VINAYAKA MISSION'S RESEARCH FOUNDATION

(Deemed to be University under section 3 of the UGC Act 1956)

VMRF DU – YEAR OF ESTABLISHMENT: 2001

REGULATIONS AND CURRICULUM WITH CHOICE BASED CREDIT SYSTEM GOVERNING **BACHELOR OF PHYSIOTHERAPY PROGRAM** FROM THE ACADEMIC YEAR 2019-2020

SHORT TITLE AND COMMENCEMENT

In exercise of the powers conferred by rule 9 of Memorandum of Association and Sec 2 of Chapter -V of Bye-laws of the Vinayaka Mission's Research Foundation (Deemed to be University), Salem, the Academic Council of the University hereby makes the following regulations: -

These regulations may be called "REGULATIONS AND CURRICULUM WITH CHOICE BASED CREDIT SYSTEM GOVERNING BACHELOR OF PHYSIOTHERAPY PROGRAM FROM THE ACADEMIC YEAR 2019-2020 OF THE VINAYAKA MISSION'S RESEARCH FOUNDATION DEEMED TO BE UNIVERSITY, SALEM".

These regulations shall come into force with effect from the academic year 2019-2020 and are subject to such modifications as may be approved by the Academic Council from time to time.

PROGRAM OBJECTIVES

The aims of the recommended curriculum are to produce Physiotherapists who are

- Technically and clinically competent for independent decision making;
- Competent to examine, evaluate, diagnose, plan, execute and document using Physiotherapeutic methods independently.
- Aware of patient conditions and treatment along with the importance of quality assurance;
- Able to understand the theoretical basis for evidence based practice & provide effective patient education.
- Effective members of the multidisciplinary team;
- Prepared to participate in or initiate research into practice;

PROGRAM OUTCOMES

The graduate who completes the program successfully will be a

Competent and reflective autonomous physiotherapy practitioner who can function safely and effectively while adhering to legal, ethical and professional standards of practice based on research evidence in a multitude of physiotherapy settings for patients and clients across the lifespan and along the continuum of care from wellness & prevention to rehabilitation of dysfunction with lifelong commitment to learning and professional development.

CBCS – DEFINITION AND BENEFITS:

Choice Based Credit System is a flexible system of learning. The distinguishing features of

CBCS are the following:

- It permits students to learn at their own pace.
- Choose electives from a wide range of elective courses offered by the other University Departments.
- Undergo additional courses and acquire more than the required number of credits.
- Adopt an inter-disciplinary and intra-disciplinary approach in learning.
- Make best use of the available expertise of the faculty across the departments or disciplines
- Has an inbuilt evaluation system to assess the analytical and creativity skills of students in addition to the conventional domain knowledge assessment pattern.

DEFINITIONS & NOMENCLATURE:

i. **Academic Year**: Two consecutive (one odd + one even) semesters constitute one academic year.

ii. **Choice Based Credit System (CBCS):** The CBCS provides choice for students to select from the prescribed courses (core, elective or minor or soft skill courses).

iii. **Course**: Usually referred as paper which is a component of a programme. All courses need not carry the same weight. The courses should define learning objectives and learning outcomes. A course may be designed to comprise lectures/ practical training / clinical training/ tutorials/ laboratory work/field work/ outreach activities/ project work/ vocational training/viva/ seminars/ term papers/ assignments/ presentations/ self-study etc. or a combination of some of these.

iv. **Credit**: A unit by which the course work is measured. It determines the number of hours of instructions required per week. One credit is equivalent to one hour of teaching (lecture or tutorial) or two hours of practical work/field work per week.

vii. **Grade Point**: It is a numerical weight allotted to each letter grade on a 10-point scale.

viii. **Credit Point**: It is the product of grade point and number of credits for a course.

ix. **Letter Grade**: It is an index of the performance of students in a said course. Grades are denoted by letters O++,O+,O, A++,A+, A, B+, B, C and RA

x. **First Attempt**: A student who has completed all formalities of the semester becomes eligible to attend the examinations and has passed in first sitting: such attempt shall be treated as first attempt.

xi. **Programme**: An educational programme leading to award of a Degree, diploma or certificate.

xi. **Semester Grade Point Average (SGPA)**: It is a measure of performance of work done in a semester. It is ratio of total credit points secured by a student in various courses registered in a semester and the total course credits taken during that semester. It shall be expressed up to two decimal places.

xii. **Cumulative Grade Point Average (CGPA)**: It is a measure of overall cumulative performance of a student over all semesters. The CGPA is the ratio of total credit points secured by a student in various courses in all semesters and the sum of the total credits of all courses in all the semesters. It is expressed up to two decimal places.

xiii. **Semester**: Each semester will consist of 100 working days. The odd semester may be scheduled from September to February and even semester from March to August.

SEMESTER SYSTEM AND CHOICE BASED CREDIT SYSTEM

The semester system accelerates the teaching-learning process and enables vertical and horizontal mobility of students in learning. The credit based semester system provides flexibility in designing curriculum and assigning credits based on the course content and hours of teaching. The choice based credit system provides a cafeteria type approach in which the students can take courses of their choice, learn at their own pace, undergo additional courses and acquire more than the required credits, and adopt an interdisciplinary approach to learning.

SEMESTERS:

An academic year consists of two semesters.

	Odd semester	Even semester
UG	**September - February**	**March to August**
(BPT)	1st, 3rd, 5th and 7th semesters	2nd , 4th , 6th and 8th semesters

CREDITS:

Credit defines the quantum of contents/syllabus prescribed for a course and determines the number of hours of instruction required per week. Thus, normally in each of the courses, credits will be assigned on the basis of the number of lectures/ tutorial laboratory work and other forms of learning required, to complete the course contents in a 15-20 week schedule:

1 credit = 1 hour of lecture per week (1 Credit course = 15 hours of lectures per semester)

3 credits = 3 hours of instruction per week (3 Credit course = 45 hours of lectures per semester)

Credits will be assigned on the basis of the lectures (L) / tutorials (T) / Clinical Training (CR) / laboratory work (P) / Project/Research work (PR)/ Internship (INT) and other forms of learning in a 15-20 week schedule.

L - **One credit** for **one hour** lecture per week (1 credit course = 15 hours /semester)

T - **One credit** for **one hour** tutorial per week (1 credit course = 15 hours /semester)

P/T - **One credit** for every **two hours** of practical or lab (1credit course = 30 hrs/ semester)

CR - **One credit** for every **2 hours** of Clinical training/ Clinical rotation/ posting (1 credit course = **30** hours/ semester)

RP - **One credit** for every **two hours** of Research Project per week – Max Credit 20-25 (1 credit course = 30 hours/ semester)

INT - **One credit** for every **2 hours** of compulsory rotatory clinical training (1 credit course = **30** hours/ semester)

	Hours spend	Credit
Lecture – L	1 Hour	1 credit
Tutorial – T	1 Hour	1 credit
Practical / lab – P	2 Hour	1 credit
Clinical training/posting/field training – CT/CP	2 Hour	1 credit
Project / Research work	2 hours	1 credit
Internship- compulsory rotatory internship training- INT***	2 hours	1 credit
*** **Maximum of 42 credits/Semester**		

TYPES OF COURSES:

Courses in the programme may be of three kinds:

Core Course

Elective Course

Ability Enhancement Course

CORE COURSE: A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course. There may be a **Core Course** in every semester. This is the course which is to be compulsorily studied by a student as a core requirement to complete the requirement of a programme in a said discipline of study. The student will have to appear for University examinations for these courses.

ELECTIVE COURSE: Generally a course which can be chosen from a pool of courses and which may be very specific or specialized or advanced or supportive to the discipline/ subject of study or which provides an extended scope or which enables an exposure to some other discipline/subject/domain or nurtures the candidate's proficiency/skill is called an Elective Course.

Discipline Specific Elective (DSE) Course: Elective courses offered by the main discipline/subject of study are referred to as Discipline Specific Elective. The University / Institute may also offer discipline related Elective courses of interdisciplinary nature. An elective may be **"Discipline Specific Electives (DSE)"** focusing on those courses which add generic proficiency to the students.

Generic Elective (GE) Course: An elective course chosen generally from an unrelated discipline/subject, with an intention to seek exposure is called a Generic Elective.

The student will have to appear for examinations at College level for these courses.

ABILITY ENHANCEMENT COURSES (AEC): The Ability Enhancement (AE) Courses may be of two kinds: Ability Enhancement Compulsory Courses (AECC) and Skill Enhancement Courses (SEC).

Ability Enhancement Compulsory Courses (AECC): These are the courses based upon the content that leads to Knowledge enhancement.

Skill Enhancement Courses (SEC): SEC courses are value-based and/or skill-based and are aimed at providing hands-on-training, competencies, skills, Indian and foreign languages etc. These courses may be chosen from a pool of courses designed to provide value-based and/or skill-based knowledge.

The student will have to appear for examinations at College level for these courses.

CREDIT FOR COURSES WITH THEORY AND LAB COMPONENTS

Model – 1							
First year – Semester - 1							
Course Number	Course Code	Course Title	L	T	P	C	Total Hours
1		Human Anatomy - I	6	-	6	9(6+3)	180

CODE NUMBERING OF THE COURSE COMPONENT:

The courses listed will be denoted with components of (L-T-P-C) where L, T, P, C refer to the Credits assigned to **L**ecture, **T**utorial, **P**ractical / Laboratory and Total **C**redit under each of the courses. **P**-column can also include Clinical Training (CR), field training and Research Project (RP/PR) wherever appropriate. In addition to learning the subject of choice and peripheral subject of use, emphasis shall also be placed on improving communication, language and computer skills of the student.

DURATION OF THE PROGRAM:

The duration of the program is 4&1/2 years with 8 academic semesters and six months of compulsory rotatory internship.

MAXIMUM DURATION OF THE PROGRAM

Candidates should complete the Bachelor of Physiotherapy degree program within a period of eight years from the date of joining the program.

MEDIUM OF INSTRUCTION:

The medium of instruction for all the courses of study and for examination of the program shall be English.

ADMISSION ELIGIBILITY:

Candidates belonging to all categories for admission to Bachelor of Physiotherapy program should have passed H.Sc. examination after a period of 12 years of study with following subjects (Physics, Chemistry & Biology / Botany & Zoology) or Pre degree passed with Science subjects or equivalent there-to

ADMISSION PROCEDURE

Admissions are made purely based on the merit in the Qualifying examination for the program.

REGISTRATION

A candidate admitted to the program shall register with this University by remitting the prescribed fees along with the application form for registration duly filled in and forwarded to this University through the Head of the Institution within 40 days from the date of admission.

COMMENCEMENT OF THE PROGRAM

The program shall commence not later than 10^{th} September of an academic year.

CUT OFF DATE FOR ADMISSION

The candidates are admitted only up to 30^{th} September and shall be registered to take up their first semester examination during February of the next year.

WORKING DAYS DURING THE SEMESTER

Each semester shall consist not less than 100 working days.

MIGRATION/TRANSFER OF CANDIDATES

Migration/Transfer of candidates shall be granted as per the regulations of Vinayaka Mission's Research Foundation – Deemed to be University, subject to the approval of the Vice Chancellor.

COURSE CURRICULUM

The Curriculum and the syllabus for the program shall be as prescribed. The curriculum is subject to modifications by the recommendations of Academic Council from time to time if necessary.

CALENDAR OF EVENTS

The calendar of events in respect of the program for each respective academic year shall be determined and notified by the university from time to time. The examinations shall be conducted at the end of each semester.

PROCEDURE FOR REJOINING AFTER BREAK OF STUDY

a. The candidate having a break of study for more than three (3) months but less than eight (8) years from the date of admission shall apply for rejoining the course in the prescribed form as in Annexure II by remitting the stipulated fee for condonation of Break of study to the Academic Department of this University through the concerned Dean / Principal of the college for issue of necessary permission to rejoin the program. The Dean / Principal of the college concerned shall not permit any candidate with a Break of study as stipulated above to rejoin the program without obtaining the prior permission from this University.

b.(i) If the absence is more than three (3) months but less than eight (8) years from the date of admission,, the candidate may be permitted to rejoin at the beginning of the year of study in which candidate discontinued the program and shall after fulfillment of the Regulations of this University to the program concerned be admitted to the examinations by remitting the prescribed fee. The candidates shall be exempted from the courses he/she has already passed.

If any candidate completed the program of study, appeared for the final year examinations but failed in one or more courses and does not consecutively appeared for two supplemental examinations, shall undergo a refresher course for a period of six months after obtaining the permission from the University for undergoing such refresher course in the college in which he/she last studied and obtain a certificate to that effect before appearing for the failed subjects of final year examination in the program. The examination application shall be forwarded through the Dean/Principal of the college concerned.

The period of break of study of the candidate for rejoining the program shall be calculated from the date of first discontinuance of the program.

All the under graduate students have to execute a declaration at the time of registration with this University in this regard in the prescribed form as in Annexure I.

READMISSION AFTER BREAK OF STUDY

ANNEXURE-I

I_____ son of / Daughter of_____Residing at _____and admitted to in I year of_____(Name of the College) do hereby solemnly affirm and sincerely state as follows:

I declare that I shall abide by the rules and regulations prescribed by the Vinayaka Mission's Research Foundation – Deemed University, Salem for the _____ (course) including regulations for re-admission after the break of study.

Date: Signature of candidate

/Countersigned/

Dean/Principal/Director

(Office date seal)

ANNEXURE-II

PROFORMA FOR RE-ADMISSION

1. Name of the student :

2. Name of the program and period of study

3. Name of the College

4. Date of joining the program

5. Duration of break of study : From To

2. Details of examinations appeared & courses passed:

3. Reasons for the period of break of study of the program: (Evidence should be produced)

4. The details of previous break of study (Enclose Xerox): Copy of the condonation order of the University, if any

5. Whether his/her own vacancy is available for rejoining: the program

10. Whether any disciplinary case is pending : (i.e) production of false certificates/ragging etc.

11. Whether the candidate has registered with : this University. If so furnish the Reg. No.

a) Whether the candidate has paid the prescribed fee for: for readmission sought for (Furnish the details) (Processing fee: Rs.500

Condonation fee: Rs.1000/- per year or part there of: (or) as revised by the University from time to time)

13. Previous Correspondence if any made : (Furnish copies of relevant records)

14. Recommendation of the Dean/Principal/Director concerned

Certified that the details furnished above in respect of the candidate are verified and found to be correct,

Signature of the Dean/Principal/Director
With seal

PROGRAM STRUCTURE

LIST OF CORE COURSES OFFERED BY VMRFDU FOR BPT PROGRAM			
Sl .No	Program year	Odd Semester	Even Semester
1.	First year	**1st semester – Core subjects**	**2nd semester – Core subjects**
		1.Human Anatomy – I 2.Human Physiology-I 3. Sociology	1.Human Anatomy – II 2.Human Physiology –II 3.Psychology
2.	Second year	**3rd semester – Core subjects**	**4th semester – Core subjects**
		1..Biomechanics – I 2 Microbiology & Pathology 3.Biochemistry & Pharmacology	1.General Medicine , General Surgery & Paediatrics 2. Exercise therapy – I 3.Biomechanics –II
3.	Third year	**5th semester – Core subjects**	**6th semester – Core subjects**
		1.Exercisetherapy-II 2.Electrophysical Agents - I 3.Physiotherapy in General Medicine , General Surgery & Paediatrics	1. Electrophysical Agents – II 2.Clinical Orthopaedics & Traumatology 3. Clinical Neurology & Neurosurgery
4.	Fourth year	**7th semester – Core subjects**	**8th semester – Core subjects**
		1. Clinical Cardio Pulmonary Medicine & Surgery 2. Physiotherapy in Neurology & Neurosurgery 3. Physiotherapy in Orthopaedics & Traumatology 4.Community & Geriatric Medicine	1.Physiotherapy in Cardio Pulmonary Medicine & Surgery 2. Community & Geriatric Physiotherapy 3. Physiotherapeutics 4. Project
5.	Fifth year	**Six months compulsory rotatory internship**	

LIST OF ABILITY ENHANCEMENT COURSE OFFERED BY VMRF DU FOR BPT PROGRAM (Compulsory)

ABILITY ENHANCEMENT COURSES

LIST OF ABILITY ENHANCEMENT COURSE OFFERED BY VMRF DU FOR BPT PROGRAM (Compulsory)			
Semester	Course code	Title	Credits
First		Basics of English	2
Second		Environmental Science	3
Third		Communication & Soft Skills	2
Fourth		Research Methodology & Biostatistics	2
Fourth		Physiotherapy – Ethics & Law	2
Seventh		Clinical Reasoning & Evidence Based Practice	2

SKILL ENHANCEMENT COURSES

LIST OF SKILL ENHANCEMENT COURSE OFFERED BY VMRF DU FOR BPT PROGRAM (COMPULSORY)			
Semester	Course code	Title	Credits
Fourth		Acupuncture & Acupressure	2
Fifth		Basics of Computer & Information science	2
Sixth		First aid and Emergency Management	2
Seventh		Radiology & Imaging	2
Eighth		Electro physiology and Diagnosis	2

DISCIPLINE SPECIFIC ELECTIVE COURSES AND GENERIC ELECTIVE COURSES

LIST OF DISCIPLINE SPECIFIC ELECTIVE (DSE) AND GENERIC ELECTIVE (GE) COURSE OFFERED FOR BPT PROGRAM			
z	Course code	Title	Credits
1st		Orientation to Physiotherapy and Rehabilitation	2
		Personality development & Stress management	
		Team building & Leadership	
2nd		Medical terminology & Record keeping	2
		Counselling & Guidance	
		Basics of Nursing	
3rd		Yoga therapy	2
		Naturopathy	
		Biomedical waste management	
4th		Public health & Hygiene	2
		Infection prevention & Control	
		Hospital management	
5th		Diet & Nutrition	2
		Life style disorders	
		Fundamentals of Occupational health	
6th		Biofeedback	2
		Exercise Physiology	
		Health & Fitness	
7th		Occupational and Speech therapy	2
		Fundamentals of Physical education	
		Ergonomics	
8th		Prosthetics & Orthotics	2
		Physiotherapy in Veterinary sciences	
		Administration, Supervision & Teaching skills	

DISTRIBUTION OF CREDITS AND COURSE HOURS

1st year – 1st semester

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
Core subjects									
	Human Anatomy - I	150	90	60	6	4	6	2	8
	Human Physiology- I	120	90	30	6	2	6	1	7
	Sociology	45	45	0	3	0	3	0	3
(**Ability Enhancement/ Skill Enhancement – Compulsory)**									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
	Basics of English	30	30	0	2	0	2	0	2

Discipline Specific Elective Courses (DSE) (Minimum one)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
	Orientation to Physiotherapy and Rehabilitation	30	30	0	2	0	2	0	2
	Personality development & Stress management	30	30	0	2	0	2	0	
	Team building & Leadership	30	30	0	2	0	2	0	
Clinical /Others									
	Clinical observation	60	0	60	0	4	0	2	2
	Total hours / credit	445							24

1st year – 2nd semester

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
Core subjects									
	Human Anatomy - II	150	90	60	6	4	6	2	8
	Human Physiology - II	120	60	60	4	4	4	2	6
	Psychology	45	45	0	3	0	3	0	3

(**Ability Enhancement/ Skill Enhancement – Compulsory)**									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
	Environmental Science	60	30	30	2	2	2	1	3

Discipline Specific Elective Courses (DSE) (Minimum one)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
	Medical terminology & Record keeping	30	30	0	2	0	2	0	2
	Counseling and Guidance	30	30	0	2	0	2	0	
	Basics of Nursing	30	30	0	2	0	2	0	
Clinical / Others									
	Clinical observation	60	0	60	0	4	0	2	2
	Total hours / credit	480							25

2nd Year - 3rd Semester

Course No	Course title		Hours per semester			Hours/week		Credits		Total credits
			Total	L	P	L	P	L	P	
Core subjects										
	Biomechanics -I		120	90	30	6	2	6	1	7
	Microbiology & Pathology	A	45	45	0	3	0	3	0	6 (3+3)
		B	45	45	0	3	0	3	0	
	Biochemistry & Pharmacology	A	45	45	0	3	0	3	0	6 (3+3)
		B	45	45	0	3	0	3	0	

(**Ability Enhancement/ Skill Enhancement – Compulsory)**									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
	Communication & Soft Skills	30	30	0	2	0	2	0	2

Discipline Specific Elective Courses (DSE)(Minimum one)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
	Yoga therapy	45	15	30	1	2	1	1	2
	Naturopathy	30	30	0	30	0	2	0	
	Biomedical waste management	30	30	0	30	0	2	0	
Clinical / Others									
	Clinical Observation	60	0	60	0	4	0	2	2
	Total hours / credit	435							25

2nd year - 4th Semester

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
Core subjects									
	General Medicine , General Surgery & Paediatrics	120	90	30	6	2	6	1	7
	Exercise therapy – I	120	60	60	4	4	4	2	6
	Biomechanics - II	120	90	30	6	2	6	1	7

(**Ability Enhancement/ Skill Enhancement – Compulsory**)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
	Acupuncture/Acupressure	45	15	30	1	2	1	1	2
	Research Methodology & Biostatistics	30	30	0	2	0	2	0	2
	Physiotherapy – Ethics & Law	30	30	0	2	0	2	0	2

Discipline Specific Elective Courses (DSE)(Minimum one)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
	Public Health & Hygiene	30	30	0	2	0	2	0	2
	Infection Prevention and Control	30	30	0	2	0	2	0	
	Hospital management	30	30	0	2	0	2	0	
Clinical / Others									
	Clinical Education / Training	90	0	90	0	6	0	3	3
	Total hours / credit	585							31

3rd year - 5th Semester

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
Core subjects									
	Exercise therapy - II	150	60	90	4	6	4	3	7
	Electrophysical Agents - I	120	60	60	4	4	4	2	6
	Physiotherapy in General Medicine , General Surgery & Paediatrics	120	60	60	4	4	4	2	6

(**Ability Enhancement/ Skill Enhancement – Compulsory)**									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max
		Total	L	P	L	P	L	P	
	Basics in Computer and Information Science	45	15	30	1	2	1	1	2

Discipline Specific Elective Courses (DSE)(Minimum one)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max
		Total	L	P	L	P	L	P	
	Diet & Nutrition	30	30	0	2	0	2	0	2
	Life style Disorders	30	30	0	2	0	2	0	
	Fundamentals of Occupational Health	30	30	0	2	0	2	0	
Clinical / Others									
	Clinical Education / Training	120	0	120	0	8	0	4	4
	Total hours / credit	585							27

3rd year - 6th Semester

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Core subjects								
	Electrophysical Agents - II	120	60	60	4	4	4	2	6
	Clinical Orthopaedics & Traumatology	90	60	30	4	2	4	1	5
	Clinical Neurology & Neurosurgery	90	60	30	4	2	4	1	5

(**Ability Enhancement/ Skill Enhancement – Compulsory)**									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max
		Total	L	P	L	P	L	P	
	First Aid & Emergency Management	45	15	30	1	2	1	1	2

Discipline Specific Elective Courses (DSE) (Minimum one)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max
		Total	L	P	L	P	L	P	
	Biofeedback	45	15	30	1	2	1	2	2
	Exercise Physiology	30	30	0	2	0	2	0	
	Health & Fitness	30	30	0	2	0	2	0	
Clinical / Others									
	Clinical Education / Training	210	0	210	0	14	0	7	7
	Total hours / credit	600							27

4th year - 7th Semester

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
Core subjects									
	Clinical Cardio Pulmonary Medicine & Surgery	90	60	30	4	2	4	1	5
	Physiotherapy in Neurology & Neuro Surgery	120	60	60	4	4	4	2	6
	Physiotherapy In Orthopaedics & Traumatology	120	60	60	4	4	4	2	6
	Community & Geriatric Medicine	60	60	0	4	0	4	0	4
(**Ability Enhancement/ Skill Enhancement – Compulsory)**									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max
		Total	L	P	L	P	L	P	
	Radiology & Imaging	45	15	30	1	2	1	1	2
	Clinical Reasoning & Evidence Based Practice	30	30	0	2	0	2	0	2

Discipline Specific Elective Courses (DSE)(Minimum one)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max
		Total	L	P	L	P	L	P	
	Occupational and Speech therapy	30	30	0	2	0	2	0	2
	Fundamentals of Physical education	30	30	0	2	0	2	0	
	Ergonomics	30	30	0	2	0	2	0	
Clinical / Others									
	Clinical Education / Training	120	0	120	0	8	0	4	4
	Total hours / credit	570							31

4th year - 8th Semester

Core subjects									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Physiotherapy in Cardio Pulmonary Medicine & Surgery	120	60	60	4	4	4	2	6
	Community & Geriatric Physiotherapy	120	60	60	4	4	4	2	6
	Physiotherapeutics	120	60	60	4	4	4	2	6
	Project	30	30	0	2	0	2	0	2

(**Ability Enhancement/ Skill Enhancement – Compulsory)**									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max
		Total	L	P	L	P	L	P	
	Electro Physiology and Diagnosis	45	15	30	1	2	1	1	2

Discipline Specific Elective Courses (DSE)(Minimum one)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max
		Total	L	P	L	P	L	P	
	Prosthetics & Orthotics	45	15	30	1	2	1	1	2
	Physiotherapy in Veterinary sciences	45	15	30	1	2	1	1	
	Administration, Supervision & Teaching skills	45	15	30	1	2	1	1	
Clinical / Others									
	Clinical Education / Training	120	0	120	0	8	0	4	4
	Total hours / credit	600							28

Supervised Compulsory Rotatory Internship (6 month/180 days) Details of

clinical department training during internship

Sl. No	Department	No of days	Credits
1.	Orthopaedic Physiotherapy	**30 Days**	**Total credit for internship = 42 ***
2.	Sports Physiotherapy	**15 days**	
3.	Neurological Physiotherapy	**30 days**	
4.	Paediatric Physiotherapy	**15 days**	
5.	Cardio Respiratory Physiotherapy	**30 days**	
6.	Community PT & Geriatric Care	**15 days**	
7.	Women's Health Physiotherapy	**15 days**	
8.	Oncology Physiotherapy	**15 days**	
9.	Critical care Physiotherapy (IMCU/ISCU/ICCU)	**15 days**	
	Total	**180 days**	
	*** maximum credit for internship is not exceeding 42***		

Details of credits for Compulsory Rotatory Internship.

Compulsory Rotatory Clinical Internship		
Total days	**Hours per day**	**Total hours of practice**
180 days (6 months)	**7**	**1260**
Details of Credits for internship		
		Total credits
For internship 30 course hours = 1 credit		**42 credits**
Total hours = 1260		
Internship credit = (1260 hours / 30 hours) = 42 credits		

DISTRIBUTION OF MARKS

Semester- I

	SUBJECT WISE DISTRIBUTION OF MARKS						
		Core subjects	Internal assessment	University / College examination			Grand total
SL No	**Paper**	**Subject**		**T**	**V**	**P**	
1.	Paper-I	Human Anatomy - I	50	100	50	--	200
2.	Paper-II	Human Physiology – I	50	100	50	--	200
3.	Paper - III	Sociology	50	50	--	--	100
	Ability Enhancement - AEC (Compulsory)						
4.	Paper-IV	Basics of English	10	40	--	--	50
	Discipline Specific Elective Courses (DSE)/ Generic Elective (GE) (Minimum One)						
5.	Paper-V	Orientation to Physiotherapy and Rehabilitation	10	40	--	--	50
6.	Paper-VI	Personality development & Stress management	10	40	--	--	50
7.	Paper-VII	Team building & Leadership	10	40	--	--	50
	***T= Theory *P = Practical *V = Viva-voce**						

Semester- II

	SUBJECT WISE DISTRIBUTION OF MARKS						
		Core subjects	Internal assessment	University / College examination			Grand total
SL No	**Paper**	**Subject**		**T**	**V**	**P**	
1.	Paper-I	Human Anatomy - II	50	100	50	-	200
2.	Paper-II	Human Physiology - II	50	100	50	-	200
3	Paper-III	Psychology	50	50	--	--	100
	Ability Enhancement - AEC (Compulsory)						
4.	Paper-IV	Environmental Science	25	75	--	--	100
	Discipline Specific Elective Courses (DSE)/ Generic Elective (GE) (Minimum One)						
5.	Paper-V	Medical terminology & Record Keeping	10	40	--	--	50
6.	Paper-VI	Counseling and Guidance	10	40	--	--	50
7.	Paper-VII	Basics of Nursing	10	40	--	--	50
	***T= Theory *P = Practical *V = Viva-voce**						

Semester- III

	SUBJECT WISE DISTRIBUTION OF MARKS						
		Core subjects	Internal assessment	University / College examination			Grand total
SL No	**Paper**	**Subject**		**T**	**V**	**P**	
1.	Paper-I	Biomechanics - I	50	100	--	--	150
2.	Paper-II	Microbiology &Pathology	50	100	--	--	150
3.	Paper-III	Biochemistry & Pharmacology	50	100	--	--	150
	Ability Enhancement - AEC (Compulsory)						
4.	Paper-IV	Communication & Soft Skills	10	40	--	--	50
	Discipline Specific Elective Courses (DSE)/ Generic Elective (GE) (Minimum One)						
5.	Paper-V	Yoga therapy	10	40	--	--	50
6.	Paper-VI	Naturopathy	10	40	--	--	50
7.	Paper-VII	Biomedical waste management	10	40	--	--	50
	***T= Theory *P = Practical *V = Viva-voce**						

Semester- IV

	SUBJECT WISE DISTRIBUTION OF MARKS						
		Core subjects	Internal assessment	University / College examination			Grand total
SL No	**Paper**	**Subject**		**T**	**V**	**P**	
1.	Paper-I	Exercise Therapy - I	50	100	25	75	250
2.	Paper-II	General Medicine , General Surgery & Paediatrics	50	100	--	--	150
3.	Paper- III	Biomechanics - II	50	100	--	--	150
	Ability Enhancement /Skill Enhancement – AEC/SEC (Compulsory)						
4.	Paper-IV	Acupuncture & Acupressure	10	20	--	20	50
5.	Paper –V	Research Methodology & Biostatistics	10	40	--	--	50
6.	Paper - VI	Physiotherapy – Ethics & Law	10	40	--	--	50
	Discipline Specific Elective Courses (DSE)/ Generic Elective (GE) (Minimum One)						
7.	Paper-VII	Public health and Hygiene	10	40	--	--	50
8.	Paper-VIII	Infection Prevention and Control	10	40	--	--	50
9.	Paper-IX	Hospital management	10	40	--	--	50
	***T= Theory *P = Practical *V = Viva-voce**						

Semester- V

	SUBJECT WISE DISTRIBUTION OF MARKS						
		Core subjects	Internal assessment	University / College examination			Grand total
SL No	**Paper**	**Subject**		**T**	**V**	**P**	
1.	Paper-I	Exercise therapy -II	50	100	25	75	250
2.	Paper-II	Electrophysical Agents - I	50	100	25	75	250
3.	Paper-III	Physiotherapy in General Medicine , General Surgery & Paediatrics	50	100	25	75	250
	Ability Enhancement/ Skill Enhancement – AEC/SEC (Compulsory)						
4.	Paper-IV	Basics of Computer & Information science	10	20	--	20	50
	Discipline Specific Elective Courses (DSE)/ Generic Elective (GE) (Minimum One)						
5.	Paper-V	Diet & Nutrition	10	40	--	--	50
6.	Paper-VI	Life style Disorders	10	40	--	--	50
7.	Paper-VII	Fundamentals of Occupational Health	10	40	--	--	50
	***T= Theory *P = Practical *V = Viva-voce**						

Semester- VI

	SUBJECT WISE DISTRIBUTION OF MARKS						
		Core subjects	Internal assessment	University / College examination			Grand total
SL No	**Paper**	**Subject**		**T**	**V**	**P**	
1.	Paper-I	Electrophysical Agents - II	50	100	25	75	250
2.	Paper-II	Clinical Orthopaedics & Traumatology	50	100	50	--	200
3.	Paper-III	Clinical Neurology & Neuro Surgery	50	100	50	--	200
	Ability Enhancement/ Skill Enhancement – AEC/SEC (Compulsory)						
4.	Paper-V	First Aid & Emergency Management	10	20	--	20	50
	Discipline Specific Elective Courses (DSE)/ Generic Elective (GE) (Minimum One)						
5.	Paper-VI	Biofeedback	10	40	--	-	50
6.	Paper-VII	Exercise Physiology	10	40	--	--	50
7.	Paper-VIII	Health and Fitness	10	40	--	--	50
	***T= Theory *P = Practical *V = Viva-voce**						

Semester- VII

	SUBJECT WISE DISTRIBUTION OF MARKS						
		Core subjects	Internal assessment	University / College examination			Grand total
SL No	**Paper**	**Subject**		**T**	**V**	**P**	
1.	Paper-I	Clinical Cardio Pulmonary Medicine & Surgery	50	100	50	--	200
2.	Paper-II	Physiotherapy in Neurology & Neurosurgery	50	100	25	75	250
3.	Paper-III	Physiotherapy in Orthopaedics & Traumatology	50	100	25	75	250
4.	Paper-IV	Community & Geriatric Medicine	50	100	--	--	150
	Ability Enhancement/ Skill Enhancement – AEC/SEC (Compulsory)						
5.	Paper-IV	Radiology & Imaging	10	20	--	20	50
6.	Paper – V	Clinical Reasoning & Evidence Based Practice	10	40	--	--	50
	Discipline Specific Elective Courses (DSE)/ Generic Elective (GE) (Minimum One)						
6.	Paper-VI	Occupational & Speech Therapy	10	40	--	--	50
7.	Paper-VII	Fundamentals of Physical education	10	40	--	--	50
8.	Paper-VIII	Ergonomics	10	40	--	--	50
	***T= Theory *P = Practical *V = Viva-voce**						

Semester- VIII

	SUBJECT WISE DISTRIBUTION OF MARKS						
		Core subjects	Internal assessment	University / College examination			Grand total
SL No	**Paper**	**Subject**		**T**	**V**	**P**	
1.	Paper-I	Physiotherapy in Cardio Pulmonary Medicine & Surgery	50	100	25	75	250
2.	Paper-II	Community & Geriatric Physiotherapy	50	100	25	75	250
3.	Paper-III	Physiotherapeutics	50	100	25	75	250
4.	Paper - IV	Project	50	50	50	--	150
	Ability Enhancement/ Skill Enhancement – AEC/SEC (Compulsory)						
5.	Paper-V	Electrophysiology and Diagnosis	10	20	--	20	50
	Discipline Specific Elective Courses (DSE)/ Generic Elective (GE) (Minimum One)						
6.	Paper-VI	Prosthetics & Orthotics	10	40	--	--	50
7.	Paper-VII	Physiotherapy in Veterinary Sciences	10	40	--	--	50
8.	Paper-VIII	Administration, Supervision And Teaching Skills	10	40	--	--	50
	***T= Theory *P = Practical *V = Viva-voce**						

EXAMINATIONS

COMMENCEMENT OF EXAMINATION

August 1st and Feb 15th

If the dates of commencement of the examination falls on Sundays or declared public holidays, the examination shall begin on the next working day.

ATTENDANCE

A candidate has to secure minimum

1. 80% attendance in theory
2. 80% in Skills training (practical)

for qualifying to appear for the final examination.

No relaxation, whatsoever, will be permissible to this rule under any ground including indisposition etc.

a. No candidate shall be permitted to appear for any one of the parts of Bachelor of Physiotherapy Examination unless he / she has attended the program in the course for the prescribed period in the institution of this University and produces the necessary certificate of study, attendance, satisfactory conduct and progress from the Head of the Institution.
b. A candidate is required to put in minimum 80% of attendance in both theory and practical separately in each course before admission to the examination.
c. A candidate lacking in the prescribed attendance and progress in any one course in theory and practical shall not be permitted for admission to the entire examination in the first appearance.

REGULATIONS FOR CONDONATION OF LACK OF ATTENDANCE.

Condonation of shortage of attendance up to a maximum of 10% prescribed eligible attendance for admission to an examination rests with the discretionary powers of the Vice-Chancellor**.** A candidate lacking in attendance should submit an application in the prescribed form and remit the stipulated fee, 15 days prior to the commencement of theory examination. The Head of the Department and Head of the institution should satisfy themselves on the reasonableness of the candidate's request while forwarding the application with their endorsements to the Controller of Examinations, who would obtain the approval of the Vice-Chancellor for admission of the said candidate to the examination. No application would be considered if it is not forwarded through proper channel.

Application for condonation of lack of attendance shall be taken up for consideration on the following grounds:

1. Any illness afflicting the candidate. (The candidate should submit to the Head of the Institution a Medical Certificate from a registered Medical Practitioner soon after he returns to the Institution after treatment.)
2. Any unforeseen tragedy in the family. (The parent / Guardian should give in writing the reason for the ward's absence to the Head of the Institution).

3. Participation in NCC/NSS and other co-curricular activities representing the Institution or University. (The Head of the Institution should instruct the concerned officers in-charge of the student activities in their institution to endorse the leave)
4. Any other leave the Head of the Institution deems reasonable for condonation.

Format for furnishing details of candidates in whose cases condonation of shortage of attendance has been granted for theory examination

Name of the college: Faculty of Physiotherapy, Vinayaka Mission's Research foundation & deemed University

Academic year for which condonation has been granted for:

S.No	Name of the candidate(s)	Name of the program and Branch	Total No. of working days /hours for the year / semester	Minimum No. of days required for attendance certificate (75%)	No. of days attended by the candidate	Actual shortage of attendance

Requested condonation of attendance in respect of the above candidates as the shortage of attendance is within the condonation limit.

The demand draft for Rs…… being the condonation fee of shortage of attendance, drawn in favour of the Registrar, the Vinayaka Mission's Research foundation – Deemed university, Salem is/are enclosed

Date: Signature of the Principal with college seal

Place: Signature of the Head of the University

Department Seal:

Note:

1. The fee prescribed for condonation of shortage of attendance as specified by the university shall be paid by the student
2. The forms should reach the university at least 15 days before the commencement of respective university examinations.
3. A separate list (Three copies degree wise) showing candidates who have not earned the required attendance and are not eligible for condonation should also be sent at least 15 days before the commencement of examination

SCHEME OF EXAMINATION:

The scheme of the examination is semester wise. The four years course period consists of eight semesters. There shall be two internal assessment examinations in each semester followed by University examination at the end of each semester.

ASSESSMENT

Assessments should be completed by the academic staff, based on the compilation of the student's theoretical &clinical performance throughout the training program. To achieve this, all assessment forms and feedback should be included and evaluated.

INTERNAL ASSESSMENT:

a. A minimum of two written examinations shall be conducted in each course during a semester and the average marks of the best two performances shall be taken into consideration for the award of sessional marks.
b. A minimum of two practical examinations shall be conducted in each course during a semester and an average of two best performances shall be taken into consideration for award of sessional marks.
c. Failed candidates in any course both theory & practical shall be provided an opportunity to improve his/her sessional marks during his/her additional period of study by applying in a prescribed form to the university at the beginning of the additional period of study. A minimum of two theory or practical examinations shall be conducted in each course during the additional period and an average of two best performances shall be taken into consideration for award of internal assessment marks.
d. The internal assessment marks (both in written and practical) should be submitted to the university endorsed by the Principal of the college 15days prior to the commencement of theory examinations.
e. The candidate has to secure 35% out of marks prescribed for the Internal examinations to become eligible for the final examination of the concerned course.

CRITERIA FOR AWARDING INTERNAL MARKS:-

Internal marks will be awarded for a maximum of 50 for all the courses were internal evaluation is applicable

1. Written exam – 20 marks
2. Practical demonstration / Viva – 20 marks
3. Assignment /Record work – 10 marks

Internal marks will be awarded for a maximum of 50 for the project work

1. Written work - 20 marks
2. Viva - 20 marks
3. Participation /Involvement - 10 marks

CRITERIA FOR AWARDING INTERNAL MARKS FOR AEC / SEC/ DSE:-

Internal marks will be awarded for a maximum of 10 marks for all the courses under AEC/SEC/DSE courses except Environmental science. Each course will have two assignments and each assignment will carry 5 marks each.
Internal marks will be awarded for a maximum of 25 marks for Environmental science

1. Written exam – 10 marks
2. Assignment – 10 marks
3. Field work - 5 marks

CONDUCT OF PRACTICAL EXAMINATION

The practical examination shall commence immediately after final theory examination. The practical examination shall be conducted by 2 examiners who are experts in their courses, one of them shall be an internal examiner and one of them shall be an external examiner. The external examiner shall be selected from an available panel of examiner list. The external examiner shall have preferably 3 years teaching experience after MPT from a recognized university and the internal examiner shall have a minimum of 1 years of teaching experience from the respective College of Physiotherapy.
Each practical examination shall be jointly conducted and evaluated by one internal examiner and one external examiner or two external examiners if there are no internal examiners.

DISTRIBUTION OF MARKS IN UNIVERSITY THEORY EXAM

MAX.MARKS : 100	MAX.MARKS : 50
Short Answers - 10 x 3 = 30	Short Answers - 5 x 3 = 15
Essay - 2 x 15 = 30	Essay - 1 x 15 = 15
Short Essays - 8 x 5 = 40	Short Essays - 4 x 5 = 20

MARKS QUALIFYING FOR PASS

50% of marks in theory and practical separately and an overall aggregate of 50% is required.

CBCS COURSES:

The minimum prescribed marks for a pass in a CBCS (AEC/SEC/DSE/GE) subject shall be an aggregate of 50% of the maximum marks prescribed for a course.

CARRY-OVER OF FAILED COURSES

01. A Candidate is permitted to go to second semester if he/she fails in any of the first semester courses.
02. A Candidate is permitted to third semester, only if he/she have passed all his /her I semester courses.
03. A Candidate is permitted to fourth semester only if he/she have passed all his /her II semester courses.
04. A Candidate is permitted to fifth semester only if he/she have passed all his /her III semester courses.
05. A Candidate is permitted to Sixth semester only if he/she have passed all his /her IV semester courses.
06. A Candidate is permitted to seventh semester only if he/she have passed all his /her V semester courses.
07. A Candidate is permitted to eighth semester only if he/she have passed all his /her VI semester courses.
08. A Candidate is permitted to undergo internship only after passing all the courses of eight semesters.

EXEMPTION FROM RE-EXAMINATION IN A COURSE

Candidate who have failed in the examination but obtained pass marks in any course shall be exempted from re-examination in that course.

REVIEW OF ANSWER PAPERS OF FAILED CANDIDATES

There shall be retotalling/revaluation of answer papers of failed candidates in B.P.T. degree examinations on payment of a prescribed fee.

CLASSIFICATION OF PERFORMANCE INCLUDING GRADING SYSTEM

% of marks	Grade point	Letter Grade	Result/ Class Description
95 -100	10	O ++	FIRST CLASS WITH DISTINCTION
90 - 94	9.5	O+	
85 - 89	9	O	
80 - 84	8.5	A++	
70 - 79	8	A+	
60 - 69	7	A	FIRST CLASS
55-59	6	B+	SECOND CLASS
51-54	5.5	B	
50	5	C	PASS
<50	-	F	REAPPEAR
ABSENT	-	AB	

INTERNSHIP

All students of Bachelor of Physiotherapy must undergo a compulsory rotatory internship for a continuous period of 6 months approved by the college after passing all examinations in all courses.

ELIGIBILITY FOR THE AWARD OF DEGREE:

A candidate shall pass in all the courses of all the semesters of the program and complete minimum of 6-month compulsory rotatory internship program to be eligible for the award of Bachelor of Physiotherapy degree.

RANKING

The first two ranks to every UG/PG programme will be decided on the basis of grades of CGPA in the program. In case of a tie, marks % [of core and DE courses only] will be taken into account.

VACATION

The Head of the Institution may declare 45 days of vacation in an academic year to the students without a semester break. The period(s) of vacation can be decided by the Head of the Institution.

MODIFICATION OF REGULATIONS

These regulations shall come into force with effect from the academic year 2019-2020 and are subject to such modifications as may be approved by the Academic Council from time to time.

CURRICULUM OF CORE COURSE

HUMAN ANATOMY –I **I ST SEMESTER**

COURSE DESCRIPTION

This course includes description of all gross anatomical structures with emphasis on bones, joints and muscles of upper limb, , cardiovascular & respiratory system and endocrine glands of human body and thereby gain clear understanding about the structural framework.

Subject Title	: HUMAN ANATOMY- I
Duration	: 1-6 months
Total Hours	: 150 hours
Theory	: 90
Practical	: 60 Hours
Total Hours / Week	: 10 Hours
Method of Assessment	: Written, Oral

COURSE OUTCOME:

At the end of the course, the student will be able to

- Summarize the basic histology & embryology effectively.
- Describe the structures of cardiovascular, respiratory system & endocrine glands appropriately.
- Classify bones, joints & soft tissues precisely.
- Discuss the osteology, myology, neurology & arthrology of upper extremity effectively.

COURSE OUTLINE

1. HISTOLOGY

General Histology, study of the basic tissues of the body;Microscope, Cell, Epithelium, Connective Tissue, Cartilage, Bone, Muscular tissue, Nerve Tissue – Transverse & Longitudinal section, Circulatory system – large sized artery, medium sized artery, large sized vein, lymphoid tissue, Skin and its appendages.

6. EMBRYOLOGY

a) Ovum, Spermatozoa, fertilization and formation of the Germ layers and their derivations.
b) Development of skin, Fascia, blood vessels, lymphatic,
c) Development of bones, axial and appendicular skeleton and muscles,
d) Neural tube, brain vessels and spinal cord,
e) Development of brain and brain stem structures

3. REGIONAL ANATOMY
THORAX:

b) **CARDIO – VASCULARSYSTEM**

Mediastinum: Divisions contents

Pericardium: Thoracic Wall: position, shape and parts of the heart; conducting System; blood Supply and nerve supply of the heart; names of the blood vessels and their distribution in the body – region wise.

b) **RESPIRATORY SYSTEM**

Outline of respiratory passages

Pleura and lungs: position, parts, relations, blood supply and nerve supply; Lungs – emphasize on broncho-pulmonary segments

Diaphragm: Origin, insertion, nerve supply and action, openings in the diaphragm.

Intercostal muscles and Accessory muscles of respiration: Origin, insertion, nerve supply and action.

c) ENDOCRINE GLANDS:

Position, shape, size, function, blood supply and nerve supply of the following glands

: Hypothalamus and pituitary gland, thyroid glands, parathyroid glands, Adrenal glands, pancreatic islets, ovaries and testes, pineal glands, thymus.

4. MUSCULO SKELETAL ANATOMY -(ALL THE TOPICS TO BE TAUGHT IN DETAIL)

a) Anatomical positions of body, axes, planes, common anatomical terminologies (Groove, tuberosity, trochanters etc)
b) Connective tissue classification.
c) Bones- Composition & functions, classification and types according to morphology and development.
d) Joints-definition-classification, structure of fibrous, cartilaginous joints, blood supply and nerve supply of joints.
e) Muscles – origin, insertion, nerve supply and actions
f) Nerves- Parts,Structure,Basic unit,Conduction,Types of nerves, Brachial Plexus and its applied anatomy

g) Upper Extremity :

a. Osteology : Clavicles, 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. Joints : Shoulder girdle, shoulder joint, elbow joints, radio ulnar joint, wrist joint and joints of the hand

d. Arches of hand, skin of the palm and dorsum of hand.

e. Applied anatomy in relation to Upperlimb

RECOMMENDED TEXT BOOKS

1. SNELL [Richard S], Clinical Anatomy for Medical students

2. B.D Chaurasia's Human Anatomy – Regional And Applied; Volume I, II and III.

3. DATTA A.K, Essentials of human Anatomy: Thorax and Abdomen

4. DATTA A.K, Essentials of human Anatomy: Head and Neck

HUMAN PHYSIOLOGY – I I SEMESTER

COURSE DESCRIPTION: This course is designed to give the student an in-depth knowledge of fundamental reactions of living organisms, particularly in the human body. The major topics covered include the following: the Cell; Skin; Blood; Cardiovascular system; Respiratory system; Muscular system & Endocrine system.

Subject Title	: HUMAN PHYSIOLGY I
Duration	: 1-6 months
Total Hours	: 120 Hours
Theory	: 90 Hours
Practical	: 30 Hours
Total Hours / Week	: 8 Hours
Method of Assessment	: Written, Oral

COURSE OUTCOMES

At the end of the course, the students will be able to

- Outline the structure, functions of cell and skin precisely
- Explain about composition and functions of blood, blood groups and blood transfusion effectively
- Explain the structure and functions of cardiovascular system effectively.
- Explain about structure and functions of respiratory system effectively
- Summarize the structure and functions of muscular system effectively.
- Outline the the structure and functions of muscular system effectively

COURSE OUTLINE

I.CELL

1. Basic concept of cell structure, components, functions, transport

II.SKIN

1. Structure, functions, temperature regulation

III. BLOOD

1. Composition and function of blood
2. Red Blood Corpuscles-morphology, formation, normal count, functions, physiological & pathological variation
3. White Blood Corpuscles- morphology, formation, normal count, functions, physiological & pathological variation
4. Blood platelets-Morphology, normal count, formation, function, variation
5. Hemoglobin-Basic chemistry, function, fate of hemoglobin
6. Blood clotting-Definition, clotting factors, theories of clotting
7. Blood group-ABO system, Rh System
8. Blood volume and regulation
9. Blood transfusion

IV.CARDIO VASCULAR SYSTEM

1. Structure and properties of cardiac muscle
2. Cardiac cycle, Conductive system, Electrocardiography
3. Heart sounds
4. Heart rate and regulation
5. Cardiac output and regulation
6. Blood pressure and regulation
7. Regional circulation- coronary, pulmonary, renal, cerebral
8. Effect of exercise in Cardio Vascular System

V.RESPIRATORY SYSTEM

1. Structure and function of respiratory system
2. Mechanics of respiration – Muscles of respiration, Lung & Chest wall compliance, V/Q Ratio, Surfactant
3. Transport of gases- O_2 & CO_2
4. Nervous and Chemical regulation of respiration
5. Hypoxia, Cyanosis, Dyspnea
6. Acid Base Balance
7. Principles of Lung Function Test – Spiro meter, Lung volumes and capacities
8. Artificial respiration
9. Effect of exercise on respiratory system
10. Defense mechanism

VI.MUSCULAR SYSTEM

1. Structure of muscle – Macroscopic & Microscopic (Myofibril, Myoneural junction)
2. Properties of skeletal muscle
3. Cardiac and smooth muscle
4. Chemical process involved in muscle contraction
5. Motor units, Electromyography
6. Effect of exercise on muscular system
7. Exercise metabolism – O_2 debt, respiratory quotient

VII.ENDOCRINE SYSTEM

1. General organization of endocrine glands
2. General metabolism – Carbohydrate, Fat, Protein
3. Physiological action, regulation, disorder of hormones – Adrenal, Pancreatic, Parathyroid , Thyroid.

Recommended text books:

1. *Text book of medical physiology – Guyton Arthur*
2. *Concise medical physiology – Chaudhuri Sujit K.*
3. *Human Physiology – Chatterjee C.C.*
4. *Text book of practical Physiology – Ranade.*

SOCIOLOGY I SEMESTER

COURSE DESCRIPTION: Sociology will introduce student to the basic sociology concepts, principles and social process, 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.

Subject Title	: SOCIOLOGY
Duration	: 1 -6 months
Total Hours	: 45 hours
Theory	: 45 hours
Total Hours / Week	: 3 hours
Method of Assessment	: Written

COURSE OUTCOME:

At the end of the course, the students will be able to

- Describe the scope and importance of sociology to health professionals effectively
- Discuss the role of various socio cultural factors related to health & sickness effectively
- Describe about the various social groups, social change and social problems in relation to sickness & disability effectively

COURSE OUTLINE:

I . INTRODUCTION:

a. Meaning- Definition and scope of sociology
b. Its relation to Anthropology, Psychology, Social Psychology.
c. Methods of Sociological investigations- Case study, social survey, questionnaire, Interview and opinion poll methods.
d. Importance of its study with special reference to Health Care Professionals.

b) Social Factors in Health and disease situations:
   a. Meaning of social factors
   b. Role of social factors in health and illness

II. SOCIALIZATION :

a) Meaning and nature of socialization
b) Primary, Secondary and Anticipatory socialization
c) Agencies of socialization

III. SOCIAL GROUPS :

a) Concepts of social groups, influence of formal and informal groups on health and sickness. The role of primary groups and secondary groups in the hospital and rehabilitation setup.

IV. FAMILY:

a) The family, meaning and definitions.
b) Functions of types of family
c) Changing family patterns
d) Influence of family on the individuals health, family and nutrition, the effects of sickness in the family and psychosomatic disease and their importance to physiotherapy.

V.COMMUNITY :

a) Rural community : Meaning and features –Health hazards of ruralities, health hazards to tribal community.

b) Urban community : Meaning and features- Health hazards of urbanities.

VI. CULTURE AND HEALTH :

a. Concept of Health
b. Concept of Culture
c. Culture and Health
d. Culture and health disorders.

VII. SOCIAL CHANGE :

a. Meaning of social changes.
b. Factors of social changes.
c. Human adaptation and social change
d. Social change and stress.
e. Social change and deviance.
f. Social change and health programme
g. The role of social planning in the improvement of health and rehabilitation.

VIII. SOCIAL PROBLEMS OF DISABLED :

Consequences of the following social problems in relation to sickness and disability, remedies to prevent these problems.

a) Population explosion
b) Poverty and unemployment
c) Beggary
d) Juvenile delinquency
e) Prostitution
f) Alchoholism
g) Problems of women in employment
h) geriatric problems
i) Problems of underprivileged.

IX. SOCIAL SECURITY :

a) Social security and social legislation in relation to the disabled.

X.SOCIAL WORKER :

b) Meaning of Social Work
c) The role of a Medical Social Worker

Recommended Text Books:

1. Sachdeva and Vidyabushan, Introduction to the study of sociology
2. INDRANI T K, Text Books of Sociology for Graduates Nurses and Physiotherapy Students, JP Brothers, New Delhi,10

HUMAN ANATOMY –II **II-SEMESTER**

COURSE DESCRIPTION

This course includes description of all gross anatomical structures with emphasis on description of bones, joints & muscles of lower limb, trunk & pelvis, head & neck and nervous systems and thereby gain clear understanding about the structural framework.

Subject Title	: HUMAN ANATOMY- II
Duration	: 7-12 months
Total Hours	: 150 hours
Theory	: 90
Practical	: 60 Hours
Total Hours / Week	: 10 Hours
Method of Assessment	: Written, Oral

COURSE OUTCOME:

At the end of the course, the students will be able to

- Discuss the osteology, neurology, myology & arthrology of lower extremity effectively.
- Summarize the osteology & myology of trunk and pelvis appropriately.
- Discuss the osteology, neurology, myology and arthrology of mandible & skull along with gross anatomy of eyeball, nose, ear & tongue effectively.
- Describe about central, peripheral and autonomic nervous systems and name its subdivisions effectively.
- Describe the structure, functions and connections of the various parts of brain & spinal cord effectively.
- Outline the basic structure of sensory organs correctly.
- Outline the nature and basis of muscle tone and its anatomical pathways
- Describe the formation, circulation and drainage of Cerebrospinal fluid effectively.
- Describe the blood supply of brain & spinal cord effectively
- List the cranial nerves and describe their anatomy and functions efficiently

COURSE OUTLINE

I. LOWER EXTREMITY

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.
d. Applied anatomy in relation to lower limb

II. TRUNK & 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

III. 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.

IV. NERVOUS SYSTEM

1)

a) Define the subdivisions of the nervous system. Define central, peripheral and autonomic nervous systems and name their subdivisions.
Comprehend the position and form of the spinal cord, its structure and function in terms of neuronal connections.
b) Indicate the position and extent of the spinal cord.
c) Illustrate the principal features shown in a transverse section of the spinal cord.
d) Specify the basic features of a mono and multi-synaptic spinal reflex pathway.
e) Illustrate the white and grey matter, and anterior, lateral and posterior columns of the spinal cord.
f) Mention the origin, termination and position of important ascending and descending tracts, site of crossing of fibers of these tracts, and function of each tract.
g) State the main consequences of spinal cord transection and hemi section, and explain the rationale of cordotomy.
h) Indicate the blood supply and meninges of spinal c

2)

a) Name the subdivision of the brain. Identify and mention the external features of parts of the brain.
b) Mention the internal structure and basic features of parts of the brain–stem and name the nuclei and fiber tract with special emphasis on cranial nerve nuclei.
c) Mention the parts of the cerebellum.
d) Mention the external features and internal structures of the cerebellum and name its various afferent and efferent tracts and their termination.
e) Mention the features of the gross component of the cerebrum and its lobes
f) Mention the location of gyri, sulci, and cortical areas.
g) State association, commissural and projection fibers.
h) Define components of forebrain, including cerebral cortex, insula, olfactory bulb, olfactory tract, uncus, fornix, basal ganglia, thalamus, hypothalamus, internal capsule, corpus callosum etc.
i) Predict the result of damage to internal capsule.
j) Outline sensory and motor pathways
k) Name sensory and motor nerve endings with function
l) Define pyramidal motor system and name its tracts
m) Define upper and lower motor neurons.
n) Name the parts and tracts of the extra pyramidal system and indicate the functions.

3) Outline the basic structure of sensory organs:- Nose, tongue, eye, ear and skin.

4) Briefly outline the nature and basis of muscle tone

Mention the anatomical pathway involved in the production and maintenance of muscle tone.

5)
   a) State the formation, circulation and drainage of CSF.
   b) Define lumbar puncture and cisternal puncture.
   c) State the features of the meninges.
   d) Recognise the difference between extra-dural, sub-dural and Sub-arachnoid haemorrhage.

6)
   a) Outline the arrangement of major blood vessels around the brain and spinal cord.
   b) Mention the arteries forming the Circle of Willis.
   c) Name the branches of major arteries supplying the brain and spinal cord and mention the parts of brain they supply.
   d) Predict the result of blockage or rupture of central deep branches.
   e) Predict the result of occlusion of cerebral arteries.
   f) Predict the result of occlusion of vertebral or basilar arteries.
   g) Mention the connection of dural venous sinuses.
   h) Name the parts of the limbic system. Mention their function in emotion and behaviour.

7)
   a) Mention the position and structure of the autonomic nervous sytem.
   b) Mention the site of origin and termination of the pre-ganglionic and post-ganglionic sympathetic and parasympathetic fibres.
   c) Name the sympathetic and parasympathetic ganglia.
   d) Summarise the functional difference between the sympathetic and parasympathetic system.

8)
   a) Enumerate the cranial nerves in serial order.
   b) Mention the nuclei of origin & termination and indicate the site of attachment to brain / brain stem.
   c) Explain the general distribution of the cranial nerves and the course of the VIIth nerve.
   d) Predict the result of injury to cranial nerves.

9]
   a). Anatomy of spinal cord – review.
   b) Name the group of spinal nerves.
   c) Explain the formation and branches of the spinal nerves and Distribution of anterior and posterior rami.
   d) Locate & name the plexuses of nerves.
   e) Indicate the course and distribution of branches of the plexuses & nerves.

RECOMMENDED TEXT BOOKS

1. SNELL [Richard S], Clinical Anatomy for Medical students
2. B.D Chaurasia's Human Anatomy – Regional And Applied; Volume I, II and III.
3. DATTA A.K, Essentials of human Anatomy: Thorax and Abdomen
4. DATTA A.K, Essentials of human Anatomy: Head and Neck

HUMAN PHYSIOLOGY – II II SEMESTER

COURSE DESCRIPTION: This course is designed to give the student an in-depth knowledge of fundamental reactions of living organisms, particularly in the human body. The major topics covered include the following: Digestive system; Excretory system; Nervous system; Reproductive system; Special senses and Applied physiology

Subject Title	: HUMAN PHYSIOLGY II
Duration	: 7-12 months
Total Hours	: 120 Hours
Theory	: 60 Hours
Practical	: 60 Hours
Total Hours / Week	: 8 Hours
Method of Assessment	: Written, Oral

COURSE OUTCOME:

At the end of the course, the students will be able to

- Explain about the structure and functions of gastrointestinal system effectively
- Outline the structure and functions of kidney and nephron & explain about micturation effectively
- Discuss about the structure , function and properties of nervous system and pain pathway effectively
- Discuss about the structure and functions of male and female reproductive system and describe about spermatogenesis, oogenesis ,menstrual cycle effectively
- Outline the structure and function of the special senses like vision, hearing , olfaction and taste effectively
- Describe the applied physiology in relation to cardiovascular, nervous system, muscles and respiratory system effectively

I.DIGESTIVE SYSTEM

1. Structure and function of Gastro intestinal system
2. Mastication and Deglutition
3 Saliva – composition, function, regulation
4 Gastric secretions – composition, phases of secretion, function
5 Pancreatic secretions – composition, function, regulation
6 Bile – composition and function
7 Movements of small and large intestine
8 Digestion in mouth, stomach, intestine
9. Defecation
10. Digestion, Absorption and metabolism of carbohydrates
11. Digestion, absorption and metabolisms of Fats
12. Digestion, Absorption and metabolism of proteins
13. Vitamins – Sources, functions and requirements
14. Balanced diet in different age groups and occupation

II.EXCRETORY SYSTEM

1. Structure and functions of kidney
2. Structure and functions of nephron
3. Formation of urine – Filtration, Reabsorption, Secretion
4. Micturation

III.NERVOUS SYSTEM

1. General organization of nervous system
2. Structure, type and function of neuron
3. Properties of neurons
4. Synapse and synaptic transmission
5. Neurotransmitters
6. Reflex – Proprieties and types
7. Sensory – Receptors, sensory pathway, pain pathway, referred pain, modulation of pain
8. Motor – Basal ganglia, Cerebellum, Cortex –Function & Effect of lesion
9. Ascending and descending pathway
10. Posture and Equilibrium
11. Muscle tone
12. Autonomic nervous system – organization, function of Sympathetic & Para sympathetic nervous system
13. Cerebro spinal fluid – composition, formation, circulation, function
14. Lower motor neuron & Upper motor neuron lesions

IV.REPRODUCTIVE SYSTEM

1. Male reproductive system
2. Female reproductive system
3. Pregnancy, function of placenta, parturition, lactation, contraception
4. Puberty and Menopause
5. Spermatogenesis and Oogenesis
6. Menstrual cycle

V.SPECIAL SENSES

1. Vision – rods and cones, retina and its function, visual pathway
2. Hearing – organ of corti, auditory pathway
3. Olfaction
4. Taste – taste buds

VI.APPLIED PHYSIOLOGY

A.THE HEART AND CIRCULATION

1. Structure and properties of heart muscles
2. The action of the heart
3. Determinants of cardiac performance
4. Normal Electrocardiography
5. Maintenance of blood pressure
6. Cardiac arrest and heart failure
7. Outline of lymphatic circulation & pulmonary circulation
8. Cardiovascular compensation for postural and gravitational changes
9. Hypertension
10. Edema
11. Central and peripheral venous pressure.

B. NERVOUS SYSTEM AND MUSCLES

1. Outline the structure and function of the central nervous system
2. Autonomic nervous system
3. Type of nerve cells, electrical phenomena in nerve cells
4. Properties of mixed nerves.
5. Reflex action, reciprocal innervation.
6. Degeneration and regeneration of nerves
7. Control of posture
8. Outline of voluntary movement
9. Cutaneous, deep and superficial sensation
10. Synaptic transmission
11. Properties of muscles, contractile responses, types of contraction, electrical phenomena and tonic reflexes

C. RESPIRATION

1. Mechanics of respiration.
2. Breath sounds
3. Properties of gases
4. Exchange of gases
5. Gas tension in air, sea level, tracheal air, cellular air, mixed air, plasma, arterial blood and mixed venous blood.
6. Lung volume
7. Magnitude of dead space
8. Control of bronchial smooth muscle
9. Lung compliance
10. Nervous control of respiration
11. Chemical control of respiration
12. Voluntary control of respiration
13. Oxygen and carbon dioxide transport
14. Acid base reactions in blood.
15. Effects of exercise on respiration
16. Artificial respiration

Recommended text books:

1. Text book of medical physiology – Guyton Arthur
2. Concise medical physiology – Chaudhuri Sujit K.
3. Human Physiology – Chatterjee C.C.
4. Text book of practical Physiology – Ranade.

PSYCHOLOGY - II SEMESTER

COURSE DESCRIPTION:

This course involves the study of various behavioral 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 this subject will help the student to understand their clients while assessment and while planning appropriate treatment methods.

Subject Title	: PSYCHOLOGY
Duration	: 7 -12 months
Total Hours	: 45 hours
Theory	: 45 Hours
Total Hours / Week	: 3 hours
Method of Assessment	: Written

COURSE OUTCOME:

At the end of the course, the students will be able to

- Describe the scope and importance of psychology to health professionals effectively
- Describe the basic principles of human behavior like motivation, frustration, intelligence, thinking, hearing , personality & leadership effectively
- Discuss the role of heredity & environment in physical and psychological development in various stages in life elaborately

COURSE OUTLINE

I. INTRODUCTION TO PSYCHOLOGY

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

II.GROWTH AND DEVELOPMENT

a) Life span: different stages of development (Infancy, childhood, adolescence, adulthood, middle age, old age).
b) Heredity and environment: role of heredity and environment in physical and psychological development, ―Nature v/s Nurture controversy.

III. SENSATION, ATTENTION AND PERCEPTION

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

IV. MOTIVATION

i. Motivation cycle (need, drive, incentive, reward).
ii. Classification of motives.
iii. Abraham Maslow's theory of need hierarchy

V. FRUSTRATION AND CONFLICT

i. Frustration: sources of frustration.
ii. Conflict: types of conflict.
iii. Management of frustration and conflict

VI. EMOTIONS

i) Three levels of analysis of emotion (physiological level, subjective state, and overt behavior.
ii) Theories of emotion
iii) Stress and management of stress.

VII. INTELLIGENCE

i) Theories of intelligence.
ii) Distribution of intelligence.
iii) Assessment of intelligence

VIII. THINKING

i) Reasoning : deductive and inductive reasoning
ii) Problem solving: rules in problem solving (algorithm and heuristic)
iii) Creative thinking: steps in creative thinking, traits of creative people

IX. LEARNING

i) Factors effecting learning.
ii) Theories of learning: trial and error learning, classical conditioning, Operant conditioning, insight learning, social learning theory.
iii) 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.

X. PERSONALITY

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

XI. SOCIAL PSYCHOLOGY

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

Recommended text books:

1. Feldman.R.H(1996). Understanding Psychology.
2. Morgan et al(2003). Introduction to Psychology.
3. Lefton( ). Psychology. Boston.
4. Mangal, S.K (2002). Advanced Educational Psychology.
5. Atkinson(1996). Dictionary of Psychology.

1 BIOMECHANICS – I III SEMESTER

COURSE DESCRIPTION

This course supplements the knowledge of anatomy and enables the student to have a better understanding of the principles of biomechanics and their application in musculo skeletal function and dysfunction

Subject Title	: BIOMECHANICS –I
Duration	: 13-18 months
Total Hours	: 120 Hours
Theory	: 90 Hours
Practical	: 30 Hours
Total Hours / Week	: 8 Hours
Method of Assessment	: Written

COURSE OUTCOME:

At the end of the course the students will be able to

- Define the basic concepts of bio- mechanics involved in human joint motions efficiently.
- Explain the mechanical principles involved in joint motions effectively.
- Describe the structure and function of vertebral column and upper limb joints effectively.
- Describe the stability and mobility of joints effectively.
- Describe the effects of injury and diseases in vertebral column and upper limb joints appropriately.

COURSE OUTLINE

I.MECHANICS

1. Describe types of motion, planes of motion, direction of motion and quantity of motion.

2. Define forces, force vectors, components of forces.

3. Describe gravity, segmental centers of gravity, centre of gravity, and line of gravity of the human body, stability and centre of gravity, relocation of the centre of gravity.

4. Describe the reaction forces, Newton law of reaction.

5. Describe equilibrium-law of inertia and establishing equilibrium of an object

6. Describe objects in motion: law of acceleration joint distraction in a linear force system and force of friction.

7. Describe concurrent force system: composition of force, muscle action lines, total muscle force vector, divergent muscle pulls, and anatomical pulleys.

8. Describe parallel force systems: first class lever, second class lever, third class lever –torque – mechanical advantage.

9. Define moment arm: moment arm of a muscle force, moment arm of gravity and anatomical pulleys

10**.** Describe equilibrium of

II.JOINT STRUCTURE AND FUNCTION

1. Describe the basic principles of joint design and a human joint
2. Describe the tissue present in human joints: including dense fibrous tissue, bone,Cartilage and connective tissue.
3. Classify joints – synarthrosis, amphiarthrosis, diarthrosis, and sub classification ofsynovial joints
4. Describe joint function, kinematics chains, range of motion
5. Describe the general effects of injury and disease
6. Closed kinematic chain versus open kinematic chain
7. Hyaline cartilage and fibro cartilage.

III.MUSCLE STRUCTURE AND FUNCTION

1. Describe mobility and stability functions of muscle.
2. Describe elements of muscle structure- composition of muscle fiber, motor unit, types of muscle fiber, muscle fiber size, arrangement and number, muscle tension, length –tension relationship.
3. Active and passive insufficiency
4. Describe types of muscle contraction, speed, angular velocity, and applied load, voluntary control, torque, isokinetic exercise
5. Factors affecting muscle tension
6. Active and passive tension
7. Concentric, eccentric, isometric contraction
8. Classify muscle – spurt and shunt muscle, tonic and phasic muscle
9. Agonist, antagonist and synergist
10. Factors affecting muscle function: type of joint and location of muscle attachments,Number of joints, sensory receptors

IV.THE VERTEBRAL COLUMN

1. Articulations, ligaments, muscles, typical vertebrae and intervertebral disc
2. Factors affecting stability and mobility
3. Structure and function of cervical, thoracic, lumbar and sacral vertebrae
4. Describe muscles of the vertebral column – flexors, extensors, rotators, lateral flexors
5. Describe the effect of injury and developmental defects
6**.**Lumbar – pelvic rhythm, Motions of the vertebral column

V.THE SHOULDER COMPLEX

1. Describe the structural components of the shoulder complex including the articulatingsurfaces, capsular attachment, ligaments, movements of the joints- Sternoclavicular, Acromioclavicular, Scapulothoracic, Glenohumeral
2. Describe the function of the shoulder complex including dynamic stability of theglenohumeral joint, scapulothoracic contributions
3 Describe the muscles of elevation (deltoid, supraspinatus, infraspinatus, teres minor,Subscapularis, upper trapezius, lower trapezius, serratus anterior, middle trapezius andRhomboids)
4. Describe the muscles of depression
5.Scapulohumeral rhythm, Coracoacromial arch

VI.THE ELBOW COMPLEX

1. Describe the structure of the humeroulnar, humeroradial including articulating surfaces, Joint capsule, ligaments, muscles
2. Describe the function of humeroulnar and humeroradial joints including the axis ofmotion, range of motion, muscle action
3. Describe the structure and function of superior and inferior radioulnar joint
4. Describe the stability and mobility of the elbow complex
5. Carrying angle
6. Factors limiting range of motion in flexion,extension, supination &pronation

VII.THE WRIST AND HAND COMPLEX

1. Describe the structure of wrist complex including radio carpal joint, mid carpal joint, andthe ligaments of the wrist complex.
2. Describe the function of the radio carpal joint and mid carpal joint including themovements and muscles involved
3. Describe the hand complex including structure of fingers – CarpoMeta carpal joint, Metacarpo phalangeal joint and inter phalangeal joints of fingers,Ligaments, range of motion
4. Describe the structure of the joints of thumb
5. Describe the extrinsic and intrinsic thumb muscles
6. Describe prehension, power, cylindrical, spherical and hook grip
7. Describe precision handling – pad to pad, tip top tip, pad to side prehension
8. Functional position of the wrist
9. Role of interossei and lumbricals muscles at the Metacarpo phalangeal joint and inter phalangeal joints .

Recommended Books

1. Physiology of Joints – Kapandji Vol I,II,III
2. Joint structure and Function - Cynthia Norkin

BIOCHEMISTRY AND PHARMACOLOGY III SEMESTER

COURSE DESCRIPTION

This course gives an outline about the various biochemical events of the body and composition and effects of various drugs in our human body.

Subject Title	: BIOCHEMISTRY AND PHARMACOLOGY
Duration	: 13-18 Months
Total Hours	: 90 Hours
Theory	: (45+45) Hours
Total Hours / Week	:(3+3) Hours
Method of Assessment	: Written

BIOCHEMISTRY

COURSE OUTCOME:

At the end of the course the students will be able to

- Describe the structure and functions of cell effectively.
- Describe normal functions of different components of food effectively.
- Describe about nucleic acids, enzymes, acid base balance, hormones and connective tissue effectively
- Explain the biochemical aspects of muscle contraction effectively.
- Explain the clinical aspects of biochemistry effectively.

COURSE OUTLINE

1. CELL BIOLOGY

i. Membrane, structure & function:
ii. Junction of intracellular organelle in brief

2. CARBOHYDRATES

i. Chemistry-definition, classification with example;
ii. Functions of carbohydrates with mucopolysaccarhides
iii Reducing properties of sugar -clinical & diagnostic importance (e.g. Benedict's test, Banfood's test etc)
iv. Metabolism – Digestion & absorption of carbohydrates-Glycolysis - aerobic, anaerobic, Energetics & regulation;
v. Kreb's cycle-its energetics & regulation- role of Tri carboxylic acid cycle.
vi. Glycogenesis, glycogenolysis& their regulation – role of liver in muscle glycogen. Gluconeogenesis - significance of Hexose Mono Phosphate shunt
vii. Hormonal regulation of blood sugar levels - important metabolic disorders of glycogen, lactose intolerance, Diabetes mellitus

3. **PROTEINS**

i. Chemistry - definition – function – classification of amino acids, protein structure – effect of temperature on proteins - denaturation – coagulation; isoelectric pH & its importance;
ii. Metabolism – Digestion & absorption – Decarboxylation – Deamination – Transmethylation – transamination & their importance – Detoxification of ammonia including urea cycle;
iii. Special products of amino acid – e.g. Phenylalanine glycine, methionine
iv. Neuro-transmitters

4. LIPIDS

i. Chemistry- definition- classification- (including fatty acids with example) – function
ii. Metabolism – digestion & absorption of lipids –
B-oxidation- of saturated fatty acids & formation & utilization –cholestrol& its importance (no biosynthesis needed)
iii. Fate of acetyl – Co-enzyme A
a. Cholesterol biosynthesis
b. Ketogenesis
c. Fatty acids biosynthesis
d. Neuro-transmitters
iv. Fate of Glycerol
a. Gluconeogenesis
b. Energy (glycolsis)
c.Triglycerides
d.Phospholipid synthesis

5. NUCLEIC ACIDS

i. D.N.A/R.N.A – Definition – structure & function – types – genetic code – catabolism of purine - gout

6. ENZYMES

i. Definition – Co- Enzymes –classifications
ii. General metabolism of enzymes
iii. Inhibition & types of inhibitors
iv. Iso-enzymes;
v. Clinical & therapeutic use of enzymes

7. VITAMINS

i. Water & Fat soluble – definition – classification;
ii. Individual vitamins – sources – Co-enzymes forms – function –reaction Related to metabolism covered
iii. Recommended daily allowance, absorption & transport – deficiency & toxicity

8. BIOLOGICAL OXIDATION

i. Oxidative phosphorylation & Electron transport chain

9. MINERALS

i. Phosphate, calcium & iron (in details)

ii. Magnesium, fluoride, Zinc, Copper, selenium Molybdenum, iodine- sources, recommended daily allowance,absorption, transport – excretion function & disorder.

10. ACID-BASE BALANCE, WATER & ELECTROLYTE

i. Body water, Ph-osmolarity, Extra & Intra cellular fluid

ii. Buffers-Ph, buffers system in blood

iii. Role of kidneys & lungs in acid-base balance

iv. Water-electrolyte balance - imbalance-dehydration

11. HORMONES

i Definition-classification-mechanism & action

ii Second messenger (Ca, EAMP, inositol phosphate)

iii Metabolic effects of

a. Insulin, b. Glucagon, c. Catecholamines, d. Thyroxine

e. Mineralocorticoids, f.Glucocorticoids

12. MUSCLE CONTRACTION

i. Contractile elements

ii. Biochemical events during contraction

iii. Energy metabolism in skeletal & cardiac muscle

13. CONNECTIVE TISSUE

i. Biochemistry of connective tissue – collagen – Glyco protein – Proteoglycans

14. NUTRITION

i. Importance of nutrition-Calorimetry-energy value-calorimeter-respiratory quotient & its significance

ii. Basal metabolic rate – definition – normal values – factors affecting BMR.

iii. Energy requirement – with- age/sex/thermogenesis/ -specific dynamic action of food – energy expenditure of various activities.

iv. Composition of food, balanced diet, dietary recommendations nutritional supplementations - nutritional value of carbohydrates/proteins/fats &fibres.

v. Nitrogen balance & its significance – Protein energy malnutrition – Kwashiorkor & Marasmus

15. CLINICAL BIOCHEMISTRY

i. Liver function test & Renal function test

ii. Relevance of blood levels of glucose, urea, Creatinine Phosphate & uric acid

iii. Enzymes-amylase, Creatinine PhosphoKinase, isoenzymes

iv. Lipid profileTri-glyceride, cholesterol / High density lipoprotein /Low density lipoprotein

v. Protein & Aggression

vi. Glycosuria

Recommended Books

1. Biochemistry by Lippincott.

2. Illustrated Biochemistry by Harper

PHARMACOLOGY III SEMESTER

COURSE OUTCOME

At the end of the course the students will be able to:

- Define basic terminologies of pharmacology efficiently.
- List out the drugs acting on Respiratory system and Gastrointestinal tract precisely.
- Describe the action of different category of drugs in human body and their usage in different clinical situations effectively.

COURSE OUTLINE:

1.**INTRODUCTION TO PHARMACOLOGY**

Terminology – Agonist – Antagonist, Pharmacokinetics, Pharmacodynamics, Pharmacotherapeutics, Toxicology Drug –Receptor interaction – Association – Dissociation constants, routes of administration-Absorption-Distribution – Termination of action.

2**. AUTONOMIC PHARMACOLOGY**

Neurotransmitters, Acetycholine, sites of action – Epinephrine, Nor epinephrine – Cholinergic blockers of muscarinic and nicotinic function – Belladonna alkaloids , synthetic substitutes, adrenergic blockers, both alpha and beta blockers and blockade.

3. **CARDIOVASCULAR PHARMACOLOGY**

Congestive Cardiac failure – glycosides – Angina and Antianginal agents – Antihypertensive – Diuretics - beta blockers calcium channel blockers, Angiotensionconverting enzyme – inhibitors – Peripheral vascular diseases and vasodialators – Cardiac anti-arrythmic agents.

4. **BLOOD DISORDERS**

Anemia, iron deficiency anemic, iron substitute as therapeutic tool –Megaloblastic anemia – cyanocobalamine – shock – plasma substitutes, plasma expanders vasoconstrictors – coagulants and anticoagulants – heparin and coumarins.

5. NEUROPHARMACOLOGY

Sedatives and Hypnotics, barbiturates and their antagonists –Narcotic analgesics – Opioids – Dangers of addictions

6. BEHAVIORAL PHARMACOLOGY AND PSYCHOPHARMACOLOGY

Anxiety states, Anti-anxiety drugs – benzodiazepines – Diazepam congeners – Mood disorders and depressed states – antidepressants Lithium - Psychodysleptics and their dangers in misuse among student population.

7. MOVEMENT DISORDERS

Parkinsonism – Characteristics of disease, tremor, rigidity – chemotherapy, Epilepsies –types – drug management of disease – spastic disease – drug treatment of acute muscle spasms

8. INFLAMMATORY DISEASE

Antinflammatory agents – Analgesics – Nonsteroidal anti-inflammatory agents – Aspirin, paracetamol, indomethacin, diclofenac, piroxicam, mefenamic acid, Prevention role of superficial and topical remedies in induction of analgesia .

9. ENDOCRINE DISORDERS

Thyroid – hypo and hyperthyroidism, diabetes and insulin - oral hypoglycemic agents, gonadal hormones – oral contraceptives – role of glucocorticoidsin arthritic conditions – dangers of prolonged use of steroidal agents, glucocorticoids, prednisolone, dexamethasone, betamethasone, beclomethasone

10. CHEMOTHERAPY

Bacterial infections – drugs against micro organism – sulfonamides, antibiotics, floxacins – parasitic infections malaria, amoebae, filariasis – flagellates – Respiratory Pharmacology use of broncho dilator – airway clearance – cancers – antibiotics, anti metabolites, irradiation – radioactive materials in cancers

11. **DRUGS ACTING ON RESPIRATORY SYSTEM**

12. **DRUGS IN GASTRO INTESTINAL TRACT**

Gastro intestinal pharmacology, hyperacidity, anti diarrhoea, purgative.

Recommended books

1. Essentials Of Medical pharmacology By KD Tripathi.
2. Pharmacology for Physiotherapy Students by Padmaja Udaykumar

MICROBIOLOGY AND PATHOLOGY (90 HOURS) III SEMESTER

COURSE DESCRIPTION

This course describes the nature of different microorganisms and their role in causing diseases in human beings and the basic pathological concepts and the patho physiology of various disorders affecting the human beings

Subject Title	: MICROBIOLGY AND PATHOLOGY
Duration	: 13-18 months
Total Hours	: 90 Hours
Theory	: (45+45) Hours
Total Hours / Week	: (3+3)Hours
Method of Assessment	: Written

MICROBIOLOGY (45 HOURS)

COURSE OUTCOME:

At the end of the course the students will be able to:

- Define microbiology and classify the microorganisms efficiently.
- Describe the nature of different microorganisms effectively.
- Describe the role of microorganisms in causing diseases in human beings effectively.
- Describe about infection & immunity and procedures involved to prevent infection and to improve immunity

COURSE OUTLINE

I. Introduction and history of microbiology

II. Micro-organisms:Classification, Shape and arrangement, Special characteristics – spores, capsules, enzymes, motility, reproduction

III. Disinfection and antiseptics

IV. Sterilization and asepsis

V. Antibacterial agents including susceptibility test

VI. Infection – Source of infection, Portals of entry, spread of infection.

VII. Non – Specific immunity.

VIII .Immunity – Natural and acquired,Agglutination,Elisa,Precipitation

IX. Allergy and hypersensitivity

X. Outline the common pathogenic bacteria, the diseases produced by them, treatment and the prevention of Respiratory tract infections, Meningitis, Enteric infections, anaerobic infections, Urinary tract infections, Leprosy, tuberculosis and miscellaneous infections,Wound infections, Sexually transmitted diseases, Hospital acquired infections.

XI. Pathogenic yeasts and fungi

XII. Virology: Virus infections - Hepatitis, Poliomyelitis & Rabies, HIV

XIII .Mycology ;Dermatology, Herpes Virus, Pencillium, Cryptococcus Aspergillus

Recommended books

1. Textbook of Microbiology. C.P. Baveja
2. Microbiology for Physiotherapy Students by B S Nagoba

PATHOLOGY (45 HOURS) III SEMESTER

COURSE OUTCOME:

At the end of the course the students will be able to

- Define and describe the basic pathological concepts effectively.
- Describe the process of inflammation and repair effectively.
- Describe the pathophysiology of various disorders affecting the human beings effectively.

COURSE OUTLINE

1. INTRODUCTION

General pathology – cell injury, causes

Reversible injury – Types, morphology, swelling, hyaline, fatty change

Irreversible injury – Types of necrosis, apoptosis, calcification, dystrophic,

Metastasis

Concepts of disease

2. INFLAMMATION AND REPAIR

Acute inflammation – causes, features, examples

Inflammatory cell and mediators

Chronic inflammation – causes, features, examples

Wound healing

Regeneration and repair.

2.**CIRCULATORY DISTURBANCE**

Edema
Chronic venous congestion

Thrombosis

Embolism

Infarction

Gangrene

Shock

4. GROWTH DISTURBANCE

Atrophy

Neoplasia – benign & malignant

5. SPECIFIC PATHOLOGY

a) Cardio vascular system – Atherosclerosis, IschaemicHeart Diseases, Myocardial Infarction, Hypertension, Congestive Cardiac Failure, Rheumatic heart diseases, Peripheral vascular diseases.

b) Respiratory system – Chronic Obstructive Pulmonary diseases, Pneumonia: lobar and broncho pneumonia, Tuberculosis: primary& secondary,Atelectasis, Asthma

c) Skin – leprosy

d) Nervous System – CerebroVascular Accident, Poliomyelitis, Parkinsonism, myasthenia gravis

c) Bone and joint –Osteoarthritis, rheumatoid arthritis, osteomyelitis, autoimmune disease, spondylosis,Osteomalacia, Gout, Tenosynovitis,
AnkylosingSpondylosis

e) Muscle – Muscular Dystrophy, Myopathies, Polymyositis

Recommended books

1. Essential Pathology for Physiotherapy Students – Harsh Mohan
2. Textbook of Pathology – Harsh Mohan

GENERAL MEDICINE, GENERAL SURGERY & PAEDIATRICS IV SEMESTER

COURSE DESCRIPTION

This course will provide a general understanding of the medical, surgical and paediatric conditions the therapist would encounter in their practice.

Subject Title	: GENERAL MEDICINE / SURGERY/PAEDIATRICS
Duration	: 19-24 Months
Total Hours	: 120 HOURS
Theory	: 90 HOURS
Practical	:30 HOURS
Total Hours / Week	: 8 HOURS
Method of assessment	: Written

COURSE OUTCOME:

At the end of the course, the students will be able to

- Describe the etiopathological changes, clinical features and medical management of general diseases & paediatric condition effectively.
- Outline the various incisions of general surgery effectively.
- Outline the post operative complications of general surgery effectively.
- Define burns & outline the classification of burns & clinical findings, complications, management, deformities due to burns & plastic surgery procedure in the management of burns effectively.
- Discuss the anatomy & physiology of reproductive organs effectively.
- Outline the minor & major complications of pregnancy effectively.
- Outline the complications of labor, puerperium, episiotomy, forced induction, caesarean effectively.
- Outline the disorder of menstrual cycle, displacement of uterus, stress incontinence, pelvic inflammatory disease, pre & post - operative care of most common operations D & C Hysterectomy effectively.

COURSE OUTLINE:

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. Obstetrics & Gynaecology: Anatomy and physiology of the female reproductive organs. Puberty dynamics, Physiology of menstrual cycle, Hormonal disorders of females, Pregnancy – Diagnosis, Abortion, Physiological changes during pregnancy, Importance of antenatal care exercises, High risk pregnancy, prenatal common complications – investigation and management, Child birth complications, investigation and management, Normal puerperium, lactation and importance of post-natal exercises, Family planning.Medical termination of pregnancy, Infection of female genital tract including sexually transmitted diseases, low backache, Prolapse of uterus and vagina
Principle of common gynaecological operations – hysterectomy, D&C, D&E, Pop smear

Menopause: Its effect on emotions and musculoskeletal system, Urogenital dysfunction – pre and post-natal condition, Surgical procedures involving child birth -Definition, Indications and Management of the following surgical procedures – pelvic repair, caesarian section, nephrectomy, Hysterosalphyngography, Dilatation and Curettage, Laproscopy, Colposopy, Hysterectomy,Carcinoma of female reproductive organs – surgical management in brief Mastectomy – Simple, radical., Hysterectomy, Incontinence – Types, Causes, Assessment and Management.

Recommended Textbooks

1. Medicine for students - Golwala
2. Principles of Internal medicine – Harrison
3. Textbook of Medicine - Davidson

GENERAL SURGERY

1. Wound healing – basic process involved in wound repair, basic phases in the healing process, 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.
2. 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.
3. 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.
4. Surgical Oncology – Cancer – definition, types, clinical manifestations of cancer, Staging of Cancer, surgical procedures involved in the management of cancer.

5. Disorders of the Chest Wall, Lung and Mediastinum

6. Definition, Indication, Incision, Physiological changes and Complications following Common operations like Cholecystectomy, Colostomy, Ileostomy, Gastrectomy, Hernias, Appendicectomy Mastectomy, Neprectomy, Prostectomy.

7. 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.

Recommended Textbooks

1. A Concise textbook of Surgery - Das
2. Short practice of Surgery – Bailey & Love
3. Cash Textbook of General Medicine & Surgery

PEDIATRICS

1. Problems and management of Low birth weight infants,
2. Perinatal problems and management,
3. Congenital abnormalities and management,
4. Respiratory conditions of childhood,
5. Cerebral Palsy – causes, complications, clinical manifestations, treatment ;
6. Spina Bifida – management and treatment,
7. Epilepsies – types, diagnosis and treatment;
8. Recognizing developmental delay, common causes of delay ;
9. Orthopedic and Neuromuscular disorders in childhood, clinical features and management;
10. Sensory disorders – problems resulting from loss of vision and hearing;
11. Learning and behavioural problems – Hyperactivity, Autism, Challenging behaviours, Educational delay, The Clumsy Child.
12. Neural development, Etiology, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders.

    a. Cerebral palsy,
    b. Hydrocephalus,
    c. Arnold-chiari malformation,
    d. Basilar impression,
    e. Klippel-Feil syndrome,
    f. Achondroplacia,
    g. Cerebral malformations,
    h. Autism,
    i. Dandy walker syndrome and Down's syndrome.

Recommended Textbooks

1. Essential Paediatrics - Ghai
2. Nelson's textbook of Paediatrics

EXERCISE THERAPY –I IV SEMESTER

COURSE DESCRIPTION

In this course the student will learn the principles, technique and effect of exercise as a therapeutic modality in the restoration of physical function. It will introduce to the student the physical, physiological and mechanical basis of exercise, various starting positions for exercise, Active & passive movements, Strengthening & Stretching exercises, Basis of posture & Gait and their assessment, use of walking aids, Relaxation procedures, Breathing exercises and complications of bed rest.

Subject Title	: EXERCISE THERAPY - I
Duration	: 19-24 months
Total Hours	: 120 hours
Theory	: 60 hours
Practical	: 60 Hours
Total Hours / Week	: 8 Hours
Method of Assessment	: Written, Oral, Practical

COURSE OUTCOME:

At the end of the course the students will be able to

- Explain the principles of therapeutic exercises effectively.
- Demonstrate starting & derived positions in the student model precisely.
- Demonstrate minimum of 5 active & passive movements for various joints in the student model precisely.
- Demonstrate resisted exercises & breathing exercises in the student model precisely.
- Demonstrate minimum of 5 stretching exercises of various muscles in the student model precisely.
- Identify the posture & gait abnormalities in patients precisely.
- Demonstrate the use of walking aids themselves precisely.
- Demonstrate various relaxation methods in the student model precisely.

COURSE OUTLINE

I. INTRODUCTION TO EXERCISE THERAPY

1. Introduction
2. Effect of therapeutic execise
3.Types of muscular contraction - Isotonic, Isometric, Isokinetic, Concentric, Eccentric
4.Group muscle action - Agonist, Antagonist, Synergists or Neutralizer, Stabilizer or Fixator
5.Range of muscle work - Full range, Inner range, Middle range, Outer range
6. Physiological changes during exercises – changes in cardiovascular system, respiratory system, blood cell and endocrine system
7. Anthropometric Measurements: Muscle girth – biceps, triceps, forearm, quadriceps, calf
8. Static power Test, Dynamic power Test, Endurance test, Speed test
9.Measurement of Limb Length: true limb length, apparent limb length, segmental limb length
10. Examination of reflexes - superficial & deep tendon reflexes – maxillary, biceps, triceps, brachioradialis, knee & ankle jerk.

II. MECHANICS OF MOVEMENT

1. Anatomical Movement- Flexion, Extension, Abduction, Adduction, Medial rotation, Lateral rotation, Circumduction, Inversion, Eversion, Dorsi flexion, plantarflexion, Protraction,Retraction, Supination, Pronation, Elevation, Depression.
2. Range of motion (ROM)-Definition, Types-Active and Passive
3. Kinematic chain-Types-Open and Closed chain, Examples
4. Force-Composition, Parallelogram of force
5. Gravity-Centre of gravity, Line of gravity
6. Equilibrium-Stable, Unstable, Neutral
7. Pulley-Fixed and Movable
8. Springs-Series and Parallel
9. Levers-Ist order, II nd order, III rd order, Human & mechanical examples, Application in Physiotherapy
10. Axis-Sagittal, Frontal, Transverse, Vertical
11. Planes-Sagittal, Frontal, Horizontal
12. Newton laws of motion
13. Definition of speed, Velocity, Work, Energy, Power, Acceleration, Momentum
14. Friction, Inertia
15. Normal pelvic tilt, anterior pelvic tilt, posterior pelvic tilt, Lateral tilt, Muscles responsible for alternation and corrective measures

III. STARTING POSITION AND DERIVED POSITION

1. Starting position - Definition, Purpose, positions-Standing, Sitting, Lying, Kneeling, Hanging
2. Derived position - Definition, Purpose, Positions-
Standing-High standing, Walk standing, Stride standing, Step standing
Toe standing, half standing, Cross standing
Sitting-Crook sitting, Long sitting, Stoop sitting, Squatting, Side sitting
Lying-Prone lying, half lying, Crook lying, side lying
Kneeling-half kneeling, kneel sitting, prone kneeling, inclined prone kneel
Hanging-Half hanging

IV. ACTIVE AND PASSIVE MOVEMENT

1. Introduction
2. Classification of movement-Active & Passive
3. Active movement-Definition, Indication, Effect, Types-
Free, Active assisted, assisted resisted, resisted
4. Passive movement- Introduction, Definition, Indications &Contraindications, Principles -
Relaxation, Fixation, Traction, Range, Speed & Duration, Sequence,
Effect & Uses
Technique of passive movement for upper extremity-shoulder, elbow, wrist, forearm and hand.
Lower extremity-Hip, Knee, Ankle and foot

V. RESISTED EXERCISE

1. Definition
2. Types of resisted exercise-Manual & Mechanical
3. Manual-Definition, principle, technique by therapist & patient
4. Mechanical-Definition, principle, technique by weights, pulleys, spring
5. Uses of resisted exercise
6. Progressive resisted exercise
   -Definition, Repetition maximum (RM) method, Delorme & Watkins,
   Mac queen, Zinovieff (oxford technique)

VI. STRETCHING

1. Definition
2. Indication & Contraindication
3. Purpose of stretching
4. Physiological changes in muscle to stretch
5. Neurological changes in muscle to stretch

6. Types of stretching
   - Passive, Active or self stretching, Proprioceptive Neuromuscular
   Facilitation, Ballistic stretching, Dynamic, Isometric
7. Lower extremity muscle stretching
Iliacus& psoas major, adductor, hamstring, Tensor fascia lata, quadriceps,
Tendo Achilles (gastronemius& soleus), Piriformis, Tibialis anterior,
Peroneus longus, Peroneus brevis, Extensor HallucisLongus, Extensor
DigitorumLongus, Extensor DigitorumBrevis

8. Trunk & Upper extremity stretching
Low back extensors, Levator scapulae & upper fibers of trapezius,
Middle fibers of trapezius & Rhomboids major and minor, Pectoralis major,
Supraspinatus, Subscapularis, Infraspinatus&teres minor, Lattismusdorsi
Elbow flexors-biceps, Elbow extensors-triceps, Wrist extensors, Wrist
Flexors, Common extensors-Extensor CarpiRadialisLongus, Extensor Carpi
RadialisBrevis, ExtensorDigitorum
Wrist & finger flexors-Flexor Carpi Radialis, Flexor Carpi Ulnaris, Flexor
DigitorumSuperficialis, Flexor DigitorumProfundus, Intrinsic muscles of
Hand

VII. POSTURE

1. Definition
2. Postural control
3. Standard posture
4. Types of posture-Standing & Dynamic
5. Faulty or Abnormal postures
   -Excessive lordosis, Kyphoticlordosis ,Sway back, Flat back, Flat neck Scoliosis, Forward head
6. Assessment of posture

VIII. GAIT / HUMAN LOCOMOTION

1. Introduction
2. Definition
3. Gait cycle
4. Phases of gait
5. Muscular activity during stance & swing phase
6. Characteristic of normal gait - Vertical displacement of center of gravity (Pelvic tilt), Lateral pelvic tilt, Horizontal dip ofPelvis, Pelvic forward and backwardrotation, Knee flexion, Double limb support, Single limb support, cadence, step length, stride length, step duration, stride duration,Base width, Degree of toe out or foot angle
7. Pathological gait - Trendelenburg gait, Circumductory gait, Hip hiking gait, Foot drop gait, Calcaneal gait, Flexed knee gait, Scissoring gait, Parkinson Gait, Antalgic gait, wide base gait, Lordotic gait,

IX. WALKING AIDS

1. Definition
2. Indication
3. Types of walking aids- Crutches, Canes, Walkers
4. Crutches
   - Types- Axillary, Elbow or Forearm, Gutter
   - Measurement for crutches-Axillary, Elbow, gutter
   - Parts of crutch-Axillary, Elbow gutter
   - Crutch muscles and preparatory exercise
   - Gait pattern-Four point gait, two point gait, three point gait, shadow walking
   - Partial weight bearing, Non weight bearing, full weight bearing
   - Swing to & Swing through,
   - stair and ramp climbing – ascending & desending stairs and ramps
   - crutch turn, crutch fall, crutch stance,
5. Canes

Purpose, Types of cane-Standard cane, Standard adjustable canes, Tripod, Quadripod, Gait pattern-Three point gait, two point gait, four point

6. Walkers,

Purpose, Parts, Types-Rigid walking frame, Foldable walker, Rollator, Reciprocal walker, Gutter Walker

7. Wheel Chair

Introduction, Purpose, Parts of wheel chair - Wheels, tyres, wheel locks, casters, hand rim, foot rest, tilt bar, seat and back rest.Measurement - Seat width, Seat height, Seat depth, Back rest height, Arm rest height.Types of wheel chair - Rigid, Foldable, One arm driven wheel chair, Powered wheel chair

X. RELAXATION

1. Introduction
2. Indication
3. Relaxation techniques-Local, General, Others
4. Local relaxation
    - Therapist massage
    - Passive movement
    - Muscle energy techniques
    - Hold relax, Contract relax
5. General relaxation
    - Contrast method
    - Reciprocal inhibition
6. Other relaxation
    - Mental imagery
    - Autogenic training
    - Yoga & Meditation
    - Music therapy
    - Creational activities
    - Social modality

XI.BREATHING EXERCISE

1 Definition
2 Indication & Contraindication
3 Physiological effects
4Types of Breathing Exercises
    - Diaphragmatic breathing exercise, Apical breathing, Costal breathing,
    Posterior basal, Glossopharyngeal, Pursed lip breathing, Localized basal expansion exercises

XII- BED REST COMPLICATIONS

Describe the complications of prolonged bed rest.
Demonstrate maintenance exercises for patients on prolonged bed rest.

Recommended Textbooks

1. Therapeutic exercise by Carolyn Kisner
2. Principles of exercise therapy by M.Dena Gardiner
3. Practical Exercise therapy by Hollis Margaret

BIOMECHANICS-II IV SEMESTER

COURSE DESCRIPTION

This course supplements the knowledge of anatomy and enables the student to have a better understanding of the principles of biomechanics and their application in musculo skeletal function and dysfunction

Subject Title	:BIOMECHANICS - II
Duration	: 19-24 months
Total Hours	: 120 hours
Theory	: 90
Practical	: 30 Hours
Total Hours / Week	: 8 Hours
Method of Assessment	: Written

COURSE OUTCOME:

At the end of the course the students will be able to

- Describe the structure and function of thorax and lower limb joints effectively.
- Describe the stability and mobility of thorax and lower limb joints effectively.
- Describe the effects of injury and diseases in lower limb joint complexes in oral and written format effectively.
- Explain the normal posture and the factors involved in maintaining it effectively.
- Identify the posture and gait abnormalities effectively.

COURSE OUTLINE

I.THORAX AND CHEST WALL

1.Describe the structure of thorax and chest wall including the articulating surfaces.
2.Describe the function of thorax and chest wall
3.Describe the muscles associated with the rib cage
4.Rib cage movements

II.THE HIP COMPLEX

1. Describe the structure of hip joint including the articulating surfaces on the pelvis andfemur, angulations, angle of torsion, internal architecture of femur and pelvis, ligamentsand muscles.
2. Describe the function of hip – rotation between pelvis, lumbar spine, and hip: pelvic motion – anterior posterior pelvic tilting, lumbar pelvic rhythm, lateral pelvic tilting and pelvic rotation.
3. Describe femoral motion
4. Describe hip stability in erect bilateral stance, sagittal plane equilibrium and Unilateral stance
5. Describe reduction of forces with weight shifting and using a cane and deviations fromnormal in muscular weakness and bony abnormalities
6. Coxa valga and coxa vara on the basis of hip stability and mobility
7. Anteversion and retroversion on the basis of hip stability and mobility

III.THE KNEE COMPLEX

1. Describe the structure of the tibiofemoral joint – articulating surfaces on femur and tibia,the menisci, joint capsule and bursa, ligaments and other supporting structures Anterior– posterior and medial – lateral stability, muscle structure:
2. Knee flexors and Extensors: axes of knee complex: mechanical axis: anatomic axis andaxis of motion.
3. Describe the function of the tibiofemoral joint: range of motion, flexion and extension,rotation, abduction and adduction, locking and unlocking, functions of menisci and muscle function
4. Describe the structure and function of patellofemoral joint
5. Describe the effects of injury and disease in the tibiofemoral joint and patellofemoralJoint
6. Q angle, Bursa around the knee

IV.THE ANKLE AND FOOT COMPLEX

1. Describe the structure – ankle joint, tibia fibular joint, transverse tarsal joint, tarsometatarsal joint, metatarsophalangeal joints, and interphalangeal joint
2. Describe about arches of foot
3. Describe dorsi flexion and plantar flexion, inversion and eversion, adduction andabduction, supination and pronation relating to ankle foot complex.
4**.**Extrinsic and intrinsic muscles of the foot

V.POSTURE

1. Describe the effects of gravity and indicate the location of the gravity line in the sagittal plane in optimal posture
2. Analyze posture with respect to the optimal alignment of joints in the AP and lateral view
3. Role of muscles and ligaments that maintain gravitational moments in erect posture
4. Explain the postural deviations – pes planus, hallux valgus, pescavus, idiopathic scoliosis,kyphosis, lordosis

VI.GAIT

1. Gait – Stance, Swing, Double support phases of gait and its sub division, parameters ofgait
2. Analyze joint motion at hip, knee and ankle of the extremity during gait cycle
3. Describe the muscle activity at hip, knee and ankle throughout the gait cycle and muscleactivity at the trunk and upper extremities.
4. Pathological gait and its biomechanical implications

EXERCISE THERAPY – II V SEMESTER

COURSE DESCRIPTION

In this course the student will learn the principles, technique and effect of exercise as a therapeutic modality in the restoration of physical function. It will introduce the student about methods of joint mobilization, measurement of joint range of motion, muscle grading & reeducation, Hydrotherapy & Suspension therapy, Proprioceptive neuromuscular facilitation & Functional reeducation, Individual & Group exercises, Balance and coordination exercises, Traction and therapeutic massage.

Subject Title	: EXERCISE THERAPY - II
Duration	: 25-30 Months
Total Hours	: 150 Hours
Theory	: 60 Hours
Practical	: 90 Hours
Total Hours / Week	: 10 Hours
Method of Assessment	: Written, Oral, Practical

COURSE OUTCOME:

At the end of the course, the students will be able to

- Demonstrate the technique of measuring joint range of motion using goniometry for minimum of 5 joints in the student model precisely.
- Demonstrate mobilization for minimum of 5 individual joints in the given student model precisely.
- Demonstrate muscle strength evaluation using manual muscle testing in the given student model precisely.
- Demonstrate techniques of strengthening exercises based on manual muscle testing grading in the given student model precisely.
- Demonstrate minimum of 5 exercises for various joints in hydrotherapy pool & also group exercises in the given student model precisely.
- Demonstrate techniques for functional reeducation in the given student model precisely.
- Demonstrate exercises for training balance and coordination in the given student model precisely.
- Demonstrate exercises using suspension therapy apparatus in the given student model precisely.
- Demonstrate the techniques of massage in the given student model precisely.
- Demonstrate the application of manual & mechanical traction in the given student model precisely.
- Discuss the PNF techniques effectively.

COURSE OUTLINE

I.GONIOMETRY

Definition, Normal range of motion of joints, Types of goniometer, Universal goniometer, Gravity dependent goniometer or fluid goniometer, Pendulum goniometer, Electrogoniometer, Procedure or steps in joint range measurement,
Demonstrate measuring of individual joint range using goniometer,
Shoulder joint, elbow joint, radioulnar joint, wrist joint, and joints of the hand
Hip joint, Knee joint, ankle joint, subtalar joint
End feel-Normal & Pathological
Precautions& Contraindications

II.METHODS OF JOINT MOBILISATION

1. Introduction
2. Definition
3. Joint range-Outer range, Middle range, Inner range
4. Causes of joint range limitation
5. Effect of prolonged immobilization
6. Indication & Contraindication

7. Principle
- -Position of patient
- -Position of therapist
- -Relaxation
- -Fixation
- -Support or Stabilization
- -Direction of movement
- -Force & Range / Distraction or Traction
- -Intensity & Duration

8. Methods of peripheral joint mobilization
- -Muscle relaxation techniques
- -Free exercise
- -Hold relax
- -Contract relax
- -Muscle stretching techniques
- -Forced passive movement
- -Passive stretching / self stretching
- -Mechanical stretching
- -Oscillatory technique
- -Sustained translatory joint play techniques

III.MUSCLE GRADING / MANUAL MUSCLE TESTING (MMT)

Introduction, Principles, Uses, Precaution & Contraindication, Types of muscle, grading, Available Range of Motion method, Make or Break test, Active resistance test, grading system, Medical Research Council (MRC), Plus & Minus grade, Demonstrate the skill to grade - Upper limb muscles, Lower limb muscles, Trunk muscles

IV. MUSCLE STRENGTHENING / RE-EDUCATION OF MUSCLE

1. Definition
2. Demonstrate various reeducation techniques on different group of muscles of upper extremity, lower extremity, trunk.
3. Demonstrate the progressive exercise in strengthening using various methods (According to muscle power-Grade I to Grade V)

V. HYDROTHERAPY

1. Introduction
2. Definition
3. Principle
   -Buoyancy, Hydrostatic pressure, Hydrodynamic pressure, Turbulence
4. Indication & Contraindication
5. Physiological & Therapeutic effects
6. Advantages
7. Types of hydrotherapy
   -Hubbard tank, Hydrotherapy pool, Foot bath, Body wraps, Contrast bath
8. Exercises in hydrotherapy

VI. PROPRIOCEPTIVE NEUROMUSCULAR FACILITATION (PNF)

1. Introduction
2. Definition
3. Principles
   -Pattern of motion, Diagonals, Motion components,
4. Basic procedure
   -Agonist & Antagonist, Traction & Approximation, Normal timing, Stretch stimulus, Stretch reflex, Manual contact, Command & Communication, Line of movement

5. Proprioceptive neuromuscular facilitation patterns for Upper Extremity
   -D1 Flexion, D1 Extension, D2 Flexion, D2 Extension
6. Proprioceptive neuromuscular facilitation pattern for Lower Extremity
   -D1 Flexion, D1 Extension, D2 Flexion, D2 Extension
7. Demonstrate Proprioceptive neuromuscular facilitation Technique
   -Repeated contractions, Slow reversals, Rhythmic stabilization, Hold relax, Rhythmic initiation

VII. MAT ACTIVITIES & FUNCTIONAL RE-EDUCATION

1. Introduction
2. Demonstrate common mat activities
   Rolling – supine – side – prone - Prone on elbows - Prone on hands - Hook lying - Bridging - Quadruped position – elbow side lying - Long sitting - Side sitting - kneel sitting – short sitting - Kneeling - kneel waking - Half kneeling - Standing - Walking

VIII.INDIVIDUAL & GROUP EXERCISE

1. Introduction
2. Advantages & Disadvantages
3. Indications
4. Formation of group
   -Space, Selection of patients, Number of patients, Instruction to patients
   Group type,
5. Type of exercise
6. Organisation of group exercises, Recreational activites and sports

IX.BALANCE AND CO-ORDINATION EXERCISE

1. Balance
   -Definition, Cause of balance disorder, Evaluation,
   Exercise to improve balance

2. Co-ordination
   - Definition, Causes of co-ordination disorder, Condition, Tests for co-ordination, Co-ordination exercise
3. Balance evaluation
   -Romberg test, Hall pike test, Functional reach test
4. Balance exercise
   - Exercise for weakness, Exercise for movement strategies, Static balance exercise, Dynamic balance exercise, Balance exercise for vestibular dysfunction, wooble board exercises.
5. Co-ordination test
   -Standing, Walking, Sitting or Supine, Finger to nose, Finger to therapist finger , Finger to finger, Alternate nose to finger, Finger opposition, Pronation /Supination, Alternate heel to knee, drawing an imaginary circle on air with upper extremity & lower extremity , Position holding, Rebound test
6. Co-ordination exercises
   - Frenkel exercise in Supine, Sitting, Walking, Functional activity, Retraining, Brushing, Combing hair, Pick up small object from table or floor, Practice writing, Draw numbers or alphabets

X. SUSPENSION THERAPY

1. Definition
2. Principle -Friction, Pendulum, Eliminating gravity movement, Advantages & Disadvantages

3. Suspension Instruments
   - Suspension frame, Supporting ropes, Pulleys, Slings, S-hook and dog Clip, Wooden cleat

4. Procedure
5. Types of suspension
   -Axial suspension, Vertical suspension, Pendular suspension
6. Demonstrate suspension therapy for upper extremity & lower extremity
7. Upper extremity- Shoulder Flexion, Extension, Medial Rotation, Lateral Rotation, Abduction, Adduction, Elbow Flexion, Extension
8. Lower extremity- Hip Flexion, Extension, Abduction, Adduction, Medial Rotation, Lateral Rotation, Knee Flexion, Extension

XI– TRACTION

1 Definition
2 Mechanism of action of traction
3 Indication & Contraindication of traction
4 Types of traction – mechanical, manual, continous, intermitent, static
5. Application of traction

XII. MASSAGE

1. Introduction
   - History of massage, Definition of massage, Mechanical points to be considered (Manipulation, time of day for treatment, comfort and support of patient-positioning, Draping, bolstering, position of operator, using body weight, contact and continuity)
2. Technique –indication and contraindication
3. Classification of massage
   - Based on character of Technique- Stroking manipulation, Pressure, manipulation, Vibratory manipulation, Tapotment or Percussion manipulation
   - Based on depth of tissue reached- Light massage, Deep massage
   - Based on parts of body massaged- General Massage, Local massage
   - Based on means of application of pressure- Manual massage, mechanical massage
4. Physiological effects of massage on various body systems
   (Effect on-circulatory system, excretory system, muscular system, nervous system , metabolic system, respiratory system, skin)
5. Massage Technique
   -Stroking manipulation- Superficial stroking, deep stroking or Effleurage
   -Pressure manipulation- Kneading-palmar & digital kneading, ironing Petrissage-picking up, wringing, skin rolling, Friction - circular & transverse friction
   - Percussion manipulation-Clapping, hacking, beating, pounding, tenting contact heel percussion
   - Vibratory manipulation-vibratory& shaking
6. Techniques Used For Various Parts of Body
   -Massage for upper limb-scapular region, shoulder joint, upper arm, elbow joint, Forearm, wrist joint, hand
   -Massage for lower limb-thigh, knee joint, leg, foot (ankle&toes)
   -Massage for back-neck and upper back, middle and lower back, gluteal region
   -Massage for face
   -Massage for abdomen

7. Sports Massage

-Introduction, role of massage in sports, Massage manipulations-stroking,effleurage,petrissage,acupressure,tapotement, Vibration, Shaking

- Ice massage
- Categories of sports massage-pre event massage, intermediate massage, Post Event massage

8. Therapeutic Application of Massage

- Relaxation
- Oedema
- Radical mastectomy
- Venous ulcer
- Painful neuroma
- Bells palsy
- Sprain and Strain
- Fibrositis

Recommended Textbooks

1.Exercise therapy –Principles and Practice by Roshan Lal Meena

2.Principles of exercise therapy by M.Dena Gardiner

3.Practical Exercise therapy by Hollis Margaret

4. Muscle Testing and function by Kendall

5. Measurement of joint Motion –Cynthia C .Norkin

6. Therapeutic massage by Sinha

7. Massage for Therapist –Margaret Hollis

ELECTROPHYSICAL AGENTS I V SEMESTER

COURSE DESCRIPTION:

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

Subject Title	:ELECTROPHYSICAL AGENTS - I
Duration	: 25-30 Months
Total Hours	: 120 Hours
Theory	: 60 Hours
Practical	: 60 Hours
Total Hours / Week	: 8 Hours
Method of Assessment	: Written, Oral, Practical

COURSE OUTCOME:

At the end of the course, the students will be able to

- Describe the basics of electrical stimulation and therapeutic currents effectively.
- Rationalize and choose the types of current for the treatment of different type of nerve injuries effectively.
- Explain the types, physiological and therapeutic effects of medium frequency currents effectively.
- Demonstrate the various therapeutic currents and electro diagnostic methods for nerve injuries in the student model precisely.
- Demonstrate the various treatment procedures for medium frequency currents in reduction of pain and restoration of physical function in the student model precisely.

COURSE OUTLINE

I. BASIC CONCEPTS IN ELECTRICAL STIMULATION

1. Resting Membrane Potential
2. Action Potential
3. Propagation of Action Potential
4. Motor Unit

II. THERAPEUTIC CURRENT

1. Definition
2. Principles
3. Types –Low Frequency current and Medium Frequency current

4. Types of Low Frequency Current
   - Interrupted Galvanic Current/Modified Direct Current/Interrupted Direct Current, Faradic Type Current, Transcutaneous electrical nerve stimulation, Iontophoresis , Sinusoidal Current, High Voltage Pulse Galvanic Stimulation (HVPGS), Diadynamic Current, Functional Electrical Stimulation (FES)
5. Medium Frequency Currents
   - Interferential Current, Russian Current, Rebox current.
   - Classical & Vector
6. Micro Current & Macro Current

III. FARADIC CURRENT

1. Definition, Type, Duration
2. Production, Surging of Faradic Current
3. Physiological effects & Therapeutic effects of Faradic Current
4. Technique of application of Faradic Current
   -Motor Point, Preparation of apparatus (Assembling, Testing) Preparation of patient, Stimulation of motor point

IV. INTERRUPTED DIRECT CURRENT

1. Definition, Type, Duration, Shape, Frequency
2. Production
3. Physiological effect & Therapeutic effect of Interrupted direct current
4. Effect of Interrupted Galvanic Current on Innervated muscle & Denervated muscle

5 Technique of application of Interrupted Galvanic Current
   - Motor Point, Preparation of apparatus (Assembling, Testing), Preparation of patient, Stimulation of motor point

6. Demonstrate surgical faradic current and interrupted galvanic current for following conditions - Bells palsy, radial nerve injury, ulnar nerve injury, median nerve injury, deltoid inhibition, medial and lateral popliteal nerve injury, faradic foot bath, faradism under pressure, quadriceps inhibition.

V. SELECTION OF CURRENT

1 Differentiate between types of current, duration, shape, frequency used in stimulating nerve and muscle

VI. ELECTRODIAGNOSIS

1. Introduction
2. Definition
3. Physiological basis
4. Principles of electro diagnosis
   -Strengh/Duration Curve, Rheobase, Chronaxie,
5. Electromyography
   -Definition, Recording electrodes, Myoelectrical signal, amplifiers, display devices, Basic wave pattern of an Electromyography signal
6. Nerve Conduction Test
   - Motor Conduction study & sensory conduction study
   - H reflex, F Wave
7. Faradic- galvanic test

8. Strengh/Duration Curve Test
   -Definition, Type of current used, shape, frequency, Procedure Advantage, Disadvantage, Characteristic of curve (Normal, Partial, Complete denervation) , Factors that affect accuracy of Strengh/Duration Curve

VII. BIO-FEEDBACK

1. Definition
2. Basis of biofeedback
3. Principles of biofeedback
4. Uses of biofeedback
5. Electro Myographic bio feedback

VIII. TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION(TENS)

1. Definition
2. Neurophysiology of pain
3. Acute pain & chronic pain
4. Pain pathway
5. Neuromodulation of pain
6. Pain modulation- Gate control theory, descending pain suppression
7. Parameter of TENS-Waveform, Frequency, Pulse width, amplitude
8. Type of TENS-
   - High Frequency Low Intensity TENS or Conventional TENS
   - Acupuncture like TENS
   - Brief Intense TENS
   - Burst Mode TENS
9. Electrode Placement, Advantage & Disadvantage of TENS, Uses of TENS and Contraindication of TENS

IX. IONTOPHORESIS

1. Definition
2. Physics of iontophoresis, types of iontophoresis – medical , surgical
3. Technique of application of iontophoresis
4. Ions commonly used in iontophoresis and their clinical indication
5. Physiological effect & Therapeutic effect of iontophoresis
6. Dosage of iontophoresis
7. Dangers & Contraindication of iontophoresis
8. Cathodal / Anodal galvanism

X. INTERFERENTIAL CURRENT

1. Definition
2. Production of interferential current
3. Types of interferential current
   - Static interferential current or Classical interferential current (4 pole method)
   - Dynamic interferential current or Isoplanar vector field (4 pole method) or Four electrodes with rotating vector
4. Parameters of Interferential Therapy
   - Quadripolar or Bipolar application, Vector or Scanning mode, Suction versus Plate electrode, Current intensity, Frequency sweep, Amplitude modulated frequency, Treatment duration, Indications & contraindication of interferential current, Physiological effects of interferential current, Dangers of interferential current

Recommended Textbooks

1. **C**laytons Electrotherapy by Forster & Plastangs
2. Electrotherapy Explained by Low & Reed
3. Clinical Electrotherapy by Nelson
4. Electrotherapy Evidene based practice by Sheila Kitchen
5. Physical agents by Michile Cameroon
6. Principles of Electrotherapy by Michile Camreeon
7. Thermal agents by Susan Michlovitz.

V SEMESTER

PHYSIOTHERAPY IN GENERAL MEDICINE, GENERAL SURGERY & PAEDIATRICS

COURSE DESCRIPTION:

The subject is designed to provide knowledge in assessing and planning physiotherapy interventions for various General Medical, Surgical & Paediatric conditions. 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, and to provide appropriate interventions to the patient.

Subject Title	: Physiotherapy in General medicine, General Surgery & Paediatrics
Duration	: 25 – 30 Months
Total Hours	: 120
Theory	: 60 Hours
Practical	: 60 Hours
Total Hours / Week	: 8 Hrs
Method of Assessment	: Written, Oral, Practical

COURSE OUTCOME:

At the end of the course, the students will be able to

- Demonstrate the physiotherapy management of general diseases and paediatric conditions in patients precisely under supervision.
- Demonstrate the post-operative physiotherapy in general surgeries in patients precisely under supervision.
- Demonstrate the physiotherapy management of burns in patients precisely under supervision.
- Demonstrate the physiotherapy management during prenatal,perinatal and post natal period precisely under supervision.

COURSE OUTLINE:

1. Anatomical and Physiological differences between the Adult and Pediatric lung

2. Bedside assessment of the patient-Adult & Pediatric

3.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 Hypergranulated Scars Keloids, Electrotherapeutics measures for relief of pain during mobilization of scars tissues.

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

5. Respiratory failure – Oxygen Therapy and Mechanical Ventilation

6. 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

7. Burns management - Role of physiotherapy in the management of burns, post grafted cases-Mobilization and Musculo-skeletal restorative exercises following burns

8. Abdominal Surgeries - Management of Pulmonary Restorative Dysfunction following Surgical procedures on Abdomen and Thorax

9. Physiotherapy intervention in the management of Medical, Surgical and Radiation Oncology Cases

10. Home program and education of family members in patient care

11.Treatment, Response to exercise and Implications of Physiotherapy in the following disease conditions: Hypertension, Diabetes, Renal Failure and Obesity.

12. Prenatal musculo skeletal disorders and PT management

i. Exercise prescription in pre and post natal stage;
ii. Concept, principles and organization of antenatal exercises.
iii. Diagnosis and treatment of musculoskeletal pain and dysfunction during pregnancy and post menopause;
iv. Treatment of Incontinence and Pelvic floor dysfunction;
v. Physiotherapy management of postnatal complications like bladder and bowel incontinence, pelvic floor muscle weakness, depression, low back pain, etc.
vi. Use of electrotherapy modalities in training Pelvic floor muscles.
vii. Therapeutic electrical stimulation. & Biofeedback.
viii. Prevention and Physiotherapy intervention in Osteoporoses.
ix. Physiotherapy intervention after gynaecological surgeries.

Recommended books:

1. Tidy's physiotherapy.
2. Cash’s Text Book of Chest, Heart, Vascular Disorders for Physiotherapists.
3. Physical Rehabilitation Assessment and Treament – O’Sullivan Schmitz
4. Elements in Pediatric Physiotherapy – Pamela M Eckersley
5. Essentials of Cardio Pulmonary Physical Therapy by Hillegass and Sadowsky
6. Cardiao pulmonary Symptoms in physical Therapy practice Cohen and Michel
7. Chest Physiotherapy in Intensive Care Unit by Mackenzi
8. Cash’s Text book of General Medicine and Surgical conditions for Physiotherapists.
9. Physiotherapy in Psychiatry
10. Physical Therapy for the Cancer patient by M.C Garvey
11. Physiotherapy in Obstetrics and Gynecology by Polden

ELECTROPHYSICAL AGENTS II VI SEMESTER

COURSE DESCRIPTION

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

Subject Title	:ELECTROPHYSICAL AGENTS - II
Duration	: 31-36 months
Total Hours	: 120 Hours
Theory	: 60 Hours
Practical	: 60 hours
Total Hours / Week	: 8 Hours
Method of Assessment	: Written, Oral, Practical

COURSE OUTCOME:

At the end of the course, the students will be able to

- Explain the principles of various electro physical agents effectively.
- Explain the physiological and therapeutic effect of various electro physical agents effectively.
- Rationalize and choose appropriate physical agents for reduction of pain and restoration of physical functions effectively.
- Demonstrate therapy using the various physical agents in the given student model precisely.

COURSE OUTLINE

I ELECTRO MAGNETIC SPECTRUM
II SHORT WAVE DIATHERMY
1 Definition
2 Principle of working
3 Indication & contraindication of Short Wave Diathermy
4 Bio-physics of deep heating using Short Wave Diathermy
- Capacitor or condenser field method
- Inductance or cable method

5. Production
-Construction, Machine circuit or Oscillator circuit, Patient circuit or Resonator circuit
- Mechanism of production of Short Wave Diathermy
- Indications for circuits to be in tune
- Transmission of shortwave in to tissues

6. Technique or Method of application of Short Wave Diathermy
- Preparation of equipment (warming, tuning, testing of machine)
- Application of treatment, Condenser field method/Capacitor field Method, Cable method/Inductothermy

7. Condenser field method
- Type of electrode, Size of electrode, Electrode spacing-Wide & Narrow Spacing, Electrode positioning- Co-planar, Contra planar, Mono planar, Cross fire method,

8. Cable field method
   - Electrode, Electrostatic field & Magnetic field, Advantages
9. Dosage of Short Wave Diathermy
10. Dangers of Short Wave Diathermy
11. Precautions and contraindication of Short Wave Diathermy

12. Pulsed Short Wave Diathermy
   - Definition, Frequency, Wavelength, Production, Parameters- Pulse repetition rate , Pulse duration , Peak pulse power , Physiological effects, Indications & contraindications, Dosage
13. Demonstrate shortwave diathermy for following conditions: periarthritis shoulder, cervical spondylosis , low back ache, arthritis.

III. MICRO WAVE DIATHERMY

1 Definition
2 Bio-physics of micro wave diathermy
3 Indications & contraindications of micro wave diathermy
4 Production of micro wave diathermy (Magnetron)
5 Technique of application of micro wave diathermy
   Patient preparation, Selection of treatment applicator, Selection of appropriate power level and application of treatment, Dosage, Physiological & Therapeutic effects, Dangers

IV. ULTRASOUND THERAPY

1 Definition
2 Bio-physics of ultrasound
3 Indication & contraindication of ultrasound
4 Proprieties of ultrasound-Reflection, Transmission, Absorption
5 Ultrasonic field
6 Coupling media
7 Production of ultrasound
8 Technique of application of ultrasound
   - Testing of machine
   - Application of ultrasound- Direct contact method, Water bath method, Water bag method,
9. Treatment parameters
   - Intensity, Mode-Continuous or Pulsed, Frequency-1 MHz or 3 MHz, Treatment duration, Pulsed mark: Space ratio
10. Dosage of ultrasound
11. Physiological & Therapeutic effects of ultrasound
12. Dangers of ultrasound
13.Phonophoresis
   -Definition, Principle of working, Drugs used in phonophoresis, Techniques of application of phonophoresis, Contraindications

14. Demonstrate ultrasound for following conditions: supraspinatus tendonitis, bicipital tendonitis, tennis elbow, trigger finger, trigger thumb, dequervains disease, calcaneal spur, plantar fascitis, and ankle ligament strain

V. INFRARED RADIATIONS

1 Definition , Basic physical principles including effects & transmission of heat, radiation energy , electromagnetic spectrum & laws governing radiation.

2 Production-Types of generators (Luminous & Non-Luminous), Working

3 Indications & Contraindications

4 Physiological & Therapeutic effects

5 Dangers

6 Technique of treatment

- Choice of apparatus, Arrangement of lamp and patient, Preparation of Patient, Application of treatment, Treatment frequency and duration

VI. ULTRA VIOLET RADIATION

1 Definition

2 Classification

3 Production

- Mercury vapor lamp-1. Air cooled medium pressure Mercury vapor lamp (Alpine Sun Lamp)
- Water cooled medium pressure Mercury vapor lamp (Kromayer Lamp)

4. Fluorescent Tube (Theraktin Tunnel)

- Tridymite formation
- Cooling of lamp

5. Technique or principle of application of treatment

- Preparation of patient, Preparation of apparatus, Setting up, Application, Progression

6. Dosage

- Test dose
- Calculation of progression of dosage

7. Psoralen Ultra Violet A apparatus

8. Care of lamp

9. Sensitizers, Photosensitization, Filters

10. Erythema, Pigmentation, Penetration

11. Indications & Contraindications

12. Physiological effects & Therapeutic effects

13. Demonstrate of Ultra Violet Radiation for following conditions

- Acne-shoulder&chest, back&chest, Alopecia aereata & Totalis, Psoriasis, ulcer ,Pressure sore, Rickets, General body bath

VII. LASER

1 Definition

2 Properties of laser

- Monochromaticity
- Coherence
- Collimation

3. Production of laser

- Lasing medium
- Resonating chamber
- Energy source

4. Types of laser

- Ruby laser or crystal laser
- Helium-neon laser or gas laser
- Diode laser or semiconductor laser

5. Technique of application

- Grid method
- Scanning method

6. Dosage parameters
    -Area of treatment, energy density, pulse repetition rate, power output, irradiation
7. Indications & Contraindications
8. Physiological effects & Therapeutic effects
9. Dangers

VIII. SUPERFICIAL HEAT MODALITIES

1. Moist hot packs-Definition, Working, Technique of application, indications & contra indications
2. Hydro collator pack-Definition, Apparatus, working, Technique of application, indications & contra indications

3. Paraffin wax bath-Definition, apparatus, Technique of application, effects, indications & contra indications
4. Whirl pool bath-Definition, apparatus, Technique of application
5. Hubbard tank-Definition, apparatus, Technique of application
6. Fluidotherapy: Construction, Method of application, Therapeutic uses, Indications & Contraindications.

IX. CRYOTHERAPY

1. Definition
2. Biophysics
3. Indication & contraindication

4. Technique of application
    - Ice pack
    -. Ice massage
    - Cold pack
    - Cold whirlpool
    - Cryo-cuff
    - Cold spray
    - Cryo stretch
    - Cryo kinetics
5. Physiological Effects & Uses

X. CONTRAST BATH

1. Definition
2. Principles
3. Technique of treatment
4. Indications & Contraindications

Recommended Textbooks:

1. **C**laytons Electrotherapy by Forster & Plastangs
2. Electrotherapy Explained by Low & Reed
3. Clinical Electrotherapy by Nelson
4. Electrotherapy Evidene based practice by Sheila Kitchen
5. Physical agents by Michile Cameroon
6. Principles of Electrotherapy by Michile Camreeon
7. Thermal agents by Susan Michlovitz.

CLINICAL ORTHOPAEDICS AND TRAUMATOLOGY

COURSE DESCRIPTION

This course introduces the student to the orthopedic conditions which commonly cause disability and understand in detail its presentation and management

Subject Title	: CLINICAL ORTHOPAEDICS AND TRAUMATOLOGY
Duration	: 31- 36 months
Total Hours	: 90 hours
Theory	: 60
Practical	: 30 Hours
Total Hours / Week	: 6 Hours
Method of Assessment	: Written, Oral

COURSE OUTCOME:

At the end of the course, the students will be able to

- Describe the etiopathological changes, clinical features of various musculoskeletal disorders effectively.
- Describe the investigations for various musculoskeletal disorders effectively.
- Discuss the medical and surgical management of various musculoskeletal disorders effectively.

COURSE OUTLINE

I. INTRODUCTION TO ORTHOPAEDICS

1. Introduction to orthopedic terminologies
2. Clinical examinations
3. Common investigations
4. Principles of management

II. PRINCIPLES OF OPERATIVE TREATMENT

1. Indications
2. Contraindications
3. Outline principles of: arthrodesis, Arthroplasty, Osteotomy, Bone grafting, Tendon transfers.

III. FRACTURES AND DISLOCATIONS

1. Types of fractures including patterns, open and closed fractures and dislocations.
2. Difference between dislocation and subluxation
3. General and local signs & symptoms of fractures and dislocations
4. Principles of management of fracture and dislocations
5. Prevention and treatment of complications – Volkmann's Ischaemic Contracture, Sudecks atrophy, carpal tunnel syndrome, myositis ossificans, shoulder-hand syndrome
6. Fracture healing

IV. UPPER LIMB FRACTURES AND DISLOCATIONS

Briefly describe the mechanism of injury, clinical features, principles of management complications, investigations, conservative and surgical for the following injuries

- Fracture clavicle
- Dislocation of shoulder joint
- Fracture of the proximal end of the humerus
- Fracture neck of humerus
- Fracture shaft of humerus
- Supracondylar fracture
- Intercondylar fracture
- Fracture of the medial epicondyle
- Fracture of the lateral condyle of the humerus
- Dislocation of the elbow
- Fracture of the head of the radius
- Fracture of the neck of radius
- Fracture of the olecranon
- Fracture of both bones of forearm
- Monteggia fracture dislocation
- Galleazi fracture dislocation
- Colle's fracture
- Fracture of scaphoid
- Dislocation of the lunate
- Fracture of metacarpal bones
- Bennett's fracture dislocation

V. LOWER LIMB FRACTURES AND DISLOCATIONS

Briefly describe the mechanism of injury, clinical features, principles of management, complications, investigations, conservative and surgical for the following injuries

- Fracture pelvis
- Dislocation of hip joint
- Fracture neck of femur
- Fracture shaft of femur
- Fracture femoral condyles
- Fracture tibial condyles
- Fracture patella
- Dislocation of knee
- Fracture of tibia and fibula
- Fracture and dislocation of ankle
- Fracture of talus and calcaneum,

VI. ORTHOPAEDIC CONDITIONS

1. Discuss the etiology, clinical features, assessment, medical and Surgical management of the following conditions

- Supraspinatus tendonitis
- Rupture of rotator cuff
- Periarthritis shoulder
- Tennis elbow
- Dequervain's disease
- Trigger finger
- Trigger thumb
- Carpal tunnel syndrome
- Dupytren's contracture
- Iliotibial band friction syndrome
- Knee and ankle ligament injuries
- Patellar tendinitis
- Chandromalacia patella
- Plantar fascitis
- Metatarsalgia

-

VII. SPINAL FRACTURES

1. Outline the mechanism, clinical features, principles of management, complications of spinal fractures.

VIII. ORTHOPAEDIC CONDITIONS OF SPINE

1. Discuss the etiology, clinical features, assessment, medical and Surgical management of the following conditions
   - Spondylolisthesis
   - Ankylosing spondylitis
   - Lumbosacral strain
   - Intervertebral disc prolapse
   - Lumbar canal stenosis
   - Scoliosis
   - Kyphosis
   - Lordosis

IX. CONGENITAL DISORDERS

Discuss the etiology, clinical features, assessment, medical and Surgical management of the following conditions
   - Congenital talipes equinovarus
   - Congenital dislocation of Hip
   - Congenital flat foot
   - Arthrogryposis multiplex congenita

IX.CHRONIC ARTHRITIS

1. Outline the pathology, clinical features, mechanism of deformities, management and Complications of – Rheumatoid Arthritis, Osteo Arthritis, ankylosing spondylosis.

X. AMPUTATIONS

1. Classify amputations, list indications of amputation
2. Principles and levels of amputation
3. Principles of management
4. Complications and its management

XI. LOW BACK PAIN

1. Definition, causes of low back ache, clinical findings, assessment, differential diagnosis and management

XII. PERIPHERAL NERVE INJURIES

Outline the clinical features, management, and reconstructive surgery of
1. Radial, median and ulnar nerve lesions
2. Sciatic and lateral popliteal nerve lesions
3. Brachial plexus injuries including Erb's palsy, Klumpke's palsy, crutch palsy.

Recommended books :

1. Outline of Fractures—John Crawford Adams.
2. Outline of Orthopedics.— John Crawford Adams.
3. Text book of Orthopedics.—Maheswari.
4. Apley's Orthopedics.
5. Textbook of Orthopedics and Traumatology— M.N.Natarajan

VI SEMESTER

CLINICAL NEUROLOGY AND NEURO SURGERY

COURSE DESCRIPTION

This course introduces the student to the neurological conditions which commonly cause disability and understand in detail its presentation and management

Subject Title	: **CLINICAL NEUROLOGY AND NEURO SURGERY**
Duration	: 31-36months
Total Hours	: 90 Hours
Theory	: 60 Hours
Practical	: 30 Hours
Total Hours / Week	: 6 Hours
Method of Assessment	: Written, Oral

COURSE OUTCOME:

At the end of the course, the students will be able to

- Discuss the neurophysiology of brain and spinal cord effectively.
- Describe neurological assessment in student model for higher functions,brain,spinal cord and peripheral nerves.
- Discuss the medical and surgical management of various neurological Conditions effectively.

COURSE OUTLINE

I. NEUROPHYSIOLOGY

Neurophysiologic basis of tone, disorder of tone, posture, bladder control, muscle contraction, movement, and pain.

II. ASSESSMENT

1. Basic history taking to determine whether the brain, spinal cord, peripheral nerve is involved
2. Assessment of higher mental function – orientation, memory, attention, speech, language
3. Assessment of cranial nerves
4. Assessment of motor power
5. Assessment of sensory function – touch, pain, temperature, position
6. Assessment of tone – spasticity, rigidity, and hypotonia.
7. Assessment of cerebellar function
8. Assessment of higher cortical function – apraxia
9. Assessment of gait abnormalities

III. NEUROLOGICAL CONDITIONS IN ADULT

1. Discuss the etiology, clinical features, assessment and management of the following conditions
   -Cerebrovascular accidents
   - Head injury
   - Spinal cord injury
   -Syringomyelia
   - Cervical and lumbar disc lesions
   -Tumors of brain and spinal cord
   -Guillain – bare syndrome
   -7th Cranial nerve palsy
   - Transverse myelitis
   -Multiple sclerosis
   - Parkinson disease
   - Tabes dorsalis
   -Spinal muscular atrophy
   -Peripheral nerve injuries
   -Entrapment neuropathies
   -Peripheral neuropathies
   -Paraplegia
   -Quadriplegia
   -Neurogenic bladder
   -Myasthenia gravis
   -Motor neuron disease
   -Lowback pain syndrome
   - Brachial neuralgia
   - Cerebellar lesions
   -Spinal Dyspharism

IV. NEUROLOGICAL CONDITIONS IN CHILDREN

1. Discuss the etiology, clinical features, assessment and management of the following conditions
   - Cerebral palsy
   - Spina bifida
   - Poliomyelitis
   - Hydrocephalus
   - Brachial plexus injury

Recommended books:

1. Davidson's Principles and Practice of Medicine
2. Brains Clinical Neurology.
3. Neurology & Neurosurgery Illustrated - Lindsay
4. Brains Diseases of Nervous system

VII SEMESTER

CLINICAL CARDIOPULMONARY MEDICINE AND SURGERY

COURSE DESCRIPTION

This course introduces the students to gain knowledge in the Clinical Cardio Pulmonary Medicine and Surgical conditions and make students to present in detail about its management .

Subject Title	:CLINICAL CARDIO PULMONARY MEDICINE AND SURGERY
Duration	: 37 -42 Months
Total Hours	: 90 Hours
Theory	: 60 Hours
Practical	: 30 Hours
Total Hours / Week	: 6 Hours
Method of Assessment	: Written, Oral.

COURSE OUTCOME:

At the end of the course, the students will be able to

- Describe anatomy and physiology of Respiratoty and Cardiovascular system
- Describe the etiopathological changes, clinical features of various cardiopulmonary conditions effectively.
- Outline the investigations for various cardiopulmonary disorders effectively.
- Discuss the medical & surgical management of various cardiopulmonary disorders effectively.

COURSE OUTLINE
I.ANATOMY AND PHYSIOLOGY

1. Respiratory system : Upper respiratory tract, Lower respiratory tract – Trachea, Bronchial tree, Broncho pulmonary segments, Alveoli .
2. Muscles of respiration, Diaphragm, Breathing disorders.
3. Pleura and types, surfactant, Deadspace and its types.
4. Mechanics of respiration – Chest wall movements, lung & chest wall Compliance, V/Q relationship.
5. Respiratory centre, Neural & chemical regulation of respiration
6. Lung volumes and capacities, Spiro meter, pulmonary function test, Peak Expiratory flow rate , Peak flow meter.
7. Pulmonary circulation.
8. Cardiovascular system: Chambers of heart, Coronary circulation, conductive system of heart, Cardiac cycle, Electrocardiography , Heart sounds, Blood pressure, cardiac output.

II. PULMONARY DISEASES

1. Define, etiology, pathogenesis, clinical features, investigation, complications, Conservative and surgical management of the following conditions

- Chronic bronchitis and Emphysema
- Bronchial asthma
- Suppurative disease- Broncheictasis, Lung abscess
- Common infectious disease-Pulmonary Tuberculosis, Pneumonia
- Interstitial lung disease
- Occupational lung disease
- Pulmonary vascular disease-pulmonary hyper tension, Pulmonary thromboembolism
- Cancer lung
- Aspergillosis
- Cystic fibrosis
- Disease of pleura- Pneumothorax and types
- Pleural effusion, Empyema
- Haemothorax
- Lung contusion
- Chest Deformities

2 . Thoracic Surgeries

- Thoracotomy
- Lobectomy
- Pneumonectomy
- Decortication
- Complications of Pulmonary surgeries.

III. CARDIO VASCULAR DISEASES

1. Define, etiology, pathogenesis, clinical features, complications, Conservative and surgical management of the following conditions

- Atrial Septal Defect
- Ventricular Septal Defect
- Fallots Tetrology
- Patent DuctusArteriosus
- Coarctation of Aorta
- Mitral Stenosis and Regurgitation.
- Aortic Stenosis and Regurgitation.
- Pulmonary Stenosis and Regurgitation.
- Ischemic heart disease
- Angina pectoris
- Myocardial infarction
- Heart failure
- Rheumatic fever
- Hypertension
- Infective endocarditis
- Myocarditis & cardiomyopathy

2. Cardiac Surgical procedures .

- Open heart surgery and closed heart surgery
- Median sternotomy
- Angioplasty
- Coronary Artery Byepass Graft
- Valve replacement and Valvotomy.

3. Describe the principles of cardio pulmonary resuscitation, Arterial Blood Gas Analysis, External Cardiac Massage, Ventilators, defibrillator, Heart Lung Machine.

Recommended books:

1. Tidy's physiotherapy.
2. Cash’s Text Book of Chest, Heart, Vascular Disorders for Physiotherapists.
3. The Brompton Guide to chest physiotherapy DU Gasket [Completed]
4. Physical Rehabilitation Assessment and Treament – O’Sullivan Schmitz
5. Essentials of Cardio Pulmonary Physical Therapy by Hillegass and Sadowsky
6. Cardiao pulmonary Symptoms in physical Therapy practice Cohen and Michel
7. Chest Physiotherapy in Intensive Care Unit by Mackenzi
8. Cash’s Text book of General Medicine and Surgical conditions for Physiotherapists.

VII SEMESTER

PHYSIOTHERAPY IN NEUROLOGY AND NEURO SURGERY

COURSE DESCRIPTION:

This course serves to integrate the knowledge gained by the students in neurology, with the skills gained in exercise therapy & electrophysical agents thus enabling them to apply these in clinical situations of dysfunction due to pathology in the nervous system.

Subject Title	: **PHYSIOTHERAPY IN NEUROLOGY AND NEURO SURGERY**
Duration	: 37-42 Months
Total Hours	: 120 hours
Theory	: 60 hours
Practical	: 60 hours
Total Hours / Week	: 8 hours
Method of Assessment	: Written, Oral, Practical

COURSE OUTCOME:

At the end of the course, the students will be able to

- Demonstrate neurological assessment of higher functions, brain, spinal cord & peripheral nerves
- Rationalize the principles and PT management of various neurological conditions effectively.
- Assess and identify the impairment,activity limitations and participatory restrictions of various neurological conditions in patients precisely under supervision.
- Plan the PT management for adult and paediatric patients with various neurological conditions effectively.
- Demonstrate the PT management of various neurological conditions of adult and paediatrics precisely under supervision.

COURSE OUTLINE
I. PRINCIPLES OF ASSESSMENT

1. Evaluation and functional physiotherapy assessment with appropriate reasoning for planning and implementation of treatment technique.
2. History taking
3. Assessment of higher function
4. Assessment of cranial nerves
5. Assessment of sensation – pain, temperature and dorsal column
6. Assessment of motor system – muscle power, joint mobility, balance, co- ordination
7. Assessment of tone,
8. Assessment of reflexes – superficial and deep
9. Assessment of gait
10. Assessment of posture
11. Assessment of limb length
12. Assessment of functional abilities

II. PRINCIPLES OF TREATMENT

1. Principles and theories of motor control and learning
2. Application of transfer and functional re-education exercise, postural exercise and gait training.
3. Functional training in bladder dysfunction.
4. Principles of co-ordination and balance exercise
5. Understand and application of neurotherapeutic skills like Proprioceptive Neuro muscular Facilitation, Neuro Developmental Therapy, Carr & Shepherd, Brunstrom and Rood's approach
6. Knowing principle in using tools of therapeutic gym such as vestibular ball, tilt board and bolsters.
7. Principles of use of ambulatory aids in neurological conditions – Upper Motor Neuron lesions, Lower Motor Neuron lesions and cerebellar dysfunction
8. Principles of use of splints and braces in spastic Upper Motor Neuron lesion and in flaccid Lower Motor Neuron lesion in both Upper and Lower limbs
9. Review the management of chronic pain in neurological condition with respect to the type of pain, treatment modalities available, and selection criteria for each modality.
10. Treatment of altered tone – hyper tonicity and hypo tonicity
11. Sensory re education – hypersensitivity, hyposensitivity and anesthesia.
12. Motor re-education – strengthening exercises, co-ordination exercise, joint mobilization exercise, use of Proprioceptive Neuro muscular Facilitation technique.
13. Treatment to improve function – free exercise, activities of daily living, mat exercise and mobilization exercise.

III. PHYSIOTHERAPY MANAGEMENT OF NEUROLOGICAL CONDITIONS IN ADULT

1. Discuss the etiology, clinical features, assessment and Physiotherapy management of the following conditions

-Cerebrovascular accidents

- Head injury

- Spinal cord injury

-Syringomyelia

- Cervical and lumbar disc lesions

-Tumors of brain and spinal cord

-Guillain – bare syndrome

-7th Cranial nerve palsy

- Transverse myelitis

-Multiple sclerosis

- Parkinson disease

- Tabes dorsalis

-Spinal muscular atrophy

-Peripheral nerve injuries

-Entrapment neuropathies

-Peripheral neuropathies

-Paraplegia

-Quadriplegia

-Neurogenic bladder

-Myasthenia gravis

-Motor neuron disease

-Lowback pain syndrome

- Brachial neuralgia

- Cerebellar lesions

-Spinal Dyspharis

V. PHYSIOTHERAPY MANAGEMENT OF NEUROLOGICAL CONDITIONS IN CHILDREN

1. Discuss the etiology, clinical features, assessment and Physiotherapy management of the following conditions

- Cerebral palsy
- Spina bifida
- Muscular dystrophy
- Poliomyelitis
- Hydrocephalus
- Brachial plexus injury

Recommended books

1. Tidy's physiotherapy.
2. Cash’s Textbook of Neurology for Physiotherapists
3. Neurological Rehabilitation by D Umphred
4. Physical Rehabilitation Assessment and Treament – O’Sullivan Schmitz
5. Elements of Pediatric Physiotherapy-Eckersle

VII SEMESTER

PHYSIOTHERAPY IN ORTHOPAEDICS AND TRAUMATOLOGY

COURSE DESCRIPTION:

This course serves to integrate the knowledge gained by the students in orthopedics with the skills gained in exercise therapy & electrophysical agents thus enabling them to apply these in clinical situations of dysfunction due to musculo-skeletal pathology.

Subject Title	: PHYSIOTHERAPY IN ORTHOPAEDICS AND TRAUMATOLOGY
Duration	: 37- 42 Months
Total Hours	: 120 Hours
Theory	: 60 Hours
Practical	: 60 Hours
Total Hours / Week	: 8 Hours
Method of Assessment	: Written, Oral, Practical

COURSE OUTCOME:

At the end of the course, the students will be able to

- Rationalize the principles and PT management of various musculoskeletal disorders efficiently.
- Assess and identify the impairment, activity limitations and participatory restrictions caused by various musculoskeletal disorders in patients precisely under supervision.
- Plan the PT management of various musculoskeletal disorders in patients precisely under supervision.
- Demonstrate the PT management of various musculoskeletal disorders in patients precisely under supervision.

COURSE OUTLINE:

I. ORTHOPAEDIC ASSESSMENT

1 Subjective assessment

2 Objective examination

3 Observations - Built, Tropical changes, Posture, Attitude of the limb and deformity, Gait, External appliances

4 Palpation - Temperature, Texture, Tenderness, Edema & Swelling, Joint crepitus

5 Sensory examination-Superficial & deep sensation

6. Pain assessment-onset, location, pattern, quality, Rating, Aggravating & Relieving Factors, Type of Pain

7. Motor examination-Range of Motion, Joint play & End feel, Muscle power, Reflexes, Limb length, Muscle girth, Tone - Spasticity & Rigidity
8. Examination of Respiratory System
9. Higher function examination
10. Functional assessment
11. Special test

II. FRACTURES AND DISLOCATIONS OF UPPER LIMB

1. Review the mechanism of injury, clinical features, treatment and complications and describe the conservative and post operative physiotherapy management and home programme for the following injuries:

- Fracture clavicle
- Dislocation of shoulder joint
- Fracture of the proximal end of the humerus
- Fracture neck of humerus
- Fracture shaft of humerus
- Supracondylar fracture
- Intercondylar fracture
- Fracture of the medial epicondyle
- Fracture of the lateral condyle of the humerus
- Dislocation of the elbow
- Fracture of the head of the radius
- Fracture of the neck of radius
- Fracture of the olecranon
- Fracture of both bones of forearm
- Monteggia fracture dislocation
- Galleazi fracture dislocation
- Colle's fracture
- Fracture of scaphoid
- Dislocation of the lunate
- Fracture of metacarpal bones
- Bennett's fracture dislocation

III. ORTHOPAEDIC CONDITIONS OF UPPER LIMB

1. Discuss the etiology, clinical features, assessment, medical and physiotherapy management of the following conditions
    - Supraspinatus tendonitis
    - Rupture of rotator cuff
    - Periarthritis shoulder
    - Tennis elbow
    - Dequervain's disease
    - Trigger finger
    - Trigger thumb
    - Carpal tunnel syndrome
    - Dupytren's contracture

IV. FRACTURES AND DISLOCATIONS OF LOWER LIMB

1. Review the mechanism of injury, clinical features, treatment and complications and describe the conservative and post operative physiotherapy management and home programme for the following injuries:
    - Fracture pelvis
    - Dislocation of hip joint
    - Fracture neck of femur
    - Fracture shaft of femur
    - Fracture femoral condyles
    - Fracture tibial condyles
    - Fracture patella
    - Dislocation of knee
    - Fracture of tibia and fibula
    - Fracture and dislocation of ankle
    - Fracture of talus and calcaneum,

V. ORTHOPAEDIC CONDITIONS OF LOWER LIMB

1. Discuss the etiology, clinical features, assessment, medical and physiotherapy management of the following conditions
    - Iliotibial band friction syndrome
    - Knee and ankle ligament injuries
    - Patellar tendinitis
    - Chandromalacia patella
    - Plantar fascitis
    - Metatarsalgia

VI. FRACTURES OF SPINE

1. Review the mechanism of injury, clinical features, treatment and complications and describe the conservative and post operative physiotherapy management and home programme of cervical, thoracic, lumbar and sacral spinal fractures.

VII. ORTHOPAEDIC CONDITIONS OF SPINE

1. Discuss the etiology, clinical features, assessment, medical and physiotherapy management of the following conditions

- Spondylolisthesis
- Ankylosing spondylitis
- Lumbosacral strain
- Fibrositis back
- Congenital abnormalities in the spine
- Intervertebral disc prolapse
- Lumbar canal stenosis

VIII. ARTHRITIS

1. Discuss the etiology, clinical features, assessment, medical and physiotherapy management of the following conditions

- Osteoarthritis of hip and knee
- Rheumatoid arthritis

IX. AMPUTATIONS

1. Review the indications and principles of amputations of the upper and lower limbs and describe the Physiotherapy management and training of amputees before and after prosthetic fitting. Review immediate post-operative prosthetic fitting and list its advantages.

X. LOW BACK PAIN

1. Definition, causes of low back ache, clinical findings, assessment, differential diagnosis and Physiotherapy management

XI. PERIPHERAL NERVE INJURIES

Outline the, Physiotherapy management

1. Radial, median and ulnar nerve lesions
2. Sciatic and lateral popliteal nerve lesions
3. Brachial plexus injuries including Erb's palsy, Klumpke's palsy, crutch palsy.

XII. HAND INJURIES

1. Outline the Physiotherapy management of Tendon, bone, and joint injuries.

XIII. LEPROSY

1. Outline the Physiotherapy management for Leprosy and its complications like neuritis, muscle paralysis, Tropic ulcer of hand and feet and deformities.

XIV. BURNS

1. Describe the different degrees of Burns and review relevant first aid measures. Outline the Physiotherapy assessment of burns as follows: Degree and % of burns, presence of edema and adherent skin, range of motion of involved joints, muscle power, contractures, deformities, posture and chest movements. Review medical and surgical management including skin grafting. Describe the Physiotherapy aims and management of a patient with burns along with a home program.

XV. ORTHOSIS AND PROSTHESIS

1. Review upper & lower limb and spinal orthosis and prosthesis. Describer the principles and function of each list indications and contra-indications, advantages and disadvantages of each. Demonstrate the fabrication of simple hand and foot splints out of plaster of paris

Recommended books

1. Orthopaedics and Applied Physiotherapy – Jayant Joshi
2. Cash textbook of Orthopaedics and Rheumatology for Physiotherapists
3.Clinical Orthopaedic Rehabilitation – Brentz Brotzman

VII SEMESTER

COMMUNITY AND GERIATRIC MEDICINE

Course Description: This course describes the various aspects of health and disease, methods of health administration, health education and disease preventive measures in the community.

Subject Title	: **COMMUNITY AND GERIATRIC MEDICINE**
Duration	: 37-42 Months
Total Hours	: 60 Hours
Theory	: 60 Hours/ per week
Total hours per week	: 4
Method of Assessment	: Written

COURSE OUTCOME:

At the end of the course the students will be able to

- Explain the natural history of diseases and the influence of social, economic and cultural aspects of health and diseases effectively.
- Explain the various measures of prevention and methods of intervention for diseases with disability effectively.
- Plan the health care delivery system for rehabilitation at community based and health centre levels effectively
- Explain mode of transmission,route of entry and levels of prevention of communicale diseases
- Explain the influence of nutritional factors
- Explain health education and role of International health agencies,community leaders and health professionals in educating the community
- Explain the physiological changes of ageing and describe the diseases affecting geriatric population.

COURSE OUTLINE

1. Outline the natural history of diseases and the influence of social, economic and cultural aspects of health and diseases.
2. Outline the various measures of prevention and methods of intervention especially for diseases with disability.
3. Outline the health care delivery system and the public health administration system at central and state government level- primary health care, school health, health team at district hospitals and Primary Health Center, voluntary and international agencies in health care.
4. Outline the important national health schemes.
5. Define occupational health and list the methods of prevention of occupational hazards.
6. Outline the Employees State Insurance scheme and its benefit

7. Describe the social security measures for protection from occupational hazards, accidents, diseases and workman compensation act.

8. Define community based rehabilitation, institution based rehabilitation. Describe the advantages and disadvantages of institution based and community based Rehabilitation.

9. Describe the following communicable diseases with reference to water reservoir, mode of transmission, route of entry and levels of prevention

- Poliomyelitis
- Meningitis
- Encephalitis
- Tuberculosis
- Filariasis
- Leprosy
- Tetanus
- Measles
- Describe the epidemiology of Rheumatic heart disease, Cancer, Chronic degenerative disease, Cerebrovascular accident

10. Outline the influence of nutritional factors such as protein energy malnutrition, Anemia, vitamin deficiency and minerals on disability, nutritional programmes, Balanced diet, nutritional requirement and source, food adulteration

11. List the principles of health education, methods of communication and role of health education in rehabilitation service-Audio Visual aids, planning a health education Programme.

12. Define the role of community leaders and health professionals in health education.

12. Outline the role of international health agencies in rehabilitation of the disabled.

14. Geriatrics

a. Senior citizens in India

b. NGO's and Health related Legal rights and benefits for the elderly.

c. Institutionalized & Community dwelling elders

d. Theories of Aging

e. Physiology of ageing: Musculoskeletal, neurological, Cardio respiratory, metabolic changes

f. Geriatric degenerative changes

g. Changes in Musculoskeletal system

h. Changes in Neuro-motor system

i. Changes in cardio-respiratory system.

j. Alzheimer's disease, Dementia, Parkinson's Disease, Incontinence, Iatrogenic drug reactions, etc

Recommended books:

a) Textbook of Preventive & Social Medicine, Dr. J E Park

b) Fundamentals of Geriatric Medicine, A Case-Based Approach, Rainier P. Soriano.

c) ABC of geriatric medicine, Nicolas cooper.

d) Oxford American handbook of geriatric medicine. Samuel

e) Geriatric Medicine Survival Handbook , (revised edition), Brian Christopher

PHYSIOTHERAPY IN CARDIOPULMONARY MEDICINE AND SURGERY

COURSE DESCRIPTION:

This course serves to integrate the knowledge gained by the students in cardio pulmonary medicine and surgical conditions with the skills to treat the patients in clinical situations of dysfunction with physiotherapy treatment procedures due to cardio pulmonary pathology.

Subject Title	: PHYSIOTHERAPY IN CARDIOPULMONARY MEDICINE AND SURGERY
Duration	: 43-48 months
Total Hours	: 120 hours
Theory	: 60 Hours
Practical	: 60 Hours
Total Hours / Week	: 8 Hours
Method of Assessment	: Written, Oral, Practical

COURSE OUTCOME:

At the end of the course, the student will be able to

- Explain the physiological principles of physiotherapy treatment techniques for cardiopulmonary disorders effectively.
- Demonstrate the physiotherapy assessment to identify impairments, activity limitations and participatory restrictions caused in patients with cardiopulmonary disorders precisely under supervision.
- Plan the physiotherapy management for impairments, activity limitations & participatory restrictions in patients with cardiopulmonary disorders precisely under supervision.
- Demonstrate the physiotherapy management in patients with cardio pulmonary disorders effectively under supervision.

I. PHYSIOTHERAPY ASSESSMENT

1. Subjective, Objective and Functional physiotherapy assessment for cardiopulmonary conditions.

II. PHYSIOTHERAPY TREATMENT TECHNIQUES

1. Define, indications, contraindication, physiological effects, types, Precautions, complications of the following physiotherapy treatment techniques.

- Breathing exercise –Diaphragmatic,Apical, Posterior basal, Thorasic expansion exercise.
- Breathing re-education during functional activities
- Relaxation position for breathlessness patient
- Chest mobility exercise
- Exercise tolerance test
- Cough – Cough reflex, types of Cough. Coughing and Huffing
- Postural drainage – Modified & Home Postural Drainage - Vibrations, Percussion, Shaking.
- Forced Expiration Technique
- Autogenic drainage
- Active cycle of breathing technique

III. EQUIPMENTS USED IN INTENSIVE CARE UNIT

- Oxygen Therapy
- Ventilator – Modes, types, principles, weaning Criteria.
- Humidification – Physiology, Bubble jet, Pass over,
- Nebulization – Physiology, Ultrasonic nebulizer
- Suctioning – Types of Suction, steps and complications.
- Aerosol Therapy , Spirometry
- Defibrillator
- Pulse oxymetry
- Ambubag
- CPAP Mask

IV.PHYSIOTHERAPY IN INTENSIVE CARE UNIT

1.Define, Indications, Types of Intensive Care Unit, Assessment, Principles of physiotherapy for a patient in Intensive Care Unit including chest physiotherapy and adjunct for adult and pediatric patient.

V. PULMONARY DISEASES

1. Discuss the etiology, clinical features, assessment and physiotherapy management of the following conditions

- Chronic bronchitis and Emphysema
- Bronchial asthma
- Suppurative disease- Broncheictasis, Lung abscess
- Common infectious disease-Pulmonary Tuberculosis, Pneumonia
- Interstitial lung disease
- Occupational lung disease
- Pulmonary vascular disease-pulmonary hyper tension, Pulmonary thromboembolism
- Cancer lung
- Cystic fibrosis
- Disease of pleura- Pneumothorax and types
- Pleural effusion, Empyema
- Haemothorax
- Lung contusion
- Chest Deformities
- Pre and post operative physiotherapy management of pulmonary Surgeries – Pneumonectomy, Lobectomy, Segmenectomy.

VI. PULMONARY REHABILITATION

1. Define, indication, outcomes, steps in pulmonary rehabilitation.

VII. CARDIO VASCULAR DISEASES

Definition, Aetiology, clinical features, assessment and physiotherapy management of the following conditions

- Atrial Septal Defect
- Ventricular Septal Defect
- Fallots Tetrology
- Patent DuctusArteriosus
- Coarctation of Aorta
- Mitral Stenosis and Mitral Regurgitation.
- Aortic Stenosis and Aortic Regurgitation.
- Pulmonary Stenosis and Regurgitation.
- Ischemic heart disease
- Angina pectoris
- Myocardial infarction
- Heart failure
- Rheumatic fever
- Hypertension
- Infective endocarditis
- Myocarditis & cardiomyopathy

2 .Pre and Post Operative Physiotherapy management of following conditions

- Open heart surgery and closed heart surgery
- Coronary Artery Byepass Graft
- Valve replacement and Valvotomy.

VIII. CARDIAC REHABILITATION

1. Define, Rehabilitation team members, Explain in detail Phases of cardiac rehabilitation .

IX. PHYSIOTHERAPY FOR PERIPHERAL VASCULAR DISEASES

Definition, Physiology, Conditions of Peripheral Vascular Diseases ,Distributions of diseases, Evaluation-arterial, venous, lymphatic, Doppler, Treatment-Burgers exercise, cold laser, electrical stimulation, Intermittent compression and other physiotherapy treatments.

Recommended books:

1. Tidy's physiotherapy.
2. Cash’s Text Book of Chest, Heart, Vascular Disorders for Physiotherapists.
3. The Brompton Guide to chest physiotherapy DU Gasket [Completed]
4. Physical Rehabilitation Assessment and Treament – O’Sullivan Schmitz
5. Elements in Pediatric Physiotherapy – Pamela M Eckersley
6. Essentials of Cardio Pulmonary Physical Therapy by Hillegass and Sadowsky
7. Cardiao pulmonary Symptoms in physical Therapy practice Cohen and Michel
8. Chest Physiotherapy in Intensive Care Unit by Mackenzi
9. Cash’s Text book of General Medicine and Surgical conditions for Physiotherapists.

VIII SEMESTER

COMMUNITY & GERIATRIC PHYSIOTHERAPY

COURSE DESCRIPTION:

The subject serves to integrate the knowledge gained by the students in community medicine and other areas with skills to apply these in clinical situations of health and disease and its prevention. It describes 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.

Subject Title	: COMMUNITY & GERIATRIC PHYSIOTHERAPY
Duration	: 43 – 48 Months
Total Hours	: 120 Hours
Theory	: 60 Hours
Practical	: 60 Hours
Hours/week	: 8 hours/ week
Method of Assessment	: Written, Oral, Practical

COURSE OUTCOME:

At the end of the course, the students will be able to

- Explain about physiotherapy in community, and its approaches effectively
- Discuss the role of physiotherapy in community based rehabilitation effectively
- Explain about screening and rehabilitation of paediatric disorders in the community effectively
- Demonstrate vocational training in community rehabilitation precisely
- Discuss the role of physiotherapy in National health care delivery system in community precisely
- Explain lifestyle disorders effectively
- Demonstrate geriatric physiotherapy precisely under supervision
- Explain about geriatric physiotherapy and explain role of physiotherapist in geriatric rehabilitation effectively

COURSE OUTINE

PHYSIOTHERAPY INTERVENTIONS IN COMMUNITY

Physical fitness, Principles of fitness training for health promotion in community,
Stress management through yoga and psychosomatic approaches, Home exercise programs for various classifications of disabilities, Exercise prescription for the elderly, Psychosocial and safety issues in elderly, Holistic physiotherapy for the aged, Community mental health

ROLE OF PHYSIOTHERAPY IN CBR

Screening for disabilities, Prescribing exercise programme, Prescribing and devising low cost locally available assistive aids, Modifications of physical and architectural barriers for disabled, Disability prevention, Strategies to improve ADL, Rehabilitation programmes for various neuromusculoskeletal and cardiothoracic disabilities.

SCREENING AND REHABILITATION OF PEDIATRIC DISORDERS IN THE COMMUNITY:

Early detection of high risk babies, Maternal nutrition and education, Rehabilitation of Cerebral Palsy, Polio, Down Syndrome, Muscular Dystrophies etc., Prevention and rehabilitation of mental retardation and Behavioral disorders, Immunization programmes, Early intervention in high risk babies, Genetic counseling

VOCATIONAL TRAINING IN REHABILITATION:

Introduction, Need, Vocational evaluation, Vocational rehabilitation services

ROLE OF PHYSIOTHERAPIST IN NATIONAL HEALTH CARE DELIVERY SYSTEM

Disability survey,Epidemiological aspects and demands of Physiotherapy services,
Concept of rural camps and integration of infrastructural service and
voluntary agencies, extension services and mobile units.

LIFESTYLE DISORDERS

Physiotherapy role in planning, execution of lifestyle diseases like hypertension, obesity and diabetes mellitus. Role in developing awareness programs.

SPECIAL CONSIDERATIONS IN COMMUNITY

Advances in disaster management, Role of Physiotherapist as a member in disaster management team, Health care in the community – Principles & delivery systems
Principles and strategies of communication skills, management, information and evaluation system, records and reports, information technology, tele-medicine and tele-physiotherapy, journalism and mass media, Recent advances in community physiotherapy, Research in community physiotherapy.

GERIATRIC PHYSIOTHERAPY

1) Screening for health and fitness in geriatric population in community and old age homes.
2) Scales used in geriatric screening
3) Physiotherapy for aging Process (physiological changes due to aging)

4) Physiotherapy for degenerative changes-Musculoskeletal / Neuromotor /Cardio – respiratory conditions

5) Role of Physiotherapy in Hospital based care, Half-way homes, Residential homes, Home for the aged,

6) Institution based Geriatric Rehabilitation.

7) Physiotherapy for conditions like - Alzheimer's disease, Dementia, Parkinson's disease, Incontinence, Iatrogenic drug reactions, etc.
8) Ethics of Geriatric Rehabilitation.

Recommended books:

1. Rehabilitation Medicine by Howard A Rusk.
2. Rehabilitation Medicine by Joel A De lisa
3. Principles of Geriatric Physiotherapy, 2008, Multani

PHYSIOTHERAPEUTICS

COURSE DESCRIPTION:

This course serves to introduce the students to Advanced and latest Physiotherapeutic techniques to treat the patients with pain and dysfunction.

Subject Title	Physiotherapeutics
Duration	: 43-48 months
Total Hours	: 120 hours
Theory	: 60 Hours
Practical	: 60 Hours
Total Hours / Week	: 8 Hours
Method of Assessment	: Written, Oral, Practical

COURSE OUTCOME:

At the end of the course, the students will be able to

- Describe the principles of advanced manual therapy techniques like Maitland, Mulligan, McKenzie , Myofascial release, Positional release, Muscle energy technique, Trigger point release and neural mobilization effectively.
- Demonstrate the joint mobilization techniques like Maitland, Mulligan and McKenzie for minimum of 5 Joints in student model precisely under supervision.
- Demonstrate the soft tissue manipulation like Myofascial release, Positional release, Muscle energy technique Trigger point release and neural mobilization in student model precisely under supervision.

Course Outline

I. MUSCLE ENERGY TECHNIQUES

Definition of MET, History of MET, Anatomy Review Muscle Spindle Physiology,List examples of postural and phasic muscles and their characteristics Integration of the Spindle in MET

1.Bony Landmarks
2.Joint restrictions and Barrier Perception
3.Identify different normal and abnormal joint end-feels
4.Role of fascia to soft tissue dysfunction.
5.Difference between fibromyalgia and trigger points
6. Basic exercises using muscle energy techniques using post isometric relaxation in both acute and chronic contexts
7. MET for Muscles of UE / LE and Spine
8. Mobility Screening / Segmental Testing
9. Naming the Dysfunction
10. Breathing Disorders and Fibromyalgia
11. Rib Articulation and Biomechanics of Breathing The diaphragm

II. TRIGGER POINT THERAPY/MYOFASCIAL RELEASE THERAPY

1. Anatomy/Surface Anatomy
2. Neuromuscular physiology
3. Pathology
4. Trigger point therapy foundations and research
5. Trigger point massage techniques
6. Clinical application and practice

III. FASCIAL MANIPULATION

1. Highlights of anatomy of the human fascial system
    i. Gross anatomy of the fascial system
    ii. Myofascial/myotendinous expansions
2. Basic principles of fascia
3. Fascial manipulation

IV. MANUAL THERAPY

1. Bio Mechanical Principles of Manual Therapy
2. Concave- Convex Rule
3. Close Pack & Loose Pack Positioning
4. Resting Positioning
5. Joint Status
6. Barrier Concept
7. Clinical Reasoning Manual Therapy

V. JOINT MOBILIZATION TECHNIQUE (Terminology, Principles, Indications, Contraindication, Assessment, Effects & Uses)

1. Maitland
2. Mulligan
3. Mckenzie

VI. Positional Release Technique

1. Physiologic changes that occur in tense tissues
2. Effects of ischemia on muscle pain and trigger point evolution
3. Components of strain/counterstrain (SCS)
4. Positioning guidelines for applying SCS/PRT
5. Indications contraindications for SCS/PRT

VII. **Neurodynamics/Neural Mobilisation**

1. Anatomy review and Palpation of Peripheral nerves,
2. Indication, Contraindication, PrecautioN of Neurodynamics,
3. Examination of Upper Limb & Lower Limb neural tension test,
4. Neural stretching and Neural mobilization of the following nerves-
5. Median, Radial, Ulnar, Sciatic, Femoral, Lateral cutaneous nerve of thigh, Tibial, Peroneal, Sural nerve.

Recommended books

1. Muscle energy techniques: APractical hand book for Physical therapist by John Gibbons
2. Muscle energy techniques by Leon Chaitow
3. The Trigger point therapy workbook by Clair Davies & Amber Davies
4. Trigger point therapy for Myofascial pain by Dona Finando
5. The concise book of trigger points III Edition by Simeon Niel Asher
6. Fascial manipulation practical part by Luigi stecco & Carla stecco
7. Fascial manipulation for Musculoskeletal pain by Luigi stecco & John V.Basmajian
8. Fascial manipulation for Internal dysfunction by Luigi stecco & Carla stecco
9. Atlas of physiology of the muscular fascia by Luigi stecco
10. Positional Release techniques – Leon Chaitow
11. Positional Release therapy – Kerry D'Ambrogio
12. Clinical Neurodynamics – Michael Shacklock
13. Biomechanics of the Nervous system – Alf Breig & Shacklock
14. A motor relearning programme for Stroke by Carr JH and Shepherd RB Butterworth Heinemann.
15. Mobilisation of the Nervous System by David Butler
16. Maitland's Vertebral Manipulation, Volume 1 by Elly Hengeveld and Kevin Banks
17. Maitland's Peripheral Manipulation, Volume 2 by Elly Hengeveld and Kevin Banks
18. Manual Therapy: Nags, Snags, MWMs, etc by Brian R Mulligan
19. Manual of Mulligan Concept by Dr Deepak Kumar
20. Manual Mobilization of the Joints - Vol. 1: The Extremities, by Freddy Kaltenborn and Eileen Vollowitz
21. Manual Mobilization of the Joints - Vol. **2**: The **Spine** by Freddy Kaltenborn and Eileen Vollowitz

PROJECT (30 HOURS)

Subject Title	: **PROJECT**
Duration	: 43 – 48 Months
Total Hours	: 30 Hours
Theory	: 30 Hours
Hours/week	: 2 hours/ week
Method of Assessment	: Written work, Oral.

COURSE OUTCOME:

At the end of the course the student will be able

- Describe the basic steps in Research
- Discuss the methodology of carrying out Research
- Conduct a study with guidance and report the same in the prescribed format efficiently and discuss the results effectively

COURSE INFORMATION:

Each student will receive guidance from the physiotherapy teacher towards referring relevant literature / collect required data and discuss them with the project guide periodically and consolidate the findings and discuss them with the project guide before compiling into final shape.

After correction and edition of hand written manuscripts by the project guide, the student will compile his/her study/ work into a manual form for submission to the institution of study.

Two copies of the project work done by the student will be certified by the project guide as a bonafide record.

The student will be expected to submit the above project work three months before the commencement of final year examinations of the four and half years B.P.T. degree course.

AECC

ABILITY ENHANCEMENT COMPULSORY COURSE

CURRICULUM FOR ABILITY ENHANCEMENT COURSE

Basics of English **1st semester**

COURSE DESCRIPTION

This course has been designed to improve the communication skills of the students in English with the teachers, patients and public and enhance their drafting skills in English

COURSE OUTCOME:

At the end of the course, students will be able to

1. Develop good vocabulary and speak fluently in English
2. Draft letters and communicate through writing in English effectively

Subject Title	: **BASICS OF ENGLISH**
Theory / Lecture	: 2 Hours / Week
Method of Assessment	: Written

COURSE OUTLINE

UNIT: I GRAMMAR

1. Remedial Grammar : Parts of speech; Types of sentences, question tags
2. Modal verbs;
3. Tenses
4. Concordance

UNIT: II VOCABULARY

1. Word formation – prefixes and suffixes
2. Medical terminology
3. Words often misused or confused
4. Idioms and phrases

UNIT: III WRITING SKILLS

1. Letter writing - permission, leave and other official letters
2. Note making methods
3. Jumbled sentences - cohesion
4. Paragraph Writing

UNIT: IV SPOKEN COMMUNICATION

1. Pronunciation of commonly mispronounced words

2. Day to day conversation

3. Telephonic conversations

4. Group Discussions

UNIT: V LISTENING AND READING SKILLS

1. General Listening and reading comprehension

Textbook Recommended:

1. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata Mc Graw – Hill Publishing Company Limited, New Delhi. (Approx. Cost Rs. 200)

2. English for Colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers. (Approx. Cost Rs. 150)

References:

1. High School English Grammar and Composition by Wren & Martin.

2. J. C. Nesfield, English Grammar Composition & Usage, Macmillan India Limited.

3. Practical English Usage, Michael Swan

4. Speak in English, Lakshminarayanan.K.R

5. A handbook of pronunciation of English words, J. Sethi and J.V. Jindal, Eastern Economy Edition.

6. Practical Communication By Abraham Benjamin Samuel

COURSE DESCRIPTION

This course has been designed on the study of the natural world and how it is influenced by people. It will emphasize the need of increasing awareness of the consequences of environmental degradation and human population growth, together with the need to conserve biodiversity. This course is to train students in a multidisciplinary environmental concepts drawing from various basic and applied disciplines.

Subject Title	: ENVIRONMENTAL STUDIES
Theory / Lecture	: 2 Hours / Week
Practical : 2 Hours / Week	
Method of Assessment	: Written

COURSE OUTCOME:

At the end of the course, the students will be able to

- Outline the nature of environmental studies and discuss the scope & importance of environmental studies effectively.
- Explain and classify ecosystem with its structure & function effectively.
- Elaborate the renewable & non- renewable resources effectively.
- Define biodiversity and outline the conservation of biodiversity effectively.
- Classify the types, causes, effects and controls of air pollution, soil pollution, water pollution, soil, chemical & Noise pollution with case studies effectively.
- Discuss the environmental laws and explain global warming , ozone layer depletion , acid rain & impacts on human communities & agriculture effectively.
- Explain the impacts of human population on environment effectively.

COURSE OUTLINE

Unit 1 : Multidisciplinary nature of environmental studies

Definition, scope and importance, need for public awareness.

Unit 2 : Natural Resources :
Renewable and non-renewable resources :

Natural resources and associated problems.
a) Forest resources : Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people.
b) Water resources : Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
c) Mineral resources : Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
d) Food resources : World food problems, changes caused by agriculture and over-grazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
e) Energy resources : Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies.
f) Land resources : Land as a resource, land degradation, man induced landslides, soil erosion and desertification.
• Role of an individual in conservation of natural resources.
• Equitable use of resources for sustainable lifestyles.

Unit 3 : Ecosystems

• Concept of an ecosystem.
• Structure and function of an ecosystem.
• Producers, consumers and decomposers.
• Energy flow in the ecosystem.
• Ecological succession.
• Food chains, food webs and ecological pyramids.
• Introduction, types, characteristic features, structure and function of the following ecosystems :
a. Forest ecosystem
b. Grassland ecosystem
c. Desert ecosystem
d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Unit 4 : Biodiversity and its conservation

• Introduction – Definition : genetic, species and ecosystem diversity.
• Biogeographical classification of India
• Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic and option values
• Biodiversity at global, National and local levels.
• Inida as a mega-diversity nation
• Hot-sports of biodiversity.
• Threats to biodiversity : habitat loss, poaching of wildlife, man-wildlife conflicts.
• Endangered and endemic species of India
• Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity.

Unit 5 : Environmental Pollution

Definition

• Cause, effects and control measures of :-

a. Air pollution

b. Water pollution

c. Soil pollution

d. Marine pollution

e. Noise pollution

f. Thermal pollution

g. Nuclear hazards

• Solid waste Management : Causes, effects and control measures of urban and industrial wastes.

• Role of an individual in prevention of pollution.

• Pollution case studies.

• Diaster management : floods, earthquake, cyclone and landslides.

Unit 6 : Social Issues and the Environment

• From Unsustainable to Sustainable development

• Urban problems related to energy

• Water conservation, rain water harvesting, watershed management

• Resettlement and rahabilitation of people; its problems and concerns. Case Studies

• Environmental ethics : Issues and possible solutions.

• Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies.

• Wasteland reclamation.

• Consumerism and waste products.

• Environment Protection Act.

• Air (Prevention and Control of Pollution) Act.

• Water (Prevention and control of Pollution) Act

• Wildlife Protection Act

• Forest Conservation Act

• Issues involved in enforcement of environmental legislation.

• Public awareness.

Unit 7 : Human Population and the Environment

• Population growth, variation among nations.

• Population explosion – Family Welfare Programme.

• Environment and human health.

• Human Rights.

• Value Education.

• HIV/AIDS.

• Women and Child Welfare.

• Role of Information Technology in Environment and human health.

• Case Studies.

Unit 8 : Field work

• Visit to a local area to document environmental assets river/ forest/grassland/hill/mountain

• Visit to a local polluted site-Urban/Rural/Industrial/Agricultural

• Study of common plants, insects, birds.

• Study of simple ecosystems-pond, river, hill slopes, etc.

REFERENCES

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

b) Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad –380 013, India, Email:mapin@icenet.net (R)

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

d) Clark R.S., Marine Pollution, Clanderson Press Oxford (TB)

e) Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumabai, 1196p

f) De A.K., Environmental Chemistry, Wiley Eastern Ltd.

g) Down to Earth, Centre for Science and Environment (R)

h) Gleick, H.P. 1993. Water in Crisis, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute Oxford Univ. Press. 473p

i) Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay (R)

j) Heywood, V.H & Waston, R.T. 1995. Global Biodiversity Assessment. Cambridge Univ. Press 1140p.

k) Jadhav, H & Bhosale, V.M. 1995. Environmental Protection and Laws. Himalaya Pub. House, Delhi 284 p.

l) Mckinney, M.L. & School, R.M. 1996. Environmental Science Systems & Solutions, Web enhanced edition. 639p.

COMMUNICATION & SOFT SKILLS

COURSE DESCRIPTION

This course is designed to improve the communication, interpersonal and logic skills for better placement

COURSE OUTCOME:

At the end of the course, students will be able to

- Foster healthy attitude.
- Develop effective inter and intra personal skills to be an effective team worker.

Communicate effectively in both academic and professional setup

COURSE OUTLINE

UNIT: I ASPECTS OF COMMUNICATION

1.Importance of communication, Process, Barriers

2.Non verbal Communication

UNIT: II SPEAKING

Opening and Closing conversations

2.Introductions and Address Systems

3.Expressing Courtesy

4.Giving Compliments and replying to Compliments

5. Presentation Skills

6. Telephonic conversation and telephone etiquette

UNIT-III PRESCRIBED READING

1.White washing the Fence- Episode from Tom Sawyer by Mark Twain

2.Bacon's Essays: - Of Goodness and goodness of nature

UNIT-IV WRITING

1.Letter writing- Letter of Complaints, Inviting and Declining an invitation

2. Memos and Email

3. Editing- Grammar, Spelling &Punctuation, Use of Dictionary & Thesaurus.

UNIT-V SOFT SKILLS

1. Active Listening Skills
2. Assertive Skills
3. Negotiation and Persuasive Skills
4. Interview Skills

Suggested text Book: Developing Communication Skills by Krishna Mohan and Meera Banerji, II edition, Macmillan.

Reference Books:

1.Communication Skills for Engineers and Scientists by Sangeeta Sharma and Binod Mishra, PHI Learning Private Limited, New Delhi.

2. English and soft skills by S.P. Dhanavel, Orient Black Swan

3. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw-Hill Publishing Company Limited.

4. Technical Communication - Principles and Practice, by Meenakshi Raman and Sangeetha Sharma, Il edition, Oxford University Press.

5. Developing Communication Skills by Krishna Mohan and Meera Banerji, II edition, Macmillan.

6. The Complete Guide to Functional Writing in English by M.Sarada, Sterling Publishers (P) Ltd., New Delhi.

7. Speaking Naturally: Communication Skills in American English by Bruce Tillitt and Mary Newton Bruder, Cambridge University Press.

RESEARCH METHODOLOGY AND BIOSTATISTICS 4th Semester

COURSE DESCRIPTION: This course will introduce to the student the basic research methodology, statistical concepts: methods of statistical analysis: and interpretation of data.

Subject Title	: Research Methodology and Biostatistics
Duration	: 13 – 18 Months
Total Hours	: 30
Theory	: 30 Hours
Lecture	: 2 Hours / Week
Method of Assessment	: Written

COURSE OUTCOME

At the end of the course the student will be able to

- Describe the basic methodology in Research and statistical concepts
- Perform basic statistical analysis and interpret the data.

Research Methodology

COURSE OUTLINE

1. 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.

2. Research problem: Statement of research problem, Statement of purpose and objectives of research problem, Necessity of defining the problem

3. Research design: Meaning of research design, Need for research design, Features for good design, Different research designs, Basic principles of research design

4. 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

6. Methods of data collection: collection of primary data, collection data through questionnaires & schedules, Difference between questionnaires & schedules.

7. Sampling fundamentals, need for sampling & some fundamental definitions, Important sampling distributions

8. Processing & analysis of data: Processing operations, problems in processing, Types of Analysis, Statistics in research, Measures of central tendency, Dispersion, Asymmetry, relationship.

10. Computer technology: Introduction to Computers, computer application in research, computers & researcher.

11. Ethical issues in research

BIOSTATISTICS

Section – B **[15 Hours]**

COURSE OUTLINE

1. 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.

2. Tabulation of Data: Basic principles of graphical representation, Types of diagrams – histograms, frequency polygons, smooth frequency polygon, cumulative frequency curve, Normal probability curve.

3. Measures of Central Tendency & Dispersion, Calculation and their significance in statistics

4. 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.

5. Inferential statistics : - Estimation & Hypothesis testing - Steps for hypotheis testing and Basic steps for testing hypothesis

Recommended Textbooks:

1. Elements of Health Statistics: Rao.N.S.N
2. An introduction of Biostatistics: Sunder Rao.P.S.S.
3. *Methods in Bio-Statistics 6th Edn. 1997: B.K. Mahajan*
4. Biostatistics : A manual of Statistics Methods: K. Visweswara Rao
5. *Elementary Statistics 1st Edn, 1990. in Medical Workers: Inderbir Singh*
6. Statistics in Psychology and education: Great and Henry
7. An Introduction to Gupta C.B. Statistical Methods, 1972: Ram Prasad & Sons
8. *Basic Statistics, 3rd Edn.: Simpsory G. Kaftha. P*
9. Research; Principles and Methods:L Denise F. Poli & Hungler
10. *Fundamentals of Research, 4th Edn.: David J. fox*

PHYSIOTHERAPY - ETHICS AND LAW **Fourth Semester**

COURSE DESCRIPTION

This course is designed to provide an introduction to physiotherapy ethics and make them aware of the various aspects of medical law and precautionary measures to be taken

COURSE OUTCOME

At the end of the course the student will be able to

- Describe the ethical concerns of medical law relating to Physiotherapy
- Demonstrate code of conduct & standard practice protocols

COURSE OUTLINE

1. Medical ethics versus medical law - Definition - Goal – Scope
2. Introduction to Code of conduct
3. Basic principles of medical ethics – Confidentiality
4. Malpractice and negligence - Rational and irrational drug therapy
5. Autonomy and informed consent - Right of patients
6. Care of the terminally ill- Euthanasia
7. Organ transplantation
8. Medical diagnosis versus physiotherapy diagnosis.
9. 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.
10. Professional Indemnity insurance policy
11. Development of standardized protocol to avoid near miss or sentinel events
12. Obtaining an informed consent.
13. Biomedical ethical principles
14. Code of ethics for physiotherapists
15. Ethics documents for physiotherapists
16. Laws affecting physiotherapy practice

Recommended books

1. Legal and Ethical Issues in Physical Therapy - Laura Lee Swisher, Carol Krueger-Brophy
2. Physical Therapy Ethics - Donald L. Gabard,

Acupuncture & Acupressure **4th Semester**

COURSE DESCRIPTION: The subject is designed to provide knowledge in learning the acupuncture and acupressure techniques and planning interventions for various General, Medical and Surgical conditions.

Subject Title	: Acupuncture & Acupressure
Total Hours / Week	: 3 Hours
Method of Assessment	: Written

COURSE OUTCOME :

At the end of the course the student will be able to
- assess and plan the treatment for relevant medical conditions and select & provide appropriate acupuncture and acupressure interventions to the patient.

COURSE OUTLINE :

1. **History of acupuncture/ acupressure & Basic theory of acupuncture/ acupressure**
   a) Philosophy of traditional Chinese medicine, including but not limited to concepts of *yin-yang* and the five phases, Functions of *qi*, blood, mind, essence and body

   fluids, as well as their relationship to one another, Physiological and pathological manifestations of *zang-fu* (visceral organs) and their relationship to one another, Meridians and collaterals, their distribution and functions, Causes and mechanisms of illness.

2. **Knowledge of acupuncture/ acupressure points**

   a. Location of the 361 classical points on the 14 meridians and the 48 extraordinary points. Location and anatomical description of the Commonly Used Points selected for Basic Training.
   b. Alphanumeric codes and names, classifications of points, direction and depth of insertion of needles, actions and indications of the commonly used points listed in the Appendix.

3. **Diagnosis**
   a. Methods of diagnosis, history taking, inspection and tongue diagnosis, palpation and pulse taking, auscultation and olfaction.
   b. Differentiation of syndromes according to the eight principles, the theory of visceral manifestations (zang-fu), the theory of qi and blood, and the theory of meridians and collateral vessels.
   c. Treatment (as permitted by national laws and health service regulations

4. Principles of treatment

a) Practical application of theory and diagnosis to treatment in each individual case.

b) Appropriateness of acupuncture treatment for the patient.

c) Planning of the acupuncture treatment to be given.

d) Appropriate selection of points and methods of needle manipulation.

e) Limitations of acupuncture, and need for referral to other health professionals or specialists.

f) Guidelines on safety in acupuncture.

5. Treatment techniques

a) Needling: sterile and safe needling technique, selection of needles, proper insertion, depth, duration, manipulation (various measures of reinforcement, reduction, and uniform reinforcement-reduction) and withdrawal, and contraindications of needling.

Recommended books

1. Dommerholt J, Huijbregts PA, Myofascial trigger points: pathophysiology and evidence-informed diagnosis and management Boston: Jones & Bartlett 2011
2. The Gunn approach to the treatment of chronic pain. Gunn, C.C., Second ed. 1997, New York: Churchill Livingstone.
3. Travell and Simons' myofascial pain and dysfunction; the trigger point manual. Simons, D.G., J.G. Travell, and L.S. Simons, 2 ed. Vol. 1. 1999, Baltimore: Williams & Wilkins.
4. Lewit, K., The needle effect in the relief of myofascial pain.
5. Baldry, P.E., Acupuncture, Trigger Points and Musculoskeletal Pain. 2005, Edinburgh: Churchill Livingstone.

Basics in Computer & Information science **5th Semester**

COURSE DESCRIPTION

This course is designed to provide basic knowledge of how computer works and become familiar with basic software applications

Subject Title	: **BASICS IN COMPUTER & INFORMATION SCIENCE**
Theory / Lecture	: 3 Hours / Week
Method of Assessment	: Written

COURSE OUTCOME:

At the end of the course, students will be able to

1. Identify computer hardware and peripheral devices
2. Use the computer with basic software applications

COURSE OUTLINE :

UNIT I - Introduction to Computer

Importance of computer – characteristics of computer - history of computer – generations of computer - types of computer.

UNIT II - Hardware

Information processing cycle – peripheral - input devices – memory unit – types of memory - output devices – external storage devices – Communication devices - Networks – types of networks – Internet – email.

UNIT III - Software

Types of software – programming languages – execution modes - Windows - File system - – Graphical applications

UNIT IV - Office Packages

MS word- MS Power point – MS Excel - MS Access – MS Publisher.

UNIT V - Advance Network Technologies

Telemedicine – Multimedia Technology – Image Processing – Computerized data processing – HTML. Recent Advances relevant to the core -course

Reference Books

1. Introduction to computers & Data processing – Shelly, Gray. B
2. Information Technology – Dennis P Curtin
3. An Introduction to Computer Applications in medicine – N.F. Kember
4. Mastering Microsoft office 2007 – Alison Balter‘s

FIRST AID AND EMERGENCY MANAGEMENT 6TH SEMESTER

COURSE DESCRIPTION: This course is designed to introduce the methods and procedures to be followed in case of medical emergencies and provide appropriate first aid

Subject Title	: **FIRST AID & EMERGENCY MANAGEMENT**
Total Hours / Week	: 3 Hours
Method of Assessment	: Written, Oral, Practical

COURSE OUTCOME:

At the completion of this course the student will be able to

- Identify and manage situation of common emergencies.
- Demonstrate first aid procedures appropriately

COURSE OUTLINE

1. First aid & Basic nursing procedures
2. Importance of First Aid in Physiotherapy.
3. Examination of Vital Signs
4. First Aid in cardiac arrest.
5. First Aid in Respiratory failure.
6. First Aid in Burns.
7. First Aid in Electric shock.
8. First Aid in Drowning.
9. First Aid in Spinal cord injuries.
10. First Aid in Hypovolemic Shock.
11. First Aid in Poisoning
12. Instrumentation used in First Aid (First Aid kit).
13. First Aid in RTA.
14. Indication of CPR.
15. Assessment and technique of CPR.
16. Artificial ventilation.
17. Training in basic life support

Recommended Textbooks

1. First aid in emergency – St-john. Ambulance Association.
2. Physiotherapy for burns & Reconstruction – Glassey.
3. Surgical & Medical Procedures for Nurses & Paramedical staff – Nathan.
4. First aid & management of general injuries & common ailments-Gupta & Gupta

Clinical Reasoning and Evidence Based Practice **7th Semester**

COURSE DESCRIPTION: This subject follows the basic science subjects to provide the knowledge about relevant aspects of clinical reasoning and evidence based practice

Subject Title	: Clinical Reasoning and Evidence Based Practice
Total Hours / Week	: 3 Hours
Method of Assessment	: Written

COURSE OUTCOME

At the end of the course student will be able to

- Describe the various aspect of evidence based practice in physiotherapy.
- Describe the various aspect of Clinical reasoning in physiotherapy.

COURSE OUTLINE

1. Introduction to Evidence Based Practice: Definitions, Evidence Based Practice, Evidence Based Physiotherapy Practice [3 hours]

2. Concepts of Evidence based Physiotherapy: Awareness, Consultation, Judgement, Creativity [1 hours]

3. Development of Evidence based knowledge, The Individual Professional, Professionals within a discipline, Professionals across disciplines [2 hours]

4. Evidence Based Practitioner: The Reflective Practitioner, The E Model, Using the E Model [1 hours]

5. Finding the Evidence: Measuring outcomes in Evidence Based Practice, Measuring Health Outcomes, Measuring clinical outcomes, Inferential statistics and Causation [3 hours]

6. 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 [2 hours]

7. Assessing the Evidence: Evaluating the evidence; Levels of evidence in research using quantitative methods, Levels of evidence classification system, Outcome Measurments, Biostatistics, The critical review of research using qualitative methods [4 hours]

8. Systematically reviewing the evidence: Stages of systematic reviews, Meta analysis, The Cochrane collabration [3 hours]

9. Economic evaluation of the evidence: Types of economic evaluation, Conducting economic evaluation, Critically reviewing economic evaluation, Locating economic evaluation in the literature [2 hours]

10. Using the evidence: Building evidence in practice; Critically Appraised Topics (CATs), CAT format, Using CATs, Drawbacks of CATs [2 hours]

11. 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 [3 hours]

12. Communicating evidence to clients, managers and funders: Effectively communicating evidence, Evidence based communication in the face of uncertainity, Evidence based communication opportunities in everyday practice [2 hours]

13. Research dissemination and transfer of knowledge: Models of research transfer, Concrete research transfer strategies, Evidence based policy [2 hours]

Recommended books:

1. Evidence-Based Practice in Nursing and Health Care: A Guide to Best Practice by Bernadette Melnyk (Editor), Ellen Fineout-Overholt (Editor)
2. Evidence-Based Rehabilitation: A Guide to Practice,by Mary Law
3. Achieving Evidence-Based Practice, by Susan Hamer, BA, MA, RGN, FETC(DIST),
4. The Evidence-Based Practice by Stout, Randy A Hayes

Radiology & Imaging **7th Semester**

COURSE DESCRIPTION:

This course has been designed to provide the basic information about common diagnostic and therapeutic imaging techniques.

	: **RADIOLOGY & IMAGING**
Subject Title	
Theory / Lecture	: 2 Hours / Week
Method of Assessment	: Written

COURSE OUTCOME

At the end of the course students will be able to

- Describe about X-Ray, CT, MRI, Ultrasound and Other Medical Images
- Interpret basic findings through these images

COURSE OUTLINE

1. **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.

2. RADIOGRAPHY AND MAMMOGRAPHY

a. Equipment components

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

3. FLUOROSCOPY

a. Definition
b. Equipment used for fluoroscopy
c. Indications and Contra indications
d. How it helps in diagnosis
e. The Findings in Fluoroscopy
g. Benefits versus Risks and Costs.

4. COMPUTEDTOMOGRAPY (CT)

a. Definition

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.

5. MAGNETIC RESONANCE IMAGING (MRI)

a. Definition

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.

6. ULTRASOUND

a. Definition

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.

7. ENDOSCOPY

a. Definition

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.

8. NUCLEAR MEDICINE

a. Definition

b. Equipment used for Nuclear Medicine

c. Indications and Contra indications

d. How it helps in diagnosis.

e. Benefits versus Risks and Cost

Recommended books:

1. Textbook of Radiology and imaging – David Sutton
2. Learning Radioogy: Recognising the basics – William Herring

ELECTRO PHYSIOLOGY AND DIAGNOSIS **8th Semester**

COURSE DESCRIPTION

This course had been designed to provide comprehensive overview about electrophysiology, electromyography and nerve conduction studies.

Subject Title	**: ELECTRO PHYSIOLOGY AND DIAGNOSIS**
Theory / Lecture	: 2 Hours / Week
Method of Assessment	: Written

COURSE OUTCOME:

At the end of the course, the student shall be able to

- describe electro diagnosis and nerve conduction studies.
- identify the neuromuscular diseases, relevant EMG features and able to compare the prognosis with electrophysiological readings.

COURSE OUTLINE:

Electro-diagnosis:

a) Neurophysiology of Nerve conduction studies and Electromyography.
b) EMG: Construction of EMG equipment and Instrumentation of Electrical stimulator, EMG, SFEMG, NCS (Nerve Conduction Studies).
c) Electrical study of reflexes (H- reflex, Axon reflex, F- response, Blink reflex, Jaw jerk, Tonic Vibration Reflex).
d) Repetitive nerve stimulation.
e) Nerve conduction velocity studies
f) Bio-feed back
g) Evoked potentials (SSEP, MEP, BAERA, and VER).
h) Interpretation of neurophysiologic responses in Neuropathy, myopathy and neuro-muscular disorders

Recommended books:

1. Manual of Electrophysiology – Mark Anderson
2. Electrophysiology: The Basics - Steinberg Jonathan S.

DISCIPLINE SPECIFIC ELECTIVE COURSE/ GENERIC ELECTIVE COURSE

CURRICULUM FOR DISCIPLINE SPECIFIC ELECTIVE COURSES /GENERIC ELECTIVE COURSES

ORIENTATION TO PHYSIOTHERAPY & REHABILITATION 1st semester

COURSE DESCRIPTION

The course provides the students a basic knowledge and features of physiotherapy and rehabilitation.

Subject Title	: **Orientation to Physiotherapy & Rehabilitation**
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

COURSE OUTCOME

At the end of the course the student will be able to

- Explain the patterns of health care delivery and components of physiotherapy profession.
- Discuss the role of physiotherapy in meeting health care needs in India.
- Explain about the Rehabilitation and the role of physiotherapist as a member of Rehabilitation team.

COURSE OUTLINE

1. **Patterns of Health Care Delivery**
    a. National Trends and resources
    b. Local trends and resources
    c. Overview of Health Science Professions

2. **Components of Physiotherapy Profession**
    a. History of Medical Therapeutics
    b. Introduction and history of Physiotherapy
    c. History of Physiotherapy
    d. Overview of Health Science Professions

3. **Role of Physiotherapy in meeting Health Care Needs in India.**
    a. Needs versus Demands
    b. Physiotherapist as 'Educator'
    c. Typical Job settings
    d. Common problems and solutions

4. Rehabilitation

a. Introduction to rehabilitation, Definition of Rehabilitation, Principles of rehabilitation, its aim & objectives.

b. Concept of disability (including mental illness), definitions and classification.

c. Difference between incidence and prevalence, Prevalence and incidence of disability

d. History of disability rehabilitation, Introduction to locomotor disability, disability and general medical conditions.

e. Global, National, State and Local legislations concerning disability and development, Poverty, disability and developmental programs.

f. Schemes & concessions for persons with disabilities, Advocacy and rights of persons with disabilities.

g. Role of community in the prevention of disabilities

RECOMMENDED BOOKS

1. Textbook of Preventive & Social Medicine, Dr. J E Park

2. Textbook of Rehabilitation medicine - Sunder

PERSONALITY DEVELOPMENT AND STRESS MANAGEMENT **1ST Semester**

COURSE DESCRIPTION

This course is designed to enlighten the students about various personality traits and methods of personality development and stress management

Subject Title	: **Personality Development and Stress Management**
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

COURSE OUTCOME

By successfully completing this course, students will be able to:

- Describe how a personality develops.
- Define the stages of personality development.
- Define personality types.
- Describe basic personality traits.
- Personality and stress.
- Health stress, coping and relaxation.
- Soft skills and personality.

COURSE OUTLINE:

Unit 1

Introduction to Personality Development, Developing Personality, Stages of Development, Types of personality, Theories of personality

Unit 2

How needs impact personality, Maslow‘s hierarchy of need, Basic Personality Traits; Values, Beliefs, Interactions, Experiences, Environmental influences, the big five dimensions.

Unit 3

Stress; causes, effect and types, Stress resistant personalities, Relaxation; training aspects importance and Body works.

Unit 4

Health stress and coping, Understanding and communicating our health needs, Behavioral and psychological correlates of illness.

Unit 5

Soft skill; need and importance, Personality development and soft skills. Effective communication, listening, speaking, writing, interpretation part of soft skills and personality

RECOMMENDED BOOKS

1. Hurlock (1976). Personality development. Tata McGraw Hill.
2. Baron R A, Psychology 5th edition, Pearsons publication.
3. Abraham A, General Psychology, Tata Mc Graw hill Education private limited.
4. Lazarus J Stress Relief and Relaxation Techniques, Viva Book Private limited.
5. Shelly E. Taylor, Health psychology, 7th edition, TATA McGrawHil, New Delhi.

TEAM BUILDING & LEADERSHIP **1st Semester**

COURSE DESCRIPTION

This course describes the student about team as an integral part of an organization and framework of leadership in managing them effectively.

Subject Title	: **Team Building & Leadership**
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

COURSE OUTCOME

At the end of the course, the student will be able to

- Explain the process of team development, factors affecting team performance and managing them effectively.
- Describe Leadership traits, styles and influencing team members.
- Discuss the role of leader in a team.

COURSE OUTLINE

Unit I :

Nature of Team – Team development process – stages of team development –Types of Team - Team composition and diversity.

Unit II :

Factors affecting team performance - Group dynamics – complexities of cooperative work – promoting effective team work.

Unit III :

Conflict management – Group think – Managing Team – Team member – Team leader – Leadership Grid - Leadership styles –Motivating team members - Essence of motivation.

Unit IV :

Leadership Traits - Character and integrity – Influencing Team - Ethics and Values- Building excellence - Emotional intelligence - Laws of leadership.

Unit V :

Coaching and Mentoring – Working with power and politics – Leadership and diversity-change- - organization.

RECOMMENDED BOOKS

1. Groups That Work (and Those That Don't): Creating Conditions for Effective Teamwork – Hackman J. R
2. Team-Work and Group Dynamics – Stewart G.L., Sims H. P., Manz C. C.
3. Effective Leadership – Robert. N.Lussier& Christopher. F. Achua.
4. Watson M Craig. Dynamics of leadership. Jaico Publishing House. 2001.
5. Daniel Goleman. ―Leadership that Gets Results.‖ Harvard Business Review On Point
6. Enhanced Edition. Boston: Harvard Business School Publishing, 2000.
7.

MEDICAL TERMINOLOGY AND RECORD KEEPING 2nd Semester

COURSE DESCRIPTION

This course enables the student to know about the elements of medical terminology in healthcare and physiotherapy and to manage the data entry on electronic health record system.

Subject Title	: **Medical Terminology and Record Keeping**
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

COURSE OUTCOME

At the end of the course, the student will be able to

- Elaborate the medical abbreviations/symbols correctly.
- Explain about the data entry and management on electronic health record system.

COURSE OUTLINE

1. Derivation of medical terms.
2. Define word roots, prefixes, and suffixes.
3. Conventions for combined morphemes and the formation of plurals.
4. Basic medical terms in health care and physiotherapy.
5. Form medical terms utilizing roots, suffixes, prefixes, and combining roots.
6. Interpret basic medical abbreviations/symbols.
7. Utilize diagnostic, surgical, and procedural terms and abbreviations related to the integumentary system, musculoskeletal system, respiratory system, cardiovascular system, nervous system, and endocrine system.
8. Interpret medical records/reports.
9. Data entry and management on electronic health record system.

RECOMMENDED BOOKS

1. Medical Terminology, Documentation, and Coding - Anne P. Stich
2. Authoring Patient Records: An Interactive Guide - Michael Pagano

COUNSELLING AND GUIDANCE **2nd Semester**

COURSE DESCRIPTION

This course will introduce the student about basics of counseling and guidance and methods to improve the counseling skills

Subject Title	: **Counselling and Guidance**
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

COURSE OUTCOME

At the end of this course, the students will be able to:

- Explain the concepts, theories, ethical issues and basic skills of counseling.
- Explain the attending and listening skills in improving relationships.

COURSE OUTLINE

UNIT I:
Introduction and definition of Counselling and Guidance, Counsellor Preparation, Qualifications, Qualities, Legal and Professional ethics

UNIT- II:
Different approaches to counselling, goals in counselling, role and functions of the counsellor.

UNIT- III:
Micro skills in Counselling- relationship building strategies and methods: Opening techniques, attending skills- verbal and non-verbal communication, Listening skills: Open questions and closed questions, Encouragement, Paraphrasing, Reflection, Summarization, influencing skills-Reframing, genuineness and Self-disclosure.

UNIT-IV:
Macro skills in Counselling, empathy, advanced empathy, Confrontation & challenging, Resistance, transference and counter-transference

UNIT-V: Counselling situations and Counselling across life-span.

RECOMMENDED BOOKS

1. Corey, G. (2004). *Theory and Practice of Counseling and Psychotherapy* (7th ed.). Wadsworth Publishing.
2. Gladding, S.T. (2003). *Counseling: A Comprehensive Profession* (5th edition.). Prentice-Hall Career & Technology.
3. Narayana Rao, S. (2002). Counselling and Guidance (Rev. Second Edition). Tata McGraw-Hill, New Delhi.
4. Thomas, R. Murray. (1990). Counselling and Life Span Development. Sage Publications, New Delhi.

BASICS OF NURSING (30 HOURS) **2nd Semester**

COURSE DESCRIPTION

This course enables the student to know about the role of nurses in various anomalies of human body and the care that to be taken by them in emergency situations.

Subject Title	: **Basics of Nursing**
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

COURSE **OUTCOME**

At the end of this course, the students will be able to:

- Discuss the role of nurses in therapeutic measures and care of the terminally ill patients.
- Explain about the role of nurses in first aid and emergency situations.

COURSE OUTLINE

I. Nurses role in the therapeutic measures

- Local applications
- General applications
- Drainage, irrigation and introduction of food into the elementary tract
- Aspiration and drainage of body cavities
- Drainage, irrigation and medication of urinary bladder
- Irrigation and medication of eye, ear, nose and throat
- Administration of oxygen and other gases and the use of respirator
- Administration of medicines
- Administration of food and fluid by parenteral therapy
- Care of wounds, including surgical dressings

II. Care of the terminally ill patients

- Needs of the terminally ill patients
- Signs of death
- Care of the death

III. First aid and Nursing in simple emergency: definition of first aid, aims and objectives, responsibilities and general principles for first aiders.

(a) Bandage, material used in bandaging, techniques of application of a roller bandage, techniques of application of a triangular bandage. Different types of knots and slings.

First aid kit, articles and purposes

(b) Application of splints, plaster of paris, traction and strapping

- Definition, types of

application procedure

c) Emergency Nursingcare

— Wound
— Haemorrhage
— Shock
— Burns and scald
— Unconsciousness
— Epilepsy
— Drowning, strangulation, choking, inhalation of fumes
— Poisoning & insect bites
— Respiratory and cardiac arrest
— Injuries to bones, muscles, joints
— Miscellaneous conditions; dog bite, snake bite, heat stroke, frost bites

(d) Transportation of injured person

RECOMMENDED BOOKS

1. Textbook of Basic Nursing - Caroline Bunker Rosdahl, Mary T. Kowalski
2. Fundamentals of Nursing Made Incredibly Easy - Karen C. Comerford

YOGA THERAPY **3rd semester**

COURSE DESCRIPTION:
In this course, the students will learn the principles and effects of yoga and its uses in medical conditions.

Subject Title	: **Yoga Therapy**
Total Hours / Week	: 3 Hours
Method of Assessment	: Written

COURSE OUTCOME

At the end of the course, the student will be able to

- Explain the fundamental principles of Yoga ,
- Explain the benefits, indications and contraindications of different Asanas
- Demonstrate basic Yoga practices
- Explain therapeutic applications of Yoga in Physiotherapy,
- Describe the role of Yoga in Self-management of Stress and better academic performance.

COURSE OUTLINE

1. Basic Principles of Yoga
2. Introduction and Definitions of Yoga,
3. Four paths of Yoga
4. Astanga Yoga
5. Hatha Yoga vs Astanga Yoga
6. Understanding different dimensions of Health
7. Concept of Mind / Indriyas
8. Concept of Stress – Eastern and Western
9. Psychosomatic Diseases – Eastern Philosophy and HPA Axis
10. Therapeutic Application of Yoga
11. Concept of Pancha Kosa / IAYT
12. Concept of Health, body and Disease
13. Asana vs Exercises & Shadkriyas (Cleansing Techniques)
14. Concept of Prana and Pranayama
15. Meditation/ Guided Relaxations
16. Yogic Principles and Practices of Healthy Living
17. Role of Yoga in Common/ Psychosomatic Ailments
18. Role of Yoga for Musculoskeletal Disorders
19. Role of Yoga for Neurological Disorders
20. Role of Yoga for Respiratory Disorders
21. Role of Yoga for Psychiatric Disorders
22. Scope of research in Yoga Therapy

Practical's **30 hours**

1. Sukhma Vyayama (Loosening Exercises)
2. Suryanamaskar
3. Standing Postures:
4. Sitting Postures:
5. Padmasana, siddhasana, sukhasana, Yogamudrasana, Virasana, Gomukhasana, Pashchimottansana, Ardha matsyendrasana, Ardha matsyendrasana
6. Supine Postures:
7. Pawanamuktasana, Ardha Halasana, Halasana, Setubandhasana, Naukasana, Matsyasana, Shavasana, sarvangasana, Urdhva dhanurasana, Viparitakarani
8. Prone Postures :
9. Pranayama – Sectional Breathing, Nadishuddi, Bramari, Kaphalabhati
10. Shadkriya – Neti, LSP
11. IYTM for Promotion of Health
12. IYTM for Musculoskeletal Disorders
13. IYTM for Neurological Disorders
14. IYTM for Respiratory Disorders
15. IYTM for Psychiatric Disorders

RECOMMENDED TEXTBOOKS

1. PPH – Dr Nagendra and Dr R Nagaratna, SVYP Publications
2. The Science of Yoga – I K Taimini
3. Lights on Pranayama – BKS Iyengar
4. Yoga for Common Ailments series - Dr Nagendra and Dr R Nagaratna
5. Yoga Nidra – Swami Satyananda Saraswathi
6. Four Paths of Yoga – Swami Vivekananda

NATUROPATHY **3rd Semester**

COURSE DESCRIPTION:
This course describes about the basic concepts of Naturopathy and basic methods of treatment in Naturopathy.

Subject Title	: **Naturopathy**
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

COURSE OUTCOME

At the end of the course, the student will be able to explain about nature cure, catechism of nature cure, principles and methods of nature cure.

COURSE OUTLINE

CHAPTER I – INTRODUCTION

a) Nature cure
b) Definitions of Nature Cure and History of Naturopathy
c) Three fold constitution of man
d) Two fold attitude of mind and soul
e) Symphony of life
f) Basic Principles of Nature Cure
g) Laws of Nature
h) Violations of Nature

CHAPTER II - CATECHISM OF NATURE CURE

a) Constructive Principle b) Destructive Principle c) Health d) Disease e) Acute disease f) Chronic disease g) Healing crisis h) Disease crisis i) Cure j) Normal/Natural. Primary causes of disease and its manifestations

CHAPTER III – PRINCIPLES & METHODS.

1. Properties of Water, Mud, Air, Sunlight. 2. Health is positive and Disease is Negative. 3. Importance of physical and mental hygiene. 4. Scientific relaxation and normal suggestion.5. Toxins and anti toxins in Nature cure way 6. Nature cures Vs. Modern medicine.

RECOMMENDED TEXTBOOKS

1. Naturopathy: The Drugless System of Healing - V. M. Kulkarni
2. Naturopathy for Longevity - H.K. Bakhru

BIOMEDICAL WASTE MANAGEMENT **3rd Semester**

COURSE DESCRIPTION:

This course describes about the various biomedical wastes and how to manage them effectively.

Subject Title	: **Biomedical Waste Management**
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

COURSE OUTCOME

At the end of the course, the student will be able to explain about biomedical waste and management and methods of disinfection.

COURSE OUTLINE

1. Definition of Biomedical Waste
2. Waste minimization
3. BMW – Segregation, collection, transportation, treatment and disposal (including color coding)
4. Liquid BMW, Radioactive waste, Metals / Chemicals / Drug waste
5. BMW Management & methods of disinfection
6. Modern technology for handling BMW
7. Use of Personal protective equipment (PPE)
8. Monitoring & controlling of cross infection (Protective devices)

RECOMMENDED TEXTBOOKS

1. Biomedical Waste Management - Dr. R. Radhakrishnan
2. Bio-Medical Waste Management - Sushma Sahai

PUBLIC HEALTH AND HYGIENE **4th Semester**

COURSE DESCRIPTION:

This course deals with significance and relevance of public health and hygiene and the health hazards associated with public health and hygiene.

Subject Title	: **Public Health And Hygiene**
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

COURSE OUTCOME

At the end of the course, the student will be able to explain about public health aspects, epidemiology and hygiene concepts of public health.

COURSE OUTLINE

I Introduction

Definition and Concept of Public Health, historical aspects, public health system in India and in the rest of world

II Aspects of health

Indicators of health, Determinants of Health, (Social, Economic, Cultural, Environmental, Education, Genetics, Food and Nutrition). Burden and prevention of disease. Environmental health- sanitation, air, water pollution, waste management. Mental health.

III Epidemology

Introduction, principles and concepts, study design, analysis methods, presentation and interpretation of epidemiological data

IV Hygiene concepts

Definition, importance, personal hygiene, medical hygiene, food hygiene, industrial hygiene.

RECOMMENDED TEXTBOOKS

1. Introduction to Public Health, Raymond L. Goldsteen, Karen Goldsteen, David G. Graham, 2011, Springer publishing company
2. Introduction To Community Health Nursing, Kasturi Sundar Rao, 4th edition, Bi Publications Pvt Ltd
3. Concepts of Epidemiology, Raj S Bhopal, 2002, Oxford University press
4. A Treatise On Hygiene And Public Health, Birendra Nath Ghosh, 9th edition, Calcutta Scientific Publishing Co
5. An Introduction to Public Health, Caryl Thomas, 1949, John Wright and Sons Ltd.,

INFECTION PREVENTION AND CONTROL **4th semester**

COURSE DESCRIPTION

This course describes about Infection, Prevention methods and control of the same in various settings.

Subject Title	: **Infection Prevention and Control**
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

COURSE OUTCOME

At the end of the course, the student shall be able to explain about infectious disease and its control and prevention.

COURSE OUTLINE

Unit 1 :

Overview of infectious diseases with special reference to communicable pathogens. Hand hygiene principles, practice and audit. Handling of patients with communicable diseases and the principles of isolation policies. Reporting of communicable diseases to the governmental agencies. Biomedical waste management and the current regulations.

Unit 2 :

Infection prevention in Operating rooms, Casualty, Dialysis , transplant units, Burns unit.
Occupational exposure to infection and management, environmental surveillance protocols.

Unit 3 : Infection control in Central Sterilization Services department, Laundry, Diet kitchen. Infection control in Intensive Care Units including prevention of Device Associated Infections.

Unit 4 : Monitoring of Antimicrobial use and audit.

RECOMMENDED BOOKS

1. Handbook Of Hospital Infection Control – Sanjay Singhal
2. Basics of Infection Control for Health Care Providers 2nd edition: Mike kennamar
3. APIC Text of Infection Control and Epidemiology, 4th ed.
4. Hospital Epidemiology and Infection Control – Glen Mayhall . 4th Edition. Lippincott Williams
5. Hospital Clinical Waste, Hazards, Management and Infection Control . Dr. Ashok Saini . Indian Society of Health Administrators. Yem Yes Printers
6. Hospital Acquired Infections – Prevention and Control , PurvaMathur, 1st Edition, Lippincott Williams

HOSPITAL MANAGEMENT **4th Semester**

COURSE DESCRIPTION

This course describes about the various strategies involved in the management of a full fledged hospital.

Subject Title	: **Hospital Management**
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

COURSE OUTCOME

At the end of the course, the student shall be able to explain about Hospital management, services, risk factors and safety management.

COURSE OUTLINE

UNIT 1 –Introduction to Management
Introduction - Definition – Steps - Planning – Organizing – Staffing –Directing – Controlling

UNIT 2 – Introduction to Clinical service
Types of Hospitals - Organization and administration of various clinical services: Outpatient services – In-patient services - Emergency services - Operation theatres – Nursing services - ICU's.

UNIT 3– Hospital Support services
Organization and Administration of various Support services: – CSSD — Diet – Medical records

UNIT 4 – Hospital Ancillary Services
Organization and Administration of various Ancillary services: Housekeeping – Linen and Laundry-Engineering services – Transportation

UNIT 5 – Hospital Diagnostic and Therapeutic services
Organization and Administration of various Diagnostic and Therapeutic services: Radiology - Laboratory – Pharmacy - Blood bank

UNIT 6 – Safety and Risk management
Hospital waste management – Nosocomial infection – Disaster management – Hospital security service - Occupational safety in hospitals

RECOMMENDED BOOKS

1. Principles of Management by – SakthivelMurugan, New Age International Publishers
2. Hospital Administration – DC Joshi &Mamta Joshi, Jaypee Brothers Medical Publishers(P) Ltd
3. Principles of Hospital Administration and Planning – by B. M. Sakharkar, Jaypee Brothers Medical Publishers
4. Total Quality Management by – V.JayaKumar, Lakshmi Publications
5. Forensic Medicine and Toxicology by – VV. Pillay, Paras Publication

DIET AND NUTRITION **5th Semester**

COURSE DESCRIPTION

This course describes about basics of food and nutrition and their role in wellness, health and disease.

Subject Title	: **Diet and Nutrition**
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

Course Outcome:

At end of this course, the students will be able to describe the

- Use of food in the body and its relationship to good health through basic principle of Nutrition effectively
- Functions of nutrients, their sources, requirements and effects of deficiencies.
- Knowledge of nutrition applications in daily life.
- Importance of water and interrelationship between water and nutrients effectively.

COURSE OUTLINE

I-Basics of food and Nutrition

Food: Definition of food, nutrition and nutrients characteristics of good health. Relation of nutrition to good health Optimum Nutrition – Malnutrition – Over and under nutrition

Classification of foods: Based on (a) Major nutrient content/ (b) Basic five food group/(c) and functional food group classification, i.e. energy giving foods, Body building foods, protective foods

II-Food selection:

Factors, responsible for food selection

Methods of cooking: Advantages and disadvantages of each method with examples. Food preservation: Food spoilage, causes and prevention. Methods of food preservation. Food additives – colorants, flavour- producing agents and their identification

III-Food Groups

Discussion of following foods under different headings structure: Composition, nutrient content and methods of preparation.(a)Cereals, (b) Pulses, (c) Nuts and oil seeds (d) Milk and Milk products, (e) Flesh foods – meat,fish and poultry (f) Eggs (g) Fruits and Vegetables (h) Beverages, (i) spices and condiments (j) Convenience foods.

IV-Macronutrients

Macro Nutrients: carbohydrates, lipids and protein-their occurrence in the body – composition, classification; functions, dietary sources and daily recommended allowances.

V-Vitamins

Dietary requirements – summary of vitamin stability – toxicity and sources of vitamins– bioavailability of vitamins– reasons for losses in foods

VI-Minerals

Dietary requirements – summary of Mineral stability – toxicity and sources of Minerals – bioavailability of Minerals – reasons for losses in foods.

VII-Water and Interrelationship between Nutrients

Importance of water and water balance & Interrelationship between nutrients.

RECOMMENDED BOOKS

1. Foods- Nutrition & Health, Vijaya Khader, 1st Edition, Kalyani Publishers / Lyall Bk Depot, 2003.
2. A Textbook on Human Nutrition, Bamji MS, PrahladRao N and Reddy V, 3rd Edition, Oxford and IBH Publishing Co., New Delhi, 2010.
3. Handbook of Nutrition and Food, Carolyn D. Berdanier, Johanna T. Dwyer, David Heber, 3rd Edition, CRC Press, 2013.
4. Food, Nutrition and Health, Linda Tapsell, Oxford University,2013.
5. Food Science, B.Srilakshmi, 5th Edition, New Age International (P) Limited, 2010.
6. A Handbook of Foods and Nutrition, F.C. Blank, Reena, Agrobios (India), 2009.

LIFESTYLE DISORDERS **5th Semester**

COURSE DESCRIPTION

This course describes about the various disorders and health issues related to lifestyle.

Subject Title	: **Lifestyle Disorders**
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

COURSE OUTCOME

At the end of the course, the student shall be able to

- Discuss the modern lifestyle disorders and dietary disorders effectively.
- Describe the social health problems effectively.
- Describe the gastrointestinal disorders effectively.

COURSE OUTLINE

UNIT I
Modern Life style disorders
Deskbound and sleeping habits, junk food, anxiety. Food poisoning, Acidity.

UNIT II
Dietary disorders
Food groups and concept of a balanced diet, obesity, metabolic syndrome, hypertension-their causes and prevention through dietary and lifestyle modifications

UNIT III
Social health problems
Smoking, alcoholism, drug dependence and Aquired Immuno Deficiency Syndorme (AIDS).

UNIT IV
Gastrointestinal disorders
Stomach disorders-Gastritis, Ulcer, Amoebiasis, Constipation, piles
Common ailment- cold, cough, fevers, diarrhoea, constipation- their causes and dietary treatment

RECOMMENDED BOOKS
1. Guide to Prevention of Lifestyle Diseases - M. Kumar R. Kumar
2. Lifestyle Medicine: Lifestyle, the Environment and Preventive Medicine in Health and Disease - Garry Egger, Andrew Binns, Stephan Rossner

FUNDAMENTALS OF OCCUPATIONAL HEALTH **5TH Semester**

COURSE DESCRIPTION

This course will provide global and national perspectives on a range of hazards encountered in community and workplace settings and consequent health burdens together with relevant regulatory frameworks for prevention and control of such exposures.

Subject Title	: **Fundamentals of Occupational Health**
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

COURSE OUTCOME

At the end of the course, the student will be able to

- Describe the occupation and health connection effectively.
- Describe the occupational health hazards, industrial hygiene and safety effectively.
- Discuss the Global, National environmental burden of disease and standards and also guidelines for safety and health effectively.
- Describe Environmental Act and Guidelines effectively.

COURSE OUTLINE

1. The Occupation and Health Connection

a) Historical perspectives
b) Impact of occupational factors on health
c) Link between occupation and health
d) The Global agenda (ILO, WHO, Millennium Development Goals)
e) The Indian agenda (Five Year Plan)
f) Role of environmental and occupational health professionals

2. Overview of Occupational Health Hazards

a) Overview of occupational safety and health hazards
b) Overview of common occupational diseases
c) Status of occupational health in the World and in India
d) Medical surveillance
e) Ethics and code of good practices in occupational safety and health

3. Overview of industrial hygiene and safety

a) Recognition, evaluation and control of occupational hazards: Chemical, Physical, Biological, Ergonomic, Psychological
b) Introduction to industrial safety: Mechanical safety, Electrical safety, Material handling, Industrial accidents

4. Global and National Environmental Burden of Disease

a) Occupational risk factors
b) Burden of disease attributable to major occupational risk factors
c) Occupational attributable fraction by disease
d) Preventing disease through healthy environments

5. Standards and Guideline for Safety and Health

a) Overview of legal framework of OSH in India
b) Factories Act, 1948, other important legislations:
c) OSHA, EU Standards,
d) ACGIH, International conventions, WHO Healthy Worker Agenda

6. Environmental acts and Guidelines:

a) Environment Protection Act, The National Environment Tribunal act, The National environment appellate authority act, The Public liability insurance act, US Environment Protection Act,
b) Introduction to Environment Management systems
c) ISO 14001, OSHAS 18001,

RECOMMENDED BOOKS

1. Environmental Health, Dade W Moeller, 3rd edition. 2005
2. Basics of Environmental Health, Annalee Yasi et al, 2001, WHO.
3. Occupational and Environmental Medicine, Joseph LaDou, 3rd Edition 2002
4. Environment and Occupational medicine, William N. Rom 2nd Edition. 1992
5. Occupational Health, Barry S. Levy, David H. Wegman, 4th Edition, 2000.
6. OSH for Development, By Kaj Elgstrand and Nils F. Petersson (editors)

BIOFEEDBACK **6th Semester**

COURSE DESCRIPTION

This course describes about feedback and the role of biofeedback in Physiotherapy and Rehabilitation.

Subject Title	: **Biofeedback**
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

COURSE OUTCOME

At the end of the course, the student will be able to

- Define feedback and describe the types of Biofeedback effectively.
- Describe the Biofeedback equipment and its principle and mechanism of action effectively.
- Describe the component of treatment and physiological principles of Biofeedback effectively.

COURSE OUTLINE

1. Definition
2. Feedback
3. Different types of biofeedback
4. Principle & Mechanism of Action
5. Biofeedback equipment & Feedback loop
6. Biofeedback as a Component of Treatment
7. EMG Biofeedback - Physiological Principles

RECOMMENDED BOOKS

1. The Clinical Handbook of Biofeedback: A Step-by-Step Guide- Inna Z. Khazan
2. Biofeedback - Krista West

EXERCISE PHYSIOLOGY **6th Semester**

COURSE OBJECTIVES

This course deals with the physiological changes and physiological adaptations to exercise.

Subject Title	: **Exercise Physiology**
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

COURSE OUTCOME

At the end of the course, the student will be able to

- Describe the aerobic and anaerobic exercises effectively.
- Describe the changes in cardiovascular and respiratory system respectively.
- Explain the applied work physiology effectively.

COURSE OUTLINE

1. AEROBIC & ANAEROBIC EXERCISE

Aerobic processes intensity & duration of exercise, prolonged exercise, muscular stress involved in exercise.

Anaerobic processes: Power & capacity of high energy breakdown.
Lactate: Production- distribution & disappearance, effect of metabolism on tissue & blood Ph, Anaerobic threshold, Maximal aerobic power, maximal anaerobic power.

2. CARDIOVASCULAR & CIRCULATORY SYSTEM

Cardiac cycle – pressure during cardiac cycle, Hemodynamics mechanical work and pressure, hydrostatic pressure, flow and resistance, various-capillary structure and transport mechanism, filtration & osmosis, vascularisation of Skeletal muscles, regulation of circulation during exercise, cardiac output & O_2 uptakes –stroke volume, blood pressure.

3. RESPIRATORY SYSTEM:

Lung compliance, air way resistance, pulmonary ventilation at rest and during exercise, diffusion in lung tissues, gas pressure – ventilation & perfusion-regulation of breathing – exercise, high air pressures-Breath holding diving.

4. APPLIED WORK PHYSIOLOGY:

Factors affecting sustained physical work, assessment of work load in relation to work capacity, Assessment of maximal aerobic power measurement of oxygen uptake in a typical work situation, Assessment of load exerted on specific muscles, Classification of work, Daily rates of energy expenditure, energy expenditure during specific activities like sleeping, sedentary, work, house work, light industry, manual labor.

RECOMMENDED BOOKS

1. Essentials of Exercise Physiology – Larry.N.Shaver
2. Essentials of Exercise Physiology – Katch & Katch

HEALTH AND FITNESS **6th Semester**

COURSE DESCRIPTION - This course includes discussion on the theories of health and wellness, including motivational theory, focus 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.

Subject Title	: **Health And Fitness**
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

COURSE OUTCOME

At the end of the course, the student will be able to

- Define health and healthy people and also describe the prevention practice and healthy people in relation to Physiotherapy effectively.
- Define fitness and fitness training and describe its components effectively.
- Describe the health, fitness and wellness in childhood, adolescence and adulthood precisely.
- Describe the women's health issues during pregnancy and resources to optimize health and wellness effectively.
- Describe the health protection and prevention practice of older adults, orthopedic, neurology, cardiovascular conditions and integumentary disorders effectively.

COURSE OUTLINE

1. 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.

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

3. 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.

4. Fitness training
    a. Physical Activities Readiness Questionnaire b. Physical Activities Pyramid
    c. Exercise Programs
    d. Evidence-Based Practice.
5. Health, fitness, and wellness issues during childhood and adolescence
6. Health, fitness, and wellness during adulthood
7. Women's health issues: focus on pregnancy:
8. Prevention practice for older adults
9. Resources to optimize health and wellness
10. Health protection.
    a) Prevention practice for musculoskeletal conditions
    b) Prevention practice for cardiopulmonary conditions
    c) Prevention practice for neuromuscular conditions
    d) Prevention practice for integumentary disorders
    e) Prevention practice for individuals with developmental disabilities
    f) Marketing health and wellness.

RECOMMENDED BOOKS

1. Fitness & Health - Brian J. Sharkey, Steven E. Gaskill
2. Health and Fitness: A Guide to a Healthy Lifestyle - Laura E. Bounds, Dottiedee Agnor, Darnell Gayden

OCCUPATIONAL THERAPY AND SPEECH THERAPY **7th Semester**

COURSE DESCRIPTION: This course is designed to provide an overview in the basics of Occupational Therapy, Speech and Language Therapy.

Subject Title	: **Occupational Therapy and Speech Therapy**
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

COURSE OUTCOME

At the end of the course, the student will be able to

- Discuss the principles, structure and function and pathophysiology in Occupational therapy effectively.
- Describe about therapeutic modality and health care management in Occupational therapy precisely.
- Discuss the anatomy, physiology and neurological basics of audiology, language, linguistics, phonetics and phonology effectively.
- Describe the language development and speech articulatory disorders respectively.
- Discuss the intervention in autism, psychopathological disorder, basic language and psychomotor development precisely.

COURSE OUTLINE

Basic Occupational therapy
Section- A

1. Introduction to Occupational Therapy
2. Principles of Occupational Therapy
3. Human Structure and Function in Occupational Therapy
4. Therapeutic Media in Occupational Therapy
5. Therapeutic Modalities in Occupational Therapy
6. Health Care Management in Occupational Therapy
7. Pathophysiology in Occupational Therapy
8. Mental Health in Occupational Therapy
9. Physical Function in Occupational Therapy

Basic Speech Therapy
Section-B

1. Anatomy and Physiology of the Organs of Language
2. Introduction to Audiology
3. Neurological Basis of Language, Linguistics, Phonetics and Phonology
4. Introduction to Language Disorders
5. Speech Therapy Intervention in Language Development Disorders, Aphasia, Speech Articulation Disorders, Deafness
6. Dyslexias and dysgraphias
7. Stuttering
8. Alternative Systems of Communication
9. Intervention in autism and Psychopathological Disorders
10. Intervention in Basic Language, Psychomotor Development
11. New Educational Methodologies for Children with Auditory Alterations
12. Technology Applied to Speech Processing
13. Speech Therapy Intervention in Cochlear Implantation

RECOMMENDED BOOKS:

1. Introduction to Occupational Therapy and Occupational Therapy Marketing, 2011, Karthik.
2. Occupational Therapy Activities, 2004, Estelle B. Breines.
3. International Handbook of Occupational Therapy Interventions, 2016, Ingrid Soderback.
4. Speech and Language Therapy: The decision-making process when working with children, 2012, Myra Kersner.
5. Language Development And Disorders, 2010, Carol A. Angell.
6. Children with Communication Disorders Paperback, 2010, Pratibha Karanth.
7. Speech Therapy for the Physically Handicapped, 2011, Sara Stinchfield Hawk.

FUNDAMENTALS OF PHYSICAL EDUCATION 7th Semester

COURSE DESCRIPTION

This course describes about the basics of fitness and the methods to be followed to maintain the same with respect to training and diet.

Subject Title	: **Fundamentals of Physical Education**
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

COURSE OUTCOME

At the end of the course, the student will be able to

- Discuss the general fitness warm-up exercises, aerobics and cool down exercises appropriately.
- Discuss the principles and methodology of fitness training effectively.
- Describe the measures of injury prevention effectively.
- Describe the factors affecting performance in athletes effectively.
- Plan the athletic nutrition precisely.

COURSE OUTLINE

1. Basic principles of General fitness-warm up exercises, aerobics, cool down Exercises
2. Principles in fitness training
3. Training methodology
4. Group & recreational activities
5. Measures of injury prevention
6. Psychological aspects of sport injury
7. Factors affecting performance of athletes.
8. Athletic Nutrition –Nutritional requirements, Pre game meal, Carbohydrate loading

RECOMMENDED BOOKS

1. Fundamentals of Health and Physical Education - Joe Eshuys
2. Physical Education: Fundamentals for Secondary School and Baccalaureate: Comprehensive and Experiential Learning - José María Casado

ERGONOMICS **7th Semester**

COURSE DESCRIPTION

This course provides the students to understand the basics of Ergonomics and the Ergonomic considerations to be followed for effectiveness and prevention of injury.

Subject Title	: **Ergonomics**
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

COURSE OUTCOME

At the end of the course, the student will be able to

- Describe the biomechanical, physiological and anthropometrical background of posture and movement precisely.
- Describe the role of Physiotherapist in Industrial set up
- Compute the Work capacity analysis, worker's capacity and Work Hardening program appropriately.
- Plan the Postural examination and prevention of injury effectively.

COURSE OUTLINE

1. Definition
2. Biomechanical, Physiological and Anthropometrical background of Posture & Movement
3. Work Organization, Jobs and Tasks
4. Environmental factors to be considered in work place
5. Work capacity analysis
6. Role of physiotherapy in industrial set up
7. Pre-employment screening
8. Worker's functional capacity assessment
9. Work hardening program
10. Industrial therapy
11. Postural examination,
12. Job task analysis
13. Educational program for prevention of injury

RECOMMENDED BOOKS

1. Handbook of Human Factors and Ergonomics - Gavriel Salvendy
2. Applied Ergonomics - D. Alexander, R Rabourn

PROSTHETICS & ORTHOTICS **8th semester**

COURSE DESCRIPTION

This course describes about the basics of Prosthetics and orthotics and its usage in Rehabilitation.

Subject Title	: **Prosthetics and Orthotics**
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

COURSE OUTCOME

At the end of the course, the student will be able to

- Describe the upper limb, lower limb and spinal orthosis effectively.
- Describe the upper limb and lower limb prosthesis precisely.
- Identify the right orthosis and prosthesis effectively.
- Demonstrate the application of them in student model precisely.

COURSE OUTLINE

1. Introduction
2. Ideal Prosthesis/Orthosis
3.Materials used & their properties
4.Upper limb prosthesis – Types and uses
5. Lower limb prosthesis – Types and uses
6. Types of Orthosis
7. Upper limb orthosis – Types and uses
8. Lower limb orthosis – Types and uses
9.Spinal orthosis – Types and uses

RECOMMENDED BOOKS

1. Essentials of Prosthetics and Orthotics - AK. Agarwal
2. Orthotics and Prosthetics in Rehabilitation - Michelle M. Lusardi, Caroline C. Nielsen

PT FOR VETERINARY SCIENCES (30 Hours) **8th Semester**

COURSE DESCRIPTION

This course describes about the various consideration and Physiotherapy treatment procedures for Veterinary sciences.

Subject Title	: **PT For Veterinary Sciences**
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

COURSE OUTCOME

At the end of the course, the student will be able to

- Describe the comparative Anatomy, observation, examination and the cause of injury in Veterinary precisely.
- Plan the Physiotherapy treatment and rehabilitation of common injuries of Veterinary sciences effectively.

COURSE OUTLINE

1. Veterinary Surgeons Act (1966)
2. Professional standards and the relationship of the physiotherapist to the veterinary surgeon and the owner
3. Comparative Anatomy
4. Observation and Examination
5. Causes of injury
6. Treatment and rehabilitation of common injuries.

RECOMMENDED BOOKS

1. Animal Physiotherapy: Assessment, Treatment and Rehabilitation of Animals - Catherine McGowan, Lesley Goff

2. Practical Physiotherapy for Veterinary Nurses - Donna Carver

ADMINISTRATION, SUPERVISION AND TEACHING SKILLS 8th Semester

COURSE DESCRIPTION

This course describes about the administration, supervision and teaching skills required for a Physiotherapist and aim to improve them.

Subject Title	: **Administration, supervision and Teaching Skills**
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

COURSE OUTCOME

At the end of the course, the student will be able to

- Analyse the principles, planning and organization, Hospital administration, Physiotherapy department and personnel management effectively.
- Discuss the aims of Physiotherapy management effectively.

COURSE OUTLINE

I. Introduction:

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. Principles of hospital administration and its applications to physiotherapy.

Planning and organization: Planning cycle, Principles of organizational charts, Resource and quality management, planning change -innovation

Financial issues including budget and income generation

Hospital administration: Organization, Staffing, Information, Communication, Coordination, Cost of services, Monitoring and evaluation.

Organization of physiotherapy department: Planning, Space, Manpower, Other basic resources.

Organizing meetings, committees, and negotiations

Personnel management: Personnel performance appraisal system, Quality care delivery from the staff.

II. Aims of physiotherapy education

Concepts of teaching and learning

Curriculum development

Principles and methods of academic and clinical teaching

Measurement and evaluation

Guidance and counseling

Faculty development program

Administration in clinical setting

Use of A-V aids in teaching

Taxonomy of education

RECOMMENDED BOOKS

1. Educational Administration, Supervision and School Management - J. Mohanty

2. Supervision: A Guide to Practice - Jon Wiles