
e) 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.
f) Methods of data collection: collection of primary data, collection data through questionnaires & schedules, Difference between questionnaires & schedules.
g) Sampling fundamentals, need for sampling & some fundamental definitions, important sampling distributions.
h) Processing & analysis of data: Processing operations, problems in processing, Types of analysis, Statistics in research, Measures of central tendency, Dispersion, Asymmetry, relationship.

i) 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
j) Computer technology: Introduction to Computers, computer application in research, computers & researcher.

UNIT II Biostatistics

a) 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.
b) Tabulation of Data: Basic principles of graphical representation, Types of diagrams – histograms, frequency polygons, smooth frequency polygon,
cumulative frequency curve, Normal probability curve.
c) 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.
d) Probability and Standard Distributions: Meaning of probability of standard distribution, the binominal distribution, the normal distribution, Divergence from normality – skew ness, kurtosis.
e) 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.
f) Analysis of variance & covariance: Analysis of variance (ANOVA), what is ANOVA? Basic principle of ANOVA, ANOVA technique, Analysis of Co variance (ANACOVA).
g) Format of scientific documents. (Structure of protocols, formats reporting in scientific journals, systematic reviews and meta-analysis).

		L	T	S	P	C
MAPT409A	**MANAGEMENT AND LEADERSHIP**	**2**	**-**	**-**	**-**	**2**

Course Objectives: The course is intended to provide a knowledge about the basic principles of Management.

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

MAPT461A	CLINICAL EDUCATION-V	L	T	S	P	C
		-	-	-	12	6

Course Objectives: Display professional behavior, including effective communication, punctuality, and respect for patients and healthcare team members. Demonstrate the ability to and assess patients' physical conditions, including posture, range of motion, strength, and functional abilities.

Develop the ability to design treatment protocol according to patient's condition.

Semester VIII

MAPT402A	PHYSIOTHERAPY IN CARDIO VASCULAR PULMONARY AND INTENSIVE CARE	L	T	S	P	C
		4	-	-	-	4

Course Objectives: 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.

UNIT I

a) Anatomical and Physiological differences between the Adult and Pediatric lung.
b) Bedside assessment of the patient-Adult & Pediatric.
c) Investigations and tests – Exercise tolerance Testing – Cardiac & Pulmonary, Radiographs, PFT, ABG, ECG, Hematological and Biochemical Tests.

UNIT II

a) Physiotherapy techniques to increase lung volume – controlled mobilization, positioning, breathing exercises, Neurophysiological Facilitation of Respiration, Mechanical aids - Incentive Spirometry, CPAP, IPPB.
b) 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.

c) 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

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 IV

Neonatal and Pediatric Physiotherapy – Chest physiotherapy for children, The neonatal unit, Modifications of chest physiotherapy for specific neonatal disorders, Emergencies in the neonatal unit.

UNIT V

a) Physiotherapy in Obstructive lung conditions.
b) Physiotherapy in Restrictive lung conditions.
c) Management of breathlessness.
d) Pulmonary Rehabilitation.
e) Physiotherapy following Lung surgeries
f) Respiratory failure – Oxygen Therapy and Mechanical Ventilation.

UNIT VI

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.

UNIT VII

a) Physiotherapy management following cardiac surgeries.
b) Cardiac Rehabilitation.

UNIT VIII

a) Physiotherapy management following PVD.

b) Abdominal Surgeries - Management of Pulmonary Restorative Dysfunction following surgical procedures on Abdomen and Thorax.
c) Management of Amputations following Diabetes, PVD - Prosthesis in amputations of lower limbs following ulcers and gangrenes.
d) Home program and education of family members in patient care.
e) Treatment, Response to exercise and Implications of Physiotherapy in the following disease conditions: Hypertension, Diabetes, Renal Failure and Obesity.

MAPT452A	**PHYSIOTHERAPY IN CARDIO VASCULAR PULMONARY AND INTENSIVE CARE LAB**	**L**	**T**	**S**	**P**	**C**
		-	**-**	**-**	**2**	**1**

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.

MAPT404A	**COMMUNITY PHYSIOTHERAPY**	**L**	**T**	**S**	**P**	**C**
		4	**-**	**-**	**-**	**4**

Course Objectives: The objective of the 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.

UNIT I

a) Rehabilitation: Definition, Types.
b) 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.
c) Introduction to 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.
d) 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.

e) Planning and management of CBR Programmes, CBR Programmed planning and management, Ownership and Governance, Decentralization and CBR, Management of CBR, Programmed sustainability, Communication and Coordination, Community participation, mobilization and awareness, CBR programme influence on promoting and developing public policies.

UNIT II

a) 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.

b) 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, Rockfeller, 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,

e) Anganwadi worker

f) Role of Physiotherapy in CBR: Screening for disabilities, Prescribing exercise programme, Prescribing and devising low cost locally available assisstive 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

a) 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.
b) Extension services and mobile units: Introduction, Need, Camp approach.
c) Vocational training in rehabilitation: Introduction, Need, Vocational evaluation, Vocational rehabilitation services.
d) 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.
e) Industrial Health & Ergonomics [10 hours] - 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.

MAPT454A	COMMUNITY PHYSIOTHERAPY LAB	L	T	S	P	C
		-	-	-	2	1

PRACTICAL: 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.

MAPT406A	CLINICAL REASONING AND EVIDENCE BASED PHYSIOTHERAPY PRACTICE	L	T	S	P	C
		3	-	-	-	3

Course Objectives: 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.

UNIT I Evidence based Practice

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

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

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

MAPT408A	ADMINISTRATION AND TEACHING SKILLS	L	T	S	P	C
		2	-	-	-	2

Course Objectives: The objective of this course is to expand the horizons of the physiotherapy student's scope beyond clinical practice and introduce the concepts of teaching methodology and basics of administrations. Through this course, students can also identify their interests and skills.

UNIT I Introduction

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

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

MAPT460A	RESEARCH PROJECT	L	T	S	P	C
		-	-	-	4	2

The project may be a case study or of recent technique or literature reviews and etc. to make the student to have research mind and to facilitate for higher studies.

MAPT462A	CLINICAL EDUCATION-VI	L	T	S	P	C
		-	-	-	12	6

Course Objectives: Display professional behavior, including effective communication, punctuality, and respect for patients and healthcare team members. Demonstrate the ability to and assess patients' physical conditions, including posture, range of motion, strength, and functional abilities.

Develop the ability to design treatment protocol according to patient’s condition.

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INTERNSHIP

MAPT561A	INTERNSHIP	L	T	S	P	C
		-	-	-	40	20

The internship time period 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 (measureable, 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 carers
g. Discharge plan documented
h. Agreement to treatment plan by patient or "person responsible" _

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