BHARATI VIDYAPEETH
(DEEMED TO BE UNIVERSITY), PUNE

Faculty of Medical Sciences
Bachelor of Physiotherapy
New Syllabus

BHARATI VIDYAPEETH
(Deemed to be University)

CURRICULUM DOCUMENT
FOR
BACHELOR OF PHYSIOTHERAPY
(BPTh)

SCHOOL OF PHYSIOTHERAPY

BHARATI VIDYAPEETH

(Deemed to be University)

Website: bvuniversity.edu.in

1. Pune- Satara Road, Dhankawadi, Pune 411043

   Tel :-(020) 40555555, 24372223

   E-mail: sopt.pune@bharatividyapeeth.edu

2. Sangli- Sangli –Miraj Raod, Wanlesswadi, Sangli

   Tel :-(0233) 2601592/93/94 Ext- 228/269

   E-mail: sopt.sangli@bharatividyapeeth.edu

INDEX

PHYSIOTHERAPY

1. **Definition:**

'Physiotherapy' is a branch of modern medical science which includes examination, assessment, interpretation, physical diagnosis, planning and execution of treatment and advice to any person for the purpose of preventing, correcting, alleviating and limiting dysfunction, acute and chronic bodily malfunction including life saving measures via chest physiotherapy in the intensive care unit, curing physical disorders or disability, promoting physical fitness, facilitating healing and pain relief and treatment of physical and psychological disorders through modulating psychological and physical response using physical agents, activities and devices including exercise, mobilization, manipulations, therapeutic ultrasound, electrical and thermal agents and electrotherapy for diagnosis, treatment and prevention. (Definition as per the Maharashtra State Council for Occupational therapy & Physiotherapy, 2004)

'Physiotherapist' is a qualified professional who has acquired all the above mentioned knowledge and skills for entry into practice after being awarded a bachelor degree in the subject of 'Physiotherapy' from a recognized institute affiliated to the University conducting a full-time course not less than four years and six months of internship.

2. **Vision:**

To provide quality medical education and professional skills in the field of Physiotherapy by creating and enriching environment for learning and research and nurturing excellence through dynamic social transformation.

3. **Mission:**

1) To prepare students to face global health care needs in the field of Physiotherapy by providing conducive atmosphere and infrastructure for effective learning.
2) To stimulate and extend the frontiers of knowledge through faculty development and foster research culture among the students and faculty for continuous upgradation of knowledge and skills.
3) To develop students into quality Physiotherapists well equipped with Cognitive, Psychomotor and Affective skills.
4) To uplift the proficiency of Physiotherapists by providing a platform for growth through Regional, National and International Collaboration.

4. Statement of Philosophy:

Physiotherapy practice spans the continuum from health promotion to prevention to rehabilitation for individuals and population throughout the lifespan. Physiotherapy diagnoses movement dysfunctions based on skillful examination and evaluation regardless of the cause or etiology and provide skilled therapeutic intervention to foster improvement in physical functioning and maximizing overall Quality of Life.

Physiotherapists provide the initial access into the health care system for persons with impairments and functional limitations amenable to Physiotherapy and engage in collegial referral relationships with other health care professionals.

Physiotherapist's role also includes that of case manager, teacher, researcher and consultant. The faculty believes the first priority of education is to prepare people for a well-rounded, balanced life with broad social and cultural interests and as involved, active citizens of our country.

Physiotherapist must have commitment to lifelong learning and to search for the evidence that supports and advances practice. Critical thinking, problem solving, intellectual perseverance and courage are all essential characteristics of a successful Physiotherapist.

About Physiotherapy:

Physiotherapists are health care professionals with a significant role in health promotion and treatment of injury and diseases. They combine their in-depth knowledge of the body and how it works with specialized hands-on clinical skills to assess, diagnose and treat symptoms of illness, injury or disability.

All Physiotherapists registered to practice are qualified to provide safe and effective Physiotherapy. They have met national entry-level education and practice standards and have successfully passed a standardized Physiotherapy competence examination.

5. Scope of Practice:

Physiotherapists plan and administer Physiotherapy/Rehabilitation treatments independently and also being a part of the multidisciplinary team. The minimum education requirement is often a Baccalaureate degree or Postgraduate degrees in Physiotherapy.

Physiotherapy is an essential part of the health and community/welfare services delivery system. Physiotherapists practice independently of other health care/service providers and also within multidisciplinary rehabilitation/habilitation programmes to prevent, gain, maintain or restore optimal function and quality of life in individuals with loss and disorders of movement.

Physiotherapists are guided by their own code of ethical principles. Thus, they may be concerned with any of the following purposes:

a. Promoting the health and well-being of individuals and the general public/society, emphasizing the importance of physical activity and exercise.

b. Preventing impairments, activity limitations, participatory restrictions and disabilities in individuals at risk of altered movement behaviors due to health or medically related factors, socio-economic stressors, environmental factors and lifestyle factors.

c. Providing interventions/treatment to restore integrity of body systems essential to movement, maximize function and recuperation, minimize incapacity and enhance the quality of life, independent living and workability in individuals and groups of individuals with altered movement behaviors resulting from impairments, activity limitations, participatory restrictions and disabilities.

d. Modifying environmental, home and work access and barriers to ensure full participation in one's normal and expected societal roles Physiotherapists may also contribute to the development of local, national and international health policies and public health strategies.

6. **Career Opportunities:** Currently there is demand for Physiotherapy specialty abroad. Physiotherapy is delivered in a variety of settings which allow it to achieve its purpose. Prevention, health promotion, treatment/intervention, habilitation and rehabilitation take place in multiple settings that may include but are not confined to the following:

   a. Community based rehabilitation programmes
   b. Community settings including primary health care centers, individual homes and field settings
   c. Education and research centers
   d. Fitness clubs, health clubs, gymnasia and spas
   e. Hospices
   f. Hospitals
   g. Nursing homes
   h. Occupational health centers
   i. Out-patient clinics
   j. Physiotherapist private offices, practices, clinics
   k. Prisons
   l. Public settings (e.g., shopping malls) for health promotion
   m. Rehabilitation centers and residential homes
   n. Schools including pre-schools and special schools
   o. Senior citizen centers
   p. Sports centers /clubs
   q. Workplaces/companies

7. **Professional Recognition:** The award of Bachelor of Physiotherapy qualifies the graduates for membership of Maharashtra State Council for Physiotherapy & Occupational Therapy and

Indian Association of Physiotherapists. They can also apply to different councils or associations in India and abroad

Degree Awarded:

After completion of the entire duration of course and internship, successful students will be awarded the degree of **'Bachelor of Physiotherapy' (BPTh).**

Recognition of Title and Qualification:

The recommended title thus stands as the 'Physiotherapist' with the acronym –'PT' for this group of professionals.

8. BPTh Course duration:

It is a four years and six months program (including six months of internship) - Bachelor's degree level.

9. Eligibility:

a. He/she has passed the Higher Secondary (10+2) or equivalent examination recognized by any Indian University or a duly constituted Board with passing marks (50%) in physics, chemistry & biology (botany & zoology) with physics, chemistry and biology as mandatory requirements. SC/ST candidates will get concession in entry qualification as per rules.

b. Candidates who have studied abroad and have passed the equivalent qualification as determined by the Association of Indian Universities will form the guideline to determine the eligibility and must have passed in the subjects: Physics, Chemistry, Biology and English up to 12^{th} Standard level.

c. Candidates who have passed the Senior Secondary school Examination of National Open School with a minimum of 5 subjects with any of the following group subjects:

   i. English, Physics, Chemistry, Botany, Zoology

   ii. English, Physics, Chemistry, Biology and any other language

d. He/she has attained the age of 17 years as on 31^{st} December of current year.

e. Admission to Bachelor of Physiotherapy course shall be made on the basis of eligibility and an Entrance test, to be conducted by the Bharati Vidyapeeth Deemed to be University.

10. Medium of Instruction: The medium of instructions for this course shall only be English. This includes theory lectures, practicals, laboratory works and assignments, seminars, clinical training.

11. Learning Outcomes: at a completion of this course, the student should be

1. The purpose of this curriculum is to delineate the cognitive, affective and psychomotor skills deemed essential for completion of this program and to perform as a competent Physiotherapist who will be able to examine, evaluate, diagnose, plan, execute and document physiotherapy treatment independently or along with the multidisciplinary team.

2. Evaluate patients for impairments and functional limitations and be able to execute all routine physiotherapeutic procedures as per the evaluation.

3. Able to operate and maintain physiotherapy equipment used in treatment of patient, physiotherapy treatment planning (both electrotherapy and exercise therapy) & procedures independently.

4. Able to provide patient education about various physiotherapeutic interventions to the patient and care givers.

Expectation from the future physiotherapy graduates

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

2. The coursework is designed to train students to work as independent physiotherapists or in conjunction with a multidisciplinary team to diagnose and treat movement disorders as per red And yellow flags.

3. Course works will skill the graduate's physical/ functional diagnosis, treatment planning, and management, administration of physiotherapy treatment and for patient support.

4. Graduates can obtain employment opportunities in hospitals/nursing homes/sports teams/fitness centers/Community Rehabilitation /Health planning boards/health promotions services in both private and public sectors as well as in independent physiotherapy clinics.

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

Terminal objectives (Expected Outcomes):

6. The graduate will be a competent and reflective physiotherapy practitioner who can function safely and effectively while adhering to legal, ethical and professional standards of practice in a multitude of physiotherapy settings for patients and clients across the lifespan and along the continuum of care from wellness and prevention to rehabilitation of dysfunction.

7. The graduate will utilize critical inquiry and evidence based practice to make clinical decisions essential for autonomous practice.

8. The graduate will function as an active member of professional and community organizations.

The graduate will be a service-oriented advocate dedicated to the promotion and improvement of community health.

9. The graduate will demonstrate lifelong commitment to learning and professional development.

12. **Dress Code:** Professional Dress Code is encouraged. It is each student's responsibility to have appropriate attire during all class assignments and learning activities.

13. **Course Location:**

- School of Physiotherapy, Bharati Vidyapeeth Deemed to be University, at Pune
- School of Physiotherapy, Bharati Vidyapeeth Deemed to be University, at Sangli.

14. **Total Intake of Students:** The total intake of students will be sixty per academic year in Bharati Vidyapeeth Deemed to be University, School of Physiotherapy, Pune and School of Physiotherapy, Sangli each.

Course Fee structure: The tuition fee and other fee structure will be as per the notifications by Bharati Vidyapeeth Deemed to be University, given from time to time. The fee structure is different for Resident Indians, Non-Resident Indian and Foreign Students.

15. **Course Structure:** Four and a half year degree course which comprises of four academic years and six months of Internship program.

First year BPTh

SN	SUBJECT CODE	SUBJECT NAME	SUBJECT CONTACT HRS.	UNIVERSITY EXAM	IA	TOTAL	UNIVERSITY EXAM	IA	TOTAL	GRAND TOTAL (Marks)
				TH (Marks)	TH (Marks)	TH (Marks)	PR (Marks)	PR (Marks)	PR (Marks)	
1	P101	Professional practice & Ethics	15	College Examination will be conducted in Final Year BPTh						
2	P102	Human Anatomy	212	80	20	100	80	20	100	200
3	P103	Human Physiology	200	80	20	100	80	20	100	200
4	P104	Biochemistry	54	40	10	50				50
5	P105	Fundamentals of Kinesiology & Kinesiotherapy	250	80	20	100	80	20	100	200
6	P106	Fundamentals of Electrotherapy	200	80	20	100	80	20	100	200
				Total marks						**850**
7		Seminar	69	This will be included in the attendance						
8		Observational clinical practice	400	This will be included in the attendance						
		Total Hrs.	**1400**							

Second Year BPTh

SN	SUBJECT CODE	SUBJECT NAME	SUBJECT CONTACT HRS.	UNIVERSITY EXAM	IA	TOTAL	UNIVERSITY EXAM	IA	TOTAL	GRAND TOTAL (Marks)
				TH (Marks)	TH (Marks)	TH (Marks)	PR (Marks)	PR (Marks)	PR (Marks)	
1	P101	Professional practice & Ethics	15	College Examination will be conducted in the Final Year BPTh.						
2	P201	Pharmacology	50	40	10	50				50
3	P202	Pathology & Microbiology	85	80	20	100				100
4	P203	Psychology	30	40	10	50				50
5	P204	Kinesiology	100	80	20	100				100
6	P205	Kinesiotherapy	245	80	20	100	80	20	100	200
7	P206	Electrotherapy	200	80	20	100	80	20	100	200
8	P207	Computer Application	40	College Exam at the end of Course (30marks Exam)						**Grade**
9	P208	Environmental Studies	30	University Examination at the end of the course						50
				Total						**750**
10		Seminar	105	This will be included in the attendance						
11		Supervised Clinical Practice	500	This will be included in the attendance						
TOTAL			**1400**							

Third Year BPTh

SN	SUBJECT CODE	SUBJECT NAME	SUBJECT CONTACT HRS.	UNIVERSITY EXAM	IA	TOTAL	UNIVERSITY EXAM	IA	TOTAL	GRAND TOTAL (Marks)
				TH (Marks)	TH (Marks)	TH (Marks)	PR (Marks)	PR (Marks)	PR (Marks)	
1	P101	Professional Practice & Ethics	15	College Examination will be conducted in the Final Year BPTh.						
2	P301	Surgery	55	40	10	50				50
3	P302	Orthopaedics	60	40	10	50				50
4	P303	Medicine	55	40	10	50				50
5	P304	Neurology	50	40	10	50				50
6	P305	Paediatrics	50	40	10	50				50
7	P306	Community Health & Sociology	60	80	20	100				100
8	P307	Obstetrics & Gynaecology	30	40	10	50				50
9	P308	Psychiatry	30	40	10	50				50
10	P309	Dermatology	20	College Exam at the end of Course (30marks Exam)						GRADE
11	P310	Functional Diagnosis & Physiotherapeutic Skills	460	80	20	100	80	20	100	200
				Total Marks						**650**
12		Seminar (including I.C.F.) :	50	This will be included in the attendance						
13		Supervised clinical practice:	465	This will be included in the attendance						
Total Hrs.			**1400**							

Fourth Year BPTh

SN	SUBJECT CODE	SUBJECT NAME	SUBJECT CONTACT HRS.	UNIVERSITY EXAM	IA	TOTAL	UNIVERSITY EXAM	IA	TOTAL	GRAND TOTAL (Marks)
				TH (Marks)	TH (Marks)	TH (Marks)	PR (Marks)	PR (Marks)	PR (Marks)	
1	P101	Professional Practice & Ethics	30	College Examination (30 Marks only)						**GRADE**
2	P401	Administration, Management & Marketing	15	College Examination (30 Marks Only)						**GRADE**
3	P402	Musculoskeletal Physiotherapy	212	80	20	100	80	20	100	200
4	P403	Neuro - Physiotherapy	210	80	20	100	80	20	100	200
5	P404	Cardiovascular Respiratory Physiotherapy	210	80	20	100	80	20	100	200
6	P405	Community Physiotherapy	210	80	20	100	80	20	100	200
7	P406	Principles of Bio-engineering	30	College Examination (30 Marks Only)						GRADE
8	P407	Research Methodology & Biostatistics	30	University Examination at the end of the course						50
9	P408	Diagnostic Imaging for Physiotherapy	20	College Examination (30 Marks Only)						**GRADE**
				Total Marks						**850**
10		Seminar (including I.C.F.) :	48	This will be included in the attendance						
11		Supervised clinical practice	455	This will be included in the attendance						
12		Project work	10	This will be included in the attendance						
Total Hrs.			**1480**							

INTERNSHIP		
SN	**Clinical Posting**	Hrs.
1	Six Month – Minimum 150 days Woking	1050

16. **Clinical Education Training:** There are dedicated clinical hours in the course where students learn assessment and treatment on patient supervised by faculty members is distributed throughout every year of the curriculum. To ensure a depth of knowledge, clinical learning will be guided and workplace skills will be supervised and assessed by Practicing and Qualified Physiotherapists.
17. **Attendance:** 75% attendance in Theory and 85% attendance in Practical's are mandatory in each academic year. A candidate lacking in the prescribed attendance and progress in any subjects in theory or practical/clinical shall not be permitted to appear for the University examination in those subjects.
18. **Internal Assessment:** Internal Assessment will be calculated on the basis of two Internal Examinations conducted in the academic year, Terminal and Prelim. The marks should be sent to the University before the commencement of University examination as notified by the examination section from time to time. Internal assessment paper records should be maintained for all students & should be available for scrutiny. The marks of internal assessment tests should be displayed on notice board for the students. In each Academic year the internal assessment (20% of aggregate marks) will be calculated from Terminal and Preliminary Examination separately for theory and practical.

SUBJECTS	TERMINAL		PRELIM		TOTAL		IA	
	TH	PR	TH	PR	TH	PR	TH	PR
	Max. 80 / Min 40	Max. 80 / Min 40	Max. 80 /Min 40	Max. 80 /Min 40	Max.160 / Min 80	Max.160 / Min 80	Max.20	Max. 20
	Max.40/ Min. 20		Max.40/ Min. 20		Max.80 / Min 40		Max.10	

19. **Monitoring Process:** Attendance, performance in Internal Examinations, Classroom and clinical Performance is monitored by faculty members. Every student shall attend Lectures, Practical's, Laboratory Works, Seminars, Class tests, Weekly Case Discussions, Review Meeting, Tele-Physiotherapy Sessions and State Level Conferences, National Level Conferences or occasionally International Conferences during each year. Every candidate shall maintain a log book and record of his/her participation in the training programs conducted by the department. The log book / Journals shall be scrutinized and certified by the Head of the Department and the Principal, School of Physiotherapy, and need to present in the 'University Practical Examination'. Every clinical Case Discussion, Case Presentation, Seminars, will be monitored by Faculty Members, Guides and Peers.

20. Schedule of Examination: Two internal examinations will be conducted in a year, an annual examination, 'Terminal' at midterm and 'Prelim' at the end of the academic year prior to University Examination, as per notification issued by the University from time to time.

The students who fail to clear I year University examination, will appear for Supplementary examination. This exam will be conducted one month after the university examination. Students, who pass in the supplementary exam, will be promoted to second year (regular student's batch). If students fail in the supplementary exam, they will attend classes with the newly admitted I year batch.

21. Eligibility for Examination: To be eligible to appear for University examination a Candidate:

a) Should have undergone satisfactorily the approved course of study in the subject or subjects for the prescribed duration.

b) Should have attended at least 75% of the total number of classes in theory and 85 % of total number of practical's to become eligible to appear for examination in those subject/ subjects.

c) Should secure at least 35% of total marks assigned for internal assessment in particular subject in order to be eligible to appear in the University examination of that subject.

d) Who fails in any other subject/subjects of first year BPT, has to put one academic term before he/she becomes eligible to appear for the next examination.

e) Should secure at least 35% of total marks in college exam in subjects for which University Exam not recommended.

f) Shall fulfill any other requirement that may be prescribed by the University from time to time.

23. Standard of Passing: For declaration of pass in any subject in the university examination, a Candidate should pass both in Theory & Practical examinations components separately as stipulated below:

a) For a pass in theory a candidate shall secure not less than 50% marks in aggregate i.e., marks obtained in written examination and internal assessment (theory) added together

b) For a pass in practical examination, a candidate shall secure not less than 50% marks in aggregate, i.e., marks obtained in University Practical Examination, Viva–Voce Examination and Internal Assessment (practical) added together.

c) A candidate not securing 50% marks in theory and practical examination in a subject shall be declared to have failed in that subject and is required to appear for both theory and practical, again in the subsequent examination in the subject.

d) In order to pass the university examination the student should score minimum 50% marks in both theory and practical of each subject.

24. Declaration of class:

a) A candidate having appeared in the entire subject in the same examination and passed that examination in the first attempt and secure 75% of marks or more of grand total marks prescribed will be declared to have passed the examination with distinction.

b) A candidate having appeared in the entire subject in the same examination and passed that examination in the first attempt and secure 60% of marks or more but less than 75% of grand total marks prescribed will be declared to have passed the examination in First class.

c) A candidate having appeared in the entire subject in the same examination and passed that examination in the first attempt and secure 50% of marks or more but less than 60% of grand total marks prescribed will be declared to have passed the examination in Second class.

d) A candidate passing the University examination in more than one attempt shall be placed in pass class irrespective of the percentage of marks secured by him/her in the examination.

[Please note fraction of marks should not be rounded off for causes (a), (b) and (c)]

25. Award of Class: A Student having appeared in the entire subjects in the same examination and passed that examination in first attempt will be awarded the class based on marks obtained in the University examination every year (First Year, Second Year, Third Year, and Fourth Year) as follows:

Marks in percentage	Class
Aggregate 75% and above	First class with distinction
Aggregate 60% & above but less than 75%	First class
Aggregate 50% & above but less than 60%	Second class
Less than 50%	Fail

26. Carry over or allowed to keep term (ATKT):

a). A student shall be allowed to keep term for the next year if he/she has a backlog of not more than two subjects in previous year but will have to pass the subjects in the subsidiary examination before appearing the examination of the next academic year, except First year BPTh.

b). A student who fails in any subject of First year, he /she must pass one academic term before appear for Second year examination.

27. Supplementary Examination: The Students, who failed to clear First year University Examination, will appear for supplementary examination. The Exam will be conducted

immediately after declaration of results. Students who pass in the supplementary exam, they will be promoted to Second year (regular students' batch. If student fail in supplementary exam. They will be allowed to attend classes with newly admitted first year batch.

28. Grace marks: - Grace Marks rules applicable as per University regulations.

29. Scheme of Examination and Pattern of University Question Paper:-

University examination of each subject is of 80/40 marks.

Internal Assessment (to be calculated from the internal examinations) is of 20 marks.

Theory and Practical Examination:- Theory Examination and Practical examination is of 80 marks each.

30. Examiners: University Examination will be conducted by one Internal Examiner from the same college or as decided by the University and one External Examiner outside the University.

SR.NO	UNIVERSITY EXAMINER	EXPERIENCE
1	Internal Examiner	3 Years' Experience In Teaching
2	External Examiner	5 Years' Experience In Teaching
3	Paper Setter	8 Years' Experience In Teaching
4	Paper Evaluator	8 Years' Experience In Teaching
5	Paper Moderator	8 Years' Experience In Teaching

31. Internship: Degree will be awarded on successful completion of the requirement including six months Clinical Posting in all specialties

- Musculoskeletal Physiotherapy
- Neuro Physiotherapy,
- Cardiovascular and Respiratory Physiotherapy
- Community Physiotherapy

a. A period of 6 months (26 weeks) of continuous clinical practice to enhance the clinical reasoning, judgment, Programme planning, intervention, evaluation of intervention, follow up and referral skills of all the dysfunctions and impairments learnt throughout the curriculum of four years.

b. Those candidates declared to have passed the final year examination in all subjects shall be eligible for internship.

c. Internship shall be done in a teaching hospital recognized by the University. A degree certificate shall be awarded ONLY on successful completion of six months of internship.

d. The Internship will be rotatory and shall cover clinical branches concerned with Physiotherapy such as Orthopaedic, Cardiovascular & Respiratory including ICU, Neurology & Neurosurgery Paediatrics, General Medicine, Surgery, Obstetrics and Gynecology both inpatient and outpatient services.

e. Successful Completion: The student must maintain a logbook. On completion of each posting, the same will have to be certified by the faculty in charge of the posting for both attendance as well as work done.

On completion of all the postings, the duly completed logbook will be submitted to the Principal/Head of program to be considered as having successfully completed the internship program.

FIRST YEAR BPTh SYLLABUS

Transcript Hours-1400

SR.NO	SUBJECT & CODE	TOPIC		DIDACTIC HRS
1	PROFESSIONAL PRACTICE & ETHICS P101	1	Introduction to the history of Physiotherapy ,	15
		2	Orientation to the curriculum, clinical areas and geographical location,	
		3	Concept of morality and ethics,	
		4	Concept of professionalism and Professional dress code	
2	ANATOMY P102	1	General Anatomy And Histology	212
		2	Musculoskeletal System	
		3	Neuro Anatomy	
		4	Systemic Anatomy	
		5	Cardio Vascular & Respiratory Anatomy	
		6	Abdomen	
		7	Sensory Organs	
		8	Endocrine & Exocrine System	
		9	Radiology	200
3	PHYSIOLOGY P103	1	General Physiology	
		2	Nervous System	
		3	Excretory System	
		4	Temperature Regulation	
		5	Endocrine System	
		6	Reproductive System	
		7	Special Senses	
		8	Respiratory System	
		9	Cardiovascular System	
		10	Gastro Intestinal System	
		11	Exercise Physiology	
		12	Physiology Of Ageing	
4	BIOCHEMISTRY P104	1	Carbohydrates	54
		2	Proteins	
		3	Enzymes	
		4	Vitamins	
		5	Minerals	
		6	Hormones	
		7	Nutrition	

		8	Clinical Biochemistry	
		9	Lipid	
		10	Muscle Contraction	
5	**FUNDAMENTALS OF KINESIOLOGY & KINESIOTHERAPY P105**	1	Mechanics & Basic Biomechanics	250
		2	Bio-Physics Related To Kinesiotherapy	
		3	Classification Of Movements	
		4	Basic Evaluation	
		5	Massage	
		6	Relaxation	
		7	Aerobic Exercise	
		8	Yoga	
6	**FUNDAMENTALS OF ELECTROTHERAPY P106**	1	Medical Electronics And Electricity	200
		2	Electrical Modalities	
		3	Superficial Thermal Agents	
7	**SEMINAR**	1	Seminar (applied to Anatomical structures and Physiological functions, Fundamentals of Kinesiology & Kinesiotherapy, Fundamentals of Electrotherapy)	69
8	**OBSERVATIONAL CLINICAL PRACTICE**	1	He /She shall observe and no technical aspects of fixation of electrotherapeutic modalities, basic movements and startingpositions used, learn bedside manners and communication skills with the seniors, peers and patients	400

PROFESSIONAL PRACTICE AND ETHICS - P101

Total 15hrs

(COLLEGE EXAMINATION IN FINAL YEAR)

COURSE DESCRIPTION:

This subject will be taught in continuum from first year to final year. An exam will be conducted only in final year. Professional and ethical practice curriculum content addresses the Knowledge, Skills and Behaviors required of the physiotherapist in a range of practice elation ships and roles. The course will discuss the role, responsibility, ethics administration issues and accountability of the physical therapists. The course will also cover the history and change in the profession, responsibilities of the professional to the profession, the public and to the health care team. This includes the application of professional and ethical reasoning decision-making strategies and professional communication.

COURSE OBJECTIVES:

At the end of the course, the student will be compliant in following domains:

Cognitive: The student will

- Be able to understand the moral values and meaning of ethics.
- Acquire bed side manners and communication skills in relation with patients, peers,seniors and other professionals.

Psychomotor: The student will be able to:

- Develop psychomotor skills for physiotherapist-patient relationship.

SR.NO	TOPIC	HRS	SUPERVISION HOURS
1	Introduction to the history of Physiotherapy	2	05
2	Orientation to the curriculum, clinical area sand Geographical location	3	
3	Concept of morality and ethics	3	
4	Concept of professionalism and Professional Dress code	2	

HUMAN ANATOMY- P102

Theory 150hrs+ Practical/Laboratory 62hrs = Total-212hrs

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION:

The focus of this course is an in-depth study and analysis of the regional and systemic organization of the body. Emphasis is placed up on structure and function of human movement. A comprehensive study of human anatomy with emphasis on the nervous, musculoskeletal and circulatory systems is incorporated. Introduction to general anatomy lays the foundation of the course. Dissection and identification of structures in the cadaver supplemented with the study of charts, models, prosecuted material and radiographs are utilized to identify anatomical landmarks and configurations.

COURSE OBJECTIVES:

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

Cognitive:

- Acquire the knowledge of Anatomical aspects of muscles, bones, joints, their attachments & to understand and analyses movements.
- Acquire the knowledge of anatomy on the living (living anatomy).
- Acquire the knowledge of the Anatomical basis of various clinical conditions.
- Able to identify various parts of nervous system.
- Understand the circulation blood of C.N.S. & spinal cord.
- To identify the course of peripheral nerve.
- Acquire the knowledge of various structures of the Cardio Vascular &Respiratorysystem and the course of blood vessels
- Identify and describe various structures of Thoracic cage and mechanisms ofRespiration
- Able to apply knowledge of Living anatomy with respect to Cardio Vascular & Respiratory system.
- Able to acquire anatomical basis of clinical conditions of cardiovascular &Respiratorysystem

Psychomotor:

- Describe the Anatomical aspects of muscles, bones, joints, their attachments & and analyze the movements
- Describe various parts of nervous system and describe the blood circulation of brain &spinal cord

- Describe the course of peripheral nerves, its supply and action to each muscle.
- Describe various structures of the Cardio Vascular &Respiratory system and thecourse of blood vessels
- Describe various structures of Thoracic cage and mechanisms of Respiration

COURSE OUTCOMES:

- To understand the basics terminology and various anatomical structures of the body.
- To understand the bones, joints, muscles, vascular and nerve supply of upper limb.
- To understand the various parts of brain and spinal cord with its pathways and vascularity of brain.
- To understand the bones, joints, muscles, vascular and nerve supply of head and neck.
- To understand the routes and functions Cranial nerves.
- To understand the various parts and surfaces of Heart, Lungs and viscera.
- To understand the bones, joints, muscles, vascular and nerve supply of lower limb.
- To understand the various parts of bones and joints of thorax, intercostal muscles,movements of thorax.
- To understand the various parts and surfaces of stomach, GIT, pancreas and liver.
- To understand various anatomical parts of reproductive system.

SR.NO	REGIONS	THEORY HOURS	PRACTICAL HOURS
1	**GENERAL ANATOMY, HISTOLOGY AND EMBRYOLOGY**	19	3
a	**General Anatomy:**	6	
	i. Fascia ii. Muscles iii. Bones iv. Joints v. Nerve vi. Vessels		
b	**General Histology**	7	3
	i. Epithelial ii.Connective tissue iii.Muscle iv. Bone and cartilage v. Nerve and vessels		

c	**Embryology**	6	
	i. Formation of Germ layers &Neural Tube ii. Formation of Bones, Muscles &Nervous Tissue iii. Formation of Limbs iv. Formation of Brain & Spinal cord v. Formation of Heart & Lungs		
2	**MUSCULOSKELETAL SYSTEM**	64	34
a	Upper extremity	15	10
b	Lower extremity	15	10
c	Back & Thoracic Cage	10	5
	Back Muscles Ribs & Sternum Intercostal Muscles Diaphragm & Mechanism of respiration		
d	Abdomen and Pelvis	7	2
	Muscles of Abdomen Muscles of Pelvic Floor and Cavity Vertebral Column & vertebrae		
e	**Head, Neck & Face**	13	5
	Skull and Mandible Facial Muscle, blood supply, nerve supply Triangles of neck, Glands, Tongue & Palate Larynx & Pharynx Muscles of mastication & T.M Joint Extra ocular muscles with never supply Nose & Para nasal sinuses		
f	**Living Anatomy:**	4	2
	i. Upper extremity ii. Lower extremity iii. Head , Neck &Face iv. Trunk		
3	**NEUROANATOMY**	32	12
a	General organization of Nervous System	5	
b	Central Nervous System	15	8
c	Cranial nerves	10	4

d	Peripheral Nerves (should be done with Respective parts)	2	
	i. Autonomic Nervous System: ii. Sympathetic iii. Parasympathetic		
4	**SYSTEMIC ANATOMY**	17	11
A	**Abdominal & Pelvic Organs**	4	2
a	Alimentary system		
b	Urinary System		
c	Genital system		2
	i. Male organs ii. Female organs		
B	**CARDIOVASCULAR & RESPIRATORY ANATOMY**	9	3
a	Thoracic wall		
b	Mediastinum		
c	Heart and major blood vessels		2
d	Lungs		1
5	**SENSORY ORGANS**	4	2
a	Ear		
b	Eye		
c	Skin		
6	**ENDOCRINE & EXOCRINE SYSTEM**	4	
7	**RADIOLOGY**	10	

RECOMMEMDED TEXTBOOKS

1. B. D. Chaurasia, Volume- I, II , III & IV ; Human Anatomy; CBS Publishers and Distributers

2.Inderbir Singh; Neuroanatomy; Jaypee Brothers Medical Publishers

3.Kadasne, Human Anatomy; Volume- I, II & III; Jaypee Brothers Medical Publishers

4. B D Chaurasia; General Anatomy; CBS Publishers and Distributers

5.Sampath Madhyastha : Manipal Manul of Anatomy , CBS Publishers.

RECOMMEMDED REFERENCE BOOKS

1. Richard Drake, A. Wayne Vogl, Adam Mitchell; Gray's Anatomy; Elsevier
2. Quining Wasb; Extremities; Lippincott Williams and Wilkins
3. Mariano De Fiore; Atlas of Histology; Lea & Febiger
4. Smoutand McDowell; Anatomy & Physiology; Edward Arnold
5. Katherine Wells; Kinesiology; Saunders (W.B.) Co Ltd
6. Splittgerber; Snell's Neuroanatomy; Wolters Kluwer
7. Textbook of Clinical Neuroanatomy; Vishrsam Singh; Elsevier India
8. G. J. Romanes;Cunnigham's- Practical Anatomy; Volume I II and III; Oxford University Press

INTERNAL ASSESSMENT:

1. Two exams –Terminal and prelims of 80 marks each (Theory & Practical) TOTAL-160 marks
2. I.A. to be calculated out of 20 marks (Theory & Practical)
3. Internal assessment as per University pattern.

SCHEME OF UNIVERSITY EXAMINATION

HUMAN ANATOMY THEORY **80 MARKS + I.A. – 20 MARKS** * The question paper will give appropriate weightage to all the topics in the syllabus.		**Marks** **100**
Section A	**Q-1 - Answer any TWO out of THREE (2 x 10 Marks = 20)** **(**should be based on Musculoskeletal anatomy) **Q-2 - Answer any FOUR out of FIVE (4 x 5 Marks = 20)** Should be based on: Digestive/ Uro-genital /Reproductive system / Special senses- Eye / Ear / Skin / Circulatory system / General Anatomy/General Histology	**40**
Section B	**Q-3 - Answer any TWO out of THREE (2 x 10 Marks = 20)** (Should be based on Neuro -Anatomy –including cranial nerves with emphasis to III to XII nerves) **Q-4 - Answer any FOUR out of FIVE (4 x 5 Marks = 20)** Should be based on: Thorax / Soft parts Upper Limb / Soft part Lower Limb/ Thorax/Spine/Neck/ Abdominal /Pelvic Muscle	**40**
Total Marks		**80**

ANATOMY PRACTICAL 80 MARKS+ I.A.– 20 MARKS		Marks 100
Spots	Based on: i. Musculoskeletal (7x3) = 21 marks ii. Systemic (5x3) = 15 mark iii. Neuro anatomy (3x3) = 09 marks	**45**
Radiology		**05**
Living anatomy		**05**
Viva	iv. Hard parts v. Soft parts	**20**
Journal	Year work on practical's performed	**05**
Total Marks		**80**

HUMAN PHYSIOLOGY-P103

Theory-150hrs + Practical /Laboratory-50hrs= Total 200hrs

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION:

The course is designed to study the function of the human body at the molecular, cellular, tissue and systems levels. The major underlying themes are; the mechanisms for promoting homeostasis, cellular processes of the metabolism, membrane function and cellular signaling; the mechanisms that match supply of nutrients to tissue demands at different activity levels; the mechanisms that match the rate of excretion of waste products to their rate of production; the mechanisms that defend the body against injury and promote healing.

These topics address the consideration of nervous and endocrine regulation of the cardio vascular, hematopoietic, pulmonary, renal, gastro-intestinal and musculoskeletal systems including the control of cellular metabolism. The course stresses on the integrative nature of physiological responses in normal function and disease.

This course will serve as a pre-requisite/foundation for the further courses i.e. Exercise physiology or Pathology.

COURSE OBJECTIVES:

At the end of the course, the candidate will:

Cognitive:

- Acquire the knowledge of the relative contribution of each organ system inmaintenance of the Milieu Interior (Homeostasis)
- Be able to understand physiological functions of various systems, with special reference to Musculo-skeletal, Neuro-motor, Cardio-respiratory, Endocrine, Uro- genital function, & alterations in function with aging
- Analyze physiological response & adaptation to environmental stresses-with specialemphasis on physical activity, altitude, temperature
- Acquire the skill of basic clinical examination, with special emphasis to Peripheral &Central Nervous system, Cardiovascular & Respiratory system, & Exercise tolerance.

Psychomotor:

- Describe the basic function of Cell, its morphology and composition of Blood.
- Describe various physiology of Respiratory system, Muscular system ,Cardio Vascular System , Nervous System , digestive system, Autonomic Nervous System,

- Able to describe the basic physiology of exercises and its effects on various system.

COURSE OUTCOMES:

- To understand the basic function of Cell and its morphology.
- To understand the basic function and composition of Blood.
- To understand the basic physiology of Respiratory system.
- To understand the basic physiology of digestive system.
- To understand the basic physiology of Muscular system and its contraction mechanism

SR.NO.	REGIONS	THEORY HOURS
A	**GENERAL PHYSIOLOGY**	
1	**Cell**	8
	Structure of cell membrane Transport a cross cell membrane R.M.P& action potential Homeostasis	
2	**BLOOD**	8
	Composition and functions of blood(WBC, RBC, Platelets) Blood group systems Immunity Hemostasis	
3	**NERVE -MUSCLE PHYSIOLOGY**	14
	Nerve:	6
	Structure, classification & Properties EMG Propagation of nerve impulse iii. Nerve injuries–degeneration, regeneration and reaction of degeneration	1 1 1 1 2
	Muscle:	8
	i. Structure properties classification-smooth, skeletal, cardiac, excitation/contraction coupling ii. Factors affecting development of muscle tension, fatigue,load. iii. Neuro -muscular transmission; applied physiology: Myasthenia gravis, Lambert Eaton Syndrome.	3 3 2
4	**NERVOUS SYSTEM**	30

a.	Introduction of nervous system, classification – C.N.S., P.N.S.& A.N.S.	4
b.	Synapse-structure, properties & transmission;	1
c.	Reflexes-classification & properties;	3
d.	Receptor physiology: classification, properties.	3
e.	Physiology of Touch, Pain, Temperature & Proprioception	2
f.	Sensory and motor tracts: effect of transaction (complete and incomplete) at various levels	4
g.	Physiology of Muscle Tone (muscle spindle); Stretch reflex	2
h.	Connection & function of Basal ganglia, Thalamus , Hypothalamus ,Sensory and Motor cortex, Cerebellum, Limbic system ,Vestibular Apparatus	8
i.	Autonomic nervous system: Structure and functions of the sympathetic and the parasympathetic nervous system.	1
j.	Learning, memory & conditioned reflex	1
k.	Physiology of Voluntary movement	1
5	**EXCRETORY SYSTEM:**	**10**
a.	Kidneys- structure &function;	1
b.	Urine formation; (to exclude concentration and dilution)	2
c.	Juxta glomerular apparatus	1
d.	Fluid and electrolyte balance–Na, K, H2O	1
e.	Neural control of Micturition	1
f.	Applied physiology: Types of bladder	2
g	Temperature Regulation:	2
6	**ENDOCRINE SYSTEM:**	**10**
a.	Secretion-regulation & function of Pituitary, Thyroid, Adrenal, Parathyroid, Pancreas	9
b.	Applied physiology (abnormalities) of the above mentioned Glands	1
7	**REPRODUCTIVE SYSTEM:**	8
a.	Physiology of ovary and testis	
b.	Physiology of menstrual cycle and spermatogenesis	
c.	Functions of progesterone, estrogen and testosterone	
d.	Puberty & menopause	
e.	Physiological changes during pregnancy	

8	**SPECIAL SENSES:**	9
a.	Structure and function of the eye	
b.	Applied physiology: errors of refraction, accommodation, reflexes– dark and light adaptation, photosensitivity.	
c.	Structure and function of the ear	
d.	Applied physiology –types of deafness	
9	**RESPIRATORY SYSTEM:**	14
a.	Introduction, structure and function of the RS	
b.	Mechanics of respiration;	
c.	Pulmonary Volumes & capacities;	
d.	Anatomical & Physiological Dead space- ventilation/ perfusion ratio, alveolar ventilation	
e.	Transport of respiratory gases	
f.	Nervous & Chemical control of respiration	
g.	Pulmonary function tests- Direct & indirect method of Measurement	
h.	Physiological changes with altitude & acclimatization	
10	**CARDIOVASCULAR SYSTEM:**	19
a.	Structure & properties of cardiac muscle	
b.	Cardiac impulse- initiation and conduction	
c.	Cardiac cycle	
d.	Heart rate	
e.	Cardiac output regulation& function affecting Peripheral Resistance, venous return.	
f.	Blood pressure, definition , regulation	
g.	Regional circulation-coronary-muscular, cerebral, pulmonary.	
h.	Normal ECG.	
11	**GASTRO INTESTINAL SYSTEM:**	6
a.	Absorption and digestion in brief	
b.	Liver function	
12	**EXERCISE PHYSIOLOGY**	12
a.	Basal Metabolic Rate and Respiratory Quotient	
b.	Energy metabolism	
c.	Fatigue	

d.	Oxygen debt	
e.	Acute cardio vascular changes during exercise, difference between mild, moderate and severe exercise, concept of Endurance	
f.	Acute respiratory changes during exercise	
g.	Concept of training/conditioning, effects of chronic exercise / effect of training on the cardio vascular & respiratory system	
h.	Body temperature regulation during exercise	
i.	Hormonal and metabolic effects during exercise	
j.	Effects of exercise on muscle strength, power, endurance	
k.	Physical fitness and its components	
13	**PHYSIOLOGY OF AGEING (With respect to all systems)**	2

Sr.No	**PRACTICALS**	**HRS**
1	Haematology – (demonstration only)	6
2	GRAPHS:	5
	a. Skeletal muscle and its properties	
	b. Cardiac muscle-properties-effect of Ach & Adrenaline	
3	Examination of pulse	2
4	Blood pressure- effects of change in posture & exercise	4
5	ECG	2
6	Physical fitness:	6
	a. Breath holding	
	b. Mercury column test;	
	c. Cardiac efficiency test- Harvard step test- Master step test	
7	Spirometry,	2
	Lung volumes and capacities	
8	Perimetry	1
9	Clinical examination: History taking and general examination / Respiratory system / cardio vascular system / Higher functions / Cranial nerves /Reflexes / Motor & Sensory system	20

10	Test of Deafness	1
11	I. Visual Acuity & II. Visual Reflexes	1

RECOMMENDED TEXTBOOKS

1. Chatterjee cc; Text book of Physiology; CBS Publishers and Distributers
2. Sujit Kumar Chaudhuri; Concise Medical Physiology; NCBA Publications

RECOMMENDED REFERENCE BOOKS

1. Ganong; Review of Medical Physiology; McGraw-Hill Education / Medical
2. Keele A. Cyril; Samson & Wright's Applied Physiology; OUP India
3. Bruce M. Koeppen ; Bern and Levy Textbook of Medical Physiology; Elsevier
4. Textbook on Medical Physiology–Guyton; Elsevier
5. K Sambulingam, Essentials of Medical Physiology, Jaypee Brothers, 7th Edition

INTERNAL ASSESSMENT:

1. Two exams–Terminal and prelims of 80 marks each (Theory & Practical)
   TOTAL –160 marks
2. I. A. to be calculated out of 20 marks (Theory & Practical)
3. Internal assessment as per University pattern

SCHEME OF UNIVERSITY EXAMINATION

		Marks
HUMAN PHYSIOLOGY THEORY **80 MARKS + I.A. – 20 MARKS** * The question paper will give appropriate weightage to all the topics in the syllabus.		**100**
Section A	**Q-1 - Answer any TWO out of THREE (2 x 10 Marks = 20)** **(**should be based on Musculoskeletal and CVRS) **Q-2 - Answer any FOUR out of FIVE (4 x 5 Marks = 20)** Should be based on: Cardio-vascular system / Respiratory system / Exercise Physiology/Special Senses (Eye/Ear/Skin)/ Reproductive system/ GIT/ Excretory.	**40**
Section B	**Q-3 - Answer any TWO out of THREE (2 x 10 Marks = 20)** (Should be based on CNS) **Q-4 - Answer any FOUR out of FIVE (4 x 5 Marks = 20)** Should be based on: Blood/ Electrolyte balance / Endocrine/ /General physiology/Nerve Muscle Physiology/ Exercise Physiology.	**40**
Total Marks		**80**

		Marks
PHYSIOLOGY PRACTICAL **80 MARKS+I.A.– 20 MARKS**		**100**
Spots	Based on: Topic 1,2,5,7,8,10,11 (10X2Marks)	**20**
Viva	Based on theory	**20**
Demonstration	On Clinical Physiology C.V.S. 10Marks R.S. 10Marks C.N.S. Cranial Nerves and Special Senses 15Marks	**35**
Journal	Year work on practical's performed	**05**
Total Marks		**80**

BIOCHEMISTRY-P104

Theory 50 hrs + Demonstrations 4 hrs =Total 54 hrs

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION:

This course provides the knowledge and skills in fundamental organic chemistry and introductory biochemistry that are essential for further studies It covers basic biochemical, cellular, biological and microbiological processes, basic chemical reactions in the prokaryotic and eukaryotic cells, the structure of biological molecules, introduction other nutrients i.e. Carbohydrates, fats, enzymes, nucleic acids and amino acids.

COURSE OBJECTIVES:

At the end of the course, the candidate will:
Cognitive:

- Able to understand the biochemical change of the various elements of the body at cellular level and extra cellular level
- Able to understand various biomolecules which are present in the body and functions
- Acquire the knowledge of the formation and fate of these biomolecules
- Able to understand their normal levels in body fluids required for functioning and their abnormal levels to understand the disease process

Psychomotor:

- Describe biochemical change of the various elements of the body at cellular level and extra cellular level
- Describe various biomolecules which are present in the body and functions
- Describe their normal levels in body fluids required for functioning and their abnormal levels

COURSE OUTCOMES:

- To understand the metabolism, function and mechanism of action of various elements of the body.
- To understand the transport system of electron and its effects on body
- To understand the metabolism, function and mechanism of action of various elements of the body like minerals, vitamins and nucleic acid.
- To understand the role of nutrition on body with biochemical changes.
- To understand the biochemical changes in connective tissues, muscles and nerves.
- To understand the biochemical markers for diagnosis of various disease conditions

SR .NO.	REGIONS	THEORY HOURS
1	**CARBOHYDRATES**	9
a	Chemistry, Definition, Classification with Examples, Functions	
b.	Digestion and Absorption, Glycogenesis, Gluconeogenesis, Glycogenolysis and HMP pathway, Glycolysis, Electron transport chain for ATP synthesis, TCA cycle.Hormonal regulation of blood	
c.	Glucose, Glycogen storage disorders, Diabetes mellitus,Glycosuria, changes in Carbohydrate, Protein & Lipid metabolism.	
d.	All the metabolisms should be taught based on the followingpoints such as starting and ending products, tissues of occurrence and the conditions when the pathway is activated,deactivated and significance of the pathway.	
2	**PROTEINS**	6
a.	Definition, Importance, Functional Classification, Digestion & Absorption, decarboxylation, deamination, transamination, transmethylation, Urea cycle, clinical significance of serum urea,function of glycine, Phenylalanine, trytophan, methioninetyrosine.	
b.	There should be an emphasis on understanding the structure ofprotein, the essential and non- essential amino acids.	
3	**ENZYMES**	4
	Definition, Modern Classification, Factors affecting enzymes Action, diagnostic & therapeutics uses & enzymes, Isoenzymes,	
	Competitive & Non competitive inhibition.	
4	**VITAMINS**	4
	Definition, Classification, Fat & water soluble vitamins, functions, Deficiency manifestations, sources & RDA (Vit. C,B12, Folic acid, Thiamin)	
	Rest all vitamins	
5	**MINERALS**	5
	Ca, P, Fe, I, Zinc, Selenium, Fluorine, Magnesium inclued Naand K. Function sources, Deficiency manifestations	

6	**HORMONES**	5
	Definition with mechanism of action, classification. Thyroid Hormone- Synthesis, Biochemical functions ,Assessment of abnormality with thyroid function test	
7	**NUTRITION**	3
	Composition of food ,balanced diet, Kwashiorkor, Marasmus, Nitrogen balance, major Dietary constituent & their importance.Include energy requirements, factors affecting B.M.R., S.D.A. (Specific Dynamic Action) and R.Q. (Respiratory Quotient)	
8	**CLINICAL BIOCHEMISTRY**	6+4(demo)
a.	Liver Function Test, Renal Function Test, Lipid profile in serum	
b.	Starvation metabolism, Haemoglobin chemistry and metabolism	
c.	Demonstrations: Demonstration of estimation of various biomolecules and their interpretation Interpret reports of variousconditions (including Diabetic profile, Cardiac profile, Uric acidand Gout)	
9	**LIPID**	4
	Definition, classification with examples biomedical importance, Phospholipids & lipoproteins functions. Digestion & absorptionof lipid, β oxidation of fatty acid with Energetics, Ketone bodiesand their metabolism, Prostaglandins and essential fatty acids , Cholesterol, importance of Cholesterol, obesity	
10	**MUSCLE CONTRACTION**	4
	Mechanism & Biochemical events Connective Tissue- Biochemistry of connective tissue Collagen Glycoproteinproteoglycans	

RECOMMENDED TEXTBOOKS

1. U Satyanarayana; Biochemistry; Elsevier India
2. Vasudevan DM; Textbook of Biochemistry for Medical students; Jaypee BrothersMedical Publishers
3. Naik Pankaja; Essentials Of Biochemistry; Jaypee Brothers Medical Publishers

RECOMMENDED REFERENCE BOOK

1. Robert K. Murray; Harpers Biochemistry (24th ed); Appleton & Lange

INTERNAL ASSESEMENT

1. Two exams –Terminal and prelims of 40 marks each TOTAL - 80marks
2. I.A.to be calculated out of 10 marks (Theory only)
3. Internal assessment as per University pattern.

SCHEME OF UNIVERSITY EXAMINATION

BIOCHEMISTRY THEORY **40 MARKS + I.A. – 10 MARKS** * The question paper will give appropriate weightage to all the topics in the syllabus. [There shall be no LAQ in this paper]		**Marks** **50**
Section A	**Q-1 - Answer any FOUR out of FIVE** **(4 x 5 Marks = 20)**	**20**
Section B	**Q-2 - Answer any FOUR out of FIVE** **(4 x 5 Marks = 20)**	**20**
Total Marks		**40**

FUNDAMENTALS OF KINESIOLOGY & KINESIOTHERAPY- P105

Didactic 100 Hrs +Practical / Laboratory 150 Hrs = Total 250 Hrs

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION:

This course covers the definition of various terms used in mechanics, biomechanics kinesiology as well as its importance in physical therapy. It applies the mechanical principles to simple equipment's of therapeutic gymnasium and familiarizes the candidate to its use. It covers the types of human motions as well as planes and relative axes of motion. It also explains the inter-relationship among kinematic variables and utilizes this knowledge to describe and analyze motion. It covers the classification of the joints and muscles along their distinguishing characteristics and skill of measurement of its ranges in various planes and axes. This course additionally covers therapeutic principles and skills of application of massage, yoga, aerobic exercise and use of suspension therapy. It also enhances the skill of evaluation of vital parameters & sensory system.

COURSE OBJECTIVE:

Cognitive:

At the end of the course, the candidate will be able to:

- Define the various terms used in relation to Mechanics, Biomechanics & Kinesiology
- Recall the basic principles of Biophysics related to mechanics of movement / motion & understand the application of these principles to the simple equipment designs along with their efficacy in Therapeutic Gymnasium & various starting positions used in therapeutics.

Psychomotor:

At the end of the course, the candidate will be able to:

- Describe & also acquire the skills of use of various tools of the TherapeuticGymnasium.
- Demonstrate the movement's in terms of various anatomical planes and axes.
- Demonstrate various starting & derived positions used in therapeutics.
- Describe physiological principles & acquire the skills of application of therapeutic massage.
- Acquire the skills of assessment of basic evaluation like sensations, reflexes & vital parameters.
- Acquire the skill of objective assessment of Range of Motion of the joints byGoniometry.
- Describe physiological basis and principle of relaxation and acquire the skills of relaxation

methods.

- Describe physiological responses and principles of aerobic exercises for general fitness & demonstrate fitness skills on self & group.
- Describe physiological principles and acquire the skill of performing Pranayama &Yogasanas.

Affective:

- To maintain proper communication with the model/ subjects for correct delivery of instruction during demonstration
- To follow the appropriate principle of the handling technique eg. Hand placement, stabilization, fixation etc.
- To perform safe, respectful and effective handling during demonstration.

COURSE OUTCOMES

- To understand terminologies of Mechanics and biomechanics
- To understand movements in various plane.
- To understand method of assessment of sensation and reflexes and vital parameters and develop skills in assessment.
- To understand various starting and derived position in therapeutic exercises and its effect and uses.
- To understand and acquire skills in yogasanas and fitness training.
- To understand basic principles in performing any assessment and therapeutic handling techniques.

SR.NO	TOPICS	THEORY HOURS	PRACTICAL HOURS
1	**MECHANICS & BASIC BIOMECHANICS**	**25**	
	a. Mechanics & Application to human body i. Explain in Detail: Mechanics (Statics & Dynamics), Biomechanics, Kinetics ,Kinematics (Osteo kinematics, Arthrokinematics, Open Chain & Closed Chain kinematics) ii. Axes /planes, iii. Laws of inertia &motion, iv.Gravity, C.O.G, L.O.G. and B.O.S. v. Equilibrium–Types and affecting factors vi.Mechanics of Forces Work, Energy, Speed, Power, Friction, Momentum, Parallelogram of	20	

	Forces vii.Torque viii. Pendulum ix. Mechanical and Anatomical pulleys x. Levers xi. Fluid mechanics related to Hydrotherapy (physics, statics & dynamics)		
	b.Muscle Mechanics i. Types of Muscles-Anatomical & Physiological ii. Types of muscle work / Contraction iii. Muscle Action: Roles as Agonist, Antagonist, Fixators, Synergist iv. Active & Passive insufficiency vi. Range of muscle work, Angle of pull – with importance to efficiency of muscle work and stability of joint	5	
2	**BIO-PHYSICS RELATED TO KINESIOTHERAPY**	20	37
	a. Starting Positions & Derived Positions i. Application of stability ii. BOS, Gravity and muscle work in relation to various positions iii. Application of Position & uses	10	5
	b. Therapeutic Gymnasium i) Stability training equipment's: Swiss Ball, wobble board, Bosu ball ii) Mobility training equipment's: Walking aids, pulleys, shoulder wheel, finger ladder, ankle mobilize, knee ratchets, foam roller,roller skates iii) Strength training equipment's: Weights, resistance bands and wands, medicineball, springs, ankle mobilize, dumbells iv) Effects, uses and Applied mechanics of allabove	5	17

	accessories		
	c. Suspension Therapy i. Principles ii.Suspension Apparatus iii. Types of Suspension iv.Effects and uses v.Techniques for individual joints	5	15
3	**CLASSIFICATION OF MOVEMENTS**	**10**	**15**
	i.Definition and classification ii.Principles of movements iii.Effects, uses and Techniques (active:assisted, free,assisted- resisted, resisted & passive)		
4	**BASIC EVALUATION**	**15**	**35**
	a. Assessment of Vital Parameters i. Temperature ii. Blood Pressure iii. Heart Rate/ Pulse rate iv. Respiratory Rate v.Chest expansion	5	5
	b. Assessment of Sensations and Reflex testing	5	5
	c. Goniometry i.Definition and Types of Goniometers ii.Principles iii. Techniques for individual joints with biomechanical principles iv. Uses	5	25
5	**MASSAGE**	5	8

	a.Definition b.Classification c.Principles d.Effects & uses e.Indications and contra indications f.Techniques- Upper limb, Lower Limb, Neck,Back, Abdomen, Face & Scalp		
6	**RELAXATION**	**5**	**10**
	a.Principles, b.Techniques along with their effects & uses i.General-Jacobson's, Shavasana & Reciprocal(Laura Mitchell) ii Local -Heat, Massage ,Gentle / Rhythmicpassive movements		
7	**AEROBIC CONDITIONING AND BASIC PRINCIPLES OF GENERALFITNESS** (as applied to self and group)	5	5
	a. Physiology of aerobic and anaerobic exercise. b. Components of fitness (definition of termsonly) c. Warm up & d. Cool down exercises and itseffects. e. Group & Recreational activities		
8	**YOGA**	15	40
	a.Definition b.Principles of Yoga c.Yogasana- Technique, Benefits, Indications, Contraindications & cautions for each Asanas:	3	
	i. Asanas in supine a. Pawanamuktasana b.Ardha Halasana c.Halasana d.Setubandhasana e.Naukasana	3	

	f. Matsyasana g. Shavasana h. Sarvangasana		
	ii. Asanas in prone a. Bhujangasana b. Ardha-Shalabhasana c.Dhanurasana d. Makarasana	3	
	iii. .Asanas in sitting a. Padmasana, Siddhasana, Sukhasana b. Yogamudrasana c. Virasana d. Vajrasana e. Gomukhasana f. Pashchimottanasana	3	
	iv. Asanas in standing a. Padhastasana, Padangusthasana, Uttanasana b. Utkatasana c. Tadasana d. Trikonasana V. Pranayama i. Anulom-vilom ii. Kapalbhati	3	

RECOMMENDED TEXTBOOKS

1. M. Dena Gardiner; Principles of Exercise Therapy; CBS Publishers and Distributers
2. M. Hollis; Massage for Therapists: A Guide to Soft Tissue therapy; Wiley-Blackwell
3. Margaret Hollis, Phyllis Fletcher Cook; Practical Exercise therapy; Wiley
4. Hydrotherapy– Kisner ,Hollis
5. Cynthia C Norkin, D Joyce White;. Measurement of Joint Motion: A Guide to Goniometry; Jaypee Brothers Medical Publishers
6. Cynthia C. Norkin, Pamela Levangie; Joint Structure and Function; F.A. DavisCompany
7. S. Datta Ray; Yogic Exercises-Physiologic and Psychic processes; Jaypee Brothers

Medical Publishers

8. Lynn Allen Colby Carolyn Kisner John Borstad; Therapeutic Exercise:Foundations and Techniques; F A Davis C

RECOMMENDED REFERENCE BOOKS

1. Sidney Licht; Massage, Manipulation &Traction; Krieger Pub Co
2. Sydney Litch; Therapeutic Exercise; Weaverly Press
3. Omprakash Tiwari; Asanas Why & How; Zen Publications
4. Peggy a Houghlum' Dolores B. Beroti; Brunnstrom'S Clinical Kinesiology

INTERNAL ASSESSMENT:

Two exams–Terminal and preliminary examination (Theory &Practical) of 80marks each TOTAL – 160 marks

1. Internal Assessment to be calculated out of 20marks.
2. Internal Assessment as per University pattern.
3.

SCHEME OF UNIVERSITY EXAMINATION

FUNDAMENTAL OF KINESIOLOGY & KINESIOTHERAPY **THEORY -** **80 MARKS + I.A. – 20 MARKS** * The question paper will give appropriate weightage to all the topics in the syllabus.		**Marks** **100**
Section A	Q-1- Answer any TWO out of THREE **[2 x 10 M = 20]** **(** Basic, mechanics & Biomechanics, Starting & Derived position, Suspension) Q-2 - Answer any FOUR out of FIVE **[4 x 5 M = 20]** (All topics)	**40**
Section B	Q-3 - Answer any TWO out of THREE **[2 x 10 = 20]** (Movements , Relaxation, Goniometric, Yoga) Q-4- Answer any FOUR out of FIVE **[4 x 5 = 20]** (All topics)	**40**
Total Marks		**80**

FUNDAMENTAL OF KINESIOLOGY & KINESIOTHERAPY PRACTICAL 80 MARKS+ I.A.– 20 MARKS		Marks 100
LONG CASE	Based on Suspension Therapy/Goniometry/Movements (passive) Cognitive– Biophysics, Biomechanical principles, indications, contraindication Documentation of findings etc -20 Marks Psychomotor + Affective skills -10 Marks	**30**
SHORT CASE	Two Short case based on: (2x20=40marks) Basic evaluation (**any one**):Sensation / Reflex testing / B.P./ & Pulse Rate/ Chest Expansion /.Respiratory Rate/Aerobic fitness for self-Skill performance (**any one**):Relaxation / Yogaposture / Starting / Derived position & Massage Cognitive – 05Marks Psychomotor - 15Marks	**40**
COMMUNICATION SKILL		**5**
JOURNAL	Year work on practical's performed.	**5**
Total Marks		**80**

FUNDAMENTALS OF ELECTROTHERAPY- P106

Didactic 95 hrs+ Practical 105 hrs =Total-200hrs

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION:

This course will cover the basic principles of Physics that are applicable in medical equipment's used in Physiotherapy. It will also help to understand the fundamentals of currents, sound waves, Heat & its effects, electro medical radiations and their effects as well as their application in physical therapy. It covers the skill of application of superficial thermal agent sand Cryotherapy.

COURSE OBJECTIVES:

Cognitive:

At the end of the course, the candidate will be able to:

- Recall the physics principles & Laws of Electricity, Electromagnetic spectrum, & Ultrasound
- Describe effects of environmental & manmade electromagnetic field at the cellular level &risk factors on prolonged exposure.
- Describe the Main electrical supply, Electric shock, precautions
- Enumerate Types & Production of various Therapeutic electrical currents & describe the panel diagrams of the machines

Psychomotor:

At the end of the course the candidate will be able to–

- Test the working of the various electro therapeutic equipment's.
- Describe in brief, certain common electrical components such as transistors, valves, capacitors, transformers etc & the simple instruments used to test /calibrate these components [such as potentiometer, oscilloscope, multi meter] of the circuit; & willbe able to identify such components.
- Describe & identify various types of electrodes used in therapeutics, describeelectrical skin resistance &significance of various media used to reduce skin resistance.
- Acquire knowledge of various superficial thermal agents such as Paraffin wax bath, Cryotherapy, Hydro collator packs, Home remedies, their physiological & therapeutic effects, Merits / demerits &acquire the skill of application.

Affective:

- To maintain proper communication with the model/ subjects for correct delivery of Instruction during demonstration
- To follow the appropriate testing of electrotherapeutic equipment's.
- To perform safe, respectful and effective handling during demonstration.

Course Outcomes:

- To understand basic knowledge about medical electronics and electricity including basic physics, condenser, mains supply, shock, electrical skin resistance, static and current electricity, faradic and galvanic current.
- To understand about fundamentals of high frequency currents including electromagnetic induction, magnetism, sound, AC / DC currents, Electromagnetic Spectrum, Cellular Biophysics, and environmental currents.
- To understand the production, physical principles, panel diagrams, and testing of deep heating modalities, of low frequency current modalities & actinotherapy modalities
- To understand Construction/ Design of the Modalities, Scales of temperature, Specific heat & modes of energy transfer, Physiological effects, Therapeutic effects/ Uses, Merits/ demerits, Indications/ contra-indications, Skills of application of superficial thermal agents.

SR. NO.	TOPIC	THEORY HOURS	PRACTICAL HOURS
1	**MEDICAL ELECTRONICS AND ELECTRICITY**	**55**	**15**
A.	**Fundamentals of Low frequency currents**	**32**	**9**
i.	**Basic Physics:**	**3**	
	Structure of atom, Isotopes, States of matter; Compound formation-(covalent formation), Properties of Electric lines of forces, Conductors, Non-conductors, Latent heat, Transmission of heat		
ii.	**Condenser**	**3**	
a)	Principles		
b)	Capacity		
c)	Types &construction		
d)	Electric field		
e)	Charging and discharging of the condenser		
f)	Duration of Discharge		
g)	Discharge through inductance		
h)	Capacitive reactance & uses of condenser		
iii.	**Main supply:**	**3**	**3**

a)	Production of Electricity		
b)	Types: A.C. / D.C.		
c)	Distribution/Grid system wiring of the house, colour coding of electrical supply to the apparatus		
d)	Earthing and its importance		
e)	Types of Plugs & Switches		
iv.	**Shock**	**2**	
a)	Definition		
b)	Types (Electric Shock & Earth shock)		
c)	Severity Causes, Effects & Precaution		
v.	**Static Electricity:**	**3**	
a)	Theory of Electricity		
b)	Production of Electric Charge		
c)	Characteristics of charged electrical body and capacitor and inductance: types &uses		
d)	Potential difference		
vi.	**Current electricity**	**6**	**6**
a)	EMF		
b)	Resistance: Combination of resistance in series and parallel		
c)	Ohms Law		
d)	D.C., A.C.		
e)	Devices for regulating current: Identification, functioning & Uses- Rheostat Potentiometer, Ammeters, Oscilloscopes, Voltmeter		
f)	Voltage and Power		
g)	Thermal effects of electric current- Joule's Law.		
vii.	**Electrical Skin Resistance**:	**2**	
a)	Skin Resistance		
b)	Factors affecting Skin resistance: types of electrodes used, electrode gels, skin threshold, skin type, skin temperature, exercises		
c)	Methods to reduce skin resistance		

viii.	**Faradic currents:** Duration, frequency, wave forms & graphical representation, surging, faradic type current, pulse width modulation,	**5**	
ix.	**Galvanic currents/Direct current:** and interrupted galvanic current, duration, frequency, waveforms &graphical representation	**5**	
B.	**Fundamentals of High frequency currents**	**13**	**6**
i.	**Electro Magnetic Induction:**	**3**	
a)	Production		
b)	Direction of induced EMF		
c)	Strength of induced EMF		
d)	Type–Self & Mutual induction		
e)	Inductive Reactance		
f)	Eddy currents		
g)	Principles and Laws–Faraday's, Lenz's		
h)	Dynamo		
ii.	**Apparatus for Modification of Currents:**	**2**	
a)	Interruption of current–Switch &Valve		
b)	C-R timing circuit		
c)	Multi vibrator Circuit, Pulse Generator		
d)	Current supplied to patient – Impulse type		
iii.	**Magnetism:**	**2**	
a)	Nature and Types		
b)	Molecular theory of Magnetism		
c)	Property of Magnet		
d)	Magnetic effect of electric current– Electro Magnets		
e)	Meters for measuring A.C.		
iv.	**Sound:**	**2**	
a)	Wave motion in sound		
b)	Infrasonics		
c)	Normal hearing band		
d)	Characteristics of sound waves and their velocities		

e)	Ultrasonics		
f)	Reflection, Refraction and Attenuation of Sound waves		
g)	Interference of sound waves		
v.	**D.C. and A.C.:**	**4**	**6**
a)	Source–Cell and rectified AC		
b)	Rectification of AC		
c)	Thermionic valves– Diode and Triode		
d)	Metal Rectifier		
e)	Types of Rectification		
f)	Transformers-Types &Functions		
g)	Smoothing circuit		
h)	Semiconductor and its types		
i)	Diodes & Transistors		
j)	Choke coil		
C.	**Electro Magnetic Spectrum**	**5**	
i.	Laws of transmission, Reflection, Refraction, Absorption, Attenuation		
ii.	Electro Magnetic Radiation		
iii.	Laws Governing E.M.R.		
iv.	Laws of Reflection, Refraction, Absorption, Attenuation, Cosine Law, Inverse Square Law, Grothus Law.		
D.	**Cellular Bio-physics**	**3**	
i.	Action potential,		
ii.	Resting membrane potential		
iii.	Transmission of impulses: Saltatory conduction		
iv.	Reception &emission of E.M.F. signals		
E.	**Environmental currents**	**2**	
	Environmental currents & fields risk factors on Prolonged exposure to E.M. field.		
2	**ELECTRICAL MODALITIES:**	**25**	**40**
	Production, Physical principles, Panel diagrams,		
	Testing of apparatus of the following:		
a.	S.W.D		
b.	Ultrasound		

c.	U.V.R.		
d.	I.F.T.		
e.	I.R.		
f.	LASER (no panel diagram)		
g.	Diagnostic Electrical muscle Stimulator		
h.	T.E.N.S.		
3	**SUPERFICIAL THERMAL AGENTS**	**15**	**50**
	Construction/ Design of the Modalities, Scales of temperature, Specific heat & modes of energy transfer, Physiological effects, Therapeutic effects/ Uses, Merits/ demerits, Indications/ contra-indications, Skills of application:		
a.	Home remedies		
b.	Paraffin wax bath		
c.	Whirl pool		
d.	Contrast bath		
e.	Hydro-collator hot packs		
f.	Cryotherapy		

RECOMMENDED TEXT BOOKS

1. FORSTER A.; Claytons Electrotherapy Theory And Practice –3rd & 10thedition; CBS Publishers and Distributers
2. Val Robertson PhD, Alex Ward PhD, John Low et el; Electrotherapy explainedPrinciples and Practice; Butterworth-Heinemann
3. Joseph Kahn; Principles and Practice of Electrotherapy; Churchill Livingstone
4. Sheila Kitchen; Electrotherapy Evidence Based Practice 11th edition; ChurchillLivingstone

RECOMMENDED REFERENCE BOOK

1. Roger M. Nelson, Dean P. Currier, Karen W. Hayes; Clinical Electrotherapy; **Pearson INTERNAL**

ASSESSMENT:

Two exams –Terminal and preliminary examination (Theory & Practical) of 80 marks each. TOTAL – 160 marks

1. Internal Assessment to be calculated out of 20marks.
2. Internal Assessment as per University pattern.

FUNDAMENTALS OF ELECTROTHERAPY THEORY **80 MARKS + I.A. – 20 MARKS** * The question paper will give appropriate weightage to all the topics in thesyllabus.		**Marks** **100**
Section A	**Q-1 - Answer any TWO out of THREE** Based on superficial Thermal agents **(2 x 10 Marks = 20)** **Q-2 - Answer any FOUR out of FIVE** **(4 x 5 Marks = 20)**	**40**
Section B	**Q-3 - Answer any TWO out of THREE** (Based on Production /Panel Diagram of high frequency current / Actinotherapy) **OR** (Based on Production / Panel Diagram of low/Medium frequency current) **(2 x 10 Marks = 20)** **Q-4 - Answer any FOUR out of FIVE** **(4 x 5 Marks = 20)**	**40**
Total Marks		**80**

SCHEME OF UNIVERSITY EXAMINATION

UNDAMENTALS OF ELECTROTHERAPY PRACTICAL 80 MARKS+ I.A.– 20 MARKS		Marks 100
LONG CASE	Based on Superficial thermal agent: Cognitive – Medical Electronic, Physiological, Biophysical principles, Therapeutic effects, indications-contraindications -20Marks Psychomotor + Affective skills - 10 Marks	**30**
SHORT CASE	Two Short case onTesting of equipment's: Low & Medium frequency High frequency/ Actino-therapy (2 x 20=40marks) • Cognitive – 05Marks • Psychomotor - 15Marks	**40**
COMMUNICATION SKILL		**5**
JOURNAL	Year work of practical's performed.	**5**
Total Marks		**80**

SECOND YEAR BPTH SYLLABUS

Transcript Hours-1400

SR.NO.	SUBJECT	TOPIC	DIDACTIC HOURS
1	**PROFESSIONAL PRACTICE & ETHICS P101**	i. Ethical code of conduct	15
		ii. Communication Skill	
2	**PHARMACOLOGY P201**	i. General Pharmacology	50
		ii. Drugs acting on C. N. S	
		iii. Drugs acting on Autonomic Nervous System	
		iv. Drugs acting on C.V.S	
		v. Drugs acting on Respiratory System	
		vi. Chemotherapy	
		vii. Other Chemo therapeutic drugs	
		viii. Endocrine	
		ix. Drugs in G.I. Tract	
		x. Haematinics	
		xi. Dermatological drugs	
3	**PATHOLOGY & MICROBIOLOGY P202**	**PATHOLOGY**	50
		i. General Pathology	
		ii. Inflammation & Repair	
		iii Immunopathology	
		iv. Circulatory disturbances	
		v. Pathologic changes in vitamin deficiencies	
		vi. Growth disturbances	
		vii. Specific pathology	
		viii. Muscular disorders	
		ix. Neuro-muscular junction	
		x. Bone & joints	
		xi. G. I. System	
		xii. Endocrine	

		xiii. Hepatic diseases	
		xiv. Clinical Pathology	
		MICROBIOLOGY	35
		i. General microbiology	
		ii .Laboratory diagnosis ofinfection	
		iii. Immunology	
		iv. Systemic bacteriology	
		v. Mycology	
		vi. Virology	
		vii. Parasitology	
		viii. Applied microbiology	
4	**PSYCHOLOGY P203**	i. Psychology: Nature & its fields	30
		ii. Developmental Psychology	
		iii. Theories of Learning	
		iv. Memory	
		v. Attention & Perception	
		vi. Motivation and Theories	
		vii. Conflict and Frustration	
		viii. Anxiety Disorders	
		ix. Affective Disorders	
		x. Psychotic Disorders	
5	**KINESIOLOGY P204**	i. Muscle Biomechanics	
		ii. Joint Biomechanics	
		iii. Vertebral Column	
		iv. Thorax and Chest wall Mechanics	
		v. Shoulder Complex	
		vi. Elbow Joint	
		vii. Wrist and Hand Complex	
		viii. Hip Joint	
		ix. Knee Complex	
		x. Ankle Foot complex	
		xi. Temporo-Mandibular Joint	

		xii. Kinetics and kinematics of various activities of daily living	100
		xiii. Motor Control	
6	**KINESIOTHERAPY P205**	i. Biophysics	245
		ii. Posture	
		iii. Motor & Postural control andBalance	
		iv. Functional Re-education	
		v. Neuromuscular co-ordination	
		vi. Gait	
		vii. Walking Aids	
		viii. Bronchial Hygiene	
		ix. Posture	
7	**ELECTROTHERAPY P206**	i. Pain	200
		ii. Low frequency Currents	
		iii. Medium frequency Currents	
		iv. High frequency Currents	
		v. Biofeedback	
		vi. Sound	
		vii. Actinotherapy	
		viii. Electrotherapy: wound care	
8	**COMPUTER APPLICATION P207**	i. Basics Of Computer	40
		ii. Hardware and Software	
		iii. Multimedia	
		iv. Operating System	
		v. Network	
		vi. Microsoft	
		vii. Power Point Presentation	
		viii. Scientific Poster Designing	
		i. Introduction To Evs	
		ii. Natural Resources	
		iii. Ecosystems	
		iv. Biodiversity And Conservation	

9	**ENVIRONMENTAL SCIENCES P208**	v. Environmental Pollution vi. Social Issues And Environment vii. Human Population And Environment viii. Field Work	30
10	**SEMINAR**	Seminar: On Biomechanics, Electrotherapy, Kinesiotherapy.Kinesiology	105
11	**SUPERVISED CLINICAL PRACTICE**	To practice clinical skills under the supervision, at the O.P.D./ I.P.D. set up. Clinical assignments should include Observation, Clinical History taking & technical assistance to the clinicians	500

PROFESSIONAL PRACTICE AND ETHICS- P101

Total -15 HRS

(COLLEGE EXAMINATION IN FINAL YEAR)

COURSE DESCRIPTION:

This subject would be taught in continuum from first year to final year. An exam in theory would be conducted only in final year. Professional and ethical practice curriculum content addresses the Knowledge, Skills and Behaviors required of the physiotherapist in a range of practice relationships and roles. The course will discuss the role, responsibility, ethics administration issues and accountability of the physical therapists. The course will also cover the history and change in the profession, responsibilities of the professional to the profession, the public and to the health care team. This includes the application of professional and ethical reasoning and decision-making strategies, professional communication.

COURSE OBJECTIVES:

At the end of the course the candidate will be compliant infollowing domains:

Cognitive:

- Be able to understand the moral values and meaning of ethics
- Will acquire bedside manners and communication skills in relation with patients, peers, seniors and other professionals.

Psychomotor:

- Be able to develop psychomotor skills for physiotherapist-patientrelationship.
- Skill to evaluate and make decision for plan of management based onsocio- cultural values and referral practice.

Affective:

- Be able to develop behavioral skills and humanitarian approach while communicating with patients, relatives, society atlarge and co-professionals.
- Be able to develop bed side behavior, respect & maintain patient'sconfidentiality.

SR. NO.	TOPIC	THEORY HOURS	SUPERVISION HOURS	TOTAL HOURS
1	Ethical code of conduct	3	10	15
2	Communication skills			
	a. Physiotherapist -Patient Relationship	1		
	b. Interviewing -Types of interviews, Skills of interviewing	1		

PHARMACOLOGY- P201

Total Hours = 50 hrs

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION:

This course covers the basic knowledge of Pharmacology including administration, physiologic response and adverse effects of drugs under normal and pathologic conditions. Topics focus on the influence of drugs in rehabilitation patient/client management. Drugs used in iontophoresis and phonophoresis will be discussed in detail.

COURSE OBJECTIVES:

At the end of the course, the candidate will be able to:

Cognitive:

- Describe Pharmacological effects of commonly used drugs by patients referred for Physiotherapy; list their adverse reactions, precautions, contraindications, formulation & route of administration.
- Identify whether the pharmacological effect of the drug interferes with the Therapeutic response of Physiotherapy & vice versa
- Indicate the use of analgesics & anti-inflammatory agents with movement disorders with consideration of cost, efficiency, & safety for individual needs.

Psychomotor:

Get the awareness of other essential & commonly used drugs bypatients- The bases for their use & common as well as serious adverse reactions.

COURSE OUTCOME:

- To understand the various routes of drugs administration, pharmacodynamics and pharmacokinetics of drugs.
- To understand the various drugs used for the treatment of ANS, PNS and CNS conditions with their mechanism of action and adverse effects.
- To understand the various drugs used for the treatment of endocrinesystem with their mechanism of action and adverse effects.
- To understand the various drugs used for the treatment of GITproblems with their mechanism of action and adverse effects.
- To understand the various antibiotic drugs with their mechanism ofaction and adverse effects.
- To understand the various drugs used for the treatment of ailment ofcardio vascular system with

their mechanism of action and adverse effects.

- To understand the various drugs used for the treatment of BronchialAsthma, Skin lesions and heavy metal poisoning.

SR.NO	TOPICS	DIDACTIC HOURS
1	**GENERAL PHARMACOLOGY**	**4**
	i. Pharmacokinetics	
	ii. Routes of administration	
	iii. Adverse drug reaction and reporting	
	iv. Factors modifying drug effect	
2	**DRUGS ACTING ON C.N.S.**	**11**
	i. Introduction	1
	ii. Alcohols + Sedatives & Hypnotics	2
	iii. Anti-convulsant	1
	iv. Drug therapy in Parkinsonism	2
	v. Analgesics & antipyretics –especially Gout & R.A.	3
	vi. Psycho Therapeutics	1
	vii. Local anesthetics, counter irritants	1
3	**DRUGS ACTING ON AUTONOMIC NERVOUS SYSTEM**	**7**
	i. Adrenergic	
	ii. Cholinergic	
	iii. Skeletal muscle relaxants	
4	**DRUGS ACTING ON C.V.S.**	**7**
	i. Antihypertensives	2
	ii. Antianginal- Antiplatelets, Myocardial Infarction	2
	iii. C.C.F.	1
	iv. Shock	1
	v. Coagulants and Anticoagulants	1
5	**DRUGS ACTING ON RESPIRATORY SYSTEM**	**3**

	i. Cough	
	ii. Bronchial Asthma	
	iii. C.O.P.D.	
6	**CHEMOTHERAPY**	**3**
	i. General principles	
	ii. Anti-Tuberculosis	
	iii. Anti –Leprosy	
7	**OTHER CHEMO THERAPEUTIC DRUGS**	**3**
	i. Drugs used in Urinary Tract Infection	
	ii. Tetra / chloral	
	iii.Penicillin	
	iv. Cephalosporin	
	v. Aminoglycosides	
	vi. Macrolides	
8	**ENDOCRINE**	**8**
	i. Insulin and oral Anti diabetic drugs	2
	ii. Steroids-Anabolic steroids	2
	iii .Drugs for osteoporosis, Vitamin D, Calcium, Phosphorus	2
	iv. Thyroid & Antithyroid	1
	v. Estrogen + Progesterone	1
9	**DRUGS IN G.I. TRACT**	**2**
	i. Peptic ulcer	
	ii. Diarrhea, Constipation & Antiemetics	
10	**HEAMATINICS**	**1**
	i. Vitamin B, Iron	
11	**DERMATOLOGICAL DRUGS**	**1**
	i. Scabies, Psoriasis, Local antifungal	

RECOMMENDED TEXT BOOKS

1. Padmaja Udaykumar ,Pharmacology For Physiotherapy ;(Cbs)
2. H. L. Sharma, K. K. Sharma, Pharmacology For Physiotherapist; (JaypeeBrothers Medical)

3. K. D. Tripathi , Essentials Of Medical Pharmacology – (Jaypee Brothers Medical)

RECOMMENDED REFERENCE TEXT BOOKS

1. Pharmacology And Pharmacotherapeutics – Dr. R S Satoskar, Dr. Nirmala N. Rege, Dr. S. D. Bhandarkar (Elsevier India)

INTERNAL ASSESSMENT

1. Two exams – Terminal and preliminary examinationof 40 marks each
   TOTAL - 80 marks
2. Internal Assessment to be calculated out of 10 marks.
3. Internal assessment as per University pattern.

SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

THEORY- PHARMACOLOGY **40 marks + I.A. 10 Marks** [There shall be no LAQ in this paper] * Emphasis should be given to the drugs related to Musculo-skeletal /Neurological, Cardio-Vascular (excluding anti arrhythmic and shock) / Respiratory conditions, analgesics & anti-inflammatory conditions		**Marks** 50
Section-A	Q1 Answer any FOUR out of FIVE [4 x 5marks = 20 marks]	20
Section-B	Q2 Answer any FOUR out of FIVE [4 x 5marks = 20 marks]	20
Total Marks		**40**

PATHOLOGY & MICROBIOLOGY- P202

Theory 50 + 35 = Total 85Hrs

(UNIVERSITY EXAMINATION)

PATHOLOGY (Theory 50 Hrs)

COURSE DESCRIPTION:

Students will develop an understanding of pathology underlying clinical disease states involving the major organ systems and epidemiological issues. Students will learn to recognize pathology signs and symptoms considered red flags for serious disease. Students will use problem-solving skills and information about pathology to decide when referrals to another health care provider or alternative interventions are indicated. Students will develop the ability to disseminate pertinent information and findings, and ascertain the appropriate steps to follow.

The course more deals with structural impairments as an important part in ICFClassification.

COURSE OBJECTIVES:

At the end of the course, the candidate:

Cognitive:

- Will have sound knowledge of concepts of cell injury & changesproduced bydifferent tissues, organs and capacity of the body inhealing process.

- Acquire the knowledge of general concepts of neoplasia with reference to the Etiology, gross & microscopic features, & diagnosis, in differenttissues, & organs of the body.

- Acquire knowledge of common immunological disorders & theirresultant effects onthe human body.

Psychomotor:

- Recall the Etiology–pathogenesis, the pathological effects & theclinico–pathological correlation of common infections & non- infectious diseases.

- Understand in brief, about the common Hematological disorders& investigations necessary to diagnose them.

- Correlate normal & altered morphology of different organ systems indifferent diseases needed for understanding disease process & their clinical significance

COURSE OUTCOME:

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

- Acquire the knowledge of concepts of cell injury and changes Produced thereby in different tissues and organs; Capacity of the body in healing Process.
- Recall the Etio-pathological effects and the Clinico pathological Correlation of common infection and noninfectious diseases.
- Acquire the knowledge of concepts of Neoplasia with reference to the Etiology, gross and microscopic features diagnosis and prognosis in different tissues and organs of the body.
- Correlate normal and altered morphology of different organ systems in different diseases needed for understanding disease process and their clinical significance (with special emphasis on neuro-musculoskeletal and cardio-respiratory system).
- Acquire knowledge of common immunological disorders and their resultant effects on the human body.
- Understand in brief, about the Hematological diseases and their resultant effects on the human body

SR.NO.	TOPIC	THEORY HOURS
1	**GENERAL PATHOLOGY**	4
	a. Cell injury-Causes, Mechanism & Toxic injuries with special reference to Physical including ionizing radiation, Chemical & Biological	
	b. Reversible injury (degeneration)- types morphology -cloudy swelling, hyaline, fatty changes	
	c. Intra-cellular Accumulation- Mucin, Protein	
	d.Irreversible cell injury-types of necrosis, Apoptosis – Calcification-Dystrophic & Metastasis	
	e. Extra-cellular accumulation-Amyloidosis.	
2	**INFLAMMATION & REPAIR**	6
	a. Acute inflammation – features, causes, vascular & cellular events	
	b. Morphologic variations-Ulcers	

	c. Inflammatory cells & Mediators	
	d. Chronic inflammation: Causes, Types, Non- specific &Granulomatous – with examples	
	e. Wound healing by primary & secondary union, factors promoting & delaying healing process	
	f. Healing at various sites- bone, nerve & muscle	
	g. Regeneration & Repair	
3	**IMMUNO –PATHOLOGY**	**4**
	a. Immune system: organization-cells- antibodies regulation ofimmune responses	
	b. Hyper-sensitivity (types and examples including graft rejection)	
	c. Secondary Immuno-deficiency including H.I.V.	
	d. Basic concepts of autoimmune disease (emphasis on S.L.E. & R.A.)	
4	**CIRCULATORY DISTURBANCES**	**4**
	a. Oedema - pathogenesis - types - transudates / exudates	
	b. Chronic venous congestion- lung, liver	
	g. Thrombosis – formation – fate – effects	
	d. Embolism – types- clinical effects	
	e. Infarction – types – common sites	
	f. Gangrene – types etiopathogenesis	
	g. Shock – Pathogenesis, types	
5	**PATHOLOGIC CHANGES IN VITAMIN DEFICIENCIES**	**1**
6	**GROWTH DISTURBANCES**	**4**
	a. Atrophy, Hypertrophy, Hypoplasia, Metaplasia, Agenesis, Dysplasia	
	b Neoplasia classification, Histogenesis, Biologic behaviors, difference between Benign & Malignant tumour	
	c. Malignant neoplasms- grades-stages-local & distal spread	
	c. Carcinogenesis: Physical, Chemical, Occupational,Heredity, Viral, Nutritional	
	e. Precancerous lesions & Carcinoma in situ	

	g. Tumour & host interactions–local and systemic effects-metastatic (special reference to bones and C.N.S.)	
7	**MEDICAL GENETICS** Classification with examples of genetic disorders	**01**
8	**SPECIFIC PATHOLOGY**	
	a. C.V.S.	
	i. Atherosclerosis - Ischemic Heart Diseases – Myocardial Infarction– Pathogenesis /Pathology	
	ii. Hypertension	**10**
	iii. C.C.F	
	iv. Rheumatic Heart Diseases	
	v. Peripheral Vascular Diseases	
	b. Respiratory	
	i. C.O.P.D	
	ii. Pneumonia (lobar, bronchial, viral), Lung Abscess	
	iii. T. B.: Primary, Secondary – morphologic types	
	iv. Pleuritis & its complications	
	v. Lung collapse – Atelectasis	
	vi. Occupational Lung diseases (with special emphasis on Silicosis, Asbestosis, Anthracosis)	
	vii. A.R.D.S.	
	c. Neuropathology:	
	i. Reaction of nervous tissue to injury, infection & ischemia	
	ii. Meningitis: Pyogenic, T.B.M., Viral	
	iii. Cerebro-vascular diseases – Atherosclerosis – Thrombosis, Embolism, Aneurysm, Hypoxia Infarction & Hemorrhage, Hydrocephalous, Increased Intracranial Pressure,	
	iv. Leprosy	
	v. Parkinsonism	
7	**MUSCULAR DISORDERS**	

	a. Classification of Muscular disorders with emphasis on Muscular Dystrophies	**3**
8	**NEURO-MUSCULAR JUNCTION**	**1**
	a. Myasthenia gravis	
	b. Myasthenic syndrome	
9	**BONE & JOINTS**	**5**
	a. Osteomyelitis – Rickets – Osteomalacia –Osteoporosis	
	b. Arthritis- degenerative (Osteoarthritis, Calcaneal spur, Periarthritis, Spondylosis) inflammatory (R.A., Ankylosing Spondylitis, Gout)	
	c. Miscellaneous- P.I.D., Haemarthosis	
	d. Infective-T.B.	
10	**ENDOCRINE**	**2**
	a. Hypo and Hyperthyroidism	
	b. Diabetes	
11	**HEPATIC DISEASES**	**1**
	a. Cirrhosis – emphasis to systemic effects of portal hypertension	
12	**G.I. SYSTEM**	**1**
	a. Gastric / Duodenal ulcer, Enteric fever, T.B., Enteritis, Gastritis(related to consumption of NSAID)	
13	**CLINICAL PATHOLOGY**	**3**
	a. Anemia – (deficiency) – T.C./D.C./ Eosinophilia Anaemia	
	b. Muscle / Skin / Nerve biopsy	
	c.Microscopic appearance of muscle necrosis – fatty infiltration	
	d. Histopathology	

RECOMMENDED TEXT BOOKS

1. Harsh Mohan ; Text Book Of Pathology ;(Jaypee Brothers Medical)
2. Bhende ; General Pathology –(Popular Prakashan Ltd)

RECOMMENDED REFERENCE BOOKS

1. Cotran, Kumar; Robbins; Pathologic Basis Of Disease - (Elsevier India)
2.Robbins ; Basic Pathology;(Elsevier India)

MICROBIOLOGY (35hrs)
Theory 31 Hrs + Demonstration 4 Hrs

COURSE DESCRIPTION:

Students will develop an understanding of pathology underlying clinical disease states and involving the major organ systems and epidemiological issues. Epidemiological issues will be presented and discussed. Students will learn to recognize pathology signs and symptoms considered red flags for serious disease. Students will use problem-solving skills and information about pathology to decide when referral to another health care provider or alternative intervention is indicated. Students will develop the ability to disseminate pertinent information and findings, and ascertain the appropriate steps to follow

COURSE OBJECTIVE:

- To identify common infectious agents and the disease.
- To evaluate methods used to identify infectious agents in the clinical microbiology lab.

COURSE OUTCOME:

At the end of the course, the candidate will

- Have sound knowledge of prevalent communicable diseases and the agents responsible for causing clinical infections, pertaining to C.N.S, C.V.S, Musculoskeletal system, Respiratory system, Genitourinary system, wound infections and of newer emerging pathogens
- Know the importance and practices of best methods to prevent the development of infections in self and patients (universal safety precautions

S.N.	TOPICS	THEORY HOURS	DEMONSTRATIONHOURS
1	**GENREAL MICROBIOLOGY**	**4**	**1**
	a. Introduction & scope		
	b. Classification of Micro-organisms and Bacterial Anatomy (cell wall, capsule, spore, flagella and types as per their shape and arrangement)		
	c. Sterilization		
	d. Disinfection		
	e. Demonstration for General Microbiology		

2	**LABORATORY DIAGNOSIS OF INFECTION**	**2**	**1**
	a. Culture media and identification of bacteria		
	b. Sample collection for smear examination andcultures		
	e. Demonstration of Gram staining, ZN staining and culture media		
3	**IMMUNOLOGY**	**5**	
	a. Innate immunity & acquired immunity		
	c. Structure and function of immune system and Immune response – normal / abnormal		
	d. Define Antigen, Antibody and Antigen antibody reaction & application for diagnosis		
	d. Hyper – sensitivity		
	e. Auto-immunity		
4	**SYSTEMIC BACTERIOLOGY**	**7**	
	a.Infection caused by gram +ve cocci Staphylococcus, Streptococcus and Pneumococcus		
	b.Infection caused by gram –ve cocci Gonococci and Meningococci		
	c.Clostridium		
	d.Enterobacteriaceae (E.Coli,		
	Klebsiella) and Pseudomonas		
	e.Salmonella and Vibrio		
	f.Mycobacterial infection:		
	i.Tuberculosis-Leprosy		
	ii.Atypical Mycobacterium		
	h. Syphilis and Leptospirosis- Morphology & pathogenesis		
5	**MYCOLOGY**	**2**	**1**
	a.Introduction and Superficial mycosis		
	b.Mycetoma and opportunistic fungal infection		
	c.Mycology and Virology demonstration		
6	**VIROLOGY**	**5**	
	a .Introduction & general properties,		

	b.DNA virus		
	c.Measles, Mumps, Rubella, polio and congenitalviral infections		
	d.Hepatitis and Rabies		
	e.H.I.V.		
7	**PARASITOLOGY**	**3**	**1**
	a.Introduction- Entamoeba histolytica		
	b.Malaria, Filaria		
	c.Toxoplasma – Cystisarcosis & Echinococcus		
8	**APPLIED MICROBIOLOGY**	**3**	
	a.Hospital acquired infections, Universal safety precautions and Waste disposal		
	b. Diseases involving Bones, Joints- Nerves-Muscles-Skin-Brain- Cardiopulmonary system, Burn and wound infections		

RECOMMENDED TEXT BOOKS

1. Ananthnarayan ; Concise Textbook Of Microbiology – (The Orient Blackswan)
2. C.P.Baweja ; Concise Textbook Of Microbiology - (Apc)
3. Nagoba ; Textbook Of Microbiology- (Wolters Kluwer India)

RECOMMENDED REFERENCE BOOK

1. R. Ananthnarayan & C.K. Jayram Panikar Text book of Microbiology – (TheOrient Blackswan)

INTERNAL ASSESSMENT:

1. Two exams – Terminal and preliminary examination of80 marks each TOTAL - 160 marks
2. Internal Assessment to be calculated out of 20 marks
3. Internal assessment as per University pattern

SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

THEORY - PATHOLOGY & MICROBIOLOGY		Marks
Pathology-50 marks + Microbiology-30 marks 80marks + I.A.:20 marks [There shall be no LAQ in this paper] *Emphasis to be given to topics related to Musculo Skeletal / Neurological / Cardiovascular / Respiratory conditions & Wound / Ulcers.		100
Section A	Questions based on **PATHOLOGY** SAQ -1 - Answer any FOUR out of FIVE [4 x 5marks = 20marks] SAQ -2- Answer any FOUR out of FIVE [4 x 5marks = 20marks]	40
Section B	Questions based on **MICROBIOLOGY** SAQ -3 – Answer any FOUR out of FIVE [4 x 5marks = 20marks] SAQ-4 - Answer any FOUR out of FIVE [4 x 5marks = 20marks]	40
Total Marks		**80**

PSYCHOLOGY-P203

Total 30hrs

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION:

The course design increases awareness of psychosocial issues faced by individuals. Their significance at various points on the continuum of health and disability should be emphasized. The course discusses personal and professional attitudes and values as they relate to developing therapeutic relationships. It emphasizes on communication skills for effective interaction with patients, health-care professionals and others. It expects students to identify common psychiatric conditions.

COURSE OBJECTIVES:

At the end of the course, the candidate will be able to:

Cognitive:

- Define the term Psychology & its importance in the Health delivery system, & will gain knowledge of Psychological maturation during human development & growth & alterations during aging process.
- Understand the importance of psychological status of the person in health & disease; environmental & emotional influence on the mind &personality.
- Have the knowledge and skills required for good interpersonal communication.

Psychomotor:

- Enumerate various psychological disorders with special emphasis tomovement / Pain & ADLs
- Acquire the knowledge in brief, about the pathological & etiological factors, signs / symptoms & management of variousPsychiatric conditions.
- Understand the patient more empathetically.

COURSE OUTCOME:

- At the end of the course student will understand importance of psychology tophysiotherapy practice.
- At the end of the course student will have thorough knowledge of psychologicalaspects related to other systemic diseases.

SR.NO	TOPIC	THEORY HOURS
1	Psychology: Definition, understanding, Nature & its fields and subfields	**1**
2	Developmental psychology (childhood, adolescence,adulthood and old age) and its theories in brief	**2**
3	Learning – Role of learning in human life – Conditioning	**2**
4	Memory – types – Forgetting causes	**2**
5	Attention & perception Natureof attention ,Nature of perception Principles of Grouping	**1**
6	Conflict & Frustration – Types –Common Defense mechanismstress-common reactions, frustrations	**2**
7	Clinical Psychology i.Introduction ii. deference between normal & abnormal psychology iii. Anxiety disorders – Phobias, Obsessive – compulsive,Hysterical convulsion disorder Iv. Affective disorders – Depression, mania, Bipolar disorders v. Psychotic disorders – Types of Schizophrenia	**20**

RECOMMENDED TEXT BOOKS

1. Morgan C.T. & King R.A. Introduction To Psychology Recent Edition (Tata Mcgraw-Hill Publication)
2. Munn N.L. Introduction To Psychology (Premium Oxford, I.B.P. PublishingCo.)
3. Clinical Psychology – Akolkar,(Asia Publishing House)
4. Developmental Psychology-Elizabeth B. Hurlock (Tata Mc-Graw Hill)

RECOMMENDED REFERENCE BOOKS:

1. Ahuja ; A Short Book Of Psychiatry - (Jaypee Bros – Medical Publishers)
2. M.S. Bhatia: Short Textbook of Psychiatry- (New Age International Pvt Limited)
3. Shah L.P.; Handbook of Psychiatry (Vora Medical Publication

INTERNAL ASSESMENT:

1. Two exams – Terminal and preliminary examination (Theory only) of 40marks each

   TOTAL - 80 marks

2. Internal Assessment to be calculated out of 10 marks (Theory only)
3. Internal assessment as per University pattern**.**

SCHEME OF UNIVERSITY EXAMINATION

THEORY- PSYCHOLOGY 40 marks + **I.A.** – 10 Marks [There shall be no LAQ in this paper] * The question paper will give appropriate weightage to all the topics in the Syllabus.		Marks 50
Section-A	SAQ- 1 Answer any FOUR out of FIVE[4 x 5marks = 20marks]	20
Section A	SAQ –2 Answer any FOUR out of FIVE[4 x 5marks = 20marks]	20
Total Marks		**40**

KINESIOLOGY - P204

Total 100 hrs

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION:

This course is based on anatomical, physiological & related kinesiological principles fornormal human movement. Students have the opportunity to develop and acquire understanding of kinesiological responses for the efficacy in various kinesiotherapeuticapplications

COURSE OBJECTIVES:

At end of the course:

Cognitive:

- Able to understand the Basics of mechanics of force system, equilibrium, lever andpulley.
- Able to Describe the joint structure, classification and function of joints And biomechanics of Connective tissue
- Able to Describe the muscle structure and function of muscles, types of muscles,contractions and factors effecting muscle recruitment and function
- Able to Describe all the regional joint biomechanics and its applied

Psychomotor:

- Acquire the skills of analysis of kinetic and kinematics of vertebral column.
- Acquire the skills of analysis of kinetic and kinematics of all peripheral joints

COURSE OUTCOME:

On successful completion of this programme, students should be able to describe the understanding of basics of mechanics, muscle structure and contraction, factors effecting muscle contraction and recruitment , explain mechanics of chest wall during various movements and the patho-mechanics associated with various chest conditions and deformities, understand normal mechanics and patho mechanics of TMJ associated with various conditions,explain mechanics of all peripheral joints and the patho-mechanics.

SR. NO	TOPIC	THEORY HOURS
1	**INTRODUCTION TO BIOMECHANICS**	**20**
	a.Muscle Biomechanics	
	h.Elements of muscle structure – fiber, size, motor unit,length tension, arrangement & number relationship	10

	ii.Classification of muscles	
	iii.Mobility and Stability of muscles	
	iv.Types of muscle contraction and factors affecting muscle function	
	b.Joint Biomechanics	
	i.Basic principles of joint design	
	ii.Classification of joints	
	iii.Osteokinematics & Arthrokinematics	10
	iv.Concave Convex Rule	
	v.Joint function, kinetics & kinematics	
2	**REGIONAL KINESIOLOGY**	**60**
	a. Vertebral Column	15
	b.Thorax	5
	c.Shoulder Complex	6
	d.Elbow joint	3
	e.Wrist And Hand Complex	6
	f. Hip Joint	6
	g. Knee Complex	10
	h. Ankle – Foot complex	6
	i. Temporo-Mandibular Joint	3
3	**MOTOR CONTROL**	
	a. Motor Control	
	b. Postural Alignment & Weight Distribution	
	c. Sensory Organisation	**10**
	d. C.N.S. Integration	
	e. Motor Strategies	
4	**KINETICS AND KINEMATICS OF VARIOUS ACTIVITIES OF DAILY LIVING**	
	i.Supine to Sitting, Sitting to Standing, Squatting,Climbingup & down	**10**
	ii.Lifting, Pulling, Pushing, Overhead activities	
	iii.Running, Jogging.	

RECOMMENDED TEXT BOOKS

1. Cynthia .C. Norkins ; Joint Structure And Function – (F.A. Davis Company)
2. Brunnstrom ; Clinical Kinesiology – (F.A. Davis Company)
3. Physiology Of The Joints – Kapandji Vol.- I,Ii,&Iii (Churchill Livingstone)

RECOMMENDED REFERENCE BOOKS

1Steindler ;Kinesiology Of The Human Body – (Charles Thomos Publisher)
1. Neumann & Donald ;Kinesiology Of The Musculoskeletal System – (Mosby)
2. Oatis& Carol ;Kinesiology – The Mechanics And Pathomechanics Of Human Motion – (Lippincot Williams And Wilkins)
3. Joseph And Hamill ;Biomechanical Basis Of Human Motion – (Lippincot Williams And Wilkins)

INTERNAL ASSESSMENT:

1. Two exams – Terminal and preliminary examination (Theory&Practical) of 80 marks each **TOTAL - 160 marks.**
2. Internal Assessment to be calculated out of 20 marks.
3. Internal assessment as per University pattern

SCHEME OF UNIVERSITY EXAMINATION

THEORY- KINESIOLOGY 80 MARKS + I.A. – 20 MARKS * The question paper will give appropriate weightage to all the topics in the syllabus.		**Marks** **100**
Section A-	Q-1 **Answer any TWO out of THREE** [2 x 10 = 20 marks] (Muscle Mechanics, Regional Kinesiology- Topic 2- a,b,c,d) Q-2 **Answer any FOUR out of FIVE** [4 x 5 = 20 marks] (Entire syllabus topics to be covered)	**40**
Section B	**Q-3. Answer any TWO out of THREE** [2 x 10 = 20 marks] (Joint Mechanics, Regional Kinesiology- Topic 2- e,f,g,h,i) **Q-4. Answer any FOUR out of FIVE** [4 x 5 = 20 marks] (Entire syllabus topics to be covered)	**40**
	Total Marks	**80**

KINESIOTHERAPY- P205

Theory-83 Hrs + Practical/ Laboratory- 162 Hrs = Total - 245 Hrs

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION:

This course is based on anatomical and physiological & related kinesiological principles for normal human movement and for the efficacy in the assessment methods for mobility, muscle strength. Students have the opportunity to develop and acquire understanding of physiological responses to various types of training and develop skills of exercise programs (on models). Exercise components of muscle strength, flexibility, balance,breathing and gait are examined. Evidence of appropriate, safe and effective exercise design and proper exercise biomechanics and prescription parameters are addressed with all interventions

COURSE OBJECTIVES

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

Cognitive:

- Describe the Biophysical properties of connective tissue, & effect of mechanical loading, &factors which influence the muscle strength, & mobility of articular & periarticular soft tissues.

Psychomotor:

- Apply the biomechanical principles for the efficacy in the assessment methods for mobility, muscle strength
- Acquire the skill of subjective and objective assessment of individual & group musclestrength
- Acquire the skills of subjective and objective methods of muscle strengthening
- Describe the physiological effects, therapeutic uses, merits / demerits of various exercise modes including Hydrotherapy
- Demonstrate various therapeutic exercises on self;& acquire the skill of application on models with Home Programs
- Analyze normal Human Posture [static & dynamic].
- Acquire the skill of functional re-education techniques on models
- Acquire the skill of Balance and Coordination Exercises
- Acquire the skill of using various walking aids for Gait Training
- Acquire the skill of demonstrating breathing exercises and retraining on self and others
- Acquire the skill of demonstrating Postural Drainage on models

Affective:

- Be able to develop behavioral skills and humanitarian approach whilecommunicating with models
- Be able to develop bed side behavior, respect & maintain confidentiality

COURSE OUTCOME:

At the completion of course the student shall be able to describe the basics of neuromuscular co-ordination involved in exercise therapy, describe and demonstrate functional reeducation, describe and demonstrate soft tissue manipulations, demonstrate and apply different techniques to correct posture & gait and able to perform various assessment techniques needed during patient assessment

SR.NO	THEORY TOPIC	THEORY HOURS	PRACTICAL HOURS
1	**Biophysics**	**40**	**111**
	a. Biophysical Principles:	2	
	i. Structures & Properties of connective and non-connective tissues		
	b. Stretching :	3	12
	i. Definition		
	ii. Types		
	iii. Assessment of muscle length and fascia around the joint		
	iv. Principles of stretching		
	v. Techniques for all joints Individual muscle stretching		
	c. Joint Mobility :	10	17
	i. Definition		
	ii. Causes of limitation		
	iii. Indication and contra indications		
	iv. Principles		
	v. Techniques		
	vi. Assessment methods		
	vii. Individual joints mobility Exercises– Upper Limb, Lower Limb & Spine (Using active, assisted,		

	passive movements)		
	d. Manual Muscle Testing and assessment (subjective & objective) :	6	35
	i.Principle		
	ii. Trick movements		
	iii.Group Muscle Testing		
	iv.Individual Muscle testing – Upper & Lower Limbs, Trunk & Face		
	e. Muscle Strengthening	10	45
	i. Concepts -Strength, Power, Endurance		
	ii. Factors influencing the Strength of normal muscle/ hypertrophy, recruitment of motor units, change after the training, training with isometric, isotonic & Isokinetic muscle contraction		
	iii. Principles: Overload, Intensity, Motivation, Learning, Duration, Frequency, Reversibility, Specificity, Determinants		
	iv. Methods : Subjective & Objective		
	v. Individual joint Strengthening Exercises Upper Limb, Lower Limb & Spine		
	vi. Concepts- 1 RM, 10 RM & Dynamometry		
	vii. Progressive Resisted Exercise - Delorme,Zinoveiff, Mc queen protocols		
	viii. Use of gymnasium equipments		
	f. Hydrotherapy	4	
	i. Physiological effects		
	ii. Indication and Contraindications		
	iii.Techniques		
	g. Traction (Cervical & Lumbar):	3	2
	i.Introduction		
	ii. Types(Mechanical / Electrical,		

	Continuous/Intermittent)		
	iii.Indications and Contra indications		
	iv. Techniques v. Effects and uses		
	h. Home Program	2	
	i. Principles		
	ii. Ergonomic advice for ADLs		
	iii. Home based exercise program		
2	**POSTURE**	**5**	**5**
	a. Definition b. Human posture –Changes from quadruped to biped		
	c. Correct and faulty posture		
	d. Postural patterns and Postural Mechanism		
	e. Factors affecting posture		
	f. Physiological deviations		
	g. Analysis of all views		
3	**FUNCTIONAL REEDUCATION**	**5**	**5**
	a.Principles & Indications		
	b. Mat exercises- mobility, strength and balance training		
	c. Progression to sitting, standing and walking		
	d. Transfers		
4	**NEUROMUSCULAR CO-ORDINATION AND BALANCE**	**5**	**5**
	a. Definition		
	b. Physiology related to coordination & Balance		
	c. Frenkels exercise (Principles & Techniques)		
	d. Balancing Exercise		
5	**GAIT**	**10**	**10**
	i. Definition		
	ii. Subjective & Objective evaluation		

	iii. Gait cycle and measurable Parameters (Step Length, Step Width, Stride Length, Foot Angle, Cadence		
	iv. Kinetics and kinematics of gait		
	v. Determinants of gait		
6	**WALKING AIDS**	**6**	**5**
	i. Types		
	ii. Indications		
	iii. Selection / Prescription		
	iv. Pre Crutch training		
	v. Measurements		
	vi. Gait with walking aids		
7	**BRONCHIAL HYGIENE**	**12**	**21**
	a. Humidification & Nebulisation	3	1
	i. Definition		
	ii. Types		
	iii. Method of delivery		
	iv. Indications and contraindications		
	b. Breathing Exercise	5	10
	i. Types – Inspiratory , Expiratory (including forced expiratory technique)		
	ii. Goals & Uses		
	iii. Techniques		
	iv. ACBT		
	v. Autogenic drainage		
	c. Postural Drainage:	4	10
	i. Definition		
	ii. Indications & Contraindications		
	iii. Assessment & Principles		
	iv. Techniques		

RECOMMENDED TEXT BOOKS

1. Margaret Hollis ;Progressive Resisted Exercises – (Wiley)
2. Carolyn Kisner ; Therapeutic Exercise Foundation And Techniques - (Fa Davis)
3. Daniel Kendall ; Muscle Testing - (Lippincot Williams And Wilkins)
4. Dena Gardiner ; Principles Of Exercise Therapy – (Cbs)
5. Cash's Textbook For Physiotherapists In Chest, Heart & Vascular Diseases (Mosby)

RECOMMENDED REFERENCE BOOKS

1. Basmajian & Wolf.; Therapeutic Exercise - Lippincot Williams And Wilkins)
2. David Magee ; Orthopedic Physical Assessment – (Elsevier India)
3. O'sullivan ; Physical Rehabilitation- (Jaypee Brothers Medical)
4. Prior & Prasad; Physiotherapy for Respiratory and Cardiac Problems , Adults & Paediatrics , Elsevier India .

INTERNAL ASSESSMENT:

1. Two exams – Terminal and preliminary examination (Theory&Practical) of 80 marks each TOTAL - 160 marks.
2. Internal Assessment to be calculated out of 20 marks.
3. Internal assessment as per University pattern

SCHEME OF UNIVERSITY THOERY EXAMINATION

THEORY- KINESIOTHERAPY 80 MARKS + I.A. – 20 MARKS * The question paper will give appropriate weightage to all the topics in the syllabus.		Marks 100
Section-A	**Q-1. Answer any TWO out of THREE** [2 x 10 = 20 marks] (Joint Mobility, Strengthening, Stretching) **Q-2. Answer any FOUR out of FIVE** [4 x 5 = 20 marks] (Entire syllabus topics to be covered)]	**40**
Section-B	**Q-3. Answer any TWO out of THREE** [2 x 10 = 20 marks] (Posture, Gait, Neuromuscular Co-ordination, Postural Drainage) **Q-4. Answer any FOUR out of FIVE** [4 x 5 = 20 marks] (Entire syllabus topics to be covered)	**40**
Total Marks		**80**

SCHEME OF UNIVERSITY PRACTICAL EXAMINATION

PRACTICAL- KINESIOTHERAPY 80 MARKS + I.A. – 20 MARKS		Marks 100
LONG CASE	Muscle Strengthening / Mobility /Bronchial hygiene (On models)	**30**
SHORT CASE	**TWO SHORT CASES:** **1. SHORT CASE ONE:** M.M.T./Coordination/Posture/Gait (Measurable parameters Only) [1x20=20 marks] **2. SHORT CASE TWO:** Walking aids/ Functional Reeducation / Breathing Exercises [1 x 20 = 20 marks]	**40**
COMMUNICATION SKILL		**5**
JOURNAL	Documentation- Principles & applications for various Kinesiotherapeutic techniques.	**5**
Total Marks		**80**

ELECTROTHERAPY- P206

Theory 100 hrs+ Practical / Laboratory 100 = Total 200 Hrs
(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION:

This course tends to explore fundamental skills in application of electrotherapeutic modalities and knowledge of indications, contraindications and physiological principles needed for appropriate patient care. It includes topics such as Electrical stimulation, T.E.N.S., Iontophoresis, Ultrasound / Phonophoresis, Diathermy and Electro diagnostic testing etc.

COURSE OBJECTIVES:

At the end of the course, the candidate will be able to:

Cognitive:

- Acquire the knowledge about the physiology of pain, Pain pathways & Methods of pain modulation, selection of appropriate modality forPain modulations.
- Describe the Physiological effects, Therapeutic uses, indication & contraindications of various Low/ Medium & High Frequency modes / Actinotherapy
- Describe the Physiological Effects & therapeutic uses of various therapeutic ions & topical pharmaco -therapeutic agents to be used forthe application of iontophoresis & sono/ phonophoresis

Psychomotor:

- Acquire the skills of application of the Electro therapy modes onmodels, for the purpose of Assessment & Treatment.
- Acquire an ability to select the appropriate mode as per the tissuespecific &area specific application.

Affective:

- Be able to develop behavioral skills and humanitarian approach while communicating with models
- Be able to develop bed side behavior, respect & maintain confidentiality

COURSE OUTCOMES:

- Able to demonstrate the techniques of application of various electrotherapymodalities.
- Able to select the appropriate modalities in different conditions
- Able to select the appropriate dosages of different Electrotherapy modalities to achieve the different goals.

SR.NO	TOPIC	THEORY HOURS	PRACTICAL HOURS
1	**Pain**	**3**	
	i.Introduction to Pain		
	ii.Physiological response to pain		
	iii.Pain pathways		
	iv.Pain Gate mechanism		
2	**Low Frequency Currents**	**37**	**44**
	a. Faradic Currents	12	12
	Faradic currents: Physiological &Therapeutic effects indications, contraindications		
	i.Faradic type		
	ii. Strong Surged Faradic		
	iii. Sinusoidal currents		
	Application of Faradic current - Faradism Under pressure – Indications, Principle of application, Technique of application		
	Faradic re-education: Indications, Principle of application, Technique Of application		
	Short/Long pulse currents Motor Points: Definition., Identification		
	b. Galvanic Currents	12	10
	Galvanic / Direct currents (Continuous DC & Interrupted DC) :Physiological & Therapeuticeffects, Indications, Contraindications		

	a. Definition: Galvanic & Interrupted Galvanic Currents		
	ii. Property of Accommodation		
	iii. Technique & Methods of Application of Galvanic currents		
	iv. Types – Anodal &Cathodal, Therapeutic		
	v. Ionization /Iontophoresis: Theory of Medical Ionisation,Effects & Uses of various Ions, Indications and contraindications, Dangers and precautions		
	c.TENS	5	12
	Introduction to Pain relieving Modalities, Definition TENS, Types of TENS		
	To Know Physiological & Therapeutic effects of TENS		
	To Know Techniques and Methods of Applications of TENS		
	To know Indications & contraindications of TENS		
	d. High Voltage Currents	1	1
	e. Micro Currents e. Didynamic Currents Topic	1	1
	f. S-D Curve	6	8
	i. Principle of S-D curves		
	ii. Technique of plotting		
	iii. Interpretation of normalcurves.		
	iv. Chronaxie and Rheobase		
3	**Medium FrequencyCurrents**	**10**	**12**
	a) To know interfrential current,Definition IFT, and itsprinciple		
	b) To Know Physiological &Therapeutic effects of IFT		

	c) To know Indications &contraindications of IFT		
	d) To know Technique & Methods of Application of IFT		
	e) To know Russian current,Definition, Indication, contraindication & its Parameters		
4	**Biofeedback**	**5**	
	i. Different types of feedback		
	ii. Principles of using biofeedback		
	iii.Uses of Biofeedback EMG		
5	**High Frequency Currents**	**20**	**20**
	a. Short Wave Diathermy	10	10
	i.Definition of electromagnetic fields		
	ii. Introduction to short wave diathermy		
	iii. Physiological effects of SWD		
	iv. Therapeutic effects of SWD		
	v. Principles of application		
	b. Ultrasound	10	10
	i.Definition of ultrasound, infrasonics andhearing band.		
	ii. Physiological effects		
	iii.Therapeutic effects		
	iv. Inference of sound waves		
	v. Phonophoresis		
	vi.Indication and contraindications ofultrasound		
	vii. Dangers of ultrasound		
	viii. Precautions of ultrasound		
	ix. Technique of application		
	x. Methods of application		

6	**Actinotherapy**	**17**	**21**
	a. Infra-Red Radiations	5	11
	i. Introduction to infrared radiations,physiological and therapeutic effects		
	ii.Technique and method of application		
	iii. Effects and uses		
	iv.Indications and contraindications		
	v.Precautions and potential dangers		
	b.Ultraviolet Radiations	8	10
	i. Types : a, b, c		
	ii. Physiological & Therapeutic effects		
	iii. Technique & Method of application		
	iv. Effects & uses		
	v.Indications & contraindications		
	vi. Dangers & Precautions		
	c.LASER	4	
	i. Physiological & Therapeutic effects		
	ii. Technique & Methods ofApplication		
	iii. Effects & Uses		
	iv. Indications & Contraindications		
	v. Dangers & Precautions		
	vi. Dosage		
7	**Advanced Electrotherapeutics**	**5**	
8	**Wound Care**	**3**	**3**
	i. Types of wound		
	ii. Application of Therapeutic currents,Ultrasound, U.V.R. & LASER		

RECOMMENDED TEXT BOOK

1. Clayton's Electro Therapy (Cbs)
2. Low & Reed ; Electro Therapy Explained – (Elsevier India)
3. Principle And Practice Of Electro Therapy – (Churchill Livingstone)
4. Kahn ; Therapeutic Electricity – Sydney Litch (Waverly Press)
5. Sheila Kitchen ; Electrotherapy Evidence Based Practice – (ChurchillLivingstone)
6. Basics of Electrotherapy – Subhash M. Khatri (Jaypee)

RECOMMENDED REFERENCE BOOK

1. Clinical Electro Therapy – Nelson & Currier (Pearson)

INTERNALASSESSMENT:

1. Two exams – Terminal and preliminary examination (Theory & Practical)
Of 80 marks each TOTAL - 160 marks.

2. Internal Assessment to be calculated out of 20 marks

3. Internal assessment as per University pattern

SCHEME OF THEORY UNIVERSITY EXAMINATION

THEORY- ELECTROTHERAPY 80 MARKS + I.A. – 20 MARKS		Marks
* The question paper will give appropriate weightage to all the topics in the syllabus.		**100**
Section A	**Q-1. Answer any TWO out of THREE** [2 x 10 = 20 marks] (Low Frequency- Faradic/IFT, Medium Frequency, High Frequency- SWD) **Q-2. Answer any FOUR out of FIVE** [4 x 5 = 20 marks] (Entire syllabus topics to be covered)	**40**
Section B	**Q-3. Answer any TWO out of THREE** [2 x 10 = 20 marks] (Low Frequency- Galvanic/TENS, Medium Frequency, High Frequency- U.S) **Q-4. Answer any FOUR out of FIVE** [4 x 5 = 20 marks] (Entire syllabus topics to be covered)	**40**
Total Marks		**80**

SCHEME OF PRACTICAL UNIVERSITY EXAMINATION

PRACTICAL- ELECTROTHERAPY 80 MARKS + I.A. – 20 MARKS		Marks **100**
LONG CASE	Motor points /Strength Duration Curve / Faradismunder pressure (On models)	**30**
SHORT CASES	1. Based on Low or Medium Frequency modalities /High Frequency modalities 2. Actinotherapy (I.R./U.V.R./LASER) 2 x 20 = 40marks (Skill of application on models & rationale for selection of modality)	**40**
COMMUNICATION SKILL		**5**
JOURNAL	Documentation- Principles & applications forvarious Electrotherapy Modalities.	**5**
Total Marks		**80**

COMPUTER APPLICATION- P207
Total 40 Hrs

(COLLEGE EXAMINATION)

COURSE DESCRIPTION:

This Course describes –Basic Operation of Computer, Various Input and Output devices, Secondary Storage Devices, Detailed study of Components of CPU and Introduction to MS Word, MS Power point, MS Excel

COURSE OBJECTIVES:

- The course is designed to create awareness among thestudents about basic operation of Computer.
- Creating the MS documents, power point presentation andExcel

COURSE OUTCOME:

At the end of the session students would be able understand the basic operation ofcomputer and creating the documents, power point presentation and making spreadsheets in Excel along with the formulas

SR.NO	TOPIC	THEORY HOURS
1	**Basics of Computer** i. Input devices ii. Output devices ii. Secondary storage device iii. Components of CPU iv. Working of Word pad	5
2	**Hardware and Software** i. Working of hardware and software ii. Working of MS power point	5
3	**Multimedia** Basics of utility of multi- media	5
4	**Operating system** i. Develop basic knowledge of Linux, Unix, DOS, Windows OS	5
5	**Network** i. Intranet, Extranet and Internet ii. Skills of web surfing for literature, research relevance to the field of medicine	5

6	**Microsoft** i. Working and preparing of MS –Excel, Word ii. Skill of spread sheet software.	**5**
7	**Power Point Presentation**	**5**
8	**Scientific Poster Designing** b.Scientific Posters using Microsoft office publisher	**5**

RECOMMENDED TEXT BOOK

1. Priti Sinha ;Computer Fundamentals : Concept System And Application By (Bpb)
2. Soumya Behera ;Computer Application, (B.K.Publicatios Private Limited)
3. Renu kapoor ;Introduction To Computer-. Lotus Publishers

SCHEME OF PRACTICAL COLLEGE EXAMINATION-

COMPUTER APPLICATION	**Marks- 30**
COMPUTER APPLICATION BASED CASE 1	10
COMPUTER APPLICATION BASED CASE 2	10
COMPUTER APPLICATION BASED CASE 3	10
Total	**30**

Passing in the exam is Mandatory:-

Grades: A+ = 75% & above, A = 66 to 74.5%, B + = 55 to 65 %, B = 50 to 54.5%, C= Fail, less than50%.

ENVIRONMENTAL STUDIES-P208

Ability Enhancement Compulsory Course; UGC

Theory 30 Hours

(UNIVERITY EXAMINATION)

COURSE DESCRIPTION:

The course is designed to develop the basic knowledge about the biodiversity and Ecosystem with respect to natural resources. It also helps to describe the social issuesand environment.

COURSE OBJECTIVES:

The objective of this course is that, the student will be able to understand the population growth, human rights and value education. In addition student will also aware about the Women and Child Welfare. Student will also aware about the rural and urban problemsand its conservation.

COURSE OUTCOME:

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

- The multidisciplinary nature of environmental studies
- Natural Resources Renewable and non-renewable resources
- Ecosystems ,Biodiversity and its conservation
- Social Issues and the Environment
- Human Population and the Environment

COGNITIVE:

- Acquire the knowledge about nature, scope and importance of environmental studies, Ecosystem, Renewable and non-renewable resources.
- Describe environmental Hazards and laws, policies and practices.
- Describe the human communities and the environments.

SN	TOPIC	THEORY HOURS
1	**Introduction to environmental studies**	**2**
	i. Multidisciplinary nature of environmental studies;	

	ii. Scope and importance; Concept of sustainability and sustainable development.	
2	**Ecosystems**	**4**
	• What is an ecosystem? Structure and function of ecosystem; Energy flow in an ecosystem: food chains, food webs and ecological succession. Case studies of the following ecosystems : a) Forest ecosystem b) Grassland ecosystem c) Desert ecosystem d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)	
3	**Natural Resources: Renewable and Non--renewable Resources**	**5**
	• Land resources and land use change; Land degradation, soil erosion and desertification. • Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations. • Water: Use and over-¬-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-¬-state). • Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies.	
4	**Biodiversity and Conservation**	**4**
	• Levels of biological diversity : genetic, species and ecosystem diversity; Biogeographic zones of India; Biodiversity patterns and global biodiversity hot spots.	

	• India as a mega-¬-biodiversity nation; Endangered and endemic species of India • Threats to biodiversity : Habitat loss, poaching of wildlife, man-¬-wildlife conflicts, biological invasions; Conservation of biodiversity : In-¬-situ and Ex-¬-situ conservation of biodiversity. • Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.	
5	**Environmental Pollution**	**4**
	· Environmental pollution : types, causes, effects and controls; Air, water, soil and noise pollution	
	· Nuclear hazards and human health risks	
	Solid waste management: Control measures of urban and industrial waste.	
	· Pollution case studies.	
6	**Environmental Policies & Practices**	**4**
	• Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture • Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act. International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD). • Nature reserves, tribal populations and rights, and human wildlife conflicts in Indian context.	
7	**Human Communities and the Environment**	**4**

	• Human population growth: Impacts on environment, human health and welfare. • Resettlement and rehabilitation of project affected persons; case studies. • Disaster management: floods, earthquake, cyclones and landslides. • Environmental movements: Chipko, Silent valley, Bishnois of Rajasthan. • Environmental ethics: Role of Indian and other religions and cultures in environmental conservation. • Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi).	
8	**Field work**	**3**
	• Visit to an area to document environmental assets: river/ forest/ flora/fauna, etc. • Visit to a local polluted site-¬-Urban/Rural/Industrial/Agricultural. • Study of common plants, insects, birds and basic principles of identification. • Study of simple ecosystems-¬-pond, river, Delhi Ridge, etc.	

Suggested Readings:

1. Carson, R. 2002. Silent Spring. Houghton Mifflin Harcourt.
2. Gadgil, M., & Guha, R. 1993. This Fissured Land: An Ecological History of India. Univ. of California Press.
3. Gleeson, B. and Low, N. (eds.) 1999. Global Ethics and Environment, London, Routledge.
4. Gleick, P. H. 1993. Water in Crisis. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.
5. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. Principles of Conservation Biology. Sunderland: Sinauer Associates, 2006.
6. Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. Science,

339: 36-37.

7. McCully, P. 1996. Rivers no more: the environmental effects of dams (pp. 29-64). Zed Books.
8. McNeill, John R. 2000. Something New Under the Sun: An Environmental History of the Twentieth Century.
9. Odum, E.P., Odum, H.T. & Andrews, J. 1971. Fundamentals of Ecology. Philadelphia: Saunders.
10. Pepper, I.L., Gerba, C.P. & Brusseau, M.L. 2011. Environmental and Pollution Science. Academic Press.
11. Rao, M.N. & Datta, A.K. 1987. Waste Water Treatment. Oxford and IBH Publishing Co. Pvt. Ltd.
12. Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012. Environment. 8th edition. John Wiley & Sons.
13. Rosencranz, A., Divan, S., & Noble, M. L. 2001. Environmental law and policy in India. Tripathi 1992.
14. Sengupta, R. 2003. Ecology and economics: An approach to sustainable development. OUP.
15. Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. Ecology, Environmental Science and Conservation. S. Chand Publishing, New Delhi.
16. Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. Conservation Biology: Voices from the Tropics. John Wiley & Sons.
17. Thapar, V. 1998. Land of the Tiger: A Natural History of the Indian Subcontinent.
18. Warren, C. E. 1971. Biology and Water Pollution Control. WB Saunders.
19. Wilson, E. O. 2006. The Creation: An appeal to save life on earth. New York: Norton.
20. World Commission on Environment and Development. 1987. Our Common Future. Oxford University Press.

SCHEME OF EXAMINATION

ENVIRONMENTAL STUDIES 50 marks	**Theory**	**Marks- 50**
SECTION A	Q. 1 Answer any Eight out of Fifteen (8X 5marks= 40)	40
SECTION B	Q. 2 Match the following (10 Marks= 10)	10
Total		**50**

THIRD YEAR BPTh
SYLLABUS
Transcript Hours-1400

Sr. No.	SUBJECT & CODE	TOPIC	TOPIC	DIDACTIC HRS
1	PROFESSIONAL PRACTICE & ETHICS P101	1	Collecting data on psychosocial factors in Medicine / Surgery / Reproductive Health / Paediatrics	15
		2	Inter professional communication.	
		3	Ethics in clinical practice	
2	SURGERY P 301	1	General Surgery	55
		2	Cardiovascular and Thoracic surgery	
		3	Plastic surgery / Reconstructive surgery	
3	ORTHOPEDICS P 302	1	Fractures	60
		2	Dislocations & subluxations	
		3	Soft tissue and Traumatic injuries	
		4	Deformities and Anomalies	
		5	Degenerative and	
		6	Inflammatory Conditions	
		7	Management of Metabolic Disorders	
		8	General Orthopaedic disorders	
		9	Tumours	
4	MEDICINE P 303	1	Cardio-Vascular &	55
		2	Respiratory Medicine	
		3	General Medicine, Rheumatology & Gerontology	
5	NEUROLOGY P 304	1	Introduction to Nervous System	50
		3	Traumatic and Non Traumatic spinal cord injuries	
		4	Demyelinating diseases (Central,	

			Peripheral)	
		5	Degenerative Disorders	
		6	Myopathies, Neuropathies, NM junction disorders	
		7	Traumatic and Non Traumatic Head Injury	
		8	Miscellaneous	
6	**PEDIATRICS P305**	**1**	Development of CNS Maturation	**50**
		2	Prematurity, Birth injuries, CP	
		3	Developmental disorders associated with spinal cord	
		4	Common Infections and Metabolic Disorders	
		5	Common conditions of Musculoskeletal system, Respiratory system, Cardiovascular System.	
		6	Miscellaneous	
7	**COMMUNITY HEALTH & SOCIOLOGY P306**	**A**	**COMMUNITY HEALTH**	**60**
		1	General concepts & Determinants of Health & Diseases	
		2	National Public Health Administration	
		3	Healthcare Delivery System	
		4	Epidemiology Of Socio-Economic & Cultural Issues	
		5	Demography And Objectives Of National Family Welfare Programmes And National Population Policy	
		6	Communicable Diseases	
		7	Non- Communicable Diseases	
		8	Nutritional Health, Mental Health, Occupational Health, Geriatric Health	
		9	Hospital Waste Management	
		B	**SOCIOLOGY**	

		1	Introduction	
		2	Socialization	
		3	Social Security & Social Legalization of Disabled	
		4	Role of a Medical Social Worker	
		5	Introduction to Research Methodology	
8	**OBSTETRICS & GYNECOLOGY P307**	**1**	Physiology of Puberty, Menstruation, Pregnancy, Labour	**30**
		2	Infertility	
		3	Uro-Genital Dysfunctions	
		4	Miscellaneous	
9	**PSYCHIATRY P308**	1	Psychiatric History & Mental Status Examination and Classification of Mental disorders	**30**
		2	Common disorders:	
		3	Miscellaneous:	
		4	Management: ECT, Pharmacotherapy, Group therapy, Psychotherapy, Cognitive Behavioral Therapy and Rational Emotive Therapy	
10	**DERMATOLOGY P309**	1	Introduction	**20**
		2	Skin Infections	
		3	Connective tissue Lesions	
		4	Miscellaneous	
11	**FUNCTIONAL DIAGNOSIS & PHYSIOTHERAPEUTIC SKILLS P 310**	**1**	International Classification of Function, Disability & Health (ICF)	**460**
		2	Musculoskeletal Evaluation & Manipulative Skills	
		3	Cardiovascular Respiratory Evaluation & Related Skills	
		4	Neuro-therapeutic Evaluation &	
		5	Electro Diagnosis	

		6	Functional Diagnosis using International Classification of Function, Disability & Health (I.C.F.) in Musculoskeletal Evaluation And Manipulative Skills, Cardiovascular Respiratory Evaluation & Related Skills, Neuro-therapeutic Evaluation & Electro Diagnosis, Community Based Rehabilitation	
12	**SEMINAR**		Functional Diagnosis using International Classification of Function, Disability & Health (I.C.F.) in Musculoskeletal Evaluation And Manipulative Skills, Cardiovascular Respiratory Evaluation & Related Skills, Neuro-therapeutic Evaluation & Electro Diagnosis, Community Based Rehabilitation	**50**
13	**SUPERVISED CLINICAL PRACTICE**		To practice clinical skills under the supervision of the O.P.D./ I.P.D. set up) Clinical Evaluation,& Case presentation with Functional diagnosis- (Total 12 cases)	**465**

PROFESSIONAL PRACTICE AND ETHICS - P101

TOTAL 15 HOURS

(COLLEGE EXAMINATION IN FINAL YEAR)

COURSE DESCRIPTION:

This subject will be taught in Continuum from first year to final year. An exam will be conducted only in final year. Professional and ethical practices curriculum content addresses the Knowledge, Skills and behaviors required of the physiotherapist in a range of practice relationships and roles. The course will discuss the role, responsibility, ethics administration issues and accountability of the physical therapists. The course will be also cover the history and change in the profession, responsibilities of the professional to the profession, the public and to the health care team. This includes the application of professional and ethical reasoning decisions making strategies and professional communication.

COURSE OBJECTIVES:

At the end of the course, the student will be complaint in the following domains:

Cognitive:

- Be able to understand the moral values and meaning of ethics.
- Will acquire bedside manners and communication skills in relation with patients, peers, seniors and other professionals.

Psychomotor:

- Be able to develop psychomotor skills for physiotherapist-patient relationship.
- Skill to evaluate and make decision for plan of management based on socio cultural values and referral practice.

Affective:

- Be able to develop behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals
- Be able to develop bedside behavior, respect& maintain patient's confidentiality

Sr.No.	Topics	Didactic Hours	Visits/Supervision Hours	Total Hours
1	Collecting data on psychosocial factors in Medicine/Surgery/ Reproductive Health / Paediatrics Pedagogy of clinical practice	4	5	15
2	Inter professional communication.	3		
3	Ethics in clinical practice, Referred Practice ethics	3		
TOTAL		**10**	**5**	**15**

SURGERY- P301

DIDACTIC-35 HRS+ CLINICAL-20 HRS =TOTAL (55HRS)

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION:

This course intends to familiarize students with principles of General surgery including various specialties like cardiovascular, thoracic, neurology and plastic surgery. It also familiarizes the students with terminology and abbreviations for efficient and effective chart reviewing and documentation. It explores various conditions needing attention, focusing on epidemiology, pathology, as well as primary and secondary clinical characteristics and their surgical and medical management. The purpose of this course is to make physiotherapy students aware of various surgical conditions general surgery and specialty surgeries so these can be physically manage defectively both pre as well as postoperatively

COURSE OBJECTIVES:

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

Cognitive Domains:

- Understand the effects of surgical trauma Anaesthesia in general
- Acquire the Knowledge of History taking and clinical characteristics of General Surgery, Neuro Surgery, Cardiovascular & Thoracic Surgery, ENT & Ophthalmic Surgery, Plastic & Reconstructive Surgery
- Describe preoperative evaluation, surgical indications in various surgical approaches, management and postoperative care in above mentioned areas with possible complications.

Psychomotor Domains:

- Evaluate Clinically the surgical cases in brief at General Surgery, Neuro Surgery, Cardiovascular and Thoracic Surgery, ENT, Ophthalmic Surgery, Plastic & Reconstructive Surgery
- Interpretation and analysis of assessment and findings
- Perform clinical skills at clinical Postings

COURSE OUTCOME:

- List the indications for surgery, etiology, clinical features and surgical methods for various conditions.
- Plan a better rehabilitation care for the patients pre and post surgically

- Clinical decision making ability & management expertise

SR.NO.	TOPICS	DIDACTIC HOURS	CLINICAL HOURS
1	**GENERAL SURGERY**	**20**	**10**
A	**GENERAL:**		
	i. Anesthesia types, Effect, indications and contraindications and common post-operative complications		
	ii. Hemorrhage and Shock, classification, description and treatment		
	iii. Water &Electrolyte imbalance		
	iv. Inflammation – acute & chronic-signs, symptoms, complications &management		
	v. Wounds & Ulcers, Cellulitis –classification, healing process, management, bandaging, Dressing solutions and its uses and debridement. Procedure, hand washing and universal precautions.		
	vi. Enumerate Common abdominal surgical incisions – classification, indications, and opening – closure, advantages and disadvantages, complications (including burst abdomen and fecal fistula), minimally invasive surgery.		
	vii. Mastectomy and onco-surgery–approach, complications & management		
	viii. Amputation – types, sites, complications & anagement		
	ix. Burns–causes, complications, classification & management		
	x. Varicose veins and PVD		
	xi. Hernias-surgery, precautions and complications		
	xii. Transplantation approach, risk problems Related to donor and recipient, precautions.		
B	**NEUROSURGERY**		
	i. Head Injury – management		

	ii. Intra cranial & Spinal tumors		
	iii. Intracranial Aneurysm and AV malformation iv. Post-operative Neurosurgical care		
C	**E.N.T.SURGERY**		
	i. Tracheostomy–indications, surgical approach & management		
	ii. Vertigo		
	iii. Surgeries for all Cranial Nerves		
2	**CARDIO VASCULAR AND THORACICSURGERY**	**10**	**5**
	a. Introduction, Cardiorespiratory resuscitation, cardiopulmonary bypass, Special investigation procedures in cardiac surgery, Basic techniques in cardiac surgery approach, incisions, Types of operation, Complications of cardiac surgery, Lines, drains and tubes.		
	b. Brief description of indications, surgery, complications for following surgery:		
	i. Surgeries of thorax		
	ii Surgeries of the lung		
	iii. Surgeries of pleura and pericardium		
	iv. Surgery for coronary artery disease		
	v. Valvular surgeries		
	vi. Surgery for Congenital Heart Disease		
	vii. Peripheral arterial disorder, Burger's disease, Reynaud's disease and Aneurysm		
	viii. Gangrene, Amputation, DVT		
3	**PLASTIC SURGERY/RECONSTRUCTIVE SURGERY**	**5**	**5**
	a. Skin grafts & flaps – Types, indications with special emphasis to burns, wounds		
	b. Ulcers, complications and postoperative care		
	c.Tendon transfers, with special emphasis to hand, foot & facial paralysis, & repair of Flexor & Extensor Tendon		

	Injuries		
	d. Keloid & Hypertrophied scar management		
	e. Reconstructive surgery of peripheral nerves		
	f. Micro vascular surgery- re-implantation and revascularization		

CLINICAL (20 Hrs.)

1. Clinical Case presentation, History, General Examination with Subjective and Objective Assessment of Underlying Orthopaedic condition and recording one case each in:
    a) Burns
    b) Wound Ulcer
    c) Head Injury
    d) Peripheral Vascular Condition
    e) Post radical mastectomy
    f) Post Thoracic Surgery
    g) Post abdominal surgery
    h) Plastic Surgery
2. Investigations, Reading & Interpretation of the Auscultation, X-rays, MRI etc.
3. Provisional Diagnosis

RECOMMENDED TEXTBOOKS

1. A Concise Textbook of Surgery– S.Das, Das Publishers
2. Handbook Of Surgery by S C Atri Publishers

RECOMMENDED REFERENCE TEXTBOOKS

1. Short Practice Of surgery--Bailey and Love, CRC Publishers
2. Manipal Manual of Surgery- K Rajgopal Shenoy, Anitha Shenoy, CBS Publishers

SCHEME OF UNIVERSITY EXAMINATION

INTERNAL ASSESSMENT:

1. **Two examination of Total 40marks (**Theory only**)**
2. Internal Assessment to Be Calculated Out Of 10 Marks
3. Internal assessment as per University pattern

SCHEME OF EXAMINATION

THEORY 40 MARKS I.A.– 10 MARKS *The Question paper will give appropriate weightage to the topics in syllabus.		**Marks** **50**
SECTION A	Q-1-Answer any FOUR out of FIVE (4 x5 marks = 20) *Based on topics– **CARDIOVASCULAR THORACIC SURGERY**	**20**
SECTION B	Q-3-Answer Any FOUR out of FIVE (4 x5 marks = 20) *Based on topics– **GENERAL SURGERY PLASTIC SURGERY**	**20**
Total Marks		**40**

Clinical Case Presentation (COLLEGE EXAMINATION)	**Marks**
Examination And Viva Examination- Based on Case presentation conducted at the end of Clinical Posting	20

*** Note:- Clinical Posting and Clinical Case Presentation is Mandatory to appear for University Exam.**

ORTHOPEDICS P302

DIDACTIC 40HRS+ CLINICAL 20HRS = TOTAL60HRS

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION:

This course intends to familiarize students with principles of orthopaedic surgery along with familiarization with terminology and abbreviations for efficient and effective each art reviewing and documentation. It also explores various orthopaedic conditions needing attention, focusing one epidemiology, pathology, as well as primary and secondary clinical characteristics and their surgical and medical management. The purpose of this course is to make physiotherapy students aware of various orthopaedic surgical conditions so these can be physically managed effectively both pre as well as post operatively

COURSE OBJECTIVES:

At The end of the course, the candidate will

Cognitive Domains:

- Be able to discuss the aetiology, Pathophysiology, clinical manifestations & conservative/surgical management of various traumatic cases of the Musculoskeletal Conditions.
- Be able to discuss the aetiology, pathophysiology, clinical manifestations & conservative/surgical management of various cold cases of the Musculoskeletal Conditions.
- Be able to understand the salient features of the X-ray of the Spine & Extremities and Correlate The radiological findings with the clinical findings

Psychomotor Domains:

- Demonstrate the skill of clinical examination; apply special tests interpretation of the preoperative old cases & all the post-operative cases.
- Be able to read & interpret salient features of the X-ray of the Spine & Extremities and Correlate the radiological findings with the clinical findings.
- Be able to interpret Pathological/Biochemical studies pertaining Orthopaedic conditions

COURSE OUTCOMES:

- To understand traumatology of Upper and lower limb fractures, with their treatment protocols.
- To understand the pathophysiology of various musculoskeletal conditions including congenital and acquired anomalies with its treatment protocol.

- To understand the pathophysiology of various inflammatory and infective conditions of musculoskeletal system with its treatment protocol

SR.NO	TOPICS	THEORY HOURS	CLINICAL HOURS
1	**FRACTURES**	**5**	**3**
	a. Definition, Classification, Causes, Clinical features, healing of fractures &Complications.		
	b. Principles of general management of		
	i. Fracture of the Upper Extremity		
	ii. Fracture of the Lower Extremity		
	iii. Fracture of the vertebral column, thorax and pelvis		
	iv. Emergency care and first aid.		
2	**DISLOCATIONS & SUBLUXATIONS**	**4**	**2**
	a. Definition, General description, Principles of general description and management of traumatic dislocation and subluxation of common joints.		
	i. Shoulder joint		
	ii. Acromio-clavicular joint		
	iii. Elbow joint		
	iv. Hip joint		
	v. Knee joint		
3	**SOFT TISSUE AND TRAUMATIC INJURIES**	**4**	**2**
	a. Introduction- Anatomy& physiology, general description, grade of injury and management of injuries of		
	i. Ligaments, Bursae,Fascia		

	ii. Muscles &Tendons		
	iii. Muscles and tendons injuries of upper and lower limb		
	b. Cervical-lumbar injuries, Whiplash of the cervical spine		
	c. Crush injuries of hand &foot		
4	**DEFORMITIES AND ANOMALIES**	**10**	**3**
	a. Definition, Causes, Classification, Congenital and acquired deformities. Physical and clinical and radiological features, Complications		
	b. Principles of medical and surgical management of the deformities		
	c. General description of following deformities:		
	i. Deformities of the spine:		
	a) Scoliosis		
	b) Kyphosis		
	c) Lordosis		
	d) Flat back		
	e) Torticollis		
	f) Hemivertebra, . Sacralisation, Lumbarisation		
	ii. Deformities of the lower limb:		
	a) C.D.H., Coxa vara , Coxavalga, Anteversion, Retroversion		
	b) Genu valgum, Genu varum, Genu recurvatum, C.D.K.		
	c) Talipes calcaneous equinus, varus & valgus		
	d) Pescavus, Pesplanus		
	e) Hallux valgus & varus, Hallux rigidus and hammer toe		
	iii. Deformities of Shoulder & Upper limb		
	a) Sprengel's shoulder, Cubitus varus,Cubitus valgus		
	b) Dupuytren's contracture		
5	**DEGENERATIVE AND INFLAMMATORY**	**5**	**3**

	CONDITIONS		
	a. Osteo-arthritis		
	b. Spondylosis ,		
	c. Spondylolysis and lysthesis,		
	d. Pyogenic arthritis		
	e. Rheumatoid arthritis		
	f. Juvenile arthritis		
	g. Tuberculosis arthritis		
	h. Gouty arthritis		
	i. Hemophilic arthritis		
	j. Neuropathic arthritis		
	k. Ankylosing spondylitis		
	l. Psoriatic arthritis		
6	**MANAGEMENT OF METABOLIC DISORDERS**	**2**	**1**
	a. Osteoporosis		
	b. Osteomalacia & Rickets		
7	**GENERAL ORTHOPAEDIC DISORDERS**	**4**	**2**
	a. Carpel tunnel syndrome/Entrapment nerve injuries		
	b. Compartment syndrome, Ischemic contracture		
	c. Avascular necrosis of bone in adult and children		
	i. Gangrene		
	ii. Backache / P.I.D.		
8	**TUMOURS**	**2**	**1**
	i. Classification, Principles of general management		
	ii. General description of benign and malignant tumors of musculoskeletal system		
9	**Neuromuscular Disorders**	4	3
	a. Cerebral palsy. b. Poliomyelitis. c. Spinal Dwarfism. d. Leprosy.		

CLINICAL (20HRS)

- Independent clinical Orthopaedic evaluation presentation & recording of:

a) One acute soft tissue lesion(including nerve injury)

b) Two cases of degenerative arthritis of extremity joint (One each in Upper Extremity and One Lower Extremity)

c) Two cases of spine(one P.I.D, one traumatic)

d) One post-operative case of fractures of extremities with fixation/replacement knee/ hip

e) One paraplegia/quadriplegia

RECOMMENDED TEXT BOOKS

1. Essentials of Orthopaedics, Maheshwari, Mhaskar,Jaypee Brothers Medical Publishers
2. Natarajan's Textbook of Orthopaedics & Traumatology, M.V Natarajan, Wolters Kluwer

***RECOMMENDED REFERENCE BOOKS**

1. Adams's Outline of Fractures: Including Joint Injuries, David L. Hamblen , A. Hamish .Simpson DM**,** Churchill Livingstone
2. Adams's Outline of Orthopaedics: Including Joint Injuries, David L. Hamblen , A. Hamish .Simpson DM**,** Churchill Livingstone
3. Apley's System Of orthopaedics and fractures, Louis Solomon & David Warwick & Selvadurai Nayagam, CRC Press

INTERNAL ASSESSMENT:

1. Two examination of Total 40marks (Theory only)

2. Internal Assessment to Be Calculated Out Of 10 Marks
3. Internal assessment as per University pattern

SCHEME OF UNIVERSITY EXAMINATION

THEORY 40 MARKS I.A.– 10 MARKS *The Question paper will give appropriate weightage to the topics in syllabus.		Marks 50
SECTION A	Q-1-Answer any FOUR out of FIVE (4 x5 marks = 20) *Based on topics–	**20**
SECTION B	Q-2-Answer Any FOUR out of FIVE (4 x5 marks = 20) *Based on topics–	**20**
Total Marks		**40**

Clinical Case Presentation (COLLEGE EXAMINATION)	**Marks**
Examination And Viva Examination- Based on One Case presentation by each student conducted at the end of Clinical Posting	20

* Note:- **Clinical Posting and Clinical Case Presentation is Mandatory to appear for University Exam.**

MEDICINE P303

DIDACTIC 45 HRS + CLINICAL 10 HRS = TOTAL 55 HRS

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION:

This course intends to familiarize students with medical terminology & abbreviations for efficient & effective chart reviewing & documentation. It also explores selected systemic diseases, focusing one epidemiology, pathology, histology, etiology as well as primary & secondary clinical characteristics & their management. Discusses & integrates subsequent medical management of General, Rheumatology, Gerontology, Cardio-vascular & Respiratory systems to formulate appropriate intervention, indications, precautions &contraindications

COURSE OBJECTIVES:

At the end of the course, the candidate will:

Cognitive Domains:

- Be able describe Aetiology, Pathophysiology, Signs & Symptoms & Management of the various Endocrine, Metabolic, Geriatric & Nutrition Deficiency Conditions.
- Be able to describe Aetiology, Pathophysiology, Signs Symptoms, Clinical Evaluation & Management of the various Rheumatologic Cardiovascular & Respiratory Conditions.
- Acquire the knowledge of basic investigations like Chest X-ray, Blood gas analysis, P.F.T. findings & Haematological Studies, for Cardiovascular, Respiratory, Neurological and Rheumatological conditions.
- Describe the Principles of Management at the Intensive Care Unit.
- Acquire the skills of Basic Life Support.
- Acquire knowledge of various drugs used for each medical condition to understand its effects and its use during therapy.

Psychomotor Domains:

- Demonstrate skill of history taking and clinical examination of Musculoskeletal, Respiratory, Cardio-vascular & Neurological System as a part of clinical teaching.

- Be able to interpret auscultation findings with special emphasis on the pulmonary system
- Interpret the basic investigations like Chest X-ray, Blood gas analysis, P.F.T. findings & Haematological Studies, for Cardiovascular, Respiratory, Neurological and Rheumatological conditions.

COURSE OUTCOMES:

- The student will be able to
- To understand the pathophysiological changes in infectious and metabolic disorders with their treatment.
- To understand the pathophysiological changes in respiratory disorders with their treatment.
- To understand the pathophysiological changes in cardiovascular disorders with their treatment.
- To understand the pathophysiological changes in hematological conditions with their treatment.
- Knowledge and understanding of subject will help the students to plan a good rehabilitation of a patient along with thorough assessment of a pediatric case.
- The student will be able to differentiate cases and handling the cases will become easier as they can relate theoretical knowledge with practical learning

SR.NO.	TOPICS	DIDACTIC HOURS	CLINICAL HOURS
1	**CARDIO-VASCULAR & RESPIRATORY MEDICINE**:	**30**	**5**
a	**Cardio-Vascular Diseases**	**12**	**2**
	i. Hypertension –systemic	1	
	ii. Cardiac Conditions-		
	a) I.H.D.(Angina, Myocardial infarction)		
	b) R.H.D.	4	
	c) Infective Endocarditis		
	d) Cardio myopathy		
	e) Heart Failure		
	iii. Valvular Heart Disease	2	

	a) Congenital		
	b) Acquired		
	iv. Congenital Heart Disease	2	
	v. Investigations		
	a) Basics of E.C.G. [Normal & Abnormal(Ischemia, Infarction & Arrhythmias)]		
	b) Observation of conduction of stress test on patient	3	
	c) 2D Echo (Ejection Fraction & Wall motion Abnormality)		
b	**Diseases of the Respiratory System:**	**18**	**3**
	i. Common Infectious diseases like Tuberculosis, Pneumonia, Lung Abscess, and Bronchiectasis. Covid-19, Monkey pox, etc.	3	
	ii. Diseases of Pleura like Pleural Effusion, Pneumothorax, Hydro pneumothorax and Empyema.	2	
	iii. ILD & Occupational lung diseases like Silicosis, Asbestosis, Pneumoconiosis, Brucellosis, Farmer's lung	2	
	iv. Obstructive Airway Diseases (C.O.P.D. with Cor Pulmonale, Pulmonary Hypertension, Bronchial Asthma & Cystic Fibrosis)	3	
	v. Intensive Care Unit		
	a) Infrastructure		
	b) Instrumentation.		
	c) Mechanical Ventilation(settings & monitoring)	3	
	d) Assessment, monitoring & management of patient in I.C.U.		
	vi. Basic Life Support: Introduction & Demonstration	2	

	vii. Investigation :Normal &Abnormal	3	
	1). Chest X-ray		
	2). Blood Gas Analysis		
	3). PFT (Observation of conduction on patient)		
2	**GENERAL MEDICINE, RHEUMATOLOGY & GERENTOLOGY:**	**15**	**5**
a	**General Medicine**	7	2
	i. Disorders of Endocrine system (Diabetes) Introduction, pathophysiology, types, role of physical activity, complications of diabetes (autonomic neuropathy, myopathy, weakness) &medications.		
	ii. Thyroid, Pituitary & Adrenal conditions, Cushing's syndrome		
	iii. Obesity		
	iv. Nutrition Deficiency Disease (Rickets, Vit.E, Vit.D, Vit.B, micronutrients, (Zn,Se)		
	v. Intoxication (Drug abuse; Alcohol, smoking, cocaine dependence)		
b	**Rheumatological Conditions**	5	2
	i. Rheumatoid Arthritis		
	ii. SLE		
	iii. SSA		
	iv. Gout		
	v. Polymyositis		
	vi. Fibromyalgia		
	vii. Ankylosing spondylitis		
c	**Geriatric Conditions**	3	1
	i. Aging Process(physiological changes due to aging)		
	ii. CVS & RS complications		
	iii. Osteoporosis		

CLINICAL- 10HRS

1. History Taking, Evaluation– General Examination Systemic examination (Inspection, Palpation, Percussion Auscultation)
2. Case Presentation of following cases :
   a. Muscular Disorders
   b. Respiratory Conditions
   c. Cardio Vascular Conditions
   d. Degenerative/ Rheumatological Condition
   e. Obesity
   f. Nutritional Disorders
   g. Diabetes Mellitus Metabolic bone disorders.

RECOMMENDED TEXTBOOKS

1. API - Textbook of Medicine, Sandhya A Kamath , Siddharth N Shah, Yash Pal Munjal, Milind Y Nadkar, Jaypee Brothers Publishers
2. Manual of Practical Medicine, R Alagappan, Jaypee Brothers Medical Publishers
3. P.J.Mehta's Practical Medicine, Nihar P Mehta, SP Mehta, SR Joshi, The National Book Depot

RECOMMENDED REFERENCE BOOKS

1. Davidson's Principles & Practice of Medicine, Ian Penman, Stuart Ralston, Mark Strachan, Richard Hobson, Elsevier Publishers
2. Golwalla's Medicine for Students, Milind Y Nadkar, Aspi F Golwalla, Sharukh A Golwalla, Jaypee Publishers
3. Hutchison's Clinical Methods: An Integrated Approach to Clinical Practice, Glynn, Elsevier Publishers

INTERNAL ASSESSMENT:

4. **Two examination of Total 40marks (**Theory only**)**
5. Internal Assessment to Be Calculated Out Of 10 Marks
6. Internal assessment as per University pattern

SCHEME OF UNIVERSITY EXAMINATION

		Marks
THEORY 40 MARKS I.A.– 10 MARKS *The Question paper will give appropriate weightage to the topics in syllabus.		**50**
SECTION A	Q-1-Answer any FOUR out of FIVE (4 x5 marks = 20) *Based on topics– **GENERAL MEDICINE, RHEUMATOLOGY, GERONTOLOGY.**	**20**
SECTION B	Q-2-Answer Any FOUR out of FIVE (4 x5 marks = 20) *Based on topics– **CARDIOVASCULAR & RESPIRATORY MEDICINE**	**20**
Total Marks		**40**

Clinical Case Presentation (COLLEGE EXAMINATION)	**Marks**
Examination And Viva Examination- Based on One Case presentation by each student conducted at the end of Clinical Posting.	20

*** Note:- Clinical Posting and Clinical Case Presentation is Mandatory to appear for University Exam.**

NEUROLOGY P304

DIDACTIC 35 HRS + CLINICAL 15 HRS = TOTAL 50 HRS

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION:

This course intends to familiarize students with medical terminology & abbreviations for efficient & effective chart reviewing & documentation. It also explores select systemic diseases, focusing one epidemiology, etiology, pathology, histology as well as primary & secondary clinical characteristics & their management. It discusses & integrates subsequent medical management of Neurological conditions to formulate appropriate intervention, indications, precautions & contraindications.

COURSE OBJECTIVES:

At the end of the course, the candidate will:

Cognitive Domain:

- Be able to describe Aetiology, Pathophysiology, signs & Symptoms & Management of the various Neurological Conditions.
- Acquire skill of history taking and clinical examination of Neurological conditions as a part of clinical teaching.
- Acquire Knowledge of Various Drugs Used for each medical condition to understand its effects and its use during therapy.
- Able to describe neuromuscular, musculoskeletal, cardio-vascular & respiratory conditions related to immunological conditions, nutritional deficiencies, infectious diseases, & genetically transmitted conditions.

Psychomotor Domain:

- Demonstrate skill of history taking and clinical examination of Neurological conditions
- Demonstrate skill of history taking and clinical examination of neuromuscular, musculoskeletal, cardio-vascular & respiratory conditions related to immunological conditions, nutritional deficiencies, infectious diseases, & genetically transmitted condition

COURSE OUTCOMES:

- Acquisition and clinical application of basic knowledge of the nervous system.
- Development of communication skills that will facilitate the clinical interaction with patients with neurologic disorders and their families and thus ensure that complete, accurate data are obtained.

- Development of competency in the single system neurological examination.
- Acquisition of the knowledge necessary for the diagnosis and initial management of common acute and chronic neurological conditions.
- Development of clinical problem-solving skills.
- Development of strategies for health promotion and prevention of neurological damage.
- Development of the attitudes and professional behaviors appropriate for clinical practice

SR.NO	TOPICS	DIDACTIC HOURS	CLINICAL HOURS
A	**NEUROLOGY**	**35**	**15**
1	**Introduction to Nervous System**	1	
	i. Applied anatomy		
	ii. Applied physiology		
2	**Cerebro Vascular Accidents**	4	2
	i. Thrombosis, Embolism, Haemorrhage		
	ii. Level of Lesion & symptoms		
	iii. Management		
3	**Extra Pyramidal lesions – Basal Ganglia**	3	2
	i. Parkinsonism		
	ii. Athetosis, Chorea, Dystonia		
4	**Differential diagnosis of muscle wasting**	4	2
	i. Approach to neuropathies		
	ii. Myopathies and neuromuscular junction disorders.		
5	**Disorders of Anterior Horn cell** with differential diagnosis of	5	2
	i.Motor Neuron Disease		
	ii.S.M.A.		
	iii.Syringomyelia,		

	iv.Peroneal Muscular Atrophy		
	v.Poliomyelitis.		
6	**Multiple Sclerosis**	1	
7	**Infections of the nervous system**:	2	1
	Encephalitis, Neurosyphilis, H.I.V. infection, Herpes, Meningitis, Tabes Dorsalis		
8	Tetanus	1	
9	Epilepsy	1	
10	Alzheimer's Disease, Dementia	1	
11	**Disorders of cerebellar function**	2	2
12	Disorders of cranial nerves & Special Senses	2	2
13	Disorders of Spinal cord	4	2
	i. Syndromes		
	ii. Bladder dysfunction		
	iii. Autonomic dysfunction		
14	**Brain tumors and spinal tumors**	2	
15	**Toxic, metabolic and environmental disorders**	2	

CLINICAL (10HRS)

1. History taking and General examination
2. Examination of the Nervous System
3. Examination of Normal and Abnormal Reflexes
4. Examination Of Respiratory System
5. Examination Of Cardiovascular System
6. Examination Of Musculoskeletal System

RECOMMENDED TEXT BOOKS:

1. **Neurology and Neurosurgery Illustrated, By Kenneth W. Lindsay, Ian Bone, Geraint Fuller, Churchill Livingstone**
2. Bickerstaff's Neurological Examination In Clinical Practice, Kameshwar Prasad ,Ravi Yadav , John Spillane ,Wiley Publisher

RECOMMENDED REFERENCE BOOKS:

1. Neurological Differential Diagnosis, John Patten, Springer
2. Harrison's Neurology in Clinical Medicine, Stephen Hauser, S. Andrew Josephson, McGraw-Hill Education / Medical

INTERNAL ASSESSMENT:

1. Two examination of Total 40marks (Theory only)
2. Internal Assessment to Be Calculated Out Of 10 Marks
3. Internal assessment as per University pattern

SCHEME OF UNIVERSITY EXAMINATION

THEORY 40 MARKS I.A.– 10 MARKS *The Question paper will give appropriate weightage to the topics in syllabus.		**Marks** **50**
SECTION A	Q-1-Answer any FOUR out of FIVE (4 x5 marks = 20) *Based on topics–	**20**
SECTION B	Q-2-Answer Any FOUR out of FIVE (4 x5 marks = 20) *Based on topics–	**20**
Total Marks		**40**

Clinical Case Presentation (COLLEGE EXAMINATION)	**Marks**
Examination And Viva Examination- Based on One Case presentation conducted by each student at the end of Clinical Posting	20

Posting and Clinical Case Presentation is Mandatory to appear for University Exam.

Clinical Case Presentation of following cases:

1. Stroke
2. Traumatic Brain Injury
3. Parkinson's Disease
4. Peripheral Nerve Injury
5. Guillain Barre Syndrome
6. Cerebellar Ataxia
7. Multiple Sclerosis
8. Spinal Cord Injury

PAEDIATRICS P 305

DIDACTIC 40 HRS+CLINICAL 10 HRS=TOTAL 50 HRS

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION:

This course intends to familiarize students with medical terminology & abbreviations for efficient & effective chart reviewing & documentation, it also explores select systemic diseases, focusing on epidemiology, etiology, pathology, histology as well as primary & secondary clinical characteristics & their management. It discusses& integrates subsequent medical management of Pediatric conditions to formulate appropriate intervention, indications, precautions & contraindications

COURSE OBJECTIVES:

- At the end of the course, the candidate will:

Cognitive Domain:

- Be able to describe Aetiology, Pathophysiology, signs & Symptoms & Management of the various Paediatric Conditions.
- Acquire skill of history taking and clinical examination of Paediatric conditions as a part of clinical teaching.
- Acquire knowledge of various drugs used for each medical condition to understand its effects and its use during therapy.
- Acquire Knowledge In brief about intrauterine development of the foetus.
- Be able to describe normal developmental milestones & growth of a child, importance of Immunisation, breast-feeding & psychological aspect of development.
- Acquire knowledge of clinical examination skills of a neonate/ child with respect to neurological, musculoskeletal & respiratory function.

Psychomotor Domain:

- Demonstrate the skill of history taking and clinical examination of Paediatric conditions as a part of clinical teaching
- Acquire skills of clinical examination of a neonate/ child with respect to neurological, musculoskeletal & respiratory function.
- Able to demonstrate various Neonatal / Primitive reflexes.

COURSE OUTCOMES:

The student will be able to

- To understand the pathophysiological changes in infectious and metabolic disorders with their treatment.
- To understand the pathophysiological changes in respiratory disorders with their treatment.
- To understand the pathophysiological changes in cardiovascular disorders with their treatment.
- To understand the pathophysiological changes in hematological conditions with their treatment.
- Knowledge and understanding of subject will help the students to plan a good rehabilitation of a pediatric patient along with thorough assessment of a pediatric case.
- The student will be able to differentiate pediatric cases and handling the cases will become easier as they can relate theoretical knowledge with practical learning

A	**A. Introduction to Normal development & Neural development:-**	**Hrs.**
1	**Normal intra-uterine development** of fetus with special reference to Central Nervous System, Neuromuscular System, Cardiovascular Respiratory System Immunization and breast-feeding, Normal development & growth, (1Hrs)	**1**
2	**Neural development**, Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders (10Hrs)–	**10**
	Cerebral palsy- - Medical Management including early intervention	
	• Developmental disorders associated with spinal cord: Spinal Dysraphism,	
	• Spina Bifida, Meningocele, Myelomeningocele, hydrocephalus management and treatment	
	• Arnold-chiari malformation,	
	• Basilar impression,	
	• Klippel-Feil syndrome,	
	• Achondroplacia,	
	• Cerebral malformations,	

	• Autism, • Dandy walker syndrome and • Down's syndrome. **Cerebro Vascular Accidents**. Sepsis, Prematurity, Asphyxia Hyper bilirubinemia and birth injuries.	
3	**Extra Pyramidal lesions –Basal Ganglia**	**1**
4	**Neuropathies**:	**2**
	a.).**Polyneuropathy** – Classification of Polyneuropathies, Hereditary motor sensory neuropathy, hereditary sensory	
	b).P**eripheral neuropathy:**– Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions.	
	ii. Myopathies and neuromuscular junction disorders:	**1**
	DMD, Becker's , CMD	
5	**Disorders of Anterior Horn cell**: Polio , PPRP	**1**
6	**Infections of the nervous system**: –	**3**
	Meningitis, Encephalitis, Poliomyelitis and Postpolio syndrome. Tabes Dorsalis	
7	Tetanus	**1**
8	Epilepsy	**1**
9	**Disorders of cerebellar function :-**Congenital ataxia, Friedreich's ataxia, Ataxia talengiectasia, Metabolic ataxia, Hereditary cerebellar ataxia, Tabesdorsalis and Syphilis,	**1**
10	**Disorders of cranial nerves&Special Senses**	**2**
	i. **Neuro-ophthalmology:**	
	ii. **Deafness, vertigo, and imbalance:**	
	iii. **Lower cranial nerve paralysis** – Etiology, clinical features, investigations, and management of following disorders - lesions in trigeminal nerve,, lesions in facial nerve, facial palsy, bell's palsy, hemi facial spasm, Glossopharangial neuralgia, lesions of Vagus nerve, lesions of spinal accessory nerve, lesions of hypoglossal nerve. Dysphagia – swallowing mechanisms, causes of dysphagia, symptoms, examination, and management of dysphagia.	

	iv. **Sensory disorders** – problems resulting from loss of vision and hearing ;	**1**
11	**Disorders of Spinal cord :**Syndromes & Bladder dysfunction	**2**
	Spinal cord disorders:, Spinal epidural abscess, Spina bifida, Sub acute combined degeneration of the cord, Hereditary spastic paraplegia.	
12	**Motor neuron diseases**: - SMA, HSMN, CMD	**1**
13	**A. Toxic, metabolic :**Encephalopathy,	**1**
	B. **Respiratory conditions of childhood**, Common diseases of the Respiratory system: Asthma, Bronchitis, Bronchiectasis, T.B., Pneumonia, Lung collapse, Pleural effusion, Respiratory distress in neonate (1Hrs)	
	C. **Rheumatic & Congenital Heart disease**	**1**
	D. **Congenital abnormalities** and management,	**1**
	E. **Genetically** transmitted neuromuscular conditions	**1**
	F. Malnutrition and Vitamin deficiency conditions	**1**
	G.-Juvenile R. A. & other Rheumatologic conditions of Musculoskeletal system	**1**
	H. **Common infections**	**2**
	a) C.N.S.& Peripheral Nervous System	
	b) Typhoid, Rubella, Mumps, Measles, Diphtheria, Chicken gunia, Malaria	
	I. **Mental Retardation** and Down's Syndrome	**1**
	J. **Learning and behavioral problems** – Hyperactivity, Autism, Challenging behaviors,	**2**
	K. Educational delay, The Clumsy Child.	**1**

CLINICAL (10HRS)

1. History taking and general examination in neonate and child
2. Examination Of Neonate And Neonatal Reflexes.
3. Examination Of The Nervous System
4. Examination Of Respiratory System

5. Examination Of Cardiovascular System
6. Examination Of Musculoskeletal System
7. Ventilatory Care In Neonate And Child

RECOMMENDED TEXT BOOKS:

1. Paediatric Clinical Methods, Singh M, CBS publishers
2. Textbook of Paediatrics, Aruchamy Lakshmanaswamy, Elsevier India

RECOMMENDED REFERENCE BOOKS

1. Essentials of Paediatrics, O.P.Ghai, Inter Print publications
2. Illingworth's The Development of the Infant and Young Child: Normal and Abnormal, Illingworth, Elsevier

INTERNAL ASSESSMENT:

1. Two examination of Total 40marks (Theory only**)**

2. Internal Assessment to Be Calculated Out Of 10 Marks

3. Internal assessment as per University pattern

SCHEME OF UNIVERSITY EXAMINATION

THEORY **40 MARKS I.A.– 10 MARKS** *The Question paper will give appropriate weightage to the topics in syllabus.		**Marks** **50**
SECTION A	Q-1 Answer any FOUR out of FIVE (4 x5 marks = 20) *Based on topics–	**20**
SECTION B	Q-2-Answer Any FOUR out of FIVE (4 x5 marks = 20) *Based on topics–	**20**
Total Marks		**40**

Clinical Case Presentation (COLLEGE EXAMINATION)	**Marks**
Examination And Viva Examination- Based on Case presentation conducted at the end of Clinical Posting	20

Note:- Posting and Clinical Case Presentation is Mandatory to appear for University Exam.

COMMUNITY HEALTH & SOCIOLOGY P306
(UNIVERSITY EXAMINATION)

COMMUNITY HEALTH 40 HRS +SOCIOLOGY 20 HRS = TOTAL 60 HRS

A- COMMUNITY HEALTH

DIDACTIC 30 HRS+VISIT 10 HRS =TOTAL 40 HRS

COURSE DESCRIPTION:

The course is organized to introduce the concept of healthcare and management issues in Health Services. It will help them in assuming a leadership role in their profession and assume the responsibility of guidance. It will help them assume wider responsibilities at all levels of health services. It will help them in improving their performance through better understanding of the health services at all the levels of community

COURSE OBJECTIVES:

At the end of the course, the candidate shall be able to understand the contents given in the syllabus:

Cognitive Domains:

- Appraise health promotion, disease prevention and public health as major components of health and to appraise the role of public health in providing individual healthcare
- Able to understand the basic concepts of maternal and child health, promote MCH through practical application of these concepts
- Able to describe the epidemiology of common communicable diseases and non-communicable diseases in the global and local context and to apply the knowledge in controlling and preventing the communicable diseases in the community in parallel with the public health system
- Recognize the and to formulate appropriate environmental friendly interventions

Psychomotor Domain:

- Apply the basic concepts in occupational health to promote health in working places and to prevent common hazard at work settings

- Promote health of individuals and families focusing on priority health needs and health related problems at individual/family level considering the given social, cultural, economic and demographic context
- Formulate appropriate environmental friendly interventions to the environmental health issues at household and community levels

COURSE OUTCOMES:

- Describe the principles and components of primary health care and the national health policies to achieve the goal of "Health for all"
- Describe the demographic pattern of the country and appreciate the roles of the individual, family,
- Community and socio – cultural milieu in health and disease
- List epidemiological methods to control communicable and non-communicable diseases in the community
- Interact with other members of the health care team and participate in the organisation of health care services and coordination implementation of national health programs
- Describe the importance of water and sanitation in prevention of water borne Diseases and their public health importance
- Identify the environmental and occupational hazards on health and appropriate preventive measures
- Describe the National health program with particular emphasis on maternal and child health family welfare and population control
- Understand family composition and family health care and social factors influencing family health
- Diagnose and manage common nutritional problems at the individual and community level

Sr.No.	Topics	Didactic Hours
1	**GENERAL CONCEPTS DETERMINANTS OF HEALTH & DISEASES:**	**4**
	a. National & International Definition of Health, Role Of Socio-Economic & Cultural Environment in Health Disease.	

	b. Epidemiology– Definition & scope, uses with relevance to Physiotherapy	
	c. Environmental Hygiene including man & his surrounding, Occupational & Industrial hygiene, Village & Town Sanitation, Bacteriology of Water, Milk & Food Hygiene.	
2	**NATIONAL PUBLIC HEALTH ADMINISTRATION**	**1**
3	**HEALTH CARE DELIVERY SYSTEM:**	**2**
	a. Healthcare Delivery System of India (Definition, Principles, Elements & Its Application)	
	b. National Health Programmes	
	c. Role of WHO	
	d. Millennium Development Goals for All	
4	**PRIMARY HEALTH CARE**	1
	a. Definition	
	b. Principles	
	c. Elements and its application	
5	**EPIDEMIOLOGY OF SOCIO-ECONOMIC & CULTURAL ISSUES**	**6**
	Related to morbidity in relation to the following vulnerable groups.	
	a. Women:	
	i. Pregnant and Lactating Women, maternal health (ANC,PNC,INC)	
	ii. Peri menopausal women's health: physical & psychological	
	infants: (Low Birth Weight, Breastfeeding, Complementary feeding, IYCN, IMNCI Vaccine Preventable Diseases, Immunization programmes, Infant and Childhood Mortality)	
	c. Children: Child health, Growth monitoring under five clinic,ICDS, PEM	
	d. School aged population health: Early detection and prevention of disabilities, behavioral problems	

6	**DEMOGRAPHY AND OBJECTIVES OF NATIONAL FAMILY WELFARE PROGRAMMES AND NATIONAL POPULATION POLICY**	**2**
7	**COMMUNICABLE DISEASES & NON COMMUNICABLE DISEASES:**	5
	Communicable Diseases:	
	An overview [including prevention & control] T.B., H.I.V., Leprosy, Vector borne diseases- Malaria/ Filariasis/ Dengue/ Chikungunya/ Japanese encephalitis, Covid 19, Monkey pox	
	Non Communicable Diseases	
	Diabetes Mellitus, Hypertension, Coronary Heart Disease/ Obesity/	
	Blindness/ Accidents/ Stroke/ Cancer.	
8	**NUTRITIONAL HEALTH, MENTAL HEALTH,OCCUPATIONAL HEALTH, GERIATRIC HEALTH:**	8
	Nutritional Health: Malnutrition, Nutritional disorders and National nutrition programmes, Osteomalacia, Rickets, Neuropathy due to Vitamin- deficiency, Skeletal Deformities	
	Mental Health: Socio-economic & cultural aspects and Substance Abuse and Addiction– tobacco, alcohol and others	
	Occupational Health: Occupational diseases & hazards- definition, scope, prevention & legislations, Occupational lung diseases & Physical injuries/ pains	
	Geriatric Health:	
	a. Physical, social, economic aspects	
	b. Osteoporosis, Malnutrition, Alzheimer's Disease, Parkinson's Disease	
9	**HOSPITAL WASTE MANAGEMENT**	1
	Sources of hospital waste, Health hazards, Waste management. Universal Safety Precautions, Immunization of health care providers including their vaccination.	

COMMUNITY VISITS:

Community health centers: Urban & Rural – 10 Hours

RECOMMENDED TEXT BOOKS:

1. Park's Textbook of Preventive Social Medicine, K.Park, Bhanot Publishers
2. Mahajan & Gupta Textbook of Preventive and Social Medicine, BK Mahajan, Rabindra Nath Roy, Indranil Saha, MC Gupta, Jaypee Publishers
3. TextBook of Community Medicine, Kulkarni, Baride, Vora Medical Publications

RECOMMENDED REFERENCE BOOKS:

1. Textbook Of Community Medicine Preventive And Social Medicine, Sunder Lal, CBS Publication
2. Golden Notes for Preventive and Social Medicine , Patel Parimal, Jp Medical Ltd

B-SOCIOLOGY

DIDACTIC 20 HRS

COURSE DESCRIPTION:

This course covers the basic knowledge and concepts of sociology with the aim to help understand the impact of group, culture and environment on behavior and health of the patients. Make them realize the importance of the relationship of the physical therapist and the patient and the environment around them

COURSE OBJECTIVES:

At the end of the course, the candidate shall be able to understand the contents given in the syllabus

Cognitive Domain:

- Describe the role of socio-cultural factors as determinants of health and behaviour in health and sickness.
- Able to understand a holistic approach towards the structure of society and community resources.
- Describe social problems and learn to execute social planning
- Understand the topics and relate this to therapeutic situations in the practice of Physiotherapy

Psychomotor Domain:

- The student will be able to demonstrate an understanding of the role of socio-cultural factors as determinants of health and behaviour in health and sickness.
- The student will be able to show their proficiency based on written and internal evaluation.

COURSE OUTCOMES:

- Understand the role of family and community in the development of behaviours.
- Develop a holistic outlook toward the structure of society and community resources.
- Identify the subtle influence of culture in the development of human personality, the role of beliefs and values as determinants of individual and group behaviours.
- Understand the social and economic aspects of a community that influence the health of the people.
- Learn to assess social problems and participate in social planning.
- Identify social institutions and resources.

- Understand the significance of social interactions in the process of rehabilitation
- Appreciate the role of therapist as a member of society and the interdependence between individuals and society

SR.NO	TOPICS	DIDACTIC HOURS
1	**INTRODUCTION:**	**1**
	Definition & Relevance with Physiotherapy Factors affecting Health Status, Decision Making Taking Treatment.	
2	**SOCIALISATION AND SOCIAL GROUPS:**	**11**
	Definition, Influence of Social Factors, on Personality, Socialization in the Hospital Rehabilitation of the patients.	
	Concepts, Influence of formal & informal groups of Health & Diseases, Role of Primary & Secondary Groups in Hospitals Rehabilitation Setting.	
	Family: Influence on human personality, Role Of Family In Health And Disease	
	Community Role: Rural & Urban communities in Public Health, Role of community determining Beliefs, Practices Home Remedies in Treatment.	
	Culture: Component's impact on human behaviour, Role of community in determining beliefs, practices and health seeking behaviour and home remedies	
	Social Change Factors: Human Adaptation, Stress, Deviance, Health Programme Role of Social Planning in the improvement of Health & in Rehabilitation	
	Social Control: Definition, Role of norms, Folkways, Customs, Morals, Religion, Law & other means of social controls in the regulation of Human	
	Behaviour, Social Deviance & Disease	
	Population Group:	

	a. Children: Street children, Child labour, Juvenile Delinquency	
	b. Women's: Victims of domestic violence and addiction, C.S.W., physically and /or mentally challenged	
	c. Role of NGOs, Social Support Systems	
3	Social Security & Social Legislation in relation to the Disabled	2
4	Role of a Medical Social Worker, Sociology of Brain Death and/ or Organ donation, Social Problems: Population explosion, Poverty, Dowry, Illiteracy- Causes, prevention & Control measures	5
5	Introduction to Research Methodology	1

RECOMMENDED TEXT BOOKS

1. An introduction to sociology, Vidya Bhushan & D.R.Sachdeva, Kitab Mahal Distributors New Delhi
2. Psychology and Sociology Applied to Medicine: An Illustrated Colour Text, by Beth Alder, Michael Porter BA
3. Social Change In India, B. Kuppuswamy B.V. Kumar, Konark Publishers Pvt Ltd

RECOMMENDED REFERENCE BOOKS:

1. The Principles of Sociology, Giddings Franklin Henry,Mjp Publishers
2. Social Problems in India, Ahuja Ram, Rawat Publications

INTERNAL ASSESSMENT:

1. **Two exams–Terminal and preliminary examination of 80 marks each**
   TOTAL-160
2. **Internal Assessment to Be Calculated out of 20 marks.**
3. Internal assessment as per University pattern

SCHEME OF UNIVERSITY EXAMINATION

		Marks
THEORY 80 MARKS +I.A.–20 MARKS *The question paper will Give appropriate weightage to the topics in the Syllabus.		100
SECTION A	Questions based on **COMMUNITY HEALTH** Q-1-Short Answer Questions Answer any FOUR out of FIVE 4 x5 marks = 20 Q-2-Short Answer Questions Answer any FOUR out of FIVE 4 x5 marks = 20	40
SECTION B	Questions based on **SOCIOLOGY** Q-3-Short Answer Questions Answer any FOUR out of FIVE 4 x5 marks = 20 Q-4-Short Answer Questions Answer any FOUR out of FIVE 4 x5 marks = 20	40
Total Marks		**80**

OBSTETRICS & GYNAECOLOGY P307

Didactic 20 Hrs + Clinical 10 Hrs = Total 30 Hrs

(UNVERSITY EXAMINATION)

COURSE DESCRIPTION:

This course intends to provide an introduction to women's health which includes problems related to pregnancy, osteoporosis, and other disorders specific to women. Topics Will Focus Medical Terminology, clinical examination, evaluation, comparing contemporary, traditional interventions and the impact of evolving technology in this area. It also emphasises on evaluation medical treatment of pelvic floor dysfunctions

COURSE OBJECTIVES:

At the end of the course, the candidate shall be able to:

Cognitive Domain:

- Describe Normal & Abnormal Physiological Events, complications and management during Puberty, Pregnancy and and Menopause
- Acquire the cognitive skill of clinical examination of the pelvic floor
- **Psychomotor Domain:**
- Demonstrate the skill of history taking and clinical examination of Gynecological conditions as a part of clinical teaching
- Acquire skills of clinical examination of obstetrics conditions as a part of clinical teaching

COURSE OUTCOMES:

- List the indications for surgery, aetiology, clinical features and surgical methods for various conditions.
- Plan a better rehabilitation care for the patients pre and postsurgically
- Clinical decision making ability & management expertise
- Diagnose conditions from history taking clinical evaluation and investigations in antenatal and postnatal cases

SR.NO	TOPICS	DIDACTIC HOURS	CLINICAL HOURS
1	**PHYSIOLOGY OF PUBERTY MENSTRUATION**: Abnormalities & common problems of Menstruation	2	
2	**PHYSIOLOGY OF PREGNANCY:**	3	
	a. Development Of The Foetus, Normal/ Abnormal/ multiple gestations,		
	b. Common Complications During Pregnancy:		
	i) Anaemia,		
	ii) PIH		
	iii) Eclampsia		
	iv) Diabetes,		
	v) Hepatitis,		
	vi) TORCH infection or HIV		
3	**PHYSIOLOGY OF LABOUR:**	**2**	**1**
	a. Normal–Events of Ist, IInd & IIIrd Stage Of labour		
	b. Complications during labour & management		
	c. Caesarean section-elective /emergency & post-operative care		
4	**POSTNATAL PERIOD:**	4	2
	a. Puerperium & Lactation		
	b. Complications of repeated child bearing with small gaps		
	c. Methods of contraception		
5	**INFERTILITY:**	**1**	
	a. Management with emphasis on PCOS/PCOD		
6	**URO-GENITALDYSFUNCTION**	3	2
	a. Uterine prolapse – Classification & Management(Conservative/Surgical)		

	b. Cystocele, Rectocoele, Enterocoele, Urethrocoele		
	c. Incontinence		
7	**MISCELLANEOUS**	4	3
	a. Common Gynaecological Surgeries		
	b. Pre, Peri and Post Menopause		
	i. Physiology		
	ii.Complications		
	iii.Management		
8	**Pelvic Inflammatory Diseases:**	1	2
	With special emphasis to backache due to Gynecological / Obstetrical conditions		

CLINICAL (10hrs)

1. **Evaluation & presentation of cases in**:
   a) Uro-genital Dysfunction
   b) Antenatal care
   c) Postnatal Care
   d) Following Normal Labour
   e) Following Caesarean Section
   f) Pelvic Inflammatory Diseases
2. **Observation**–One Normal & One Caesarean delivery & One Hysterectomy/ Repair of the Uro-genital Prolapse

RECOMMENDED TEXT BOOKS

1. Textbook of Gynaecology, D. C. Dutta,New Central Book A**gency**
2. Textbook of Obstetrics, D C Dutta,New Central Book Agency

RECOMMENDED REFERENCE BOOKS:

1. Obstetrics and Gynaecology: Preparatory Manual for undergraduates, Muralidhar Pai, Shripad Hebbar,Elsevier India
2. Undergraduate Manual of Clinical Cases in Obstetrics & Gynaecology, by N. Hephzibah Kirubamani,Elsevier India

INTERNAL ASSESSMENT:

1. **Two examination of Total 40marks (**Theory only**)**
2 Internal Assessment to Be Calculated Out Of 10 Marks
1. Internal assessment as per University pattern

SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

THEORY 40 MARKS I.A.– 10 MARKS *The Question paper will give appropriate weightage to the topics in syllabus.		**Marks** **50**
SECTION A	Q-1--Short Answer Questions Answer Any FOUR out of FIVE (4 x5 marks = 20)	**20**
SECTION B	Q-2-Short Answer Questions Answer Any FOUR out of FIVE (4 x5 marks = 20)	**20**
Total Marks		**40**

PSYCHIATRY P308
Didactic 20 + Clinical 10 Hours = Total 30 Hrs.

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION:

The course design increases awareness of psychosocial issues faced by individuals. Their significance at various points on the continuum of health and disability should be emphasised. The course discusses personal and professional attitudes and values as they relate to developing therapeutic relationships. It emphasises communication skills for effective interaction with patients, health-care professionals and others. It expects students to identify common psychiatric conditions

COURSE OBJECTIVES:

At the end of the course, the candidate shall be able to:

Cognitive Domain:

- Understand the importance of psychological status of the person in health & disease; environmental & emotional influence on the mind & personality
- Able to understand a holistic approach towards the patients.
- Enumerate various Psychiatric disorders with special emphasis to movement / Pain & ADLs
- Acquire the knowledge in brief, about the pathological & etiological factors, signs / symptoms & management of various Psychiatric conditions
- Have the knowledge and skills required for good interpersonal communication.

Psychomotor Domain:

- The students will be able to evaluate psychiatric history and examination.
- the student will be able to show their proficiency based on written and internal evaluation
- Student will be able to perform the Mental Status Examination

COURSE OUTCOMES:

- Conduct a comprehensive psychiatric history and examination
- Construct a bio-psycho-social formulation and treatment plan

- Explain how different biological, psychological and social factors may combine to precipitate
  - psychiatric disorder
  - Interpret and perform the mental status examination
  - Recognise physical signs and symptoms that accompany psychiatric disorders

SR.NO	TOPICS	DIDACTIC HOURS
A	Classifications, Causes, Clinical manifestations and treatment methods used in Psychiatry. Modalities of psychiatric treatment, Psychiatric illness and physiotherapy, Psychiatric History & Mental Status Examination	**2**
B	Brief description of Eeatio-pathogenesis, manifestations, and management of psychiatric illnesses	**16**
1	Anxiety neurosis,	
2	Depression,	
3	Psychosis, Postpartum psychosis, Psychotic disorder,	
4	Maniac-depressive psychosis,	
5	Post-traumatic stress disorder, Conversion disorder	
6	Psychosomatic reactions:	
7	Stress and Health, Theories of Stress – Illness.	
8	Classification of Mental disorders	
9	Schizophrenia & its types	
10	Delusional disorder,	
11	Mood disorder	
12	Organic brain disorders (delirium, dementia, Amnesticsyndromes, Organic personality disorder,)	
13	Anxiety disorders: Phobia, Obsessive Compulsive Disorder,	

14	Somatoform disorder, (Hypochondriasis, Dissociative disorder, Conversion disorder, & Pain disorder)	
15	Personality disorder	
16	Substance related disorder (alcohol),Drug dependence and alcoholism,	
17	Somatoform and Dissociate Disorders – conversion reactions, Somatization,	
18	Dissociate Amnesia, and Dissociate Fugue,	
19	Child psychiatry - manifestations, and management of childhood disorders -attention deficit syndrome and behavioral disorders.	
20	Disorders of infancy – childhood & adolescence	
21	Attention Deficit Hyperactivity Disorder,	
22	Mental Retardation	
23	Conduct disorder,	
24	Pervasive developmental disorder	
25	Enuresis	
26	Speech disorder	
27	Geriatric Psychiatry	
28	Eating disorder	
C	Management: ECT, Pharmacotherapy, Group therapy, Psychotherapy, Cognitive Behavioural Therapy and Rational Emotive Therapy	**2**
	CLINICAL HOURS:	**10**
A	History, Mental Status Examination & evaluation of:	
	1. Schizophrenia	

	2. Anxiety Disorder	
	3. Personality Disorder	
	4. Somatoform Disorder	
	5. Childhood Disorder (ADHD, MR)	
	6. Organic Brain Disorder (dementia)	
B	Seminar/ Workshop on Communication skills	

RECOMMENDED TEXT BOOKS

1. A Short Textbook Of Psychiatry by Ahuja, Jaypee Publisher
2. Short Textbook of Psychiatry, M.S. Bhatia, CBS
3. Short Textbook Of Psychiatry, By Lalit Batra, PeePee Publishers and Distributors Pvt

REFERENCE TEXT BOOKS

2. Shorter Oxford Textbook Of Psychiatry, by Paul Harrison, Philip Cowen, Tom Burns, Mina Fazel, OUP Oxford.
3. Ips Textbook of Undergraduate Psychiatry, by, P K Singh, Jaypee Brothers Medical Publishers.

INTERNAL ASSESSMENT:

1. **Two examination of Total 40marks (**Theory only**)**
3 Internal Assessment to Be Calculated Out Of 10 Marks
4. Internal assessment as per University pattern

SCHEME OF UNIVERSITY EXAMINATION (THEORY ONLY)

THEORY 40 MARKS I.A.– 10 MARKS *The Question paper will give appropriate weightage to the topics in syllabus.		Marks 50
SECTION A	Q-1-Short Answer Questions Answer any FOUR out of FIVE (4 x5 marks = 20)	**20**
SECTION B	Q-2-Short Answer Questions Answer Any FOUR out of FIVE (4 x5 marks = 20)	**20**
Total Marks		**40**

DERMATOLOGY P309

DIDACTIC 10 HRS + CLINICAL HRS 10 HRS = TOTAL 20 HRS

(COLLEGE EXAMINATION)

COURSE DESCRIPTION:

At the end of the course, the student will be able to describe the Pathophysiology, Signs & Symptoms, Clinical Features, Examination & Management of Common Skin Conditions like Leprosy, Psoriasis, Bacterial & Fungal Infections of the skin, connective tissue disorder, hand eczema, drug reaction, cutaneous manifestation of HIV, &Sexually Transmitted Diseases

COURSE OBJECTIVES:

At the end of the course, the candidate shall be able to:

Cognitive Domain:

- Define common dermatologic terms
- List common bacterial , fungal and Viral infections of the skin
- Recognize malignant skin lesions, risk factors for development

Psychomotor Domain:

- students will be able to evaluate Dermatological history and examination
- identify and characterize physical findings typical of common skin disorders

COURSE OUTCOMES:

This will provide an opportunity to recognize acute and chronic skin conditions. Will learn to identify and characterize physical findings typical of common skin disorders as well as findings that precede or reflect systemic illness, such as metabolic, neoplastic, and connective tissue disorders. Will be able to educate patients regarding sun exposure and other-skin-related issues, and learn appropriate indications for dermatology referral

SR.NO.	TOPICS	DIDACTIC HOURS	CLINICAL HOURS
1	Introduction to Dermatology, basic skin lesions and History taking	1	1
2	**Skin infections**	2	2
	a. Scabies/ Pediculosis/ Bacterial infections,		

	b. Viral/ Fungal/ Cutaneous T.B.		
3	**Connective tissue lesions-**	3	2
	a. Scleroderma, S.L.E., Dermatomyositis, Morphia		
	b. Hand eczema, Psoriasis, Psoriaticarthritis, Reiter's Syndrome,		
	c. Cutaneous hyperplasia-Keloid, Hypertrophic scar, Corn, Callosity		
4	Leprosy and Deformity	2	3
5	**Miscellaneous**	2	2
	a. Cutaneous Manifestation of HIV		
	b. Hyperhidrosis		
	c. Drug reaction		
	d. Urticaria		
	e. Genodermatosis- Epidermolysis Bullosa		
	f. Sexually Transmitted skin lesions, PUVA Treatment		
	TOTAL	**10**	**10**

RECOMMENDED TEXTBOOK:

1. Handbook of Dermatological Drug Therapy, K. C. Nischal and Akansha Chadha Uday Khopkar, Sushil Pande, Clever Pen Publishing LLP

2. Review of Dermatology, Saurabh Jindal, Jaypee Brothers Medical Publishers

RECOMMENDED REFERENCE BOOK:

1. Handbook of Dermatology, G. Ilangovan, Jaypee Brothers Medical Publishers Private Limited
2. Essentials in Dermatology, Venereology, Leprology Cosmetology, Bansal Ramesh, Jaypee Brothers Medical Publishers

SCHEME OF COLLEGE EXAMINATION (THEORY ONLY)

THEORY 30 MARKS *The Question paper will give appropriate weightage to the topics in syllabus.		**Marks** **30**
SECTION A	Q-1-Short Answer Questions Answer any THREE out of FOUR (3 x 5 marks = 15)	**15**
SECTION B	Q-3-Short Answer Questions Answer Any FIVE out of SIX (5 x 3 marks = 15)	**15**
Total Marks		**30**

FUNCTIONAL DIAGNOSIS & PHYSIOTHERAPEUTIC SKILLS P310
DIDACTIC 135 HRS + CLINICAL 325 HRS =TOTAL 460 HRS

(UNIVERSITY EXAMINATION)

COURSE DESCRIPTION:

1. Functional Diagnosis & Physiotherapeutic Skills is a stepping stone to introduce students actual concepts of PT assessment and later to the treatment concepts
2. Functional Diagnosis focuses on the assessment of the body systems. Musculoskeletal, Neurological and Cardiovascular-Respiratory in order to study the various impairments and their impact on activity and participation of the individual taking into consideration the contextual factors as well. It also emphasises on the clinical reasoning of the underlying components of a universal evaluation tool (ICF) for a better understanding of the patient in a holistic manner. The student is also subjected to learn basics of manipulative, cardiovascular-respiratory and neuro-therapeutic skills on models so that he/she will be able to apply these principles eventually on patients.
3. The student will also gain a sound knowledge of electro-diagnosis, which is an integral part of Functional Diagnosis

COURSE OBJECTIVES:

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

Cognitive:

- Understand the use of ICF.
- Acquire the knowledge of human growth and development from new life to birth and adulthood
- Understand structure and function of nerve and muscle as a base for understanding the electro-diagnostic assessment.
- Understand the use of appropriate tools or instruments of assessment in Musculoskeletal, Neurological and Cardio-vascular conditions.
- Understand the theoretical basis and principles of manipulative skills, neuro therapeutics kills and skills of cardiopulmonary care and resuscitation
- Document results of assessment to evaluate the patient from time to time.

Psychomotor:

Student will be able to:

- Perform assessment of measures of body structures and functions related to tissue mechanics.
- Perform assessment of measures of body structures and functions related to motor control affecting activity and participation, quality of life and independence.
- Perform the skill of electro-diagnosis (SD Curve) and observe skills of EMG and NCV studies, to understand the documentation of finding of these studies
- Interpretation and Analysis of assessment and findings.
- Demonstrate skills of manual therapy musculoskeletal, neuro therapeutics and cardiovascular and respiratory skills on models (Laboratory work).

Affective:

Student will be able to:

- Select appropriate assessment techniques to facilitate safety, sensitive practices in patient comfort and effectiveness.
- Demonstrate safe, respectful and effective performance of physical therapy handling techniques taking into account the patient's clinical condition, need for privacy, resources available and the environment.
- Follow the principles of appropriate handling technique that is draping, hand placement, body part positioning, manual techniques, lifting and transfer techniques.
- Communicate with patients and their families/caregivers regarding the need and uses of various assessment technique

COURSE OUTCOMES:

- To understand the pathological changes of degenerative and metabolic disorders of the musculoskeletal system with their assessment.
- To understand the various types of amputations with their limitations
- To understand the pathophysiology of various soft tissue injuries with their respective assessment
- To understand the importance of various special surgeries
- Assessment of patients sustaining orthopaedic injuries
- Learn the physical assessment in Neurological Conditions

- Student will be able to understand proper therapeutic techniques/approaches and demonstrate it on Models
- Interpretation of different non-invasive diagnostic investigation to make proper assessment in various respiratory and cardiovascular dysfunction
- Develop the skills to execute different Physiotherapy techniques of Cardio-respiratory dysfunctions.
- To select strategies for cure, care & prevention; adopt restorative & rehabilitative measures for maximum possible functional independence of a patient at home, workplace & in community
- Be able to execute the effective Physiotherapeutic measures with appropriate clinical reasoning to improve pulmonary function

TOPIC		DIDACTIC HOURS	PRACTICAL/ CLINICAL HOURS
1	**SECTION I:** **Functional Diagnosis using International Classification of Function, Disability & Health (I.C.F.) (Applicable for all the Sections mentioned below)**	**5**	
2	**SECTION II:** **MUSCULOSKELETAL EVALUATION AND MANIPULATIVE SKILLS**	**40**	**140**
A	**Assessment of Musculoskeletal System**:	**3**	**2**
	i. Soft Tissue Flexibility		
	ii. Joint Mobility		
	iii. Muscle Strength & Endurance		
	iv. Trick Movements		
	v. Sensations		
	vi. Limb Length		
	vii. Abnormal Posture		

	viii. Gait Deviations due to Musculoskeletal Dysfunction		
B	**Assessment of Joints with special tests:**	**10**	**8**
	ii. **Shoulder**: Yergason's, Speed's, Drop-Arm, Supraspinatus, Impingement, Anterior & Posterior Apprehension, Allen, Adson.		
	iii. **Elbow**: Cozen's, Miller's, Tinel's Sign		
	iv. **Forearm, Wrist & Hand**: Phalen's, Bunnel-Littler, Froment's sign		
	v. **Lumbar Spine**: Schober's, SLR, Prone, Knee Bending, Slump.		
	vi. **Sacro Iliacjoint**: Faber-Patrick's,Gaenslen, Gillet, March		
	vii. **Hip:** Nelaton's Line, Bryant's Triangle, Thomas, Ober's, Tripod sign, Trendelenburg Sign,		
	viii. **Knee:** Tests For Collateral Cruciate, Ligaments (valgus, varus, Lachman, Sag, Drawer's, McMurray's, Fluctuation, Patellar tap, Q-angle, Clarke)		
	ix. **Ankle & Foot**:Anterior , Drawer, Talar Tilt, Homan's Moses, (for D.V.T.)		
C	**Response of soft tissues to trauma:**	**2**	
	i. Trigger points		
	ii. Spasm		
	iii. Ligament Sprains		
	iv. Muscle Strains		
D	**Basics in Manual Therapy and Applications with Clinical Reasoning:**	**5**	**5**

	i. Assessment of Articular and extra-articular soft tissue status		
	a) Contractile Tissues		
	b) Non Contractile Tissues		
	ii. Examination of Joint Integrity		
	a) Accessory Movement		
	b) End Feel		
E	**Examination of musculoskeletal Dysfunction :**	**6**	**10**
	i. Subjective examination		
	ii. Objective examination		
	iii. Special tests		
	iv. Functional Diagnosis using ICF		
	v. Orthopaedic Scales:		
	● Neck Disability Index		
	● Shoulder Pain and Disability Index		
	● Patient Specific Functional Scale		
	● Disability of the Arm, Shoulder and Hand Questionnaire		
	● The Michigan hand Questionnaire		
	● Modified Oswestry Disability Questionnaire		
	● The Western Ontario and McMaster Universities Osteoarthritis Index		
	● The Knee Injury and Osteoarthritis Outcome Score		
	● Lower Extremity Functional Scale		
	● Fear-Avoidance Beliefs Questionnaire		
F	**Assessment of Pain:**	**4**	**5**
	i. Types Of Pain: Somatic, Referred,	Assessment	

	Neurogenic, Visceral	By VAS & NPRS	
	ii. Subjective Assessment:		
	a) Location, duration, progression, distribution, quality, diurnal variations, modifying factors.		
	b) Severity, nature of pain, tissue irritability		
	iii. Objective Measurement & Documentation-		
	a) Visual Analogue Scale (V.A.S).		
	b) Numerical Rating Scale(N.R.S.)		
	c) McGill's modified questionnaire (including Body charts)		
G	**Basic principles, indications, contraindications of mobilisation skills for joints And Soft Tissues:**	**10**	**110**
	i. Maitland	Practice of Manual Therapy in Kaltenborn, Maitland's, M.E.T.& Neural Mobilisation on extremities and spine on Models only	
	ii. Mulligan		
	iii. Kaltenborn		
	iv. Mckenzie		
	v. Cyriax		
	vi. Myofascial Release Technique		
	vii. Muscle Energy Technique		
	viii.Neural Tissue Mobilization (Neuro-Dynamic Testing)		
3	**SECTION III:**		
	CARDIOVASCULAR RESPIRATORY EVALUATION & RELATED SKILLS	**40**	**55**
A	**Assessment of Cardio Vascular& Pulmonary System:**	**25**	**25**
	i. Vital parameters	Identification of abnormal	

	ii. Chest Expansion	breath sounds, measurement of chest expansion, Pattern of breathing, Vital parameters, Grades of Dyspnoea, Rate of Perceived Exertion.	
	iii. Symmetry of chest movement		
	iv. Breath Holding Test		
	v. Breath Sounds		
	vi. Rate of Perceived Exertion(R.P.E.)		
	vii. Energy Systems & Exercise Physiology–	Exercise Tolerance Testing– 6Minutes Walk Test	
	a) Physiological response to immobility and Activity.		
	b) Aerobic & Anaerobic metabolisms		
	c) Evaluation of Functional Capacity using submaximal tests (Exercise Tolerance –Six Minute Walk test)		
	d) Theoretical bases of different protocols for maximal exercise testing (e.g.: Bruce Protocol, Modified Bruce Protocol, Balke		
	viii. Interpretation of reports– A.B.G., P.F.T. ,P.E.F.R., E.C.G.- (Normal & Variations due to Ischemia & Infarction), X-ray Chest, Biochemical Reports	Ankle Brachial Index,	
	ix. Ankle Brachial Index		
	x. Tests for Peripheral Arterial & Venous Circulation.		
B	**Examination of Cardiovascular Respiratory Dysfunction**	**5**	**5**
	i. Subjective examination		
	ii. Objective examination		
	iii. Special tests: Exercise Tolerance Testing– 6 Min Walk Test, Breath Holding Test, P.E.F.R.		

	iv. Functional Diagnosis using I.C.F.		
	v. Scales - Prevention Fall, Quality of Life(SF-36), RULA/ RUBA and Depression Score		
C	**Assessment of Fitness & Health**	**10**	**25**
	i. Screening for risk factors		
	ii. Body Composition-B.M.I., use of skinfold calipers, Girth measurement		
	iii. Physical Fitness: Flexibility, Strength, Endurance, Agility		
	iv. Physical Activity Readiness Questionnaire		
	v. Screening for health and fitness in childhood, adulthood and geriatric group		
	vi. Quality of life		
	vii. Principles & components of exercise prescription for healthy		
4	**SECTION IV:** **NEUROTHERAPEUTICS VALUATION & ELECTRODIAGNOSIS**	**50**	**130**
A	**General Principles of Human development & maturation**	**7**	**5**
	i. Aspects		
	a) Physical		
	b) Motor		
	c) Sensory		
	d) Cognitive & Perceptive		
	e) Emotional		
	f) Social		
	ii. Factors influencing human development & growth:		

	a) Biological		
	b) Environmental inherited		
	iii. Principles of maturation in general & anatomical directional pattern –		
	a) Cephelo – caudal		
	b) Proximo – distal		
	c) Centero – lateral		
	d) Mass to specific pattern		
	e) Gross to fine motor development		
	f) Reflex maturation tests		
	iv. Development in specific fields - Oromotor development, sensory development, neurodevelopment of hand function		
B	**Basics in Neuro Therapeutics Skills & Applications with Clinical reasoning.**	**20**	**55**
	i. Principles, Technique & Indications for	Therapeutic Skills of Bobath/N.D.T ,P.N.F, Rood's Technique & Brunnstrom, M.R.P, (on models only)	
	Application of		
	a) Bobath/Neuro Developmental Technique (N.D.T)		
	b) Rood's Technique		
	c) Proprioceptive Neuromuscular Facilitation (P.N.F)		
	d) Brunnstrom Technique		
	e) Motor Relearning Program Technique (M.R.P.)		
C	**Assessment of Movement Dysfunction**	**10**	**25**
	i. Higher Functions		
	ii. Cranial Nerves		
	iii. Sensation, sensory organisation and body image		
	iv. Joint Mobility		

	v. Tone		
	vi. Reflexes-Superficial & Deep		
	vii. Voluntary Control		
	viii. Muscle strength		
	ix..Coordination		
	x. Balance		
	xi. Endurance		
	xii. Trick movements		
	xiii. Limb length		
	xiv. Postural deviations		
	xv. Gait deviations due to neurological dysfunction		
	xvi. Functional Diagnosis using I.C.F.		
	xvii. Interpretation of Electro diagnostic, Findings, routine Biochemical Investigations		
D	**Electro diagnosis**	**10**	**30**
	Therapeutic current as a Tool for electro diagnosis: on patients	Test for S.D.C. & Faradic / Galvanic Test	
a	EMG and NCV Studies:		
	Electro-Myography Instrumentation with types of Electrodes		
	Normal & Abnormal E.M.G. pattern		
	● At rest		
	● On minimal contraction		
	● On maximal contraction		
	Nerve Conduction Studies		
	● Principles & Technique		
	● F wave		
	● H reflex		
b	Strength Duration Curve tests		
c	Faradic Galvanic Test,		

d	Test for sensory, Pain threshold and pain tolerance.		
E	**SCALES:**	**3**	**15**
	1. Berg Balance Scale (BBS)		
	2. Modified Ashworth scale (MAS)		
	3. Glasgow Coma Scale (GCS)		
	4.Dynamic Gait Index(DGI)		
	5. Mini Mental State Examination (MMSE),		
	6. Stroke Rehabilitation Assessment Movement (S T R E A M)		
	7. American Spinal Cord Injury Association (ASIA) Impairment Scale		
	8.Rancho Los Amigos Level of Cognitive Functioning Scale (RLA)		
	9.Unified Parkinson's Disease Rating Scale (UPDRS)		
	10.Hoehn & Yahr Scale		
	11.Functional Independence Scale (FIM), Barthel Index		

DOCUMENTATION:

A	**Documentation & Interpretation of following investigations:**
	i Electrodiagnosis: 2 each
	a) S.D.C.
	b) Faradic Galvanic Test
	c) E.M.G .& N.C.V Studies
	ii. Cardiovascular & Pulmonary :
	(1 each) A.B.G.,P.F.T.,E.C.G.,X-ray Chest, Exercise Tolerance Test (ETT)
	iii. Neurological Scales(1each)
	Modified Ashworth Scale, Berg's Balance,

	Dynamic Gait Index, Glasgow Coma Scale, Barthel Index, Functional Independence Scale, STREAM, Hoehn and Yahr Scale, UPDRS,MMSE, ASIA Impairment scale
B	**Case presentation with Functional Diagnosis:**
	Total 12 cases:- Three cases each in–
	a) Musculoskeletal
	b) Neurological
	c) Cardiovascular & Respiratory (Including General Medical & Surgical Cases)
	d) General & Community Health (Including Fitness & Health, Women & Child Health, Occupation Health)
	To maintain the Record/Journal of the term work & to get each assignment duly signed by respective Head of the Dept.

RECOMMENDED TEXT BOOKS:

1. Orthopaedic Physical Assessment, David J. Magee. Elsevier India
2. Clinical Electro Therapy, Nelson & Currier, Appleton & Lange Publisher
3. Clinical Neurophysiology: Nerve Conduction, Electromyography, Evoked Potentials, U.K. Misra, Elsevier India
4. Therapeutic Exercise: Foundations and Techniques, Lynn Allen Colby, Carolyn Kisner, John Borstad, F A Davis Co.
5. Physical Rehabilitation: Assessment and Treatment, Susan B. O'Sullivan, Thomas J. Schmitz , F A Davis Co.
6. Cardiovascular and Pulmonary Physical Therapy Evidence to Practice; Donna Frownfelter, Elizabeth Dean; Fifth Edition; Elsevier
7. Physiotherapy for Respiratory and Cardiac Problems: Adults and Pediatrics; Jennifer A Pryor, S Ammani Prasad
8. ACSM's Guidelines for Exercise Testing and Prescription, 11th Edition; Wolters Kluwer
9. Exercise Physiology: Nutrition, Energy and Human Performance; Eighth Edition; William D McArdle, Frank I. Katch, Victor L. Katch

RECOMMENDED REFERENCE BOOKS

1. **Maitland's book on Manual Therapy**, Maitland's Vertebral Manipulation: Management of Neuromusculoskeletal Disorders - 2 Vols Set. Elly Hengeveld, Kevin Banks BA MCSP SRP, Churchill Livingstone
2. **Mobilisation of Extremities – Kaltenborn** Manual Mobilization of the Joints: Joint Examination and Basic Treatment: The Extremities:Volume 1& 2, Freddy M. Kaltenborn, Olaf Evjenth, Traudi Baldauf Kaltenborn, Orthopedic Physical Therapy
3. Manual Therapy: Nags, Snags, Mwms, Etc.,by Brian R Mulligan (Author), Bateson Publishing Ltd
4. Cyriax's Illustrated Manual of Orthopaedic Medicine- James H. Cyriax, Butterworth-Heinemann Ltd
5. The Myofascial Release Manual , Carol J. Manheim, SLACK Incorporated
6. Electrodiagnosis in Diseases of Nerve and Muscle: Principles and Practice by Jun Kimura , OUP USA
7. Orthopaedic Physical Therapy, Robert A. Donatelli ,Churchill Livingstone publisher.
8. Exercise and the Heart, Nanette Kass Wenger , F.A. Davis Company
9. Exercise Physiology: Energy, Nutrition, and Human Performance (Exercise Physiology, William D. McArdle, Frank I. Katch , Victor L. Katch, Lippincott Williams & Wilkins
10. Facilitation Techniques Based on NDT Principles, Lois Bly, Allison Whiteside, Psychological Corp
11. Movement Therapy in Hemiplegia: A Neurophysiologic Approach, Signe Brunnstrom, Kathryn A. Sawner, Jeanne M. Lavigne, Lippincott Williams and Wilkins
12. Occupational Therapy for Physical Dysfunction, Catherine Anne Trombly, Mary Vining Radomski, Lippincott Williams and Wilkins
13. Infant Motor Development, Jan Piek, Human Kinetics Publishers
14. Neurology And Neurosurgery Illustrated, Kenneth W. Lindsay, Ian Bone, Geraint Fuller, Churchill Livingstone Publisher
15. Neuro-developmental Treatment Approach: Theoretical Foundations & Principles, Janet M. Howle, Osseum Entertainment
16. Fundamentals of Neurology: An Illustrated Guide, Thieme Publishers
17. Early Detection and Management of Cerebral Palsy ,by Sophie Levitt
18. Therapy for the Motor Disorders by Sophie Levitt

19. Illingworth's The Development of the Infant and Young Child Normal and Abnormal

20. Manual Therapy: Nags, Snags, Mwms, Etc- Brian R Mulligan, Bateson Publishing Ltd

INTERNAL ASSESSMENT:

1. Two exams Terminal and preliminary examination (Theory & Practical) of 80 marks each TOTAL - 160 marks
2. Internal Assessment To Be Calculated out of 20marks
3. In Practical's of Terminal & Preliminary examinations Spots will be 15 marks (3marks X 5) No marks will be allotted for the journal in Terminal & Preliminary examinations.
4. Internal assessment as per University Pattern

SCHEME OF UNIVERSITY EXAMINATION

THEORY **80 MARKS + I.A.– 20 MARKS** *The question paper will give appropriate weight age to all the topics in the syllabus.		**Mark** **100**
SECTION A	**Q-1 -Short Answer Question** Answer Any FOUR out of FIVE (4 x 5 Marks = 20) **Q-2 -Long Answer Question** Answer Any TWO out of THREE (2x 10 Marks =20**)** LAQ will be Based on Simulated case on ICF pattern, breakup of 10 marks should be given	**40**
SECTION B	**Q-1 -Short Answer Question** Answer Any FOUR out of FIVE (4 x 5 Marks = 20) **Q-2 -Long Answer Question** Answer Any TWO out of THREE (2x 10 Marks =20**)** LAQ will be Based on Simulated case on ICF pattern, breakup of 10 marks should be given	**40**
Total Marks		**80**

PRACTICAL 80 MARKS + I.A.– 20 MARKS		Marks 100
LONGCASE	[Time maximum 30 minutes for students for evaluation] 1. Psychomotor & affective: ● Skill of History taking [05marks] ● Skills of clinical examination [15marks] ● Skill of objective diagnostic procedure[10 marks] 2. Cognitive: ● Ability to justify bases for functional diagnosis by C.F. [15marks] [To be evaluated in cognitive, psychomotor and affective domains.]	**45**
SHORTCASE	**Two Short cases on** 1. Mobilisation Technique: Kaltenborn, Maitland, M.E.T. or Neural Mobilisation (On Models) [10marks] 2. Neuro Therapeutic Skills: N.D.T. / P.N.F. / Rood's / Brunnstrom (On Models) [10marks] **OR** Electro Diagnosis: S.D.Curve/ Faradic Galvanic Test (On Patient [10 marks] **OR** Exercise Tolerance Test: Six Minute Walk Test (On Model) [10marks]	**20**
SPOTS	**5 spots-(5 x 3 Marks=15 Marks) 3 minutes for each spot** a) X-ray (on section 2/3/4) b) Pulmonary Function Test c) Blood Gas Analysis d) E.C.G. e) E.M.G./ N.C.studies	**10**
JOURNAL	Documentations- Assessment, Evaluation, Diagnosis with I.C.F.	**5**
Total Marks		**80**

FOURTH BPTH SYLLABUS

TRANSCRIPT HRS. 1480

SN	SUBJECT & CODE	TOPIC		DIDACTIC HRS.
1	**PROFESSIONAL PRACTICE & ETHICS P101**	1	Introduction, Orientation , Concept, Ethical code of conduct, Communication skills, Law 7 Regulations , Ethics , Role of WCPT &Council , etc	**30**
2	**ADMINISTRATION, MANAGEMENT & MARKETING P401**	1	Management, Administration, Budget, Methods, Performance Analysis, Time Management, etc	**15**
3	**MUSCULOSKELETAL PHYSIOTHERAPY P402**	1	Bones – fractures & fracture-dislocations:	**212**
		2	Soft tissue injuries	
		3	Degenerative and inflammatory conditions	
		4	Infective conditions	
		5	Congenital & Acquired Deformities of extremities & spine Deformities	
		6	Amputations	
		7	Spinal conditions	
		8	Effects of spinal traction:	
		9	Osteoporosis	
		10	Orthopaedic surgeries:	
		11	Introduction to Bio-Engineering	

		12	Peripheral Nerve Injuries & Plexus Injuries complications& management	
		12	Sports Physiotherapy: Physical fitness.	
		14	Applied Yoga in orthopaedic conditions.	
4	**NEURO - PHYSIOTHERAPY P403**	1	Features of ICF model	**210**
		2	Theoretical basis of motor control and learning to understand various Neuro-physiotherapeutic approaches	
		3	Adaptive System: Plasticity of the intact brain	
			General methods of strength training, fitness and promotion of skill acquisition	
		4	Quality of Life scales & Independence Measures	
		5	Physiotherapy Management	
		A	**ADULT**	
		1	Stroke	
		2	(S.O.L.)	
		3	Spinal cord disorders –	
		4	Peripheral neuropathies –	
		5	Vestibular disorders –	
		6	Lower cranial nerve paralysis-	
		7	Demyelinating diseases -	
		8	Cerebellar diseases and coordination disorders-	

		9	Extrapyramidal diseases-	
		10	Anterior Horn Cell diseases-	
		11	Myopathies	
		12	Disorders of A.N.S. –	
		13	Infectious disorder of brain:	
		14	Psychosomatic pain & paralysis	
		15	Motor neuron diseases:	
		B	**PAEDIATRICS**	
		1	Cerebral palsy - Aetiology and type - assessment -differential diagnosis – management.	
		2	Down's syndrome	
		3	Neural tube defects: Spina Bifida and Hydrocephalus	
		4	Brachial plexus injuries	
		5	Infectious disorders	
		6	Post Poliomyelitis Residual Paralysis.	
		7	D.M.D. & other Myopathies	
		8	S.M.A. / H.S.M.N.	
		9	Paediatric extra pyramidal disorders	
		10	Non-epileptic attacks of childhood, Epilepsy in childhood	

5	**CARDIO-VASCULAR & RESPIRATORY PHYSIOTHERAPY P404**	1	Toxic, metabolic and environmental disorders:	**210**
		2	Investigation and exercise testing	
		3	Exercise physiology	
		4	Physiotherapy skills	
		5	PHYSIOTHERAPY MANAGEMENT in	
			a)Physiotherapy in Obstructive and Restrictive lung conditions	
			b)Physiotherapy in General Respiratory Infection	
			c)Physiotherapy rehabilitation in medical and surgical condition of Cardiovascular Diseases	
			d)Neonatal and Paediatric Physiotherapy	
			e)Management of breathlessness	
			f)Physiotherapy in Pulmonary Surgeries	
			g)Abdominal surgeries	
			h)Physiotherapy management following Oncological Surgeries	
			i)Musculoskeletal dysfunction	
			j)Management of Amputations	
			k)Management of Burns	
			l)Treatment, Response to exercise and Implications of Physiotherapy in the following disease conditions: Hypertension, Diabetes, Renal Failure and Obesity	

		6	ICU Evaluation and Management	
		7	Pulmonary rehabilitation	
		8	Cardiac rehabilitation	
		9	Drug therapy	
		10	Application of ICF model	
		11	Introduction to functional scales	
		12	Basic life support (C.P.C.R.)	
6	**COMMUNITY PHYSIOTHERAPY P405**	1	Health promotion	**210**
		2	Women's health	
		3	Geriatrics	
		4	Concepts of rehabilitation	
		5	Introduction to disaster management	
		6	Industrial health	
		7	Extension services and mobile units	
		8	Vocational training in rehabilitation	
		9	Screening and rehabilitation of paediatric disorders in the community	
		10	National district level rehabilitation programme	
		11	Role of voluntary Organizations in CBR	
		12	Role of Social work in CBR	
		13	Planning and management of CBR Programmes	
7	**PRINCIPLES OF BIO-ENGINEERING P406**	1	Introduction to bioengineering	**30**
		2	Biomechanical principles in designing of appliances & assessment; Procedures for static & dynamic alignment of the	

			Orthotics & Prostheses	
		3	Practical's & Project:	
8	**RESEARCH METHODOLOGY & BIOSTATISTICS P407**	1	Research In Physiotherapy	**30**
		2	Research Fundamentals	
		3	Writing A Research Proposal	
		4	Research Ethics	
		5	Overview Of Study Designs	
		6	Sampling	
		7	Basic Probability Distributions And Sampling Distributions	
		8	Tests Of Significance	
		9	Correlations And Regression	
		10	Statistical Data	
		11	Research Reports	
		12	Computer Applications	
9	**DIAGNOSTIC IMAGING FOR PHYSIOTHERAPY P408**	1	Image Interpretation	**20**
		2	Radiography	
		3	Fluoroscopy	
		4	Computed Tomography (CT)	
		5	Magnetic Resonance Imaging (MRI)	
		6	Ultrasound	
		7	Mammography	
		8	Endoscopy	
		9	Nuclear Medicine	

10	**SEMINAR**	1	(including I.C.F.) : Functional Diagnosis using International Classification of Function, Disability & Health (I.C.F.) to plan Short term and Long term goals in physiotherapy management of health condition of in Musculoskeletal Evaluation And Manipulative Skills, Cardio Vascular Respiratory Evaluation & Related Skills, Neurotherapeutic Evaluation & Electro Diagnosis, Community Based Rehabilitation	**48**
11	**SUPERVISED CLINICAL PRACTICE**	1	During each clinical assignment, the student shall evaluate, functionally diagnose, plan & practice clinical skills on patients in consultation with the qualified physiotherapist staff	**455**
12	**PROJECT WORK**			**10**
	TOTAL			**1480**

PROFESSIONAL PRACTICE AND ETHICS - P101
[DIDACTIC: 30 HRS]

(COLLEGE EXAMINATION)

COURSE OUTCOME:
At the end of this course, student will be able to:

a. Understand the Ethical Principles & Ethical code of conduct of Physiotherapy profession.
b. Develop psychomotor skills for inter professional communication and physiotherapist-patient relationship.
c. Understand Concept of professionalism and concept of morality, Ethics & Legality-rules of professional conduct & their Medico-legal & moral implications .
d. Understand need of Council Act for Physiotherapy role of WCPT.

OBJECTIVES: At the end of the course, the student will be compliant in following domains:

Cognitive: The student will

1. Be able to understand the moral values and meaning of ethics
2. Be able to learn and apply ethical code of conduct in fields of clinical practice, learning, teaching, research and physiotherapist-patient relationship
3. Acquire bedside manners and communication skills in relation with patients, peers, seniors and other professionals
4. Will acquire the knowledge of the basics in Managerial & Management skills, & use of information technology in professional Practice

Psychomotor: The student will be able to:

1. Develop psychomotor skills for physiotherapist-patient relationship
2. Develop the skill to evaluate and make decisions for plan of management based on sociocultural values and referral practice

Affective: The student will be able to:

1. Develop behavioural skills and humanitarian approach while communicating with Patients, relatives, society and co-professionals
2. Develop bedside behaviour, respect & maintain patients' confidentiality

S.N.	TOPICS	DIDACTIC HOURS
a.	Introduction to the history of Physiotherapy.	1
b.	Orientation to the curriculum, clinical areas and geographical location	2
c.	Concept of morality and ethics	3
d.	Concept of professionalism and Professional dress code	2
e.	Ethical code of conduct	2
f.	**Communication skills**- i) Physiotherapist –Patient Relationship	1
	ii) Interviewing -Types of interview, Skills of interviewing	1
g.	Collecting data on psychosocial factors in Medicine, Surgery, Reproductive Health, Paediatrics	2
h.	Inter professional communication	2
i.	Ethics in clinical practice	2
j.	Roles of Physiotherapist as patient manager, Consultant, Critical inquirer, Educator, Administrator	3
k.	Laws and regulations	2
l.	Professional development, competence and expertise	2
m.	Professional bodies	2
n.	Ethics in Research	1
o.	Ethics in Teaching	1
p.	Role of W.C.P.T. & Council	1

RECOMMENDED REFERENCE LITERATURE

1. Rules & Regulation of Indian
2.

RECOMMENDED BOOKS:

1. Association of Physiotherapists
2. W.C.P.T. ethics (from their website)
3. Gazette of Maharashtra Council for Occupational therapists & Physiotherapists

THEORY ONLY - ETHICS (College Exam) [There shall be no LAQ in this paper] *The question paper will give appropriate weightage to all the topics in the syllabus.		Marks 30
Section A	Q1. Answer any FIVE out of SIX [5 x 3MARKS]	15
Section B	Q2. Answer any FIVE out of SIX [5 x 3MARKS]	15
Total Marks		30

Passing in the examination is Mandatory

Grades: A+ = 75% & above, A = 66 to 74.5%, B + = 55 to 65 %, B = 50 to 54.5%, C = less than50%

ADMINISTRATION, MANAGEMENT & MARKETING - P401

[Didactic: 15 Hrs.]

(COLLEGE EXAMINATION)

COURSE OUTCOME:

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

a. Learn the Systematic, Scientific and conscious use of marketing principles in professional practice.
b. Learn the Methods of maintaining records, Budget planning and Time management.
c. Acquire Administration principles based on the Goal & functions at large hospital, rehabilitation centre set up.
d. Gain integrate knowledge in basic management and communication skills for effective physiotherapy practices.

OBJECTIVES: At the end of the course the student will be compliant in following domains:

Cognitive: The student will:

a. Learn the management basics in fields of clinical practice, teaching, and research and physiotherapy practice in the community.
b. Acquire communication skills in relation with patients, peers, seniors and other professionals & the community.
c. Acquire the knowledge of the basics in Managerial & Management skills, & use of Information technology in professional Practice

Psychomotor: The student will be able to:

S.N.	TOPICS	DIDACTIC HOURS
1	Management studies related to –local health care organization Management & structure, planning delivery with quality assurance & funding of service delivery information technology career development in Physiotherapy.	3
2	Administration-principles-based on the Goal & functions -at large hospital set up / domiciliary services/ private clinic /academics.	3
3	Methods of maintaining records	2
4	Budget-planning	2
5	Performance analysis--physical structure / reporting system [man power / status /functions / quantity & quality of services/turn overcast benefit revenue contribution.	2

6	Setting up Therapeutic gymnasium, Fitness clinics, Cardiac and Pulmonary Rehab centres etc.	2
7	Time management.	1

a. Develop psychomotor skills for physiotherapy practice.

b. Develop skill to evaluate and make decision for plan of management based on sociocultural values and referral practice.

Affective: The student will be able to:

Develop behavioural skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals.

RECOMMENDED REFERENCE BOOK

1. Administration for Physiotherapists-Pai

2. Principles of Hospital Administration-Sakharkar

SCHEME OF EXAMINATION

THEORY ONLY – ADMINISTRATION (College Exam) [There shall be no LAQ in this paper] *The question paper will give appropriate weightage to all the topics in the syllabus.		**Marks** 30
Section-A	Q1. Answer any FIVE out of SIX [5X 3 MARKS]	15
Section-B	Q2. Answer any FIVE out of SIX [5X 3 MARKS]	15
Total Marks		30
Passing in the examination is Mandatory Grades: A+ = 75% & above, A = 66 to 74.5%, B + = 55 to 65 %, B = 50 to 54.5%, C = less than50%		

MUSCULOSKELETAL PHYSIOTHERAPY- P402

(Didactic - 67 hours + Practical-145 hours)

TOTAL: 212 HOURS

(UNIVERSITY EXAMINATION)

Course Description:

Musculoskeletal Physiotherapy is a specialized area of Physiotherapy treating injuries and conditions which affect the bones, joints, and soft tissues.

Students will be able to develop advanced evaluative and problem-solving skills for the examination, assessment and treatment of patients with different musculoskeletal dysfunction using advanced manual therapy techniques, therapeutic exercises, taping and electrotherapy.

COURSE OUTCOMES:-

Students should able to,

- Understand relevant investigations technique which will help to diagnosed various orthopaedic conditions.
- Able to integrate theoretical knowledge with clinical assessment.
- Demonstrate clinical decision making ability and treat different musculoskeletal conditions.
- Plan & prescribe as well as acquire the skill of executing short & long-term goals of Physiotherapy treatment.
- Plan & prescribe physiotherapeutic treatment by selecting appropriate modes of Manual Therapy, Taping, Electro-Therapy, Therapeutic exercise & appropriate Ergonomic advice for various musculoskeletal conditions.

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

Cognitive:

a. Identify, evaluate, analyse & discuss primary and secondary musculo-skeletal dysfunction, based on biomechanical, kinesiological & patho-physiological principles.
b. Correlate the same with radiological, electrophysiological, biochemical/ haematological investigations as applicable & arrive at the appropriate Physiotherapy diagnosis with skilful evaluation of structure and function with clinical reasoning.
c. Understand the pharmaco-therapeutics, its interaction with physiotherapeutic measures and modify physiotherapeutic intervention appropriately.

d. Apply knowledge of psychosocial factors (personal and environmental factors in the context of disability associated with the musculo-skeletal system or multiple body systems) for behavioural and lifestyle modification and use appropriate training and coping strategies.

Psychomotor:

a. Apply theoretical basis of physiological effects, indications, contraindications; and best available evidence on the effectiveness, efficacy and safe application guidelines for a full range of physiotherapeutic strategies and interventions, including appropriate modes of soft tissue & joint mobilization, electrotherapy, therapeutic exercise, and appropriate ergonomic advise that can be employed to manage problems of the individual's structures, functions, activities and participation, capacity and performance levels associated with the musculo-skeletal system, for relief of pain & prevention, restoration and rehabilitation measures for maximum possible functional independence at home, workplace and in community.

b. Prescribe and train for appropriate orthoses, prostheses and walking aids based on musculoskeletal dysfunction.

Affective:

Acquire ethical skills by demonstrating safe, respectful and effective performance of physical handling techniques taking into account the patient's clinical condition, the need for privacy, the physiotherapist, the resources available and the environment.

Syllabus:

A. Use of ICF model (Bio, Psycho and Social) to plan Short term and Long term goals in physiotherapy management of health condition of musculoskeletal system a. Identification of short term and long term goals based on i) Capacity and Performance related to activities and participation to enhance functioning ii) Personal and Environment factors -facilitators and barriers that affect disablement and functioning b. Documentation of disability and functioning c. Red flags- Recognizing signs and symptom (2Hrs.)

B. a. Introduction to functional scales as outcome measures – Generic and Disease specific. (1Hrs.)

b. Evidence base practice in musculoskeletal health conditions- levels of evidence, clinical application (1Hrs.)

C. Biomechanical / Physiological basis of following modes physiotherapy interventions implemented during all three stages of tissue healing –

a. Electrotherapeutic modes for pain- acute and chronic pain syndromes, swelling, wound healing, re-education. (1Hrs.)

b. Therapeutic exercise to alleviate pain, increase mobility, muscle performance (strength) endurance, motor control, muscle length, posture and gait training. (1Hrs)

c. Taping techniques for pain relief, support and posture correction

i. Principles

ii. Indications / Contraindications

iii. Types of tapes and terminologies used

iv. Techniques

D. The following topics are applicable to all conditions related to musculo-skeletal dysfunction throughout lifespan in acute care setting , hospital, chronic conditions at home and in community on the basis of:

a. Evaluation, interpretation of investigations and appropriate clinical reasoning for Functional diagnosis (ICF).

b. Evidence-based analysis of tools and techniques, (including Quality of Life questionnaires), and planning, prescription & implementation of short term & long term goals of Physiotherapy with appropriate documentation of the same.

c. Application of appropriate electro therapeutic modes for relief of acute & chronic pain, swelling and for wound healing, muscle / movement re-education etc with clinical reasoning.

d. Application of appropriate exercise therapeutic modes for improving joint mobility, muscle strength & endurance and motor control.

e. Application of advanced therapeutic modes of manual mobilization techniques (non-thrust techniques to be applied on extremities only), Friction Massage, Myofascial Release, Muscle Energy Techniques and Neuro Dynamic Techniques on patients.

f. Application of appropriate therapeutic exercise using therapeutic gymnasium tools as and when indicated, for relief of pain, enhancing structural stability, strength & endurance, and functional maintenance &/ or restoration including posture correction and gait training including preventive measures.

g. Prescription of appropriate orthotic & prosthetic devices.

h. Various taping techniques for support & pain relief; principles, indications, contraindications, types of tapes used & relevant terminology.

i. Appropriate Home Program & Ergonomic advise for preventive measures & functional efficiency at home, work place and during recreation. Advice to Parents & Care Givers.

- Physiotherapy interventions with goal setting for dysfunctions due to impairments of Pain, Mobility, Muscle performance(Strength), Endurance, Motor Control, Muscle length, Posture and Movement Balance and Gait for common health conditions secondary to conservative or surgical management of the following regions, with appropriate consideration of red flags.
- Selection and application of physiotherapeutic techniques, manoeuvre's, modalities for preventive, curative and rehabilitative means in all conditions.
- Principles of various schools of thought in manual therapy. (Briefly Maitland and Mc kenzie).

E. PT assessment for Orthopaedic conditions - SOAP format.

Subjective - history taking, informed consent, personal, past, medical and socioeconomic history, chief complaints, history of present illness. Pain assessment- intensity, character, aggravating and relieving factors, site and location.

Objective - on observation - body built swelling, muscle atrophy, deformities, posture and gait.

On palpation- tenderness-grades, muscle spasm, swelling-methods of swelling assessment, bony prominences, soft tissue texture and integrity, warmth and vasomotor

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

Sr. No.	Topics	Didactic Hours	Practical Hours
1	**Bones – fractures & fracture-dislocations: -**	11	20
	Fractures - types, classification, signs and symptoms, complications. Fracture healing - factors affecting fracture healing. Principles of fracture management - reduction - open and closed, immobilization - sling, cast, brace, slab, traction - manual, mechanical, skin, skeletal, lumbar and Cervical traction, external fixation, functional cast bracing. PT management in complications - early and late - shock, compartment syndrome, VIC, fat embolism, delayed and mal union, RSD, myositis ossificans, AVN, pressure sores etc. Physiotherapy assessment in fracture cases.		
	Aims of PT management in fracture cases - short and long term goals. Principles of PT management in fractures - Guidelines for fracture treatment during period of immobilization and guidelines for treatment after immobilization period.		
	Specific fractures and dislocations:		
	PT assessment and management of upper limb fractures and dislocations.PT assessment and management of lower limb fractures and dislocations including pelvis.PT assessment and management spinal fractures.		
2	Soft **tissue injuries**	3	10
	(Refer Sport related soft tissue injury also), Contused lacerated wounds (CLWs), Burns complications and management, Crush injuries and its conservative and post-surgical management.		
3	**Degenerative and inflammatory conditions**	11	50
	Definition, signs and symptoms, clinical features, path physiology, radiological features, deformities, medical, surgical management. Describe the PT assessment and management and home program for the following conditions – Osteoarthritis - emphasis mainly on knee, hip and hand, Rheumatoid Arthritis, Ankylosing spondylitis, Gout, Perth's disease, Periarthritic shoulder.		
4	**Infective conditions**	3	6

	Definition, signs and symptoms, clinical features, pathophysiology, radiological features, medical, surgical management. Describe PT assessment and management for following conditions – Osteomyelitis – acute and chronic, Septic arthritis, pyogenic arthritis, TB spine and major joints - knee and hip.		
5	**Congenital & Acquired Deformities of extremities & spine Deformities**:	6	10
	Review in detail the extremities and postural abnormalities of spinal column the causes, signs and symptoms, radiological features, medical and surgical management. Describe the PT. assessment and management of the following conditions		
	Congenital: CTEV, CDH, Torticollis, Pes Planus, Pes Cavus and other common deformities.		
	Acquired: Scoliosis, Kyphosis, Coxa Vara, Genu Varum, Valgum & Recurvatum.		
	i. . **Cerebral palsy**: Definition, aetiology, classification, clinical features, complications, deformities, medical and surgical management and home program with special emphasis on carrying techniques. PT management after surgical corrections.		
	ii.**Poliomyelitis**: Definition, aetiology, types, pathophysiology, clinical features, deformities, medical and surgical management. PT assessment& management after surgical corrections and reconstructive surgeries - emphasis on tendon transfer and home program.		
	iii. **Leprosy**: Definition, cause, clinical features, medical and surgical management. PT assessment, aims, and management after surgical procedures such as tendon transfer both pre and post operatively.		
6	**Amputations**	4	8
	Definition, levels, indications, types, PT assessment, aims, management pre and post operatively. PT management with emphasis on stump care and bandaging.Pre and post prosthetic training, checking out prosthesis, complications of amputations and its management.		
7	**Spinal conditions**	4	8

	Review the causes, signs and symptoms, investigations, radiological features, neurological signs. PT assessment, aims, and management and home program of the following conditions: Cervical spondylosis, LumbarSpondylosis, Spondylolisthesis, Spinal canal stenosis, Spondylolysis, Sacro-iliac joint dysfunction, Sacralisation, Lumbarisation, Intervertebral disc prolapse, Coccydynia, SpinaBifida Occulta.		
8	**Effects of spinal traction:** types of traction, modes of application, indications for spinal traction, contraindications, precautions, limitations of traction.	1	2
9	**Osteoporosis -** causes, predisposing factors, investigations and treatment.	2	1
10	**Orthopaedic surgeries:** Pre and post-operative PT assessment, goals, precautions and PT management of following surgeries such as : Arthrodesis, Osteotomy, Arthroplasty-partial and total - Excision arthroplasty, excision arthroplasty with implant, inter positional arthroplasty and total replacement; Tendon transplant, Soft tissue release- tenotomy, myotomy, lengthening; Arthroscopy, Spinal stabilization, Re-attachment of limbs, External fixators, Synovectomy.	5	5
	a. Shoulder **joint:** Shoulder instabilities, TOS, RSD, Impingement syndrome - conservative and post-operative PT management. Total shoulder replacement and Hemi replacement. - Post operative PT management. AC joint injuries - rehabilitation.Rotator cuff tears-conservative and surgical repair. Subacromial decompression - Post operative PT management.		
	b. **Elbow and forearm**: Excision of radial head - Post operative PT management. Total elbow arthroplasty- Post operative PT management. 20. Wrist and Hand: Total wrist arthroplasty. Repair of ruptured extensor tendons. Carpal tunnel syndrome.Flexor and extensor tendon lacerations - Post operative PT management.		
	c. **Hip: Joint** surgeries - hemi and total hip replacement - Post operative PT management Tendonitis and bursitis. - Management.		
	d**. Knee:** Lateral retinacular release, chondroplasty- Post operative management. Realignment of extensor mechanism. ACL and PCL reconstruction surgeries - Post operative rehabilitation. Meniscectomy and		

	meniscal repair - Post operative management. Plica syndrome, patellar dysfunction and Hoffa's syndrome- conservative management.TKR-rehabilitation protocol.Patellar tendon ruptures and Patellectomy-rehabilitation.		
	e. **Ankle and foot**: Ankle instability. Ligamentous tears- Post operative management.		
11	**Introduction to Bio-Engineering** : Classification of Orthoses and prostheses; Biomechanical principles of orthotic and prosthetic application; Designing of upper extremity, lower extremity and spinal orthosis, indications and check out; Designing of upper extremity and lower extremity prostheses, indications and check out; Psychological aspects of orthotic and prosthetic application; prescription and designing of footwear and modifications; Designing and construction of adaptive devises.	5	10
12	**Peripheral Nerve Injuries & Plexus Injuries complications& management**	3	5
13	**Sports Physiotherapy: Physical fitness.**	7	10
	A). **Definition of Sports- Types of Sports** i Physical fitness Assessment & Evaluation:		
	a. Methods of evaluation: Interview, Clinical Examination,		
	b. Field Tests and Laboratory tests		
	c. Evaluation of motor skills (fundamental and sports specific skills)		
	ii. Principles of Training and exercise conditioning		
	iii. Anti-doping: a. (NADA,WADA)		
	iv. Sports Injuries, Prevention, Management And Rehabilitation		
	B). **Principles of Prevention of Sports Injuries:**		
	a. Protective devices		
	b. Technique		
	c. Play area and play surface		
	d. Shoes		

	C**). Sports emergency and first aid management**.		
	D**). Common sports injuries, mechanisms (causation), prevention and management:**		
	a. Soft tissue: i. Ligament ii. Muscle iii. Tendon		
	b. Hard tissue: i. Bone ii. Articular cartilage		
	c. **Stages of soft tissue healing.** Treatment guidelines for soft tissue injuries- Acute, Sub acute and chronic stages.		
	d. **Repair of soft tissues**- rupture of muscle, tendon and Ligamentous tears. Soft tissue injuries- prevention and rehabilitation of, Lateral ligament sprain of ankle. Rotator cuff injuries. Collateral and Cruciate injuries of knee. Meniscal injuries of knee. Supraspinatus and Bicipital tendonitis.Pre patellar and Sub-acromial bursitis.Tennis and Golfer's elbow. Hamstring strains, Quadriceps contusion, TA rupture. Dequervain's tenosynovitis. Trigger and Mallet finger. Plantar fasciitis. Wrist sprains.		
14	Applied Yoga in orthopaedic conditions**.**	2	

PRACTICAL –

Practical shall be conducted for all the relevant topics discussed in theory in the following forms:

1. Bedside case presentations and case discussions
2. Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.

CLINICAL: SUPERVISED CLINICAL PRACTICE: (141Hrs)

During this supervised clinical practice, student should be able to successfully execute the competencies in assessment, Functional diagnosis on ICF basis, plan of care and therapeutic interventions relating to musculo-skeletal dysfunctions. Student should become familiar with performance of these skills in all settings (inpatient and outpatient) as well as on all types of conditions (surgical, non-surgical, paediatric and geriatric). Student should learn to perform these skills objectively under the supervision of trained physical therapists. Student is required to keep a performance record of all listed competencies during the clinical practice and successfully perform on real patients during the final evaluation of the course.

CLINICAL COMPETENCIES:

A.COMPETENCY IN ASSESMENT AND CLINICAL REASONING:

Student should be able to apply the ICF framework in selecting measurement tools to ensure a holistic approach to evaluation of body structure and function, activities, participation; and select and administer assessment/evaluation tools and techniques suitable for the patient's problems and condition(s) based on the best available evidence and interpret the information obtained demonstrating evidence-based decision-making and safe handling technique such as:

a. Risk factor screening (Red flags & Yellow flags).
b. Assessment of Musculo-skeletal dysfunction.
c. Interpretation of Radiological, Electrophysiological, Haematological and Biochemical investigations.
d. Aerobic fitness and Functional performance testing as appropriate
e. Identification and quantification of environmental and home barriers and facilitators
f. Identification and analysis of body mechanics during self-care, home management, work, community, tasks, or leisure activities.
g. Identification and analysis of ergonomic performance during work
h. Assessment of Quality of Life through use of appropriate questionnaire and generic or disease-specific scales (nice to know)
i. Identification and prioritization of impairments in body functions and structures, and activity limitations and participation restrictions to determine specific body function and structure, and activities and participation towards which the intervention will be directed
j. State the evidence (patient/client history, lab diagnostics, tests and measures and scientific literature) to support a clinical decision.
k. Determine the predicted level of optimal functioning and the time required to achieve that level. 12. Recognize barriers that may impact the achievement of optimal functioning within a predicted time frame and ways to overcome them when possible

B. COMPETENCY IN DEVELOPING PLAN OF CARE:

Student should be able to:

a. Identify patient goals and expectations.
b. Design a Plan of Care with measurable functional goals (short-term and long-term) that are prioritized and time bound.
c. Consult patient and/or caregivers to develop a mutual agreement regarding the plan of care.

d. Identify indications/ additional needs for consultation with other professionals & appropriate referrals.

e. Select the interventions that are safe, realistic and meet the specified functional goals and outcomes in the plan of care:

i. Identify precautions and contraindications,

ii. Provide evidence for patient-centred interventions that are identified and selected,

iii. Define the specificity of the intervention (time, intensity, duration, and frequency).

f. Measure and monitor patient response to intervention and modify elements of the plan of care and goals in response to changing patient/client status, as needed.

g. Establish criteria for discharge based on patient goals and current functioning and disability.

C. COMPETENCY IN PHYSIOTHERAPEUTIC INTERVENTION:

Important influences on Musculo-skeletal physiotherapy management choices may include but not limited to:

1. Diverse settings of care including critical, acute, long term, rehabilitation, and community care;
2. Lifespan issues ranging from the neonatal stage to those associated with aging;
3. Life style modification for diseases and for prevention
4. Skill of application of physical and electrical agents for relief of acute & chronic pain and swelling.
5. Facilitation, re-education and training of muscle strength, endurance & motor control, posture and gait through skilful use of various therapeutic exercise techniques with appropriate therapeutic gymnasium equipment.
6. Skill of application of therapeutic modes of improving joint mobility and soft tissue flexibility like joint mobilization techniques and soft tissue techniques like Muscle Energy Techniques, Myofascial Release, Friction Massage, Neuro Dynamic Techniques etc.
7. Functional training in self-care, home, work (job, school and play), community and leisure activities

DOCUMENTATION:

Presentation & Documentation of 8 Cases (4 traumas, 4 cold) for patient management using ICF model as following: (Assessment, Evaluation, Diagnosis, Prognosis, Intervention, Outcome)

a. Soft tissue lesion

b. Fractures of upper Limb (Including Hand Injury),

c. Fractures of lower limb,

d. Fractures of spine with/without Neurological condition

e. Degenerative/ Inflammatory arthritis of peripheral skeletal joint

f. Degenerative /inflammatory arthritis of Spine

g. Musculoskeletal condition of Hand & Foot

h. Amputation

RECOMMENDED TEXT BOOKS

1. Therapeutic Exercise - O'Sullivan
2. Orthopaedic Physical Therapy - Donatelli
3. Cash's Textbook of Orthopedics & Rheumatology for Physiotherapists
4. Tidy's Physical Therapy
5. Manual Mobilization of Extremity Joints - Kaltenborn
6. Therapeutic Exercise: Foundations and Techniques - Kolby & Carolyn Kisner
7. Physical Rehabilitation - Susan O'sullivan

RECOMMENDED REFERENCE BOOKS

1. Manual Therapy: Nags, Snags, MWMs, etc - 6th Edition Brian R Mulligan
2. Maitland's Peripheral Manipulation Elly Hengeveld
3. Neural tissue mobilization – Butler
4. Brukner & Khan's Clinical Sports Medicine - Peter Brukner, Karim Khan (Mcgraw Medical)
5. TherapeuticExercise: Moving Toward Function - Carrie M. Hall, Lori Thein Brody
6. Manual Mobilization of Extremity Joints -Kaltenborn
7. Neural Tissue Mobilization - Butler
8. Taping Techniques –Rose Mac Donald
9. Clinical Orthopaedic rehabilitation-Broadsman

SCHEME OF EXAMINATION

THEORY- MUSCULOSKELETAL PHYSIOTHERAPY 80 MARKS + I.A. – 20 MARKS		Marks
* The question paper will give appropriate weightage to all the topics in the syllabus		100
Section A	* Based on topics- structured question based on ICF model with emphasis to goal setting and treatment intervention Q-1. LAQ- Answer any TWO out of THREE (2 x 10 Marks = 20) Q-2. SAQ - Answer any FOUR out of FIVE (4 x 5 Marks = 20)	40
Section B .	* Based on topics- structured question based on ICF model with emphasis to goal setting and treatment intervention. Q-3. LAQ- Answer any TWO out of THREE (2 x 10 Marks = 20) Q-4. SAQ - Answer any FOUR out of FIVE (4 x 5 Marks = 20)	40
Total Marks		80

PRACTICAL - MUSCULOSKELETAL PHYSIOTHERAPY 80 MARKS + I.A. – 20 MARKS		Marks
		100
LONG CASE	a. Subjective and Physical Examination -10 marks b. Evaluation and Physical therapy diagnosis (ICF) – 10 marks c. Plan of care - Goal setting – 10 marks d. Demonstration of any one important test and treatment intervention on patient –15 marks [Student will be evaluated in cognitive, psychomotor and affective domains.]	45
SHORT CASE	One Short case on: Demonstrations of two physiotherapy intervention skills for effective patient management 2 x 10 marks	20
SPOTS	5 spots - (5 x2 Marks= 10 Marks) 3 minutes for each spot X– ray of extremities and spine, Orthoses, Prostheses, Metal Implant	10
JOURNAL	Documentations- Assessment, Evaluation, Diagnosis, Prognosis, Intervention of Case along with ICF	05
Total Marks		80

NEUROPHYSIOTHERAPY- P403
(Didactic 76 hrs. + Clinical 134 hrs.)
TOTAL 210 HRS
UNIVERSITY EXAMINATION

COURSE DISCRIPTION:

This course was designed to develop skills in identifying and analyzing the patient condition and able to decide functional goals and plan appropriate neuro-physiotherapeutic intervention based on evidence to enhance activity and participation of the patient in the routine life and in community and work place as well. This subject includes topics such as use of ICF model, application of functional scales, disease specific topics Stroke, Acquired brain injury, Spinal cord disorders, Peripheral neuropathies, Vestibular disorders, Lower cranial nerve paralysis, Demyelinating diseases, Cerebellar diseases and coordination disorders, Extrapyramidal diseases, Anterior Horn Cell diseases, Myopathies, Disorders of A.N.S. Infectious disorder of brain, Motor neuron diseases, etc, is addressed with all interventions.

COURSE OUTCOMES:-

Students should able to,

- Understand relevant investigations technique which will help to diagnosed various Neurological condition conditions.
- Able to integrate theoretical knowledge with clinical assessment and Developed clinical decision making ability and treat different neurological conditions.
- Acquire the knowledge of normal neurodevelopment, with specific reference to locomotion.
- Assess, identify & analyse Neuro-motor & psychosomatic dysfunction in terms of alteration in the muscle tone, power, coordination, involuntary movements.
- Plan, prescribe & execute short term & long term treatment, with special reference to relief of Neuropathic & psycho-somatic pain, mat exercises, functional re-education, gait training, postural & functional training for A.D.L., ergonomic.

OBJECTIVES: At the end of the course, student will

Cognitive:

a. Be able to identify and analyze movement dysfunction due to neuromuscular skeletal disorders in terms of biomechanical and biophysical basis, correlate the same with the health condition,

routine electrophysiological, radiological and biochemical investigations, and arrive at appropriate physical therapy diagnosis using WHO-ICF with clinical reasoning.

b. Be able to plan realistic goals based on the knowledge of prognosis of the disease of the nervous system and prescribe appropriate, safe evidence based physiotherapy interventions with clinical reasoning.
c. Understand infection control principles, best practices and techniques applicable to a range of setting where clients with neurological conditions would receive physiotherapy services.
d. Know determinacy of health (environmental, nutritional, self-management/ behavioral factors) and chronic disease management principles related to neurological health.

Psychomotor:

a. Be able to develop psychomotor skills to implement timely and appropriate physiotherapy assessment tools/techniques to ensure a holistic approach to patient evaluation in order to prioritize patient's problems.
b. Be able to select timely physiotherapeutic interventions to reduce morbidity and physiotherapy management strategies, suitable for the patients' problems and indicator conditions based on the best available evidence.
c. Implement appropriate Neuro-physiotherapeutic approaches, electrotherapeutic modalities, joint and soft tissue mobilizations and ergonomic advice for neuromuscular skeletal systems, contextual factors to enhance performance of activities and participation in society.

Affective:

a. Be able to develop behavioural skills and humanitarian approach while communicating with patients, relatives, society and co-professionals, to promote individual and community health.

S.N.	TOPICS	DIDACTIC HOURS	PRACTICAL HOURS
A	**Features of ICF model:** To plan realistic, measurable and functional short term and long term goals to enhance functioning in a patient with health condition of nervous system.	2	
	a) Clinical utility of bi-directional relationships among the ICF model's domain		
	b) Environment and Personal factors Facilitators and Barriers that affect disablement and functioning		

	c) Capacity and Performance related Activities and Participation to enhance Functioning		
	d) d. Set patient specific goals and expected outcome with clinical reasoning		
	e) e. Documentation of disability and functioning Red flags-recognizing signs and symptoms		
B	Theoretical basis of motor control and learning to understand various Neuro-physiotherapeutic approaches	2	
C	a) Plasticity of the intact brain	5	
	i. Motor learning		
	ii. Training		
	iii. Plasticity		
	• Plasticity following brain lesion		
	• Nature of spontaneous recovery		
	• Effect of environment behaviour and recovery.		
	• Adaptation of motor performance		
	• Muscle adaptation		
	b) Strength training and physical conditioning in Neuro-rehabilitation to optimize functional performance		
	c) Skill acquisition in restoration of functional performance		
	• Information, instruction, demonstration.		
	• Feedback		
	• Practice		
D	**Quality of Life scales & Independence Measures**	2	
i	Evaluation, interpretation of investigations and appropriate clinical reasoning for Functional diagnosis (I.C.F.).		
ii	Evidence-based analysis of tools and techniques, (including Quality of Life questionnaires), and planning, prescription & implementation of short term & long term goals of Physiotherapy with appropriate documentation of		

	the same.		
iii	Manifestation of movement dysfunction following disease or trauma of the central or peripheral nervous system.		
	a. Bed mobility		
	b. lying to sitting		
	c. standing up and sitting down		
	d. walking		
	e. balance		
	f. reaching		
	g. manipulation		
iv	Selecting appropriate assessment/evaluation tools and techniques suitable for the patients' health condition and key indicators and interpret information obtained demonstrating evidence based decision making-use of biomechanical measures, generic scales/instruments to measure arousal, cognition, sensation, tone, strength, locomotion and balance, upper extremity function, anxiety and depression, quality of life and independence, Self-assessment and self-efficacy scales and common disease specific scales.		
	GCS		
	Mini Mental State Examination		
	Ashworth scale		
	Gait-D.G.I.		
	Balance- BBS, Functional Arm Reach Test.		
	T.U.G.		
	Barthel A.D.L. index		
	SF – 36		
	Disease specific measures – S.T.R.E.A.M., Brunnstrom, Fugl–Meyer assessment. A.S.I.A. Scale, U.P.D.R.S., E.D.S.S.		

E	PHYSIOTHERAPY MANAGEMENT – ADULT Planning of short term and long term goals in accordance with ICF for all the conditions in neurosciences by doing detail assessment and appropriate outcome measures and planning evidence based treatment program-for key indicator conditions		
SN	**TOPICS**	**DIDACTIC HOURS**	**PRACTICAL HOURS**
1	**Stroke– C**erebral circulation, types of stroke and manifestations, assessment and management.	6	10
2	Acquired brain injury- trauma and pathology (S.O.L.)	3	5
3	**Spinal cord disorders** – traumatic and non – traumatic, management including bladder training	4	8
4	**Peripheral neuropathies** –(Didactic 06 hours + 08 Clinical hours = 14 hours) traumatic & non traumatic - upper limb & lower limb - brachial plexus - nerve root lesions - metabolic & endocrine	6	8
5	**Vestibular disorders** – central and peripheral	2	5
6	**Lower cranial nerve paralysis-** Etiology, clinical features, investigations, and management of following disorders - lesions in trigeminal nerve, trigeminal neuralgia, trigeminal sensory neuropathy, lesions in facial nerve, facial palsy, bell's palsy, hemi facial spasm, Glossopharyngeal neuralgia. Dysphagia – swallowing mechanisms, causes of dysphagia, symptoms, examination, and management of dysphagia.	3	5
7	**Demyelinating diseases** - Multiple Sclerosis & G.B. syndrome	2	5
8	**Cerebellar diseases and coordination disorders-** Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Congenital ataxia, Friedreich's ataxia, Ataxia talengiectasia, Metabolic ataxia, Hereditary	2	8

	cerebellar ataxia, Tabesdorsalis and Syphilis		
9	**Extrapyramidal diseases-** Parkinson's disease, Dystonia, Chorea, Ballism, Athedosis, Tics, Myoclonus and Wilson's disease	3	8
10	**Anterior Horn Cell diseases**- Heredity and acquired e.g. M.N.D., P.M.A., S.M.A., Poliomyelitis, post-polio syndrome	2	6
11	**Myopathies**	2	8
12	**Disorders of A.N.S.** – Horner's syndrome, Hypo/Hypertension, Autonomic Dysreflexia s	1	5
13	**Infectious disorder of brain**: Meningitis, Encephalitis, Septic encephalopathy, AIDS, Rheumatic fever, Brucellosis, Tetanus, and Pertussis.	2	2
14	**Psychosomatic pain & paralysis**	1	3
15	**Motor neuron diseases**: Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications of following disorders - Amyotrophic lateral sclerosis, Spinal muscular atrophy, Hereditary bulbar palsy, Neuromyotonia and Post-irradiation lumbosacral polyradiculopathy.	3	6
16	**Toxic, metabolic and environmental disorders: .** Etiology, risk factors, classification, neurological signs & symptoms, investigations, management, of following disorders – Encephalopathy, Alcohol toxicity, Recreational drug abuse, Toxic gases & Asphyxia, Therapeutic & diagnostic agent toxicity, Metal toxicity, Pesticide poisoning, Environmental & physical insults, Pant & Fungal poisoning, Animal poisons, & Complications of organ transplantation.	3	3

PHYSIOTHERAPY MANAGEMENT – PAEDIATRIC

Knowledge of developmental neurology, plasticity in development, Aetiology, Pathophysiology of common Neuro-paediatric conditions, impairment, clinical reasoning, goal setting & P.T. management. More emphasis should be given on physiotherapy management skills.

S.No	Topics	Didactic Hours	Practical Hours
1	Cerebral palsy - Aetiology and type -assessment -differential diagnosis –management.	8	10
2	Down's syndrome	1	5
3	Neural tube defects: Spina Bifida and Hydrocephalus	2	10
4	Brachial plexus injuries	1	2
5	Infectious disorders	1	1
6	Post Poliomyelitis Residual Paralysis.	1	1
7	D.M.D. & other Myopathies	2	5
8	S.M.A. / H.S.M.N.	1	1
9	Paediatric extra pyramidal disorders	1	4
10	Non-epileptic attacks of childhood, Epilepsy in childhood	2	

Treatment Programme includes:

1. Application of appropriate electro-therapeutic modes for relief of pain and functional re-education with clinical reasoning.
2. Application of skills as Neuro-therapeutic approaches (Brunnstrom, Roods, Bobath, N.D.T., and M.R.P., mental imagery, and Constraint induced movement therapy, learning transfers), co-ordination and balancing exercise by using techniques based on neurophysiological principles.
3. Tools and adaptive equipment's used for Neuro-rehabilitation like Vestibular balls Tilt boards, Bolsters, Wedges, Graded Benches, Therapeutic mats etc.
4. Application of transfer and functional re-education exercise, postural exercise and gait training.
5. Bladder and bowel training
6. Developing a philosophy for caring

7. Prescription for appropriate orthotic devices and fabrication of temporary splints
8. Lifting techniques, wheel chair modifications, adaptive devices
9. Ergonomic advice for prevention/rehabilitation for the patients as well as for parents/care givers education about handling of patients.
10. Introduction to virtual reality training, functional electrical stimulation, sensory integration training.

CLINICAL SUPERVISED CLINICAL PRACTICE:

During the supervised clinical practice, student should be able to successfully execute the competencies in assessment, physical diagnosis on ICF basis, plan of care and therapeutic interventions relating to neuromuscular dysfunctions. Student should become familiar with performance of these skills in all settings (inpatient and outpatient) as well as on all types of conditions (surgical, non-surgical, paediatric and geriatric). Student should learn to objectively perform these skills under the supervision of trained physical therapists. Student is required to keep a performance record of all listed competencies during the clinical practice and successfully perform on real patients during the final evaluation of the course.

CLINICAL COMPETENCIES:

A] COMPETENCY IN ASSESMENT AND CLINICAL REASONING:

Student should be able to apply the ICF framework in selecting measurement tools to ensure a holistic approach to evaluation of body structure and function, activities, participation; and select and administer assessment/evaluation tools and techniques suitable for the patient's problems and condition(s) based on the best available evidence and interpret the information obtained demonstrating evidence-based decision-making and safe handling technique such as:

1. Risk factor screening (Red flags & Yellow flags).
2. Assessment of Neuromuscular dysfunction.
3. Interpretation of Radiological, Electrophysiological, Haematological and Biochemical investigations.
4. Identification and quantification of environmental and home barriers and facilitators
5. Identification and analysis of body mechanics during self-care, home management, work, community, tasks, or leisure activities.
6. Identification and analysis of ergonomic performance during work (job/school/play):
7. Assessment of Quality of Life through use of appropriate questionnaire and generic or disease-specific scales (nice to know)

8. Identification and prioritization of impairments in body functions and structures, and activity limitations and participation restrictions to determine specific body function and structure, and activities and participation towards which the intervention will be directed
9. State the evidence (patient/client history, lab diagnostics, tests and measures and scientific literature) to support a clinical decision.
10. Determine the predicted level of optimal functioning and the time required to achieve that level.
11. Recognize barriers that may impact the achievement of optimal functioning within a predicted time frame and ways to overcome them when possible.

B] COMPETENCY IN DEVELOPING PLAN OF CARE:

Student should be able to:

1. Identify patient goals and expectations.
2. Design a Plan of Care with measurable, prioritized and time bound functional goals (short-term and long-term)
3. Consult patient and/or caregivers to develop a mutual agreement regarding the plan of care.
4. Identify indications/ additional needs for consultation with other professionals & appropriate referrals.
5. Select the interventions that are safe, realistic and meet the specified functional goals and outcomes in the plan of care: -

(a) Identify precautions and contraindications,

(b) Provide evidence for patient-centred interventions that are identified and selected,

(c) Define the specificity of the intervention (time, intensity, duration, and frequency).

6. Measure and monitor patient response to intervention and modify elements of the plan of care and goals in response to changing patient/client status, as needed.
7. Establish criteria for discharge based on patient goals and current functioning and disability.

C] COMPETENCY IN PHYSIOTHERAPEUTIC INTERVENTION:

Important influences on neuromuscular physiotherapy management choices may include but not limited to:

1. Diverse settings of care including critical, acute, long term, rehabilitation, and community care;
2. Lifespan issues ranging from the neonatal stage to those associated with aging
3. Life style modification for diseases and for prevention.

4. Skill of application of physical and electrical agents for relief of acute & chronic pain and swelling.
5. Facilitation, re-education and training of muscle strength, endurance & motor control, posture and gait through skilful use of various therapeutic exercise techniques with appropriate therapeutic gymnasium equipment.
6. Skill of application of Neuro-therapeutic modes of improving neuromuscular strength, endurance, movement control, coordination.
7. Functional training in self-care, home, work (job, school and play), community and leisure activities

CLINICAL SKILLS:

Learning of facilitatory and inhibitory Neuro-therapeutic techniques related to adult and paediatric neurological conditions

- Sensory testing – Sensory Re-education
- MMT / voluntary control – muscle re-education
- Use of appropriate electrical modalities for muscle re-education / pain relief
- Management of tone • Postural assessment & postural correction
- Transfer training
- Functional re-education
- Gait assessment- gait training
- Co-ordination testing & training
- Strategies for balance training
- Fitness training for patients having neurological problems.
- Use of outcome measures & quality of life questionnaire.

RECOMMENDED TEXT BOOKS:

1. Cash's Text book for Physio Therapist in Neurological disorders-Jaypee bros.
2. Proprioceptive Neuro muscular Facilitation – Herman Kabat
3. Practical Physical Therapy – Margaret Hollis
4. Therapeutic exercise – O'Sullivan
5. "Right in the middle" – Patricia Davis
6. Stroke rehabilitation – Margaret Johnstone
7. Paediatric Physiotherapy – Roberta Shepherd.

RECOMMENDED REFERENCE BOOKS:

1. Neurological rehabilitation – Darcy Umphred
2. Paediatric physical therapy – Stephen Tecklin
3. Brain's disorders of Nervous system
4. Paediatric Physiotherapy – Sophie Levitt Neurological Rehabilitation - Optimising Motor Performance – Carr and Shepherd
5. Neurology and Neurosurgery Illustrated, **By** Kenneth W. Lindsay **,** Ian Bone**,** Geraint Fuller

SCHEME OF EXAMINATION

THEORY - **NEURO - PHYSIOTHERAPY** 80 MARKS + I.A. – 20 MARKS * The question paper will give appropriate weightage to all the topics in the syllabus.		**Marks** 100
Section A	Q-1 - Answer any TWO out of THREE **[2 x 10 = 20]** (U.M.N. condition (adult / paediatric)) Q-2- Answer any FOUR out of FIVE **[4 x 5 = 20]**	40
Section B	Q.3 - Answer any TWO out of THREE **[2 x 10 = 20]** (L.M.N. condition (adult / paediatric) Q-4-- Answer any FOUR out of FIVE **[4 x 5 = 20]**	40
Total Marks		80

PRACTICAL - **NEURO PHYSIOTHERAPY** 80 MARKS + I.A. – 20 MARKS		**Marks** 100
LONG CASE	a. Subjective and Physical Examination -10 marks b. Evaluation and Physical therapy diagnosis (ICF) – 10 marks c. Plan of care - Goal setting – 10 marks d. Demonstration of any one important test and treatment intervention on patient –15 marks [Student will be evaluated in cognitive, psychomotor and affective domains.]	45
SHORT CASE	One Short case on: Demonstrations of two physiotherapy intervention skills for effective patient management 2 x 10 marks	20
SPOTS	5 spots - (5 x2 Marks= 10 Marks) 3 minutes for each E.M.G./N.C.V Studies Orthoses/ Prostheses Neurological assessment, Scales	10
JOURNAL	Documentations- Assessment, Evaluation, Diagnosis, Prognosis, Intervention of Case along with ICF	05
Total Marks		80

CARDIO-VASCULAR & RESPIRATORY PHYSIOTHERAPY- P404

(INCLUDING CRITICAL CARE)

(Didactic–64 Hrs. + Clinical 146 Hrs.)

TOTAL 210 HRS

(UNIVERSITY EXAMINATION)

COURSE OUTCOMES: - At the end of the course Student should be able,

1. To acknowledge the difference in Anatomy and Physiology of adult and pediatric cardiopulmonary system.
2. To interpret investigations related to cardiopulmonary system and correlate them clinically.
3. To understand basics of Exercise Physiology and its relation to health and sickness.
4. To diagnose and frame physiotherapeutic management in cardiopulmonary conditions.
5. To apply appropriate Physiotherapeutic techniques to various clinical conditions and interpret with correct outcome measures.

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

Cognitive:

a. Identify and analyse cardio-vascular & pulmonary dysfunction in terms of biomechanical, and Bio-physical basis and correlate the same with the Health condition, routine electrophysiological, radiological, and biochemical investigations and arrive at appropriate Physical therapy diagnosis using WHO-ICF tool (Disability, Functioning and contextual factors) with clinical reasoning.

b. Plan, prescribe appropriate, safe physiotherapy interventions with clinical reasoning for and prevention of impairments, activity limitations, participation restrictions and environmental barriers related to cardio-vascular & pulmonary dysfunction in acute care settings, at home , work place, in society & in leisure activities.

Psychomotor:

a. Utilise skills such as executing exercise tests, PFT, Ankle brachial index, arterial & venous insufficiency tests

b. Utilise psychomotor skills to implement appropriate bronchial hygiene therapy, therapeutic exercise, electrotherapeutic modalities, CPCR, Intensive (critical) care, joint and soft tissue mobilisations, offering ergonomic & energy conservation advice for patients with cardio-vascular & pulmonary dysfunction.

c. Utilise the knowledge about contextual factors to enhance capacity and performance of activities and participation in society

d. Utilise the skill to deliver cardiac, pulmonary & vascular rehabilitation

Affective:

a. Develop behavioural skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals

b. Develop bed side behaviour, respect & maintain patients' confidentiality

SR.NO	TOPICS	DIDACTIC HOURS	PRACTICAL HOURS
1	**BASIC APPLIED ANATOMY & PHYSIOLOGY**	3	
	a. Anatomical and Physiological differences between the Adult and Paediatric lung. b. Pulmonary Anatomy & Physiology , Cardiac anatomy & Physiology c. Cardiac and Respiratory Pharmacology d. Biomechanics of Thorax (Revision)		
2	**INVESTIGATION AND EXERCISE TESTING**	4	10
	a. Investigation & Clinical Implication - X-ray, PFT,ABG, ECG, ABI claudicationtime, pulses, auscultation ,postural, hypotension, Hematological and Biochemical Tests. b.Stress, testing i. 6 Minute Walk test &Harward Step test Skill & Interpretation ii. Shuttle Walk Test & Modified Bruce Protocol (interpretation only)		
3	**EXERCISE PHYSIOLOGY**	5	10
	i. Nutrition (Bioenergetics) ii. Total energy expenditure (MET) sources iii. Acute and chronic adaptation to exercise iv. Complication of bed rest/ Immobilization & prevention v. Aerobic & Anaerobic Training, vi. Principles of Exercise Prescription		

4	**PHYSIOTHERAPY SKILLS**	**8**	**34**
	a) Physiotherapy techniques to increase lung volume – controlled mobilization, positioning, breathing exercises, Neurophysiological Facilitation of Respiration, Mechanical aids - Incentive Spirometry, CPAP,IPPB. Physiotherapy techniques to decrease the work of breathing – Measures to optimize the balance between energy supply and demand, positioning to improve ventilation & perfusion matching, Breathing re-education – Breathing control techniques, mechanical aids – IPPB, CPAP, BiPAP, Therapeutic positioning to alleviate dyspnoea, Lung Expansion Therapy, Neurophysiologic facilitation of respiration, Forced Expiratory Technique, Therapeutic exercise program to strengthen respiratory muscles b) Physiotherapy techniques to clear secretions – Hydration, Humidification & Nebulisation, Mobilisation and Breathing exercises, Postural Drainage, Manual techniques – Percussion, Vibration and Shaking, Rib Springing, ACBT, Autogenic Drainage, Mechanical Aids – PEP, Flutter, IPPB, Facilitation of Cough and Huff, Nasopharyngeal Suctioning. c) Therapeutic exercise program to alleviate pain, to strengthen respiratory muscles, to achieve mobility, to correct posture and improve peripheral circulation. d) Deliver Ergonomic advice, energy conservation advice, Home exercise Program, & modifications of contextual factors. e) Applied Yoga in Cardio-respiratory conditions f) Electrotherapeutic modalities for pain, swelling, &wound healing. g) Home program and education of family members in patient care.		
5	**PHYSIOTHERAPY MANAGEMENT in**	**22**	**57**
	a) Obstructive and Restrictive lung conditions	2	10

	i. Bronchitis ii. Emphysema iii. Bronchial Asthma iv. Cystic Fibrosis v. Occupational lung diseases vi. Interstitial Lung Diseases		
	b) Physiotherapy in General Respiratory Infection	2	10
	i. Tuberculosis ii. Pneumonia iii. Lung Abscess iv. Bronchiectasis v. Pneumothorax vi. Hydro pneumothorax vii. Atelectasis viii. Pleuritis ix. Pleural Effusion x. Empyema & other Pleural Disorders		
	c) Physiotherapy rehabilitation in medical and surgical condition of Cardiovascular Diseases	3	5
	i. Hypertension ii. I.H.D. , Myocardial Infarction iii. Valvular Heart Disease iv. Congenital v. Acquired v. Thrombosis, Phlebitis and Phlebothrombosis. vi. Varicose Veins and ulcers viii. Other Arterial disorders		
	d) Neonatal and Pediatric Physiotherapy	2	6
	Chest physiotherapy for children, The neonatal unit, Modifications of chest physiotherapy for specific neonatal disorders, Emergencies in the ARDS. i. Meconium aspiration		

	ii. Pneumonitis iii. Pneumonia iv. Childhood Asthma v. Cystic fibrosis and chronic lung disease vi. Neonatal unit.		
	e) Management of breathlessness	1	2
	f) Physiotherapy in Pulmonary Surgeries Traumatic and Surgical conditions of Chest, Lung, Pleura and Mediastinum	1	4
	g) Abdominal Surgeries Management of Pulmonary Restorative Dysfunction following surgical procedures on Abdomen and Thorax. Pre and Post-Operative care, Complication & Management.	4	2
	h) Physiotherapy management following Oncological Surgeries Pre and Post-Operative care, Complication & Management	1	2
	i) Musculoskeletal dysfunction i. Flail chest ii. Scoliosis iii. Kyphosis	1	3
	j) Management of Amputations Following Diabetes, PVD - Prosthesis in amputations of lower limbs following ulcers and gangrenes (Stump care management).	2	4
	k) Management of Burns (Head Face neck & thoracic, inhalation burns) Acute care Management	1	5
	l) Treatment, Response to exercise and Implications of Physiotherapy in the following disease conditions: Hypertension, Diabetes, Renal Failure and Obesity	2	4
6	**ICU Evaluation and Management** Principles of ICU monitoring –Apparatus, Airways and Tubes used in the ICU - Physiotherapy in the ICU – Common conditions	8	12

	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. Suctioning and Humidification		
7	**PULMONARY REHABILITATION (A.A.C.V .P.R. /A.T.S. GUIDELINES)** b. Indications & Contraindications c. Phases(I,II,III,& IV) d. Outcome Measures	3	5
8	**CARDIAC REHABILITATION (A.H.A./A.C.S.M. GUIDELINES)** i. Definition, ii. Indications & Contraindications iii. Phases(I,II,III,& IV) iv. Outcome Measures	4	10
9	**Drug therapy** Drugs to prevent and treat inflammation, Drugs to treat Bronchospasm, Drugs to treat Breathlessness, Drugs to help sputum clearance, Drugs to inhibit coughing, Drugs to improve ventilation, Drugs to reduce pulmonary hypertension, Drug delivery doses, Inhalers and Nebulisers.	1	2
10	**APPLICATION OF ICF MODEL** 1.To plan effective Short term and long term goals to enhance functioning of Cardiovascular & Respiratory Dysfunction 2. Set patient specific goals and expected outcome within time frame with clinical reasoning Documentation	2	
11	**INTRODUCTION TO FUNCTIONAL SCALES** a. Generic and disease specific b. Patient's perception of his disability and functioning and correlating the same with therapist evaluation	2	1
12	**BASIC LIFE SUPPORT (C.P.C.R.)**	2	5

PRACTICAL

1 Positioning, breathing control strategies (e.g. Pursed Lip Breathing, Sustained Maximal Inspiration, deep breathing), ventilator muscle training. Relaxation training, positioning, early mobilization.

2 Airway clearance techniques, Suctioning, use of mechanical assistive devices (e.g. Positive Expiratory Pressure, Flutter, Vest, etc.), postural drainage and percussions, coughing manoeuvres, medication delivery e.g. Nebulization ,oxygen

3 Physical handling Techniques (e.g. positioning and donning, doffing, fitting and adjusting Stockings for vascular disorders, bandaging , dressing, taping, splints and orthotics pertaining to cardiovascular and pulmonary impairments)

4 PNF for breathing facilitation and inhibition.

5 Ability to use a variety of exercise/movement equipment (e.g. treadmill, heart rate monitor, Oximeter, pressure biofeedback unit, free weights, balance boards, theraballs, etc.)

6 Prescription and education: aerobic, endurance and interval exercise training, resistance (strength, Endurance and power) training, flexibility training. Formulating cardiac, pulmonary rehabilitation programme

7. Develop skills to monitor compliance of the client in executing rehabilitation program & identifying comorbid & contextual factors affecting it.

8 Familiarity and skill of use of various monitoring and treatment equipment's in ICU.

9 Use of physical and electrical agents for pain relief and wound care

10 Skill of administering basic life support.

CLINICAL COMPETENCIES:

A] COMPETENCY IN ASSESMENT AND CLINICAL REASONING:

Student should be able to apply the ICF framework in selecting measurement tools to ensure a holistic approach to evaluation of body structure and function, activities , participation; and select and administer assessment/evaluation tools and techniques suitable for the patient's problems and condition(s) based on the best available evidence and interpret the information obtained demonstrating evidence-based decision-making and safe handling technique such as:

1. Risk factor screening (Red flags & Yellow flags).
2. Assessment of Cardiovascular &Respiratory dysfunction.
3. Interpretation of Radiological, Haematological and Biochemical investigations.
4. Aerobic fitness and Functional performance testing as appropriate

5. Identification and quantification of environmental and home barriers and facilitators

6. Identification and analysis of body mechanics during self-care, home management, work, community, tasks, or leisure activities.

7. Identification and analysis of ergonomic performance during work (job/school/play)

8. Assessment of Quality of Life through use of appropriate questionnaire and generic or disease-specific scales (nice to know)

9. Identification and prioritization of impairments in body functions and structures, and activity limitations and participation restrictions to determine specific body function and structure, and activities and participation towards which the intervention will be directed.

10. State the evidence (patient/client history, lab diagnostics, tests and measures and scientific literature) to support a clinical decision.

11. Determine the predicted level of optimal functioning and the time required to achieve that level.

12. Recognize barriers that may influence the achievement of optimal functioning within a predicted period and devise ways to overcome them when possible.

B] COMPETENCY IN DEVELOPING PLAN OF CARE:

Student should be able to:

1. Identify patient goals and expectations.

2. Design a Plan of Care with measurable, prioritized and time bound functional goals (short-term and long-term)

3. Consult patient and/or caregivers to develop a mutual agreement regarding the plan of care. 4. Identify indications/ additional needs for consultation with other professionals & appropriate referrals.

5. Select the interventions that are safe, realistic and meet the specified functional goals and outcomes in the plan of care:

(a) Identify precautions and contraindications,

(b) Provide evidence for identified and selected patient-centred interventions that are identified and selected,

(c) Define the specificity of the intervention (time, intensity, duration, and frequency).

6. Measure and monitor patient response to intervention and modify elements of the plan of care and goals in response to changing patient/client status, as needed.

7. Establish criteria for discharge based on patient goals and current functioning and disability.

C] COMPETENCY IN PHYSIOTHERAPEUTIC INTERVENTION:

Important influences on Cardiovascular & Respiratory physiotherapy management choices may include but not limited to:

1. Diverse settings of care including critical, acute, long term, rehabilitation, and community care
2. Lifespan issues ranging from the neonatal stage to those associated with aging;
3. Life style modification for diseases and for prevention.
4. Skill of application of physical and electrical agents for relief of acute & chronic pain and swelling.
5. Facilitation, re-education and training of muscle strength, endurance & motor control, posture and gait through skilful use of various therapeutic exercise techniques with appropriate therapeutic gymnasium equipment.
6. Skill of application of therapeutic modes of improving cardiovascular & respiratory performance. Functional training in self-care, home, work (job, school and play), community and leisure activities

Documentation:

Presentation & Documentation of 8 cases for patient management using ICF Model as following:

(Assessment, Evaluation, Diagnosis, Prognosis, Intervention, Outcome)

1. Medical Respiratory condition
2. Paediatric respiratory condition
3. Thoracic Surgical condition
4. Cardiac Medical condition
5. Cardiac Surgical condition
6. Peripheral vascular disorders
7. Burns of Head, Neck & Face (Acute phase only)
8. Abdominal surgical condition

RECOMMENDED TEXT BOOKS

1. Cash's Textbook for Physiotherapists in Chest, Heart & Vascular diseases
2. Cash's text book in General Medicine & Surgical conditions for Physiotherapists
3. Chest Physical therapy & pulmonary rehabilitation -- Donna Frown Filter
4. Brompton's hospital guide
5. Physiotherapy in respiratory and cardiac problem - Pryor and Prasad
6. Physiotherapy in Cardio – Vascular rehabilitation – Webber

7. Chest physiotherapy in intensive care Colin Mackenzie

8. Mechanical ventilation – Ashfaq Hasan

9. Management of Mechanical ventilation – Pierce

RECOMMENDED REFERENCE BOOKS

1. Exercise & the Heart – Wenger

2. ECG – P.J. Mehta

3. Cardiopulmonary Physical Therapy -- Irwin Scott

4. Fundamental of respiratory care - Egan's

5. Essential of cardio pulmonary physical therapy – Hillgass And Sodosky

6. Exercise physiology, energy, nutrition and human performance – M'cardle

7. Exercise testing and prescription - Skinner

8. Exercise in health and disease-Pollock

SCHEME OF EXAMINATION

THEORY - **CARDIO-VASCULAR & RESPIRATORY PHYSIOTHERAPY** 80 MARKS + I.A. – 20 MARKS * The question paper will give appropriate weightage to all the topics in the syllabus.		**Marks** 100
Section A	Q-1 – (LAQ)Answer any TWO out of THREE [2 x 10marks =20] (Based on Respiratory System)- Q. 2 (SAQ) Answer any FOUR out of FIVE [4 x 5marks =20]	40
Section B	Q-3 – (LAQ)Answer any TWO out of THREE [2 x 10marks=20] (Based on Respiratory System) Q.4 -(SAQ) Answer any FOUR out of FIVE [4 x 5marks =20]	40
Total Marks		80

PRACTICAL CARDIO-VASCULAR & RESPIRATORY PHYSIOTHERAPY 80 MARKS + I.A. – 20 MARKS		Marks 100
LONG CASE	a. Subjective and Physical Examination -10 marks b. Evaluation and Physical therapy diagnosis (ICF) – 10 marks c. Plan of care - Goal setting – 10 marks d. Demonstration of any one important test and treatment intervention on patient –15 marks [Student will be evaluated in cognitive, psychomotor and affective domains.]	45
SHORT CASE	**One Short case on:** Demonstrations of two physiotherapy intervention skills for effective patient management 2 x 10 marks	20
SPOTS	**5 spots -** (5 x2 Marks= 10 Marks) 3 minutes for each Chest/Cardiac X-ray, ABG, PFT, ECG, Adjunct/devices	10
JOURNAL	Documentations- Assessment, Evaluation, Diagnosis, Prognosis, Intervention of Case along with ICF	05
Total Marks		80

COMMUNITY PHYSIOTHERAPY- P405
(Didactic 96 hrs + Clinical 114 hrs)
TOTAL 210 HRS
(UNIVERSITY EXAMINATION)

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. The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to identify rehabilitation methods to prevent disabilities and dysfunctions due to various disease conditions and plan and set treatment goals and apply the skills gained in rehabilitating and restoring functions.

COURSE OUTCOME:-

At the end of the course the learner should be able to:

- Understand, Assess and evaluate various stages of women's health related to physiotherapy. Also to prevent and maintain the functional level through Rehabilitation.
- Identify and Evaluate Disability in patient with appropriate goals in Treatment and Rehabilitation.
- Understand biological and physiological changes in Geriatrics with Multisystem Assessment to evaluate and to plan Rehabilitation Program.
- Observe and Analyze factors affecting health and health promotion at industrial community level
- Understand the different components of health care systems and able to attain the goal of health for all

OBJECTIVES: At the end of the course the student shall:

Cognitive: Be able to describe:

a. The general concepts about health, disease and physical fitness.
b. Physiology of aging process and its influence on physical fitness.
c. National policies for the rehabilitation of disabled – role of PT.
d. The strategies to access prevalence and incidence of various conditions responsible for increasing morbidity in the specific community – role of PT in reducing morbidity, expected clinical and functional recovery, reasons for non-compliance in specific community environment & solution for the same.

e. The evaluation of disability and planning for prevention and rehabilitation.
f. Rehabilitation in urban and rural set up.
g. Able to be a part of decision making team regarding the policies for the welfare of special communities & on issues of disability

Psychomotor:

a. Be able to identify with clinical reasoning the prevailing contextual {e.g. environmental and psycho-social cultural} factors, causing high risk responsible for various dysfunctions and morbidity related to sedentary life style and specific community like women, children, aged as well as industrial workers and describe planning strategies of interventional policies to combat such problems at community level.
b. Be able to gain the ability to collaborate with other health professionals for effective service delivery & community satisfaction
c. Utilize the research methodology knowledge for formulation of a research question (synopsis)

Affective: Be an empathetic health professional, especially for those in the community, who is away from the health institutions and having difficulty in healthcare access.

S.N	TOPICS	DIDACTIC HOURS	PRACTICAL HOURS
1	**HEALTH PROMOTION**	10	15
	a. W.H.O. definition of health and disease.	1	
	b. Health Delivery System – 3 tier	1	
	c. Physical Fitness: definition and evaluation related to:	8	
	i. Effect in Growing Age		
	ii. Effect in Obesity		
	iii. Physical Fitness in women - Pregnancy, Menopause, Osteoporosis		
	iv. Physiology of Aging – Related to physiological changes in Aging		
	Preventive Measures in all the above groups of community with their related complications of physiological changes, growth, degenerative changes and lifestyle diseases.		
2	**WOMEN'S HEALTH**	20	20
	a. Women in India.	1	
	b. Social issue having impact on physical Function.	1	

	c. Legal rights and benefits related to health.	1	
	d. Anatomical & Physiological variations associated with pregnancy & menopause.	8	
	e. Antenatal, post natal care, advice on labour positions, pain relief.	4	
	f. Urogenital dysfunction, prolapse, incontinence, malignancy and their therapeutic interventions.	5	
3	**GERIATRICS**	20	20
	a. Senior citizens in India	1	
	b. NGO's and Health related Legal rights and benefits for the elderly.	1	
	c. Institutionalized & Community dwelling elders : Role of Physiotherapy in Hospital based care, Half-way homes, Residential homes, Meals on wheels etc. Home for the aged, Institution based Geriatric Rehabilitation.	6	
	d. Theories of Aging	2	
	e. Physiology of ageing: Musculoskeletal, neurological, Cardio respiratory, metabolic, Endocrine, Cognitive, Immune systems. changes	6	
	f. Scheme of evaluation & role of PT in Geriatrics.	2	
	g. Ethics of Geriatric Rehabilitation.	2	
4	**CONCEPTS OF REHABILITATION**	13	17
	a. Rehabilitation- Definition, types {Institutional, Reach out and Community} Definition, Historical review, Concept of CBR, Need for CBR, Difference between Institution based and Community based Rehabilitation, Objectives of CBR, Scope of CBR, Members of CBR team, Models of CBR	2	
	b. Community: Definition of Community, Multiplicity of Communities, and The Community based approach, Community Entry strategies, CBR and Community development, Community initiated versus community oriented programme, Community participation and mobilization.	2	
	c. National policies for rehabilitation Role of Government in CBR: laws, Policies, Programmes, Human Rights Policy,	2	

	Present rehabilitation services, Legal aspects of rehabilitation		
	d. Rehab Team work: Role of P.T.-Principles of a team work of Medical person/P.T./O.T. audiologist/speech therapist /P.&O./vocational guide in C.B.R. of physically handicapped person , Agencies involved in rehabilitation of physical handicapped - Legislation for physically handicapped. Concept of multipurpose health worker.Role of family members in the rehabilitation of a physically handicapped.	2	
	e. CBR – -Role of Physiotherapy & Physiotherapist: Screening for disabilities, Prescribing exercise programme, Prescribing and devising low cost locally available assistive aids, Modifications physical and architectural barriers for disabled, Disability prevention, Strategies to improve ADL, Rehabilitation programmes for various Neuro-musculoskeletal and cardiothoracic disabilities.	2	
	f. CBR strategies in:	3	
	i. Urban area e.g. UHC, community centre, clubs, mahila mandalas, Social centres, Schools, industries, sports centres.		
	ii. Rural area- by using PHC / rural hospital, district hospital infrastructure. Loco motor aids using local resources.		
5	**INTRODUCTION TO DISASTER MANAGEMENT**	2	
6	**INDUSTRIAL HEALTH**	18	20
	a) Introduction to Industrial Health: Definition, Model of Industrial Therapy (Traditional Medical & Industrial Model)	3	
	b) Worker Care Spectrum:		
	i) Ability Management : Job analysis:- Job description, Job demand Analysis, Task Analysis,	4	
	Ergonomics Evaluation, Injury Prevention, Employee Fitness Program.		
	ii) **Disability Management:**	5	
	Disability- Definition of Impairment, Handicap and Disability, Difference between impairment, handicap and disability,		
	Causes of disability, Types of disability,		
	Prevention of disability,		

	Disability in developing countries.		
	Disability Surveys: Demography.		
	Screening: Early detection of disabilities and developmental disorders,		
	Prevention of disabilities- Types and levels.		
	Disability Evaluation:		
	Introduction, What, Why and How to evaluate, Quantitative versus		
	Qualitative data, Uses of evaluation findings. Acute care, Concept of Functional Capacity assessment, Work Conditioning, Work Hardening.		
	iii) Occupational Hazards in the industrial area –	3	
	a) Physical agents e.g. heat/cold, light, noise, vibration, UV radiation, ionizing radiation.		
	b) **Chemical agents-** inhalation, local action and ingestion.		
	c) Mechanical hazards-overuse/fatigue injuries due to ergonomic alternation and ergonomic evaluation of work place.		
	iv. **Mechanical stresses**: overuse/fatigue injuries due to ergonomic alteration & ergonomic evaluation of work place-mechanical stresses per hierarchy	3	
	a) Sedentary table work-executive's clerk.		
	b) Inappropriate seating arrangement-vehicle drivers.		
	c) Constant standing- watchman, defence forces, surgeons.		
	d) Over execution in labourer's-stress management.		
	e) Psychological hazards e.g. monotonicity and dissatisfaction in job, anxiety of work completion with quality, Role of PT. in industrial set up and stress management relaxation modes.		
	f) Biological Hazards.		
7	**EXTENSION SERVICES AND MOBILE UNITS**	1	2
	Introduction, Need, Camp approach.		
8	**VOCATIONAL TRAINING IN REHABILITATION**	1	2
	Introduction, Need, Vocational evaluation, Vocational rehabilitation services.		

9	**SCREENING AND REHABILITATION OF PEDIATRIC DISORDERS IN COMMUNITY**	3	18
	Early detection of high risk babies, Maternal nutrition and education, Rehabilitation of Cerebral Palsy, Polio, Downs Syndrome, Muscular Dystrophies etc., Prevention and rehabilitation of mental retardation and Behavioural disorders, Immunization programmes, Early intervention in high risk babies, Genetic counselling.		
10	**NATIONAL DISTRICT LEVEL REHABILITATION PROGRAMME**	2	
	Primary rehabilitation unit, Regional training centre, District rehabilitation centre, Primary Health centre, Village rehabilitation worker, Anganwadi worker.		
11	**ROLE OF VOLUNTARY ORGANIZATIONS IN CBR**	2	
	Charitable Organizations, Voluntary health agencies – National level and International NGO's, Multilateral and Bilateral agencies. International Health Organizations: WHO, UNICEF, UNDP, UNFPA, FAO, ILO, World bank, USAID, SIDA, DANIDA, Rockfeller, Ford foundation, CARE, RED CROSS		
12	**ROLE OF SOCIAL WORK IN CBR**	2	
	Definition of social work, Methods of social work, History of social work, Role of social worker in rehabilitation.		
13	**PLANNING AND MANAGEMENT OF CBR PROGRAMMES**	2	
	Programmed planning and management, Ownership and overnance, Decentralization and CBR, Management of CBR, rogrammed sustainability, Communication and Coordination, ommunity participation, mobilization and awareness, CBR rogramme influence on promoting and developing public policies.		

PRACTICAL:

This will consist of Field visits to urban and rural PHC's., Visits to regional rehabilitation training centre, Regular mobile camps, Disability surveys in villages, Disability screening, Demonstration of Evaluation and Physiotherapy prescription techniques for musculoskeletal,

neuromuscular, cardiorespiratory, paediatric, gynaecological and geriatric problems in community, Demonstration of evaluation and prescription techniques for ambulatory and assistive devices, Fabrication of low cost assistive devices with locally available materials.

PROJECT SYNOPSIS:

Students have to select a study to be done under the guidance of a teacher of any subject related to physiotherapy. After the finalization of the topic, he/ she has to decide the methodology of the study to be done (which has to be undertaken during the internship) Student will present defend the synopsis of this study to be done during the University Practical examination of Community Physiotherapy.

CLINICAL – (114 Hrs.)

1. UHC & PHC visits, Industrial Visit, Geriatric Home Visit
2. Institutional adoption of close by area/ vicinity.
3. Perform surveys in adopted localities for ANC, disability, exercises & health promotion, preventive aspects for smoking/ alcohol/ drugs in youth etc.
4. Students may make a case dependent evaluation proforma/ questionnaire.

RECOMMENDED TEXT BOOKS

1. Physiotherapy in Gynecological & Obstetrical conditions –Mantle
2. Therapeutic Exercise – Kisner
3. Text book of Community Health for Physiotherapists – Bhaskar Rao
4. Geriatrics Physiotherapy – Andrew Guccione
5. Industrial Therapy – Glenda Key
6. Text of Physiotherapy for obstetrics and Gynecology – G.B. Madhuri &Pruthvish

RECOMMENDED REFERENCE BOOKS

1. Mural K F –Ergonomics: Man in his working environment
2. Exercise Physiology- Mc'Ardle
3. Musculoskeletal Disorders in work place: Principle & Practice- Nordin
4. Andersons Pope
5. Indian Social Problem Vol 2 – G R Madan
6. Status of Disabled in India -2000-RCI publication
7. Legal Rights of disabled in India- Gautam Bannerjee
8. ICF –WHO Health Organisation 2001 publication
9. Preventive &Social Medicine – Park

10. Training in the Community for the people with disability – Hallender Padmini Mendes

11. Disabled Village Children-- David Werner

12. Chorin C& M Desai, C Gonsalves, 1999, Women & the Law, Vol. I & II Socio - legal Information Centre Mumbai

13. Astrand P A Rodahe K- Text book of Work Physiology

14. Women's Health – Sapsford

SCHEME OF EXAMINATION

THEORY - **COMMUNITY PHYSIOTHERAPY** 80 MARKS + I.A. – 20 MARKS * The question paper will give appropriate weightage to all the topics in the syllabus.		**Marks** 100
Section A	Q-1 - Answer any TWO out of THREE [10 marks x 2 = 20] * Long Questions Based on topics - Health Promotion / Industrial Health. Q-2- Answer any FOUR out of FIVE [5marks x 4 = 20]	40
Section B	Q-3 -- Answer any TWO out of THREE [10 marks x 2 = 20] * Long Questions Based on topics - Women's Health / Geriatrics. Q-4 - Answer any FOUR out of FIVE [5marks x 4 = 20]	40
Total Marks		80

PRACTICAL - **COMMUNITY PHYSIOTHERAPY** 80 MARKS + I.A. – 20 MARKS		**Marks** 100
LONG CASE	a. Subjective and Physical Examination -10 marks b. Evaluation and Physical therapy diagnosis (ICF) – 10 marks c. Plan of care - Goal setting – 10 marks d. Demonstration of any one important test and treatment intervention on patient –15 marks [Student will be evaluated in cognitive, psychomotor and affective domains.]	45
SHORT CASES	Two Short Cases 15 marks each	30
JOURNAL	1. One cases each of Rehabilitation, Health Promotion, Industrial Health, Women's Health & Geriatrics (Total 5 cases only) 2. Documentation of visits (Minimum One) to either Industry, Geriatric Home, Community assessment	05
Total Marks		80

PRINCIPLES OF BIOENGINEERING -P406

(Didactic 27 hrs + Practical /Laboratory-03 hrs) TOTAL 30 HR
(COLLEGE EXAMINATION)

COURSE OUTCOMES:

At the end of the course, a student would be able to :

1- Acquire knowledge about biomechanical principles, of application of variety of aids & appliances used for ambulation, protection & prevention.

2- Acquire knowledge about various material used for splints / Orthosis & prosthesis--selection criteria.

OBJECTIVES:

At the end of the course, the candidate shall

Cognitive:

a) Acquire knowledge about biomechanical principles of application of variety of aids & appliances used for ambulation, protection & prevention.

b) Acquire in brief knowledge about various material used for splints/ Orthoses & prostheses and their selection criteria

Psychomotor:

Acquire the skill of fabrication of simple splints made out of Low cost material.

S.N.	TOPICS	DIDACTIC HOURS
1	**Introduction to bioengineering**	**1**
	Classification of Aids & appliances (Splints/ Orthoses for spine, upper & lower limb; Prostheses for Lower limbs & Upper limbs)	
2	**Biomechanical principles in designing of appliances & assessment; Procedures for static & dynamic alignment of the Orthoses & Prostheses**	**26**
a.	Introduction to Orthotics, Solid Ankle foot Orthoses (AFO)	**1**
b.	Articulated AFO, Various Shoe modifications	**1**
c.	Knee Ankle Foot Orthoses (KAFO)	**1**
d.	Knee Orthoses (KO)	**1**
e.	Hip Knee Ankle Foot orthoses (HKAFO), Hip Orthoses (HO)	**1**
f.	Fracture Bracing and Flexible Lumbo-sacral Orthoses (LSO) and Thoraco-Lumbo-sacral Orthoses (TLSO)	**1**

g.	Rigid TLSOs and Cervical Orthoses (CO)	**1**
h.	Orthotic mgmt. of Scoliosis, Milwaukee and low profile scoliosis orthoses, Scheuermann's Kyphosis & Osteoporosis	**1**
i.	Orthoses for LBP, Introduction to Upper limb Orthotics and Shoulder orthoses (SO)	**1**
j.	Shoulder (SO),Elbow Orthoses (EO) & Wrist Hand Orthoses (WHO)	**2**
k.	Introduction to Gait in relation to the use of Orthoses / Prostheses	**1**
l.	Prosthetic management of Forefoot amputees	**1**
m.	Prosthetic management of Syme's and hind foot Amputees	**1**
n.	Below Knee Prosthesis & Prosthetic foot pieces	**1**
o.	Alignment of Below Knee Prosthesis and gait deviations	**1**
p.	Prosthetic Knees and Knee Disarticulation mgmt.	**1**
q.	Above Knee Prosthesis, alignment, gait deviations	**1**
r.	AK Checkouts, Prosthetic mgmt. of Hip Disarticulation, hemipelvectomy, bilateral amputees and Congenital cases	**1**
s.	Introduction to Upper Limb Prosthetics, Prosthetic management of Partial Hand amputees	**2**
t.	Cosmetic Prostheses for all levels of Amputations	**1**
u.	Task Specific Prostheses, Prosthetic management of Wrist Disarticulation, Myoelectric below Elbow prosthesis	**1**
v.	Body Powered below Elbow Prostheses and it's components	**1**
w.	Harnessing in Below Elbow	**1**
x.	Prosthetic management of Elbow Disarticulation and Above Elbow Amputation.	**1**

SN	PROJECT:	PRACTICAL HOURS
	Temporary splints: To fabricate ONE splint each [to use P.O.P, aluminum strips /sheets /wires rubber bands, Rexin, Orfit,etc]	**3**
	Splinting- Practical Demonstration of the following:	
a.	Cock up (dorsal/volar)	
b.	Outrigger	
c.	Opponence splint	
d.	Anterior and posterior guard splints for gait training	
e.	Foot drop splint	
f.	Facial splint	
g.	Mallet Finger Splint	
h.	C bar for 1st web space of hand.	

Temporary splints: To fabricate ONE splint each [to use P.O.P, aluminum strips /sheets /wires rubber bands, Rexin, Orfit,etc **(3).**

Splinting- Practical Demonstration of the following:-

a) Cock up (dorsal/volar)

b) Outrigger,

c) Opponence splint

d) Anterior and posterior guard splints for gait training,

e) Foot drop splint

f) Facial splint

g) Mallet Finger Splint

h) C bar for 1st web space of hand.

RECOMMENDED REFERENCE BOOKS

1. Orthotics in Functional Rehabilitation of Lower limb- Deborah A. Nawoczenski, Marcia E. Epler

2. Orthotics –clinical Practice and Rehabilitation Technology- Published byChurchill Livingstone

3. Atlas of Orthotics- Biomechanical principles and application (American Academy of Orthopaedic Surgeons)- The C. V. Mosby Company.

SCHEME OF EXAMINATION

		Marks
THEORY ONLY – BIOENGINEERING **(College Exam)** [There shall be no LAQ in this paper] *The question paper will give appropriate weightage to all the topics in the syllabus.		50
Section A-Q-1	SAQ – to answer any FIVE out of SIX [5 x 5] Orthotics	25
Section-B-Q-2	SAQ- to answer any FIVE out of SIX [5 x 5] Prosthetics	25
Total Marks		50
Passing in the examination is Mandator Grades: A+ = 75% & above, A = 66 to 74.5%, B + = 55 to 65 %, B = 50 to 54.5%, C = less than50%		

RESEARCH METHODOLOGY AND BIOSTATISTICS- P407

Didactic 27 Hrs + Practical 3 Hrs= Total 30 Hrs

(UNIVERSITY EXAMINATION)

COURSE OUTCOMES:

Student should be able to,

1) Understand concept of research, research fundamentals and research ethics.
2) Learn to write and execute research proposal.
3) Learn different applications of bio-statistical methods in research.
4) Formulate and execute one research project.
5) Use different computer applications required for completion of statistical analysis.

OBJECTIVES:

At the end of the study of this subject the student should be able to:

Cognitive:-

1. Enumerate the steps in Physiotherapy research process.

2. Describe the importance & use of biostatistics for research work.

Psychomotor:-

1. Acquire skills of reviewing literature, formulating a hypothesis, collecting data, writing research proposal etc.

2. To utilize the research methodology knowledge for formulation research work.

Affective:

To plan and apply appropriate statistical analysis for the research project.

S.No	Topics	Didactic Hours	Practical Hours	Total Hours
1	**RESEARCH IN PHYSIOTHERAPY**	**3**		**3**
	a. Introduction			
	b. Research for Physiotherapist: Why? How? When?			
	c. Research – Definition, concept, purpose, approaches			

	d. . Internet sites for Physiotherapists.			
2	**RESEARCH FUNDAMENTALS**	**3**		**3**
	a. Define measurement			
	b. Measurement framework			
	c. Scales of measurement			
	d. Pilot Study			
	e. Types of variables			
	f. Reliability & Validity			
	g. Drawing Tables, Graphs, Master chart			
3	**WRITING A RESEARCH PROPOSAL**	**3**		**3**
	a. Defining a problem			
	b. Review of Literature			
	c. Formulating a question, Operational Definition			
	d. Inclusion & Exclusion criteria			
	e. Methodology- Forming groups Data collection & method for analysis			
	f. Informed Consent Steps of documentation – Title to Scope of study			
4	**RESEARCH ETHICS**	**2**		**2**
	a. Importance of Ethics in Research			
	b. Main ethical issues in human subjects' research			
	c. Main ethical principles that govern research with human subjects			
	d. Components of an ethically valid informed consent for research.			
5	**OVERVIEW OF STUDY DESIGNS**	**3**		**3**
	a. Observational- i. Descriptive-Case study/ series, Cross sectional, Normative, Correlational			
	ii. Analytical; case control, cohort			

	b. Experimental- True & quasi experimental			
6	**SAMPLING**	**2**		**2**
	a. Random and non-random sampling			
	b. Various methods of sampling – simple random, stratified, systematic, cluster and multistage. Sampling and non-sampling errors and methods of minimizing these errors.			
7	**BASIC PROBABILITY DISTRIBUTIONS AND SAMPLING DISTRIBUTIONS**	**2**		**2**
	a. Concept of probability and probability distribution.			
	b. Normal, Poisson and Binomial distributions, parameters and application			
	c. Concept of sampling distributions.			
	d. Standard error and confidence intervals.			
	e. Skewness and Kurtosis			
8	**TESTS OF SIGNIFICANCE**	**3**		**3**
	a. Basics of testing of hypothesis – Null and alternate hypothesis, type I and type II errors, level of significance and power of the test, p value.			
	b. Tests of significance (parametric) - t – test (paired and unpaired), Chi square test and test of proportion, one way analysis of variance.			
	c. Repeated measures analysis of variance.			
	d. Tests of significance (non-parametric)- Mann-Whitney u test, Wilcoxon test,			
	e. Kruskal-Wallis analysis of variance. Friedman's analysis of variance			
9	**CORRELATIONS AND REGRESSION**	**1**		**1**
	Simple correlation – Pearson's and			

	Spearman's; testing the significance of correlation coefficient, linear and multiple regressions.			
10	**STATISTICAL DATA**	**2**		**2**
	Tabulation, Calculation of central tendency and dispersion, Using software packages, Analysis, Presentation of data in diagrammatic & Graphic form.			
11	**RESEARCH REPORTS**	**1**		**1**
	Overview, Types and Publication, Plagiarism			
12	**COMPUTER APPLICATIONS** related to Research work	**2**	**3**	**5**

RECOMMENDED TEXT BOOK

1. Methods in Biostatistics - B.K. Mahajan
2. Research for physiotherapist-Hicks
3. Research Methodology, 2nd Revised - CR Kothari

SCHEME OF EXAMINATION

THEORY ONLY – : **BIOSTATS & RESEARCH METHODOLOGY** [There shall be no LAQ in this paper] *The question paper will give appropriate weightage to all the topics in the syllabus.		**MARKS** 50
Section A-Q-1	SAQ – to answer any FIVE out of SIX [5 x 5 marks] BIOSTATISTICS	25
Section-B-Q-2	SAQ- to answer any FIVE out of SIX [5 x 5marks] RESEARCH METHODOLOGY	25
Total Marks		50

DIAGNOSTIC IMAGING FOR PHYSIOTHERAPY: - P408

[Didactic: 20 Hrs]

(COLLEGE EXAMINATION)

COURSE OUTCOMES:

Student should be able to,

1) Understand fundamental concept of medical diagnostic imaging system.
2) Gain basic knowledge and practical experience in the multiple facets of diagnostic imaging
3) Learning about the techniques of viewing and interpreting different diagnostic imaging for diagnosis of various conditions and utilization for planning of rehabilitation.

This course covers the study of common diagnostic and therapeutic imaging tests

Cognitive:

The student will be aware of the indications and implications of commonly used diagnostic imaging tests as they pertain to patient's management.

Psychomotor:

The students will be able to diagnose underlying pathology using given radiological investigations

Affective: The student will be able to understand:

3. How X-Ray, CT, MRI, Ultrasound and Other Medical Images are created and how they help the health professionals to save lives.
4. To correlate radiological findings with clinical presentations and give reasoning to it.

SN	TOPIC	DIDACTIC HRS.
1	**IMAGE INTERPRETATION**	2
	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	
	f. Computed Tomography (CT)	
	g. Magnetic Resonance Imaging (MRI)	
	h. Ultrasound	

	i. Endoscopy.	
2	**RADIOGRAPHY**	5
	a.Equipment components	
	b.Procedures for Radiography	
	c.Benefits versus Risks and Costs	
	d.Indications and contraindications.	
	e. Radiography(x-rays)	
	Spine , Limbs, Chest	
3	**FLUOROSCOPY**	1
	a. What is Fluoroscopy?	
	b. Equipment used for fluoroscopy	
	c. Indications and Contra indications	
	d. How it helps in diagnosis	
	e. The Findings in Fluoroscopy	
	f. Benefits versus Risks and Costs.	
4	**COMPUTED TOMOGRAPHY (CT)**	4
	a. What is Computed Tomography?	
	b. Equipment used for Computed Tomography	
	d. Indications and Contra indications	
	e. How it helps in diagnosis	
	f. The Findings in Computed Tomography	
	g. Benefits versus Risks and Costs.	
5	**MAGNETIC RESONANCE IMAGING (MRI)**	4
	a. What is MRI?	
	b. Equipment used for MRI	
	c. Indications and Contra indications	
	d. How it helps in diagnosis	
	e.The Findings in MRI	
	f. Benefits versus Risks and Costs	
	g. Functional MRI.	

6	**ULTRASOUND**	
	a. What is Ultrasound?	
	b. Equipment used for Ultrasound	
	c. Indications and Contra indications	1
	d. How it helps in diagnosis	
	e. The Findings in Ultrasound	
	f. Benefits versus Risks and Costs.	
7	**MAMMOGRAPHY**	
	a.Equipment components	
	b.Procedures for Mammography	1
	c.Benefits versus Risks and Costs	
	d.Indications and contraindications.	
8	**ENDOSCOPY**	
	a.What is Endoscopy?	
	b.Equipment used for Endoscopy	
	c.Indications and Contra indications	1
	d.How it helps in diagnosis	
	e.The Findings in Endoscopy	
	f. Benefits versus Risks and Costs.	
9	**NUCLEAR MEDICINE**	
	b. What is Nuclear Medicine?	
	c. Equipment used for Nuclear Medicine	
	c. Indications and Contra indications	1
	d. How it helps in diagnosis.	
	e. Benefits versus Risks and Costs.	

REFERENCES:-

1. Essentials of Radiology , by Rajesh Raman,
2. Textbook Of Radiology For Residents And Technicians 5Ed by Satish Bhargav

SCHEME OF EXAMINATION

		Marks
THEORY ONLY – **Diagnostic Imaging (College Exam)** [There shall be no LAQ in this paper] *The question paper will give appropriate weightage to all the topics in the syllabus.		30
Section-A	Q1. Answer any FIVE out of SIX [5x 3marks] Q2. Answer any FIVE out of SIX [5x 3marks]	30
Total Marks		30
Passing in the examination is Mandatory Grades: A+ = 75% & above, A = 66 to 74.5%, B + = 55 to 65 %, B = 50 to 54.5%, C = less than50%		

ANNEXTURE

SCHEME OF EXAMINATION

BHARATI VIDYAPEETH
(Deemed to be University)
SCHOOL OF PHYSIOTHERAPY
First Year BPTH
University Exam

YEAR	SN	SUBJECTS	UNIVERSITY EXAM		IA		TOTAL	
			TH	PR	TH	PR	TH	PR
FIRST BPTh	1	**HUMAN ANATOMY**	Max. 80	Max. 80	Max.20	Max.20	Max.100 Min. 50	Max.100 Min. 50
	2	**HUMAN PHYSIOLOGY**	Max. 80	Max. 80	Max.20	Max.20	Max.100 Min. 50	Max.100 Min. 50
	3	**BIOCHEMISTRY**	Max. 40		Max.10		Max.50 Min. 25	
	4	**FUNDAMENTALS OF KINESIOLOGY & KINESIOTHERAPY**	Max. 80	Max. 80	Max.20	Max.20	Max.100 Min. 50	Max.100 Min. 50
	5	**FUNDAMENTALS OF ELECTROTHERAPY**	Max. 80	Max. 80	Max.20	Max.20	Max.100 Min. 50	Max.100 Min. 50

BHARATI VIDYAPEETH
(Deemed to be University)
SCHOOL OF PHYSIOTHERAPY
Second Year BPTH
University Exam

YEAR	SN	SUBJECTS	UNIVERSITY EXAM		IA		TOTAL	
			TH	PR	TH	PR	TH	PR
SECOND BPTh	1	**PHARAMCOLOGY**	Max. 40		Max.10		Max.50 Min. 25	
	2	**PATHOLOGY & MICROBILOGY**	Max. 80		Max.20		Max.100 Min. 50	
	3	**PSYCHOLOGY**	Max. 40		Max.10		Max.50 Min. 25	
	4	**KINESIOLOGY**	Max. 80		Max.20		Max.100 Min. 50	
	5	**KINESIOTHERAPY**	Max. 80	Max. 80	Max.20	Max.20	Max.100 Min. 50	Max.100 Min. 50
	6	**ELECTROTHERAPY**	Max. 80	Max. 80	Max.20	Max.20	Max.100 Min. 50	Max.100 Min. 50
	7*	**COMPUTER APPLICATION**	**GRADE (Max. A+ and Min. B)**					
	8	**ENVIRONMENTAL SCIENCE**	Max.50 Min. 25					

BHARATI VIDYAPEETH
(Deemed to be University)
SCHOOL OF PHYSIOTHERAPY
Third Year BPTH
University Exam

YEAR	SN	SUBJECTS	UNIVERSITY EXAM		IA		TOTAL	
			TH	PR	TH		TH	
	1	**SURGERY**	Max. 40		Max.10		Max.50 Min. 25	
THIRD BPTh	2	**ORTHOPAEDICS**	Max. 40		Max.10		Max.50 Min. 25	
	3	**MEDICINE**	Max. 40		Max.10		Max.50 Min. 25	
	4	**NEUROLOGY**	Max. 40		Max.10		Max.50 Min. 25	
	5	**PAEDIATRICS**	Max. 40		Max.10		Max.50 Min. 25	
	6	**COMMUNITY HEALTH & SOCIOLOGY**	Max. 80		Max.20		Max.100 Min. 50	
	7	**GYNAECOLOGY & OBSTRETICS**	Max. 40		Max.10		Max.50 Min. 25	
	8	**PSYCHIATRY**	Max. 40		Max.10			
	9	**DERMATOLOGY**	**GRADE (Max. A+ and Min. B)**					
	10	**FUNCTIONAL DIAGNOSIS & PHYSICAL SKILLS**	Max. 80	Max. 80	Max.20	Max.20	Max.100 Min. 50	Max.100 Min. 50

BHARATI VIDYAPEETH
(Deemed to be University)
SCHOOL OF PHYSIOTHERAPY
Fourth Year BPTh Mark sheet

SUBJECTS	UNIVERSITY EXAM		IA		TOTAL	
	TH	PR	TH	PR	TH	PR
PROFESSIONAL PRACTICE AND ETHICS	GRADE (Max. A+ and Min. B)					
ADMINISTRATION , MANAGEMENT & MARKETING	GRADE (Max. A+ and Min. B)					
MUSCULOKELATAL PHYSIOTHERAPY	Max. 80	Max. 80	Max. 20	Max. 20	Max.100 Min. 50	Max.100 Min. 50
NEUROPHYSIOTHERAPY	Max. 80	Max. 80	Max. 20	Max. 20	Max.100 Min. 50	Max.100 Min. 50
CARDIOVASCULAR RESPIRATORY PHYSIOTHERAPY	Max. 80	Max. 80	Max. 20	Max. 20	Max.100 Min. 50	Max.100 Min. 50
COMMUNITY PHYSIOTHERAPY	Max. 80	Max. 80	Max. 20	Max. 20	Max.100 Min. 50	Max.100 Min. 50
PRINCIPLES OF BIOENGINEERING	GRADE (Max.A+ and Min. B)					
RESEARCH METHODOLOGY & BIOSTATISTICS	Max. 40		Max. 10		Max.50 Min. 25	
DIAGNOSING IMAGING FOR PHYSIOTHERAPY	GRADE (Max.A+ and Min. B)					