PROPOSED SYLLABUS FOR BACHELORS OF PHYSIOTHERAPY (B.PT)

2022-2023

VIDHYADEEP INSTITUTE OF PHYSIOTHERAPY

Vidhyadeep University, Anita, Kim Highway, Olpad, Gujrat (394110)

BACHELOR OF PHYSIOTHERAPY (BPT)

INTRODUCTION:

The Bachelor of Physiotherapy program shall be under the Faculty of Medicine. The name of the Degree program shall be Bachelor of Physiotherapy (or, Bachelor of Physical Therapy) – **B.P.T**

These REGULATIONS & CURRICULUM will be applicable from the academic year 2022-2022 and thereafter.

LEARNING OBJECTIVES:

The purpose of this curriculum is to delineate the cognitive, affective, and psychomotor skills deemed essential for completion of this program. At the completion of this course, the student should be –

1. Able 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. Able to evaluate patients for impairments and functional limitations and 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.

EXPECTATIONS FROM THE FUTURE PHYSIOTHERAPY GRADUATES

1. Coursework entitles independent physiotherapy assessment and treatment 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 dysfunctions as per red and yellow flags.
3. Course will develop skill in the graduate's physical & functional diagnosis, treatment planning, management, and administration of physiotherapy treatment for the patient support.
4. Graduates can find 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 to keep abreast with the recent advances, new technology and research. The professional should opt for continuous professional education credits offered by national and international institutes.

Terminal OBJECTIVES (Expected Outcomes):

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

Program Specific Outcome

Code	Graduate Attribute	Programme Specific Outcome
PSO1	Knowledge and proficiency	Students will learn about the fundamentals of physiotherapy, including basic knowledge of structure and function of human body; as well as different approaches to treat the conditions utilizing multidisciplinary approach.
PSO2	Analytical skills	To evaluate need of assessment, creating plan of care, putting physiotherapy programmes into action, and conducting follow-up assessments, and develop physiotherapy skills in assessment and management various conditions.
PSO3	Communication	Compassionate communicator who respects professional colleagues, clients, patients, and other members of the healthcare system.
PSO4	Research aptitude	To utilize and apply knowledge of research in clinical practice through various literature resulting in evidence based practice and advance knowledge of profession.
PSO5	Professional competence	To follow and apply rules and regulations of ethical practice with maintaining dignity of physiotherapy profession by implementing an appropriate code of conduct with colleagues, in patient care and research.
PSO6	Learning attitude	Implement and develop abilities of novel method for learning clinical practice and educational sector, to become a lifelong learner.
PS07	Teamwork and leadership	To acquire qualities of a leader and an efficient team member to work for inter-disciplinary and intra-disciplinary members with taking responsibilities.

1. CRITERIA OF ELIGIBILITY FOR ADMISSION

- A candidate applying for the degree of B.P.T being eligible for admission to the Physiotherapy College affiliated to UGC recognized University must have passed the Higher Secondary (10+2) or equivalent examination recognized by any Indian University or a duly constituted Board and passed in Physics, Chemistry and Biology.

Or

- Candidates who have studied abroad and have passed the equivalent examination as per the guidelines of the Association of Indian Universities to determine the eligibility and must have passed in the subjects: Physics, Chemistry and Biology up to 12th Standard level.
- Admission of student in Physiotherapy will be based on the Gujarat State government council
- He /She has attained the age of 17 years as on 31st December of concerned year.
- He/she should furnish at the time of submission of application form, a Certificate of Physical fitness from a registered medical practitioner that the Candidate is physically fit to undergo Physiotherapy course.
- A candidate fulfilling above requirements will be provisionally admitted in the First Year of B.P.T Degree Programme, as per the rules of Admission Committee for Professional Medical Educational Courses of Gujarat and/or Government of Gujarat.

2. DURATION OF COURSE:

B.P.T is 4½ years regular & fulltime degree programme. The 4½ years includes **4 academic years for study and 6 months** (minimum 1164 hours) of compulsory rotatory internship.

Academic Year (52 weeks)					
Teaching (40 weeks)		Exam (8 weeks)		Vacation (4 weeks)	
1st term (19 weeks)	2nd term (19 weeks)	College (4 weeks)	University (6 weeks)	Diwali Vacation (2weeks)	Summer vacation (2weeks)

- 1 week must include 39 teaching hours
- Hours spent during public holidays should be adjusted at college level.

3. MEDIUM OF INSTRUCTION:

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

4. ADMISSION TO THE PROGRAMME:

Admission granted by the Central Admission Committee appointed by the State Government to any student shall be provisional till the Enrollment/ Registration/ Enlistment is made by the University, and in case of admission is granted on the basis of provisional eligibility certificate, the condition & instruction given by the University should be complied within the time limit fixed by the University, otherwise term kept and fees paid by such a student will be forfeited and fees will not be refundable in any conditions.

Registration: Candidate admitted to the course in any of the affiliated college shall register with University by remitting the prescribed fees along with the application form for registration duly filled in and forwarded to University through Head of the Institute within stipulated date.

5. RE-ADMISSION AFTER BREAK OF STUDY:

All re-admissions of candidates are subject to the approval of the Provost of concerned University.

6. COMMENCEMENT OF THE COURSE -

The course shall commence as per the notification of Central Admission Committee of Government of Gujarat.

The course shall commence as per the notification of Central Admission Committee of government of Gujarat. No student can be admitted in college after 31st October.

Duration of first term –1st Sept to 28th Feb

Duration of second term – 1st March to 31st August

7. SCHEDULE OF EXAMINATION –

The scheme of examination for the B.P.T course shall be divided into 4 professional examinations; each examination will be held at the end of each respective Academic year.

There will be 1 internal examination (optional) after completion of 4 months of onset of Academic year. There will be 1 Internal/Preliminary exam (compulsory) before University exam. Internal evaluation is based on continuous assessment, for 40% of the marks of the subject. There will be University examination through written paper and/or practical examination for 60% of the marks of the subject at the end of every Academic year.

University has to conduct supplementary exam for failed students after 4 months and before 6 months from previous exam.

8. NUMBER OF ATTEMPTS AND RE-ADMISSION AFTER BREAK OF STUDY:

No more than four attempts shall be allowed for a candidate to pass the First Year B.P.T. examination. The total period for successful completion of First Year B.P.T. shall not exceed four (04) years. Partial attendance of examination in any subject shall be counted as an attempt. A learner shall not be entitled to graduate later than ten (10) years of her/his joining the first B.P.T. Program.

All re-admissions of candidates are subject to the approval of the Vice Chancellor/Provost of concerned University.

9. ELIGIBILITY CRITERIA TO APPEAR IN UNIVERSITY EXAMINATION

Attendance: A candidate must secure minimum 75% of attendance

A candidate is required to attend at least 75% of the total classes conducted in a year in all subjects prescribed for that year (separately), in theory and practical / clinical to become eligible to appear for the University examination.

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

Filling of University examination form: Candidates desirous of appearing for University examination must forward their applications in the prescribed form to the registrar through the Principal of the Institutions on or before the date prescribed for the purpose

10. STUDENTS' ASSESSMENT:

The performance of every student in each course will be evaluated as follows:

- Internal evaluation based on continuous assessment, for 40% of the marks of the subject.
- University examination through written paper and/or practical examination for 60% of the marks of the subject

11. SCHEME OF EXAMINATION: SUBJECTS AND DISTRIBUTION OFMARKS

First Year B.Physiotherapy							
Sr.No	**Subject Code**	**Subject**	**Theory Marks**		**Practical Marks**		**Total Marks**
			External	**Internal**	**External**	**Internal**	
1	1151101	Human anatomy	60	40	60	40	200
2	1151102	Human physiology + biochemistry	60 (45+15)	40 (30+10)	60**	40**	200
3	1151103	Psychology + sociology	60 (30+30)	40 (20+20)	-	-	100
4	1151104	Exercise Therapy –I & Soft Tissue Manipulation	60	40	60	40	200
5	1151105	Biomedical Physics	30	20	-	-	50
		Total	270	180	180	120	750

** Only Physiology

Second Year B.Physiotherapy							
Sr.No	**Subject Code**	**Subject**	**Theory Marks**		**Practical Marks**		**Total Marks**
			External	**Internal**	**External**	**Internal**	
1	1151201	Pathology + Microbiology	60 (30 + 30)	40 (20 + 20)	-	-	100
2	1151202	Pharmacology	30	20	-	-	50
3	1151203	Exercise therapy II	60	40	60	40	200
4	1151204	Kinesiology	60	40	-	-	100
5	1151205	Electrotherapy	60	40	60	40	200
		Total	270	180	120	80	650

Third Year B.Physiotherapy							
Sr.No	**Subject Code**	**Subject**	**Theory Marks**		**Practical Marks**		**Total Marks**
			External	**Internal**	**External**	**Internal**	
1	1151301	Medicine I (General Med + Skin & V. D.)	60 (45+15)	40 (30+10)	-	-	100
2	1151302	Medicine II (Neurology + Pediatrics)	60 (45+15)	40 (30+10)	-	-	100
3	1151303	Surgery GeneralSurgery, Plastic Surgery, Neuro Surgery Cardiothoracic Surgery Obstetrics and Gynecology	60 (45+15)	40 (30+10)	-	-	100
4	1151304	Orthopedic (Traumatic & Non-Traumatic)	60	40	-	-	100
5	1151305	Preventive & Social Medicine	30	20	-	-	50
6	1151306	Physical & Functional Diagnosis	60	40	60	40	200
		Total	330	220	60	40	650

Final Year B.Physiotherapy							
Sr.No	**Subject Code**	**Subject**	**Theory Marks**		**Practical Marks**		**Total Marks**
			External	**Internal**	**External**	**Internal**	
1	1151401	Physiotherapy in Neurological Conditions	60	40	60	40	200
2	1151402	Physiotherapy in Musculoskeletal Conditions	60	40	60	40	200
3	1151403	Physiotherapy in Cardiorespiratory & Medical Surgical Conditions	60 (45+15)	40 (30+10)	60	40	200
4	1151404	Community-Rehabilitation and assistive technologies	60 (45+15)	40 (30+10)	60	40	200
5	1151405	Biostatistics & Research Methodology	30	20	-	-	50
6	1151406	Ethics and Management	30	20	-	-	50
		Total	300	200	240	160	900

12. INTERNAL ASSESSMENT:

The internal assessment will be done based on continuous evaluation method. Every year, there is one internal examination for both the theory and the practical. For the award of internal marks in theory and practical, other components like attendance, seminar presentations, workshops & conferences attended and journal submission will also be taken into consideration.

Internal marks calculation - 40% of total Marks of a subject (Separately for theory and practical):

Distribution of 40 Marks is as follows:

- 20 marks :- Internal examinations (Both theory &/or Practical of subject whatever is applicable):
- 10 marks :- Weekly test (Theory/Practical)
- 5 marks :- Overall Attendance
    - 1 mark : 75% to 79%,
    - 2 marks : 80% to 84%,

- 3 marks : 85% to 89%,
- 4 marks : 90% to 94%,
- 5 marks : 95% to 100%

- 5 marks :- Seminar presentations/Co-curriculum Activities/journal submission/discipline

A candidate must obtain minimum of 35% marks of internal evaluation in each paper for both theory and practical separately before appearing for University examination.

13. UNIVERSITY (EXTERNAL) EXAMINATION:

PASSING CRITERIA: Every student should have an aggregate score of minimum 50% marks of combined in both the Internal and University Examination but separately in theory and practical examination. (It is not compulsory to pass in section – I and section – II separately.)

STRUCTURE OF QUESTION PAPERS:

Paper-style for **60 marks subjects** for University (External) examination

(**Including section I and II for 30 marks each**)

Duration: **2 hours 30 minutes**

Section-I		
Que. 1 Long Answer	1 x 10 = 10	(Any 1 out of 2)
Que. 2 Short Answer	4 x 5 = 20	(Any 4 out of 5)
Section-II		
Que. 3 Long Answer	1 x 10 = 10	(Any 1 out of 2)
Que. 4 Short Answer	4 x 5 = 20	(Any 4 out of 5)

Applicable for following subjects

Human Anatomy
Exercise Therapy – 1 & Soft Tissue Manipulation
Psychology (Section I) & Sociology (Section II)
Pathology (Section I) & Microbiology(Section II)
Exercise therapy II
Kinesiology
Orthopedics (Traumatic and Non-traumatic)
Electrotherapy
Physical & Functional Diagnosis
Physiotherapy in Neurological Conditions
Physiotherapy in Musculoskeletal Conditions

Paper-style for **60 marks subjects** for University (External) examination

(**Including section I for 45 Marks and Section II for 15 marks**)

Duration: **2 hours 30 minutes**

Section-I		
Que. 1 Long Answer	1 x 10 = 10	(Any 1 out of 2)
Que. 2 Short Answer	2 x 5 = 10	(Any 2 out of 3)
Que. 3 Very Short Answer	5 x 3 = 15	(Any 5 out of 6)
Section-II		
Que. 4 Short Answer	3 x 5 = 15	(Any 3 out of 4)

Applicable for following subjects

Human Physiology (Section I) & Biochemistry (Section II)
Medicine I (General Med (Section I) + Skin & V. D. (Section II))
Medicine II (Neurology (Section I) + Pediatrics(Section II))
Surgery (Section I) + Obstetrics and Gynecology (Section II)
Physiotherapy in Cardiorespiratory Conditions (Section I)+ Physiotherapy in General Medical & Surgical Conditions (Section II)
Community Physiotherapy Rehabilitation (Section I)+ Assistive technologies (Section II)

Paper-style for **30 marks subjects** for University (External) examination

(Including section I only)

Duration: **1 hour 30 minutes**

Section-I		
Que. 1 Long Answer	1 x 10 = 10	(Any 1 out of 2)
Que. 2 Short Answer	4 x 5 = 20	(Any 4 out of 5)

Applicable for following subjects

Biomedical Physics
Pharmacology
Preventive & Social Medicine
Ethics and Management
Biostatistics & Research Methodology

GENERAL INSTRUCTIONS FOR UNIVERSITY PRACTICAL EXAMINATION

1. Practical examination should be taken and marks should be given by pair of examiners (one internal from same university and one external from another university) only and not by single examiner. For practical exam of Medical subjects, number of examiners is as per Medical Council of India rules.
2. Marks should be put directly on the mark sheet. No rough mark sheet should be used.
3. Sealed original and duplicate mark sheets should be submitted at the end of each session to the special supervisor or co-coordinator of examination.
4. Examiner shall not keep any kind of rough or fair copy of any mark sheet with him/her.
5. Number of students per examiner examined per day should not exceed 30 in any circumstances.

14. **END YEAR EXAMINATION**:

End Year Examination will be conducted at the end of each academic year.

1. The Panel of the Board of Studies of the Faculty shall propose a list of examiners. The provost shall select 3 examiners out of this list which will include at least 1 Internal & 1 External Examiner.
2. The Controller of Examinations shall arrange to get one set of question paper each from the three examiners.
3. The Question Paper shall cover the entire syllabus and will be in two sections, namely I & II.
4. Of the two sections, answers to one section will be evaluated by the Internal Examiner & the answers to the other section will be evaluated by the External Examiner.
5. The Controller of Examinations shall arrange to show the answer papers of the subjects in which the examination is held to the students on a designated day, where the students can check their own evaluated answer scripts.
6. In case a student is aggrieved with the marks obtained in the subject in the year End Examination, the student may apply for Re-Assessment of answer script by paying the prescribed fees.
7. Arrangement shall be made by the Controller of Examinations for Re-Assessment.
8. The Controller of Examinations shall arrange for obtaining internal marks from the Course Teacher and totaling Internal & External Marks and announcing the result.
9. A student who fails to secure a minimum of 50% in End Year Examination may appear for Supplementary Examination in the subject which will be conducted within 6 months of the End Year Examination. after 4 months and before 6 months from previous exam.

15. INTERNAL EVALUATION FOR REPEATERS:

A candidate who has been declared fail in University examination for either of 1^{st} ,2^{nd},3^{rd}, 4^{th} year B.P.T is a repeater for said examination/paper/subject.

The eligibility criteria for appearing for University examination shall be applicable for the repeaters. But, the candidate may appear for the theory and practical held during that Academic year, for the improvement of internal marks for the subsequent University examination in the paper/papers he/she has failed. If candidate does not wish to appear in repeat internal examination, marks obtained in previous internal examination will be counted as final marks.

16. PROMOTION CRITERIA / CARRY OVER SYSTEM:

i. It is not mandatory to pass in 1st year B.P.T Examination to proceed to 2nd year B.P.T. class. However, it is mandatory to pass in all subjects of 1st year B.P.T examination to be eligible to appear for 2nd year B.P.T examination.

ii. It is not mandatory to pass in 2nd year B.P.T Examination to proceed to 3rd year B.P.T class. (Students can be allowed to attend classes in 3rd B.P.T only if he/she has passed 1 B.P.T University exam.) However, it is mandatory to pass in all subjects of 2nd year B.P.T examination to be eligible to appear for 3rd year B.P.T examination.

iii. It is not mandatory to pass in 3rd year B.P.T Examination to proceed to 4th year B.P.T. class. (Students can be allowed to attend classes in 4th B.P.T only if he/she has passed 2nd B.P.T University exam.) However, it is mandatory to pass in all subjects of 3rd year B.P.T examination to be eligible to appear for 4th year B.P.T examination.

iv. A candidate cannot be declared to have passed the examination until he/she has passed in all the subjects in that particular examination.

v. Student will not be allowed to appear in higher examination unless he/she has passed all subjects of lower examination.

vi. **Candidates must have 75% attendance of whole academic year to appear for university exam**. (Candidates must have completed one academic year after lower examination to appear in higher examination.)

17. GRACE MARKS:

The Grace Marks may be awarded by the University to a student, who has failed in any paper either theory or practical; but it is a subject to discretion of the Provost

18. DEFINITION OF TRIAL/ATTEMPT

First trial/attempt is deemed to take place when the candidate is due to appear as per the regulation of University for the examination. Similarly 2nd, 3rd , etc, trials relating to the subsequent examination. There is no limited to the numbers of trials in any year to pass the examination.

19. EXEMPTION FROM RE-EXAMINATION:

Candidates who have failed in the examination, but obtained pass marks in any subjects shall be exempted from re-examination in those subjects. Candidates who have failed in theory &/or practical in any subject, will have to appear in theory & practical both again for that particular subject.

20. DECLARATION OF CLASS:

A successful candidate-

PERCENTAGE	CLASS	ATTEMPT
>75%	First class with distinction	First attempt
60% to 74.9%	First class	First attempt
50% to 59.9%	Second class	First attempt
Grace marks	Pass class	More than one attempt

21. COMPULSORY ROTATORY INTERNSHIP

All students of Bachelor of Physiotherapy must undergo a compulsory rotatory internship for period of 6 months after passing 4thyear BPT examination in all subjects. It includes Minimum 1164 hours. Candidate will have to join internship within 15 days of declaration of 4th year University examination result. Internship should be done in only Hospitals/Institutions recognized by the Council (List will be declared later). No candidate shall be awarded degree certificate without successfully completing six months of Internship.

The Internship should be rotatory and cover clinical branches concerned with Physiotherapy such as Orthopedics, Cardiothoracic including ICU, Neurology, Pediatrics, General Medicine, General Surgery, Obstetrics, Geriatrics, Women's health, CBR and Gynecology both in-patient and out-patient services. On completion of all postings, the duly completed logbooks will be submitted to the Principal/Head of program to be considered as having successfully completed the internship program.

22. DRESS CODE:

Professionalism with respect to dressing is encouraged throughout the course. It is each student's responsibility to have appropriate dressing during all class assignments and learning activities. Students are supposed to wear apron compulsorily during practical and clinical hours.

23. MIGRATION/TRANSFER OF CANDIDATES:

The Provost shall have the powers to place any migration/transfer he/she is fit for grant of permission for migration/transfer to candidates undergoing course of study in another University as prescribed by University

24. COURSE OF STUDY – SUBJECTS & HOURS DISTRIBUTION

1. Credit = 1 classroom lecture per week for 19 weeks (1 term) (makes 20 lectures in one term) or
2. Practical/clinical hours per week for 19 weeks (1 term) (makes 38 practical hours in one term)

YEAR WISE DISTRIBUTION OF HOURS AND CREDITS

First Year

Subject	Theory Hours	Practical Hours	Total	Credits
Human Anatomy	133	171	304	11.5
Human Physiology	152	152	304	12
Biochemistry	38	-	38	2
Psychology	76	-	76	4
Sociology	76	-	76	4
Exercise Therapy 1 & Soft Tissue Mobilization	152	152	304	12
Biomedical Physics	95	57	152	6.5
Professional Practice & Ethics*	19	-	19	1
English*	19	-	19	1
Computer*	19	-	19	1
Environment Studies*	38	-	38	2
Observational Clinical Practic (4 Hours/Week)	-	133	133	3.5
	817	665	1482	60.5

*Not for university exam.

Second Year

Subject	**Theory Hours**	**Practical Hours**	**Total**	Credits
Pathology	76	-	76	4
Microbiology	76	-	76	4
Pharmacology	76	-	76	4
Exercise Therapy II	152	152	304	12
Kinesiology	114	-	114	6
Electrotherapy	152	152	304	12
Miscellaneous Medicine Subjects* Radiology ENT Ophthalmology	 9 5 5	-	19	01
Psychiatry*	19	-	19	01
Allied Therapeutics*	19	-	19	01
Recent Trends* Professiona Practice And Ethics Introduction To Evidence Based Practice And Seminar	9 10	-	19	01
Supervised Clinical Practice (2 Hours/Day)	-	456	456	12
	722	760	1482	58

*****Not for university exam.

Third Year

Subject	Theory Hours	Practical Hours	Total	Credits
General Medicine	76	-	76	4
Skin & V.D.	19	-	19	1
Neurology	76	-	76	4
Pediatrics	38	-	38	2
General Surgery	57	-	57	3
Cardiothoracic Surgery Specialty Surgeries Plastic Surgery Neurosurgery	38 19 19	-	38 19 19	2
Obstetrics & Gynecology	38	-	38	2
Physical & Functional Diagnosis	114	114	228	9
Orthopedics (Traumatic & Non Traumatic)	114	-	114	6
Preventive & Social Medicine	38	-	38	2
Recent Physiotherapy Trends* Evidence Based Physiotherapy & ICF Seminar Professional Practice & Ethics	19 19	- -	38	2
Supervised Clinical Practice (3 Hours/Day)	-	684	684	18
	684	798	1482	57

*Not for university exam.

Final Year

Subject	Theory Hours	Practical Hours	Total	Credits
Physiotherapy In Musculoskeletal Conditions	114	19	133	7
Physiotherapy In Neurological Conditions	114	19	133	7
Physiotherapy In Cardio respiratory and medical surgical conditions	114	19	133	7
Community Physiotherapy Rehabilitation	38	19	57	3
Assistive Technologies	19	-	19	1
Biostatistics & Research Methodology	38	-	38	2
Recent Practice Trends* Professional Practice & Ethic Administration, Management And Marketing	19 19	-	38	2
Supervised Clinical Practice (4 Hours/Day)	-	912	912	24
Research Project & Field Work*	-	19	19	1
	494		1482	54

*Not for university exam.

- **6-month compulsory rotatory internship: 1144 Hours**

COURSE CONTENTS

FIRST YEAR

B. PHYSIOTHERAPY

1151101-HUMAN ANATOMY

COURSE OBJECTIVES:

1. To provide students with the fundamental knowledge of the structure of the human body this forms an essential foundation for their clinical studies.
2. To concern with the topographical and functional anatomy of the upper limb, lower limb, abdomen, spine, head, thorax, neck and brain.
3. To share the knowledge related to the upper limb, lower limb, head, neck and nervous system which are studied with particular reference to topics of importance

COURSE OUTCOMES:

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

1. To understand the structural and functional anatomy of soft tissues, various joints, bones of human body.
2. Apply the knowledge of structure and functions of tissues of upper limb, lower limb and trunk and their relevance with daily activities like walking.
3. Interpret the basic concept of microscopic study and developmental aspects of various cells of the human body.
4. To utilize practical aspect of bone and soft tissues including surface anatomy.
5. To apply the concept of functional Anatomy in physiotherapy practice

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	**General Introduction:** a) Definitions and subdivisions b) Plan of human body c) System of the body d) The unit of structure and function of the cell	20
2	**Histology: (Not For University Examination)** a) Cell b) Tissues of the body c) Epithelium d) Connective tissue e) Cartilage f) Bone g) Lymphoid tissue	05

3	**Embryology: (Not For University Examination)** a) Ovum, spermatozoa, fertilization and formation of germ layers andthe derivations b) Development of skin, fascia, blood vessels and lymphaticsNeural tub brain vessels, spinal cord d) Development of brain and brainstem structures, developmenta anomalies (brief) e) Development of bones, axial and appendicular skeleton and muscles	05
4	**Musculoskeletal anatomy:** (all topics to be taught in detail) **Osteology:** a) Anatomical positions of the body, axes, planes, common anatomica terminologies (grooves, tuberosity, trochanters etc) b) Connective tissue classification c) Bones:- Composition and functions, classification of types according t morphology and development, growth and repair, structure of long bon vertebral column, types of vertebrae, bones of extremities and bod landmarks **Arthrology:** a) Definitions b) Classification of joints c) Construction of joints d) Motions of joints e) Structure of fibrous, cartilaginous joints f) Blood supply and nerve supply of joints g) Articulations – articular surfaces, types of joints, motions of upper an lower extremities, trunk, head **Myology:** a) Types of muscle tissue b) Muscles of upper extremity, lower extremity, trunk, eye, face etc. origi insertion, nerve supply and action (in detail) **Myology of other systems:** a) Cardiovascular system b) Blood lymph, tissue fluid-characteristics, composition, and function c) The heart-main arteries, veins, capillaries **d)** Lymph circulation	42
5	**Neuro-anatomy** a) Division and function of the nervous system b) Brain, spinal cord-their structures, division c) Nerve tissue-neuron, nerve fibre, synapse, end-organs etc d) Organization of Central Nervous System-spinal nerves and autonomi nervous system-mainly pertaining to cardiovascular, respiratory an urogenital system.	42

	e) Cranial nerves f) Peripheral nervous system-Peripheral nerves, sensory and organ neuromuscular junction, spinal segments and areas g) Nerve supply to voluntary muscles and segmental distribution h) Central nervous system-Brain, cerebellum, Thalamus, Hypothalamu Corpus striatum, Cerebral hemispheres – white and gray matter, later ventricles, blood supply of brain, meninges, pyramidal syste extrapyramidal systems, anatomic integration. i) Cerebro-spinal fluid **j)** Sensory end-organs and sensations	

	k) Autonomic nervous system-sympathetic, parasympathetic	
6	**Respiratory System:** a) Thoracic cage b) Brief outline of air passages c) Brief gross anatomy of respiratory organs-lungs, pleura, bronchialtre broncho- pulmonary segments d) Intercostals muscles in detail e) Mechanisms of respiration and muscles of respiration, Diaphragm	15
7	**Cardiovascular System:** a) Heart (gross anatomy and functions) b) Arteries c) Veins d) Collateral Circulation	15
8	**Digestive System:** a) Anatomy of digestive organs – Oesophagus, stomach, intestine,rectu etc b) Digestive glands	10
9	**Urinary System:** a) Anatomy of urinary organs, kidneys, ureters, urinary bladderurethra i males and females etc. b) Types of bladder especially in paraplegics	10
10	**Reproductive System:** a) Brief outline of genital organs b) Outline of male and female reproductive system	05
11	**Endocrine System:** a) Glands – classification, sites and section b) Enzymes c) Hormones	05
12	**Lymphatic System** – Brief outline	05
13	**Special sensory organs and sensations:** a) Emphasis on skin, ear and eyes b) Less detail on smell and taste	05

14	**Regional Anatomy:** **Upper Extremity:** a) Osteology: Clavicle, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, Phalanges in articulated hand b) Soft parts: Breast, pectoral region, axilla, front of arm, cubital foss front of forearm, back of forearm, palm, dorsum of hand, muscle fascia, nerves, blood vessels and lymphatic drainage of upp extremity c) Joints: shoulder girdle, shoulder joint, elbow joint, radio-ulnar join wrist joint and joints of hand d) Arches of hand, skin of the palm and dorsum of hand	35
	Lower Extremity a) Osteology: Hip bone, femur, tibia, fibula, patella, tarsals, metatarsal phalanges. b) Soft parts: Gluteal region, front and back of thing {femoral triangl femoral canal and inguinal canal}, medical side of the thigh {adducto canal}, lateral side of the thigh, popeliteal fossa, anterior and posteri compartment of leg, sole of the foot, lymphatic drainage of lower limb venous drainage of the lower limb, arterial supply of the lower limb arches of the foot, skin of foot.	45
	Trunk Osteology: Cervical, thoracic, lumbar, sacral and coccygeal vertebra and rib a) Soft tissue: Pre and Para vertebral muscles, anterior abdominal wa muscles, intervertebral disc. **b)** Joints: Hip joint, knee joint, ankle joint, joints of the foot**.**	20
	Head and neck a) Osteology: Mandible and bones of the skull. **b)** Soft parts: Muscles of the face and neck and their nerve and blood suppl – Extraocular muscles, salient points about the eye ball and internal ea	20

NOTE:-

1. Dissection of upper and lower limbs & back.
2. Identification of anterolateral abdominal wall, posterior abdominal wall & thoracic cage.
3. Anatomical position & description of all bones.
4. Surface marking in cadaver and living body.
5. Radiological examination of upper limb, lower limb & other special X-rays.
6. In BRAIN: Identification of all parts and various sections at different levels.
7. In HISTOLOGY PRACTICAL: Identification of basic tissues of bod

1151102- HUMAN PHYSIOLOGY

COURSE OBJECTIVES:-

1. To deliver knowledge on the functioning of various human systems like cell, blood, cardiovascular system, GI system, Excretory, endocrine system and reproductive system.
2. Explain functioning of nervous system with major emphasis on spinal cord and brain.
3. Describe in detail nerve -muscle physiology with basic knowledge on pathologies associated with nerve, muscles and neuro-muscular junction

COURSE OUTCOMES:-

At the end of the year the student will be able to:

1. To relate the concept of human physiology in physiotherapy application including exercises physiology
2. To understand the principles of human physiology for the various systems of the human body at a microscopic and macroscopic level.
3. To able to understand the functional physiology of cell, blood, neuromuscular, cardiovascular and pulmonary systems,
4. Demonstrate basic practical related to measurement of heart rate/pulse rate, blood pressure, temperature, respiratory rate and evaluate their findings.
5. Develop and evaluate basic knowledge on applied physiology in various pathologies related to cell, blood, cardiovascular system, GI system, Excretory, endocrine system and reproductive system.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	**General Physiology:** a) General Principles of Biophysics b) Body Fluid compartments.	**20**
2	**Blood:** a) Composition of blood, Plasma, protein formation and their function. b) Structure, formation and functions of R.B.C c) Structure, formation and functions W.B.Cs. and Platelets. d) Coagulation and its effects on bleeding, clotting time. e) Blood groups and their significance, Rh. factor. f) Reticulo-Endothelial system, jaundice, structure and functions of spleen. g) Hemoglobin and E.S.R	**30**

3	**Cardiovascular System:** a) Structure, properties of heart muscle and nerve supply of heart, Structure and function of arteries, arterioles, capillaries and veins b) Cardiac cycle and heart sounds. c) Cardiac output measurement & affecting factors d) Heart rate and its regulation, cardio vascular reflexes. e) Blood pressure, its regulations and physiological variations. f) Peripheral resistance, Factors controlling, Role in B.P. g) Hemorrhage. h) Changes in muscular exercise.	**30**
4	**Respiratory System:** a) Mechanism of respiration, Intra-pleural and intra pulmonary pressure. b) Lung volumes and capacities. c) O2 and CO2 carriage and their exchange in tissues and lungs. d) Nervous chemical regulation of respiration - Respiratory Centres. Respiratory states - anoxia, asphyxia, Cyanosis, Acclimatization.	**30**
5	**Digestive System:** a) General outline and salivary digestion b) Gastric secretion and its mechanism of secretion and functions. c) Digestion, absorption and metabolism of proteins. d) Structure, Secretions and Functions of Livers.	**10**
6	**Nutrition:** a) Digestion, absorption and metabolism of carbohydrates. b) Digestion, absorption and metabolism of fats. c) Digestion, absorption and metabolism of proteins. d) Vitamins, sources, functions and resources. **e)** Balanced diet in different age groups and occupation.	**10**
7	**Endocrines:** a) Anterior Pituitary. b) Posterior Pituitary and parathyroid. c) Thyroid. d) Adrenal Cortex e) Adrenal Medulla, thymus. **f)** Pancreas and Blood sugar regulation.	**10**
8	**Reproductive System:** a) Sex determination and development, puberty, b) Male sex hormones and their functions, spermatogenesis. c) Female sex hormones and formation of urine, G.F.R. and Tubular functions. **d)** Pregnancy, functions of placenta and lactation	**10**

9	**Excretory System:** a) Gross and minute structure of kidney and features of renal circulation. b) Mechanism of formation of urine, G.F.R. and Tubular function. c) Renal function tests. **d)** Physiology of micturition	**10**
10	**Neuro Muscular Physiology:** **10.1 Muscle and Nerve:** a) Structure of neurones, membrane potential and generation of action potential. b) Nerve impulse conduction, saltatory conduction. c) Nerve muscular junction and drugs acting on it - Myasthenia. **d)** Degeneration and regeneration in peripheral nerves including Walleria degeneration	**69**
	10.2 Muscle: a) Type of muscles and their gross structure, stimulus, chronaxie, strengt duration curve. b) Structure of Sarcomere - basis of muscle contraction, Starlings law, changes during muscle contraction. c) Electrical - Biphasic and monophasic action potentials. d) Chemical, Thermal and Physical changes, isometric and isotonic contraction. e) Motor units and its properties, clonus, tetanus, all or none law, beneficial effect. **f)** Nature of voluntary contraction, fatigue.	
11	**Nervous System:** a) Types and properties of receptors, types of sensations b) Structure of synapse, reflex arc and its properties, occlusion, summation, sub minimal fringe etc. c) Tracts of spinal cord. d) Descending tracts, Pyramidal and Extrapyramidal. e) Hemi section and complete section of spinal cord. Upper and lower motor neuron paralysis. f) Cerebral cortex, areas and functions - E.E.G. g) Structure - connections and function of cerebellum. h) Basal ganglia and thalamus, connections and functions. i) Reticular formation, tone, posture and equilibrium. **j)** Autonomic Nervous system.	**65**
12	**Special Senses:** a) Broad features of eye, errors of refraction, lesions of visual pathways. b) Speech and its disorders. **c)** Ear and vestibular apparatus.	**10**

Practical & Demonstrations

1. NERVE MUSCLE PHYSIOLOGY - Gastrocnemius Muscle-Sciatic Nerve Prep. - Action Potential etc. - Effect of Temperature on S.M.C - Effect of Load on Skeletal Muscle Contraction **2. CARDIO-VASCULAR SYSTEM** - Graph - BP - Radial Pulse - Spirometry/Respiratory Efficiency Test **3. INSTRUMENTS** **4. RECORDING BODY TEMPERATURE**	**5. HAEMATOLOGY** - Total red blood Cell & white blood cells Count - Cells in Peripheral blood film, Differential WBC count, - Absolute count, Arneth count, Blood grouping - Bleeding time/Clotting Time, Blood ,PCV, ESR **6. CENTRAL NERVOUS SYSTEM** - Examination of sensory function - Examination of motor functions - Examination of reflexes - Cranial nerves I, II, III, IV, V, VI,VII,VIII,IX,X,XI

1151103- BIO-CHEMISTRY

COURSE OBJECTIVE:

1. To share the knowledge related to micronutrients, macronutrients, acid-base balance, water electrolyte balance and imbalance, hormones and enzyme activities.
2. To provide the importance of clinical biochemistry, with special reference to liver and renal function tests, blood study for lipid profile.
3. Describe basal metabolic rate and the factors affecting the same (in brief) with special reference to obesity.

COURSE OUTCOMES:

1. Acquire knowledge about chemical compositions of various nutrients to understand the actual chemical concepts of biology
2. Memorize the functioning of various body processes and physiology by uses of biomolecules
3. Distinguish and apply the mechanism of metabolism, digestion and absorption of various biomolecules in clinical conditions such as obesity.
4. Apply the knowledge of biochemical changes with reference to exercise and physical activity, balanced diet.
5. Evaluate relations among nutrition deficiency, exercise performance and biochemical changes.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	**Cell Biology** a) Membrane structure and function. b) Function of intracellular organs in brief.	03
2	**Carbohydrates** a) Chemistry, definition, classification with examples b) Function of mucopolysaccharide (in detail) c) Reducing properties of sugars of clinical and diagnostic importanc (e.g. Benedict's test, Barfoed's test, etc) d) Metabolism, digestion and absorption of carbohydrates, glycosis aerobic and anaerobic, energetics and regulation. e) Kerbs's cycle, its energetics regulation and role of TCA cycle f) Glycogenesis, Glycogenolysis, their regulation and the role of live and muscle glycogen g) Significance of HMP shunt and gluconeogenesis **h)** Hormonal regulation of blood sugar level, important metaboli disorders of glycogen, lactose intolerance, diabetes mellitus.	05
3	**Proteins** a) Chemistry, definition, classification of amino – acids, protei structure, effect of temperature on proteins, denaturatio	04

	coagulation, isoelectric pH and its importance. b) Metabolism, digestion and absorption, decarboxylation deamination, transmethylation, transamination and their importance and detoxification of ammonia including urea cycle. c) Special products of amino acids, example: phenylalanine, glycine methionine d) Neurotransmitters e) Plasma proteins including immunoglobulins f) Hemoglobin, Myoglobin, their functions, haemoglobinopathies thalassemias **g)** Structural proteins: Collagen, Elastin	
4	**Lipids** a) Chemistry, definition, classification and function b) Metabolism, digestion and absorption of lipids, beta oxidation of fatty acids and its energetics, regulation of fat metabolism in adipose tissue, ketone bodies formation and its utilization, cholesterol and importance of lipoproteins, lipoproteinemia with atherosclerosis causes and prevention, fatty acid synthesis, fatty liver and obesity.	04
5	**Nucleic Acids** a) DNA, RNA – definition, structure and function, types, genetic code, catabolism of purines – gout.	03
6	**Enzymes** a) Definition, classification, factors b) Coenzymes. c) Inhibition and type of inhibitors d) Isoenzymes e) Clinical and therapeutic uses of enzymes	03
7	**Vitamins** a) Definition, classification, functions b) Deficiency symptoms, RDA	04
8	**Biological Oxidation** a) Oxidative phosphorylation, ETC	02
9	**Minerals** a) Phosphate, calcium and iron (in details) b) Magnesium fluoride, Zinc, Copper, Selenium, Molybdenum c) RDA, iodine sources, absorption, transport, excretion, function and disorders d) Acid – base balance, water and electrolyte balance	03
10	**Connective tissue** a) Biochemistry of connective tissue – Collagen, Glycoprotein, Proteoglycans	03
11	**Nutrition and BMR, PEM, Balance diet.**	04

1151104- PSYCHOLOGY

COURSE OBJECTIVES:-

1. To deliver comprehensive details on psychology and its significance in the health delivery system.
2. Provide knowledge of psychological maturation during human development and growth and alteration during ageing process, human behaviour, human emotions and perception, personality and attitude.
3. The fundamental psychological aspect of pain and stress, interpersonal behaviour, and thinking process.
4. To teach basics psychotherapy and counselling.

COURSE OUTCOMES:

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

1. Evaluate the importance of psychological status of the person in the health and diseases, environmental and emotional influence on the mind and personality.
2. Interpret the various methods of learning and problem solving utilized by human mind and apply the same learning strategies while treating patients.
3. To analyse various types of human personality based on their behaviour and describe various coping strategies used by different personalities.
4. Differentiate different factors influencing human behaviour, thinking and learning.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	**Introduction:** Introduction of psychology, brief history, definitions, schools of psychology	05
2	**Introduction**: Biological foundations of behavior, hereditary, environment and logical basis for development, developmental Psychology (child).	05
3	**Learned and unlearned behavior**: Simple learning an conditioning, social learning. Learning disability in children (counseling for exercise)	05
4	**Memory**: Phases of memory, short term storage, memory an perception thinking etc. Forgetting testimony and recall of events, memory and ageing	05
5	**Perception:** Sensory basis of perception, attention and perception, observer error	05
6	**Motivation and Emotions**: Approaches to motivations, emotiona development, influence of early experience. Family and socia influences on motivation and behavior. Thematic Apperception Test developed by A M Mankad based on Maslow theory.	05
7	**Thinking and Intelligence**: Learning and problem solving development of conceptual thinking in children. Communicatio language and thinking, Measurement of intelligence, influences o intelligence, extent and consequence of individual difference.	05
8	**Tests**: Wechsler scales, Standford-Binet Intelligence scale, Bende	05

	and Gestalt - other projective test, Anxiety scale.	
9	**Personality:** Nature of personality structure and dynamics dimensional, psycho analytical and constitutional theories o personality, measurement of personality, culture and personality Patterns.	05
10	**Attitude:** Nature of attitudes and beliefs including prejudice, grou influences on attitudes, attitude change, doctor - patient expectations and attitudes, prejudice formation an reduction.	05
11	**Interpersonal Behavior**: Experimental analysis on social interactio studies of the interview situation, behaviour in formal and informa groups, group norms and roles. Leadership in formal and informa groups, group moral, Behaviour therapy, behaviour Modification techniques, token economy.	05
12	**Social Psychology** : nature and scope of social psychology, socia interaction, psychological groups and their classificatio socialization of the individual, social control (social heredits) - Moves, customs, fashion, propaganda and its techniques.	05
13	**Stress**: stress and responses, disorders, coping with stressors, four Maxims, meditational yoga.	05
14	**Pain**: Physiological and psychological factors, types of pain, pain Measurement.	05
15	**Psychotherapy and counselling**: Goals, Psychodynamic therapy, Humanistic therapy Behaviour therapy- Relaxation training (Jacobson training), Hypnosis, Biofeedback. Behaviou modification therapies (BMT) – Operant conditioning technique Token economy, Classical conditioning, modelling technique Cognitive therapy- Elli's rational/ emotive therapy, Beck's Cognitive, Meichenbaum'sself-instructional training.	06

1151104- SOCIOLOGY

COURSE OBJECTIVE:-

1. To provide basics of societal structure including social groups, social institutions, role of family.
2. Provide knowledge of social change with its impact, essential social problems and norms/legislations of social security.

COURSE OUTCOME:-

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

1. Utilize the role of family and community members in improving the physical and mental health of the patients
2. To develop the rural and urban remedial measure by evaluating their differential health hazards.
3. Understand and apply knowledge of different legislative norms and compensatory provisions available for the disabled individual.
4. Evaluate the impact of various cultures on the health of individual.
5. Evaluate the influence of socioeconomic strata on patient.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	**Introduction:** a) Meaning - Definition and scope of sociology. b) Its relation with anthropology, psychology, social psychology an ethics. c) Methods of sociology - Case study, social survey, questionnai interview and opinion poll methods. d) Importance of its study with special reference to health ca professionals.	07
2	**Social factors in Health and disease:** The meaning of social factors, the role of social factors in health an illness.	07
3	**Socialization:** a) Meaning and nature of socialization b) Primary, secondary and anticipatory socialization c) Agencies of socialization.	06
4	**Social Groups:** Concepts of social groups influence of formal and informal groups on Health and sickness. The role of primary groups and secondary groupsi the hospital and rehabilitation settings.	06

5	**Family:** a) The family b) Meaning and definition c) Functions d) Types e) Changing family patterns **f)** Influence of family on the individuals health, family and nutrition, th effects of sickness on family and psychosomatic disease and the importance to physiotherapy.	06
6	**Community:** a) Rural community - Meaning and features - Health hazards of ruralitie b) Urban community - Meaning and features -Health hazards o urbanities**.**	08
7	**Culture and Health:** a) Concept of culture b) Culture and behaviour. c) Cultural meaning of sickness. d) Culture and health Disorders	08
8	**Social Change:** a) Meaning of social changes. b) Factors of social change. c) Human adaptation and social change. d) Social change and stress. e) Social change and deviance. f) Social change and health program. g) The role of social planning in the improvement of health and i rehabilitation.	06
9	**Social Problems of Disabled:** **Consequences of the following social problems in relation to sickne and disability remedies to prevent these problems.** a) Population explosion. b) Poverty and unemployment. c) Beggary. d) Juvenile delinquency. e) Prostitution. f) Alcoholism. g) Problems of women in employment.	10
10	**Social Security:** Social security and social legislation in relation to disabled.	06
11	**Social Worker:** Meaning of social work. The role of a medical social worker	06

1151105- EXERCISE THERAPY I & SOFT TISSUE MOBILIZATION

COURSE OBJECTIVES:-

1. To attain the basic understanding of mechanical principles and effect of exercise therapeutic techniques in the restoration of physical function.
2. To provide knowledge of use of various tools of the therapeutic gymnasium.
3. Describe the physiological and therapeutic effect of various movements and demonstrate in various anatomical planes.
4. Describe application of various massage manipulations with their physiological effects, therapeutic use, merits / demerits of the same.
5. To techniques relaxation and breathing

COURSE OUTCOMES:

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

1. Describe the physiological and therapeutic effects of various movements and exercise.
2. Develop understanding of proper body mechanics when performing Joint range of motion and normal range of each joint.
3. Evaluate and apply appropriate positioning of the parts of the body when patient is in different positions with instructions to a patient/family member for bed mobility.
4. Understand and utilize the appropriate gait patterns using assistive devices, and summarize their advantages and disadvantages.
5. Attain a valuable insights for communication while performing group exercise, free exercise and mat exercise and breathing exercise along with its principle
6. Acquire the skill of use of various tools of the therapeutic gymnasium, application of various massage manipulations.
7. Acquire knowledge of various examination techniques such as limb length measurement, range of motion examination, girth measurement and gait patterns.

EXERCISE THERAPY – I

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	**Introduction to exercise therapy.**	05
2	**Physiological effects and uses of exercise.**	05
3	a) Definition of strength, power & work, endurance, muscleactions. b) Physiology of muscle performance: structure of skeletal muscl chemical & mechanical events during contraction &relaxatio muscle fiber type, motor unit, force gradation. c) Causes of decreased muscle performance d) Physiologic adaptation to training: Strength & Power,Endurance.	05
4	**Use of apparatus in exercise therapy.**	02

5	**Fundamental starting positions and its muscle work** a) Derived positions and its muscle work b) Effects and uses of starting and derived positions c) Pelvic tilt	15
6	**Joint movement** a) Terminology b) Normal Range c) Axes and planes of movement d) Levers, e) Measurement of joint movements (goniometry) f) Principles of Goniometry g) Types of goniometer including Universal, bubble and gravit goniometer. h) Methods of measuring joint range of each joint	30
7	a) Causes of restriction of range of movement - Distinguish betwee skin, muscles, **b)** Capsular contractures.	05
8	**Movement** 8.1 Classification of movements	02
	8.2 Active movements a) Definition, b) Types **c)** Techniques Effects and uses.	15
	8.3 Passive movements a) Causes of immobility, b) Classification of Passive movements, c) Specific definitions related to passive movements, d) Principles of giving passive movements e) types f) Techniques of applications of relaxed passive movements g) Uses h) Comparison of active and passive movements i) Techniques of mobilization for stiff joints	20
9	**Group work**-Criteria of selection of patients, advantages and Disadvantages of group class exercises**.**	05
10	**a) Home exercises** **b) Trick movements.**	03
11	**Suspension therapy** a) Definitions of suspension b) Point of suspension, c) Types of suspension, d) Pulleys and use of pulleys in suspension therapy,	15

	e) Application of suspension therapy either to increase the joint rang or to increase muscle power.	
12	**12.1 Breathing** a) Mechanism of breathing (normal) b) Muscles of respiration c) Changes in thoracic cage during process of respiration	07
	12.2 Breathing Exercises a) Diaphragmatic and segmental breathing b) Principles and techniques c) Therapeutic effects d) Exercises for bronchial hygiene, coughing and huffing, hom program e) Pursed lip breathing f) Glossopharyngeal Breathing - significance.	15
13	**Normal gait cycle – Phases of gait**	07
14	**14.1 Walking with walking aids - Crutch walking / Walking wit walker, rollator etc** a) Types of crutch walking, b) Group of muscles responsible during crutch walking c) Use of parallel bars in pre-crutch walking stage d) Balance exercises as pre-gait training e) Phase of walking in terms of walking with walking aids f) Gait training g) Progression in crutch walking h) Crutch - walking on even surface, slopes, climbing up the stair cas	20
	14.2 Measurement of crutches and other walking aids like canes, Walkers, tripods other types of crutches.	10
15	**a) Measurement of limb length** **b) Methods of measurements.**	05
16	**Free, Active and Active assisted Exercises** a) Classification b) Techniques c) Effects and Uses d) Indications and Precautions e) Application for all the joints f) techniques of mobilization for stiff joints	05
17	**Resisted Exercises** a) Techniques b) Types of resistance c) How to measure resistance d) SET system (Heavy resisted exercises) e) Oxford method	20

	f) Delorme method g) Macqueen's method. h) DAPRE	
18	**Application of resistance to develop endurance and power** a) Progression of exercises b) Angle of pull c) Types of muscle work d) Exercises - free resisted, assisted - use of gadget apparatus**.**	10
19	**a) Maintenance of record and documentation volume, range o motion, resistance, limb length** **b) Anthropometric Measurements: Muscle girth – biceps, tricep forearm, quadriceps, calf**	03

SOFT TISSUE MOBILIZATION

SYLLABUS:-

Sr. No.	Topic	Hours
1	Introduction-brief history, definition, classification.	75
2	Physiological effects and therapeutic uses, contra - indications.	
3	Preparation of patient, basic points to be considered before and during massage procedure.	
4	Technique, effects and uses of each manipulation and contra-indications.	
5	Specific effects of certain manipulations.	
6	Massage for arm, leg, neck and upper back face.	
7	Massage for edema, scar, tendinitis, fibrosis (tight fascia)	
8	Practice of soft tissue manipulation in subjects.	
9	Mobilization of soft tissues, joints and fluid collection.	

1151106- BIOMEDICAL PHYSICS

COURSE OBJECTIVES:-

1. The physics, principles and Laws of Electricity, Electro-magnetic spectrum. Enumerate the types and production of various therapeutic electrical currents.
2. Provide brief of certain common electrical components such as transistors, valves, capacitors, transformers etc and the simple instruments used to test.
3. Describe effects of environmental & man made electro-magnetic fields at the cellular level & risk factors on prolonged exposure.
4. Brief about about Basic concept of different waves and sound

COURSE OUTCOMES:

At the end of the course the candidate will able to

1. Learn and apply the different laws and its applications to identify the lever and use and advantage of it.
2. To learn and utilize the knowledge in electrotherapeutic modalities and designing exercises.
3. Understand and apply role of the physical agents and their use in electrotherapy modalities.
4. Apply the basic concepts of electronics and applications onto physiotherapy

GENERAL PHYSICS (MECHANICS):

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	**Basic Concepts** a) Centre of Gravity (COG) b) Line of Gravity (LOG) c) Planes and axis of motion (mechanical and anatomical	05
2	**Principles of stability** a) Base of Support (BOS) b) Height c) COG and LOG d) Mass of body e) The impact of forces f) Friction g) Segmentation h) Visual factors i) Psychological and Physiological factors	05
3	**Force, Motion and Work** a) Definition, unit, resolution of forces. b) Magnitude of force c) Centripetal and Centrifugal force. d) Point of application of force e) Direction of force and Resistance f) Arm of lever g) Perpendicular distance	10

	h) Composite effect of two or more forces i) Methods of determining the components of force and work, j) Principles of motion: k) Causes of motion, l) Motions experienced by the body, m) Newton's laws of motion. n) Types of motion, direction and quantity of motion, o) Speed, p) Velocity, q) Work, r) Energy and Power Movements of body as a whole and of segments of body in air,wate and on surface	
4	a) Force of gravity b) Centre of gravity s) Line of gravity and base	03
5	**Friction** a) Force of friction b) Static and dynamic friction c) Limit of friction c) Friction a necessity and evil.	05
6	**Musculoskeletal mechanics** a) Anatomical levers b) Angle of pull c) Mechanical advantage d) Wheel and axle e) Pulley f) Fixed and movable pulley g) Pendulums h) Elasticity d) Spring - properties of spring and application	10
7	**Fluid mechanics** a) Viscosity- definition b) Coefficient of viscosity c) Streamline and turbulent flow d) Effect of temperature and pressure on viscosity e) Principle of Archimedes f) Laws of floatation g) Hydrostatic pressure h) Buoyancy i) Surface tension j) Excess pressure in spherical liquefied drop i) Physical property of water	10

8	**Heat** a) Heat transfer b) Properties of thermal radiation c) Specific heat d) Thermal capacity e) Energy conversion f) Ist and IInd law of thermodynamics g) Physical effects of heat – expansion, evaporation, thermioni emission etc. h) Concept of heat and temperature, measurement of heat thermometry i) Thermometer. j) Method of measuring body temperature. k) Human body temperature. k) Biophysics of superficial heat and cold	05
9	**Sound** a) Origin of sound b) Characteristics of sound waves c) Velocity of sound in air and water d) Effect of temperature, pressure, density of medium, humidity, win on sound waves. e) Frequencies of sound waves f) Infrasonic, Normal hearing band and Ultrasonics g) Reflection, Refraction and Attenuation of Sound waves h) Acoustic Impedance i) Interference of sound waves j) Resonance, Echo, Doppler effect k) Fresnel and Fraunhofer zones in Ultrasonics	05

Electricity and Electronics:

Sr. No.	Topic	Hours
1	**Fundamentals of Low frequency currents** a) Production of electricity, mains supply, b) A.C. currents & Faradic type current c) D.C. currents – Types d) Fundamentals of electrical charges e) Static electricity f) Physics of direct currents g) Ohm's law h) Conductors i) Capacitors j) Rheostats k) Potentiometers l) Ammeters m) Oscilloscopes n) Types of electrodes o) Skin resistance p) Electrodes - Types & significance q) Gels	10
2	**Fundamentals of High frequency currents** a) Magnetism b) E.M.F. Conduction c) Lenz's Law d) Transformers and its types. e) Thermionic valves. e) Semi–conductors: types, transistors f) Electronic circuits– oscillators, pulse generators	05
3	**Electromagnetic spectrum** a) Electromagnetism and its production b) Physical properties of electromagnetic radiations c) Electromagnetic spectrum d) Laws of transmission- reflection, refraction, absorption, attenuation e) Grothus' law f) Cosine law g) Inverse square law h) Practical application of all Laws i) Uses of Electromagnetic waves **j)** Environmental currents and fields – risk factors on prolonged exposure t electromagnetic field	10

4	**Production, Physical principles, Panel diagram, Testing of apparatus** a) S.W.D. b) Ultra-sound c) U.V.R. d) I.F.T. and Beat frequency currents e) I.R. f) LASER (no panel diagram).	22
5	**Light** a) Emission and absorption spectra b) Electromagnetic spectrum c) Laws of transmission, reflection, refraction, absorption. d) Internal reflection and fibre optics e) Interference of light. f) LASER and its application	10
6	**Therapeutic continuous / interrupted direct currents & their various wave forms, A.C. current**	05
7	**Bio-physics of superficial heat & cold (Only basic principles)** **a)** Home remedies, **b)** Paraffin wax bath **c)** Whirl pool **d)** Contrast bath **e)** Hydro-collator hot packs / cold packs **f)** Cryotherapy	30
8	**a) Electric Shock** **b) Earth Shock**	02

1152107 - PROFESSIONAL PRACTICE & ETHICS
(Not for University Exam)

COURSE OBJECTIVES:-

5. This course is aimed to enable the candidate to acquire the knowledge of ethical code of professional practice, its moral & legal aspects, role of state and national council, WHO & WCPT, GSCPT.

COURSE OUTCOMES:

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

1. Be able to understand and apply the moral values and meaning of ethics in educational sector, clinical practice and conducting research.
2. Acquire bedside manners and communication skills in relation with patients, peers seniors and other professionals

COURSE CONTENTS:-

Sr, No.	Topic	Hours
1	Introduction to the history of physiotherapy	03
2	Orientation to the curriculum, clinical areas and geographical location	05
3	Concept of morality & ethics	06
4	Concept of professionalism and professional dress code	05

1152108 - COMPUTER APPLICATIONS
(Not for University Exam)

COURSE OBJECTIVES:-

1. The course enables the students to understand the fundamentals of computer and its basic applications.

COURSE OUTCOMES:

1. Student will be able utilize knowledge on data processing, programming and software learning to organize data.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	**Introduction to data processing:** a) Features of computers. What are Hardware and Software? b) Advantages of using computers. Role and uses of computers. Wha is data processing? c) Application areas of computers and common activities in dat processing. Types of data processing, characteristics of application	05
2	**Hardware concepts:** a) Architecture of computers – characteristics of discs, tape terminals, printers, network. b) Types of storage devices. c) Concept of damage. Application of networking concept of P system care, floppy care, data care etc.	05
3	**Concept of software** a) Classification of software: System software. Application of softwar Operating System, Computer System, computer virus, precautior against viruses, dealing with viruses, computers in medical electronics.	04
4	**Basic anatomy of Computers:** a) Principles of programming: Computer application – principles i scientific research, work processing, medicine, libraries, museum education, information system. b) Data processing c) Computers in Physical Therapy – Principles of EMG, Exercis testing equipment, Laser.	05

1152109 - ENGLISH
(Not for University Exam)

COURSE OUTCOMES:

1. The course is designed to help Acquire a good command and comprehension of the English lang through individual papers and conferences.
2. Become thoroughly knowledgeable about and skilled in a range of professional communication skills.
3. Learn how to communicate effectively across cultures in their personal, academic, and professional settings.
4. To excel in your work, hone your presentation and business writing skills.
5. To differentiate themselves and advance their careers, develop soft talents.
6. To succeed in a multidisciplinary and cross-cultural work setting, develop a variety of intelligences and an open mindset.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	**Introduction:** a) Study techniques b) Organization of effective note taking and logical processes o analysis and synthesis. c) Use of the dictionary d) Enlargement of vocabulary e) Effective diction	03
2	**Applied Grammar:** a) Correct usage b) The structure of sentences c) The structure of paragraphs **d)** Enlargement of vocabulary	03
3	**Written composition:** a) Precise writing and summarizing b) Writing of Bibliography **c)** Enlargement of vocabulary	03
4	**Reading and Comprehension:** **Review of selected materials and express oneself in one's words an enlargement of vocabulary.**	03
5	**The study of various forms of composition:** **Paragraph, essay, letter, summary, practice in writing**	03

6	**Verbal Communication:** **Discussions and summarization, debates, oral reports, use i teaching.**	04

1152110 - ENVIRONMENTAL SCIENCES

(Not for University Exam)

COURSE OBJECTIVE:-

After completion of this course, student will be able to:

1. Be aware of the environment around us and develop an understanding of sustainable development. Acquire a basic scientific understanding of environmental issues and their possible solutions.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	**Multidisciplinary nature of environmental studies** a) Definition, scope and importance b) Need for public awareness	03
2	**Natural Resources:** **Renewable and non-renewable resources:** Natural resources and associated problems. a) Forest resources: Use and over-exploitation, deforestation, cas studies. Timber extraction, mining, dams and their effects on fore and tribal people. b) Water resources: Use and over-utilization of surface and groun water, Floods, drought, conflicts over water, dams-benefits an problems. c) Mineral resources: Use and exploitation, environmental effects c extracting and using mineral resources, case studies. d) Food resources: World food problems, changes caused by agricultu and overgrazing, effects of modern agriculture, fertilizer-pesticid problems, water Logging, salinity, case studies. e) Energy resources: Growing energy needs, renewable and no renewable energy sources, use of alternate energy sources. Cas studies. f) Land resources: Land as a resource, land degradation, man induce Landslides, soil erosion and desertification. g) Role of an individual in conservation of natural resources. h) Equitable use of resources for sustainable lifestyles.	05
3	**Ecosystems** a) Concept of an ecosystem. b) Structure and function of an ecosystem. c) Producers, consumers and decomposers. d) Energy flow in the ecosystem. e) Ecological succession. f) Food chains, food webs and ecological pyramids.	05

	g) Introduction, types, characteristic features, structure and function o the Following ecosystem :- ● Forest ecosystem ● Grassland ecosystem ● Desert ecosystem ● Aquatic ecosystems (ponds, streams, lakes, rivers, ocean estuaries)	
4	**Biodiversity and its conservation** a) Introduction – Definition: genetic, species and ecosystem diversity. b) Biogeographical classification of India c) Value of biodiversity : consumptive use, productive use, socia ethical, aesthetic and option values d) Biodiversity at global, National and local levels. e) Inida as a mega-diversity nation f) Hot-sports of biodiversity. g) Threats to biodiversity: habitat loss, poaching of wildlife, mar wildlife conflicts. h) Endangered and endemic species of India **i)** Conservation of biodiversity: In-situ and Ex-situ conservation o biodiversity	05
5	**Environmental Pollution** a) Definition, Cause, effects and control measures of:- b) Air pollution, Water pollution, Soil pollution, Marine pollution, Nois pollution, Thermal pollution, nuclear hazards c) Solid waste Management: Causes, effects and control measures o urban and Industrial wastes. d) Role of an individual in prevention of pollution. e) Pollution case studies. f) Disaster management: floods, earthquake, cyclone and landslides g) Environment Protection Act. h) Air (Prevention and Control of Pollution) Act. i) Water (Prevention and control of Pollution) Act j) Wildlife Protection Act k) Forest Conservation Act l) Issues involved in enforcement of environmental legislation. m) Public awareness.	10
6	**Human Population and the Environment** a) Population growth, variation among nations. b) Population explosion – Family Welfare Program. c) Environment and human health. d) Human Rights. e) Value Education. f) HIV/AIDS.	05

	g) Women and Child Welfare**.** h) Role of Information Technology in Environment and human health. **i)** Case Studies.	
7	**Field work** a) Visit to a local area to document environmental assets rive forest/grassland/hill/mountain b) Visit to a local polluted site-Urban/Rural/Industrial/Agricultural **c)** Study of common plants, insects, birds. Study of simple ecosystem: pond, river, hill slopes, etc	05

COURSE CONTENTS

SECOND YEAR

B. PHYSIOTHERAPY

1151201 – PATHOLOGY & MICROBIOLOGY

SECTION-I (PATHOLOGY)

OBJECTIVES:

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

1. Acquire the knowledge of concepts of cell injury and changes produced thereby in different tissues and organs; capacity of the body in healing process.
2. Recall the etio-pathogenesis, the pathological effects and the clinical-pathological correlation of common infection and non-infectious disease.
3. 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.
4. Correlate normal and altered morphology of different organ systems in different diseases needed to understand the disease process and their clinical significance (with special emphasis to neuro-musculo skeletal and cardiovascular – respiratory system).
5. Acquire knowledge of common immunological disorders and their resultant effects on the human body.
6. Understand in brief, about the hematological diseases and investigations necessary to diagnose them and determine their prognosis.

Sr. No	Topic	Hour
1	**General Pathology:** a) Introduction: Aims and objects of study of pathology, definitions c health, disease, causes of disease, methods of study of disease. b) Inflammation – General morphology, types, phenomenon of acut inflammation. c) Tissue repair – Wound healing, fracture, skin, nerves, muscles d) Cell Injury – Degeneration, physical and chemical irritants, ionizin radiations, cellulites. e) Disturbance of circulation – edema, thrombosis, infarction, embolism. f) Necrosis, Gangrene g) Growth and its disorders – atrophy and hypertrophy (pseudo), Hyperplasia h) Cellular ageing i) Tumors – definitions, classification, characteristics of being an malignant tumors, etiology and spread of tumors, systemic effects. j) Infection – Acute, chronic, including AIDS. k) Blood-Anemia, definition, classification, etiology, lab investigation blood picture; Hemorrhagic disorders – causes and classificatio (hemophilia) l) Immunity, Hypersensitivity and Auto immune disorders (RA, SLE)	33

2	**Systemic Pathology:** (Each condition in this section is to be taught under the specific headings c Causes, Development, Gross and Microscopic only). a) Respiratory System: Pneumonia, Bronchitis, Bronchiectasis, Asthm Emphysema, Tuberculosis and Carcinoma of Lungs Occupational Lun Diseases b) Cardiovascular System: Rheumatic Heart diseases, Myocardial infarctio Atherosclerosis and other disease of blood vessels – TAO, Buerger diseases, Thrombophlebitis, Congenital Heart diseases, c) Alimentary System: Peptic Ulcer, Ulcerative lesions of intestine d) Liver: Hepatitis, Cirrhosis e) CNS: Meningitis, Encephalitis, Cerebral Hemorrhage, CVA, Brief outlin of CNS Tumors f) Peripheral Nerves: Neuritis, Neuralgia, GBS, Neuropathies. g) Bones and Joints: Osteomyelitis, Osteoarthritis, Septic, Arthritis, Gou Osteomalacia, Bone Tumors briefly*-Giant Cell tumor,Osteosarcom Ewing's h) Muscles: Disorder of muscles including Poliomyelitis and Myopathies, Volkman's Ischaemic contracture i) Skin:*** Scleroderma, Psoriasis, Autoimmune disorders j) Urinary System:** Nephritis, Glomerular Nephritis, Nephrotic Syndrom k) Endocrine System:*** Thyroid – Thyroiditis and Thyroid tumors, Diabetes	43

1151201-MICROBIOLOGY

COURSE OUTCOMES:

At the end of the course the candidate will be able to have sound knowledge of the agents responsible for causing human infections pertaining to CNS, CVS, musculoskeletal and Respiratory system.

COURSE CONTENTS:-

Sr. No	Topic	Hour
1	**General Bacteriology:** a) Introduction, historical background, classification of micro organisms b) Morphology of bacteria c) Staining of bacteria d) Sterilization e) Cultivation and culture media	12
2	**Systemic Bacteriology:** a) Gram-Positive cocci – Streptococci, Pneumococci, Staphylococci b) Gram-Negative Cocci – Gono and Meningococci c) Gram-Positive Bacilli d) Gram-Negative Bacilli-Typhoid, Cholera, Dysentry e) Aerobic-Diptheria, T.B., Leprosy f) Anaerobic-Tetanus, Gas Gangrene, Botulism	15
3	**Immunology:** a) Immunity, Antigens b) Antibodies, Ag-Ab Reaction c) Agglutination, precipitation d) Hypersensitivity reactions	10
4	**General Virology:** a) Poliomyelitis b) Rabies c) Demonstration of test in: diagnosis of AIDS, Hepatitis and Syphilis d) Corona virus disease e) Chikunguniya f) Dengue g) H1N1 Virus	15
5	**Parasitology:** a) Malaria b) Amoebiasis c) Round worm and loop worm	8

6	**Mycology:** a) Candidiasis b) Ring worm **c)** Scabies	6
7	**Applied Microbiology:** **concerning systemic, Parasitology, Mycology, Immunolog hypersensitivity tests** a) Infection of bones/joints b) Infection of burns case c) Serological test – interpretation of Antistreptolysin O (ASO), Rheumatoi Arthritis (RA), Venereal Disease Research Laboratory (VDRL), C Reactive Protein (CRP), Widal, Enzyme-Linked Immunoassay (ELISA (HIV, HBsAg), PCR based diagnosis d) Demonstration of gross/microscopic appearance of various parasites	5
8	**Aseptic universal precautions & practices Biomedical waste an universal precautions**	5

1151202- PHARMACOLOGY

COURSE OUTCOMES:

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

1. Describe pharmacological effects of commonly used drugs by patients referred for physiotherapy; list their adverse reactions, precautions to be taken, contraindications, formulation and root of administration.
2. Identify whether the pharmacological effect to the drug interferes with the therapeutic response of physiotherapy and vice versa
3. Indicate the use of analgesics and anti inflammatory agents with movement disorders, with consideration of cost efficiency and safety for individual needs.
4. Get the awareness of other essential and commonly used drugs by patients. The basisof their use and common as well as serious adverse reaction.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	Chemical character and general action of drugs	2
2	Principles of drug administration and routes of administratio distribution, metabolism, excretion of drugs, factors influencing drug reaction, dosage and factors modifying it.	8
3	Drug toxicity including allergy and idiosyncrasy.	6
4	Definition, action, indication, contraindication, adverse reaction of th following: a) Drugs acting as PNS: stimulating and inhibiting, Adrenergi cholinergic and anticholinergics. Drugs acting at NM junction. Muscle relaxants b) Drugs acting on CNS: Analgesics, antipyretics, narcotics, an inflammatory, anti epileptic, sedatives, hypnotics, tranquilizer anticonvulsants, stimulants, psychotherapeutics, alcohol c) Pulmonary effects of general and local anesthetic agents d) Drugs acting on CVS: antihypertensive, vasoconstrictor vasodilators, diuretics, mucolytic agents. Drugs that influenc myocardiac contractility and heart rate. e) Drugs acting on Respiratory system: bronchodilators, drugs usedi inhalation therapy, drugs acting on CNS and cardio respirator system which influence the physical exercise.	36
5	Antimicrobial Agents	4
6	Immunological agents and vaccines	4
7	Chemotherapeutic agents	4

8	Endocrine Pharmacology: thyroxin, glucocorticoids, anabolic steroids, calcitonin, insulin an hypoglycemic agents, Estrogen and Progesterone Drugs used for Osteoporosis, Vitamin D, Calcium, Phosphorous	8
9	Heamatinics - vitamin B, Iron	2
10	Irritants counterirritants	2

1151203- EXERCISE THERAPY II

COURSE OUTCOMES:

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

1. Describe the biophysical properties of connective tissue and the effect of biomedical loading and factors which influence the muscle strength and mobility of articular and periarticular soft tissue.
2. Acquire the skill of assessment of isolated & group muscle strength, & Range of motion of the joints subjectively & objectively
3. To demonstrate general fitness, exercise and shall gain fitness for oneself

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	**Passive movements:** a) Definition b) Types c) Technique d) Effects and uses e) CPM unit f) Comparison of active with passive movements for all joints c exterminates, neck and trunk.	10
2	**Stretching** a) Definitions related to stretching b) Types of contractures c) Differentiation properties of soft tissues affecting elongation andaim of stretching d) Manual and mechanical stretching, e) Cycle mechanical stretching f) Indications g) Aims of stretching h) Principles i) Contraindications j) Myofascial Release Technique (MFR)	25
3	**Traction** a) Types b) Effects c) Principles of application for cervical and lumbar spine d) Traction to soft tissues of joints – gliding movements	10

4	**Manual Therapy and Peripheral Joint Mobilization** a) Causes of restriction of R.O.M., b) Prevention of restrictions, c) Schools of Manual Therapy d) Basics of Maitland, Kaltenborn, Mulligan mobilization e) Biomechanicalbasis for joint mobilization f) Principles of application of Joint Mobilization g) Joint shapes and types of motion; h) Stretching, glides, compression, traction i) Grades of mobilization j) Techniques of mobilization of various joints of limbs k) Mobilization of joints R.O.M. through functional diagonal patterns, l) Joint manipulation-definition, types m) Indications, contraindications, precautions of joint mobilization an manipulation	35
5	**Advance soft tissue Mobilization** a) Basic principles of MET (Muscle Energy Techniques), b) MFR (Myofacial Release Techniques) c) PRT (Positional Release Therapy) d) Neural Tissue Mobilization e) Active release techniques (Basics only)	17
6	**Manual Muscle Testing (M.M.T.)** a) Need of M.M.T b) Uses of MMT c) Fundamental principles, d) Anatomical and physiological basis, e) Oxford scale of muscle gradation, f) Principles of isolation, substitution, stabilization, g) Grading procedure for muscles of extremities, neck and trunk. h) Limitations of manual muscle testing i) Techniques of MMT for individual muscles and group j) Static power Test k) Dynamic power Test l) Endurance test m) Dynamometers - Technique of application and uses n) Voluntary control of movement gradation by Bobath, Brunnstrom.	35

7	**Posture:** a) Types b) Factors influencing posture c) Regulation of posture and posture mechanism d) pelvic tilt and postural deviations of spine and its treatment e) Principles of re-education: corrective methods and techniques f) Patient education g) Crawling exercises: principles, types, effects and uses of clapp' crawl	10
8	**Strengthening of muscles (PRE):** a) Physiology of muscle performance - Structure of skeletal muscle chemical and mechanical events during contraction and relaxation muscle fiber type, motor unit, forces gradation. Causes of decrease muscle performance Physiologic adaptation to training: Strength & Power, Endurance b) Principles involved to prevent muscle wasting, c) Rood's technique of initiating muscle contraction, d) Progressive strengthening of muscles (loads assisted and resiste exercises), e) Use of equipment f) Re-education of muscles and restoration of functions g) Practice of strengthening of muscles of limbs, neck, trunk and face h) Use of manual and mechanical resistance i) Contraindications j) Isometric and isokinetic exercises regime k) Plyometrics l) Specific exercise regimens m) Isotonic: de Lormes, Oxford, macqueen, Circuit weight training n) Isometric: BRIME (Brief Resisted Isometric Exercise), Multiple Angl Isometrics Isokinetic regimens	30
9	**Proprioceptive Neuromuscular Facilitation** a) Introduction b) Responses of nm mechanism c) Definitions & goals d) Basic neurophysiologic principles of PNF e) Basic techniques of PNF patterns of arm, leg, neck, head and trun (emphasis on straight patterns) f) Specific techniques of facilitation g) Mobility: contract relax, hold relax, rhythmic initiation h) Strengthening: slow reversals, repeated contractions, timing fo emphasis, rhythmic stabilization i) Stability: alternating isometric, rhythmic stabilization	35

	j) Skill: timing for emphasis, resisted progression endurance: slo reversals, agonist reversal k) Inhibitory techniques l) Bobath rood's and kabat approaches	
10	**Relaxation** a) Definitions: Muscle Tone, Postural tone, Voluntary Movement b) Degrees of relaxation c) Pathological tension in muscle d) Stress mechanics e) Types of stresses , Effects of stress on the body mechanism f) Indications of relaxation g) Methods & techniques of relaxation h) Principles & uses **i)** Techniques of relaxation - General, Local, Jacobson's, Mitchel' additional methods	10
11	**Balance** a) Physiology of balance: b) Contributions of sensory systems c) Processing sensory information d) Generating motor output e) Components of balance (sensory, musculoskeletal, biomechanical) f) Causes of impaired balance g) Examination & evaluation of impaired balance h) Activities for treating impaired balance: mode, posture, movement i) Precautions & contraindications j) Types k) Balance retraining	15
12	**Neuro Muscular coordination:** a) Anatomy & Physiology of cerebellum with its pathways b) Definitions: Co-ordination, Inco-ordination c) Causes for Inco-ordination d) Test for co-ordination: equilibrium test, non equilibrium test e) Factors governing co ordination f) Principles of re-education g) Frenkel's Exercise: uses and technique of application and progression h) Home exercise.	15
13	**Functional Reeducation:** a) Mat activities for re education of hemiplegics, paraplegics quadruplegics and cerebral palsy **b)** Walking and functional re-education in neurological and orthopedic conditions.	15

14	**Aerobic exercises:** a) Definition and key terms b) Physiological response to aerobic exercise c) Examination and evaluation of aerobic capacity d) Exercise Testing, fitness testing, stress testing for healthy an convalescent individuals. e) Determinants of an Exercise Program f) Normal and abnormal response to acute aerobic exercise g) Physiological changes that occur with training h) Application of Principles of an Aerobic conditioning program fo patients – types and phases of aerobic training i) Physiological effects and therapeutic uses, Pharmacological aspec of exercises.	15
15	**Breathing exercises:** a) Mechanisms of normal breathing b) Muscles of respiration c) Changes in thoracic cage during the process of respiration d) Segmental and diaphragmatic breathing exercises, pursed lip breathing e) FET f) Breathing mechanisms and postural drainage g) Assistive measures h) Techniques, indications and contraindications	20
16	**Hydrotherapy:** a) Physiological properties of water and hydrodynamics b) Use of special equipments, techniques, Effects and uses, merits an demerits of hydrotherapy c) Applications of Bad Ragaz Technique d) Indications and contraindications	07

1151204-KINESIOLOGY

COURSE OUTCOMES:

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

1. Acquire the skill of assessment of isolated and group muscle strength subjectively and objectively.
2. Analyze normal human posture and its associated problems, its management.
3. Analyze the various normal musculoskeletal movements during breathing, gait and daily living activities and in terms of biomechanical and physiological principles.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	**Mechanics of joint motion:** a) Joint design b) Materials used in human joints c) General properties of connective tissues d) J o i n t function e) Joint motion f) Structure and types of joints g) Types of movements	05
2	**Mechanics of muscular action:** a) Mobility and stability functions of muscles b) E l e m e n t s of muscle structure c) Muscle function d) Classification of muscles, e) Line of pull, f) Types of contractions, g) Role of muscles and tendons, h) Action of two joint motions, i) Non customary action	04
3	**Skilled Movements:** a) Rope climbing b) Cycling c) Running d) Ballistic movements e) Volitional movements	02
4	**Impetus:** Impetus to external objects and receiving impetus	02
5	**Posture** a) Static and dynamic posture	05

	b) Postural control c) Kinetics and kinematics of posture d) Ideal posture **e)** Analysis of posture	
6	**Locomotion:** a) Normal gait analysis b) Definition of gait c) Phases of normal gait d) Normal gait with kinetic and kinematics e) Abnormal pathological gaits f) Gait training **g)** Kinematics and kinetics of the trunk and upper extremities in relatio to gait, stair case climbing and running	15
7	**Biomechanics of joints:** Kinetics, kinematics and patho-mechanics of various joint – hip , kne ankle, foot, shoulder, elbow, wrist and hand	30
8	**Biomechanics of spinal column:** a) Spinal curves b) Articulations c) Non contractile soft tissue of column d) IV disc e) Ligaments f) Intrinsic equilibrium g) Movements of spinal column **h)** Muscle mechanics	12
9	**Mechanics of pelvic complex:** a) Pelvis at rest, in standing body and in motion b) Lumbosacral Rhythm **c)** Patho mechanics of pelvis	03
10	**Mechanics of thorax:** a) General structure and function b) Rib cage movements c) The muscles associated with the rib cage d) Movements between ribs and vertebrae, sternum and ribs, **e)** Patho mechanics of respiration	06
11	**The Tempero-mandibular Joint General features, structure an function**	02
12	**Postural strain and occupational hazards:** a) Biomechanical aspects of abnormal postural and postural strain du to occupation **b)** Correct use of body mechanics at home, at school, work and a recreation	03
13	**Kinetics and kinematics of ADL :** a) Supine to sitting	06

	b) Sitting to standing c) Squatting d) Climbing up and down e) Pushing f) Pulling g) Overhead activities h) Walking i) Running **j)** Jogging.	

1151205 - ELECTROTHERAPY

COURSE OUTCOMES:

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

1. Recall the Physics – Principles and laws of electricity, Electromagnetic spectrum, Ultrasound
2. Describe the electrical main supply, Electric shock – precautions
3. Describe and identify various types of electrodes used in therapeutics, resistance offered by the skin and significance of various media used to reduce the same
4. Describe the production, physiological effects, therapeutic uses, merits/ demerits, indications and contraindication of various Low, Medium and High frequency currents and modes. Describe the panel diagrams of the machine
5. Acquire the skill of application of Low, Medium and High frequency currents on models for the purpose of treatment
6. Describe the physiological effects and therapeutic uses of various therapeutic ions tobe used for the application of Iontophoresis
7. Describe effects of electromagnetic field at the cellular level and risk factors on prolonged exposure
8. Describe the physiological effects and therapeutic uses of various topical pharmaco-therapeutic agents to be used for the application of phonophoresis
9. Acquire an ability to select the appropriate mode as per the tissue specific and area specific application

COURSE CONTENTS:-

Sr, No.	Topic	Hours
1	**LOW FREQUENCY CURRENTS**	
	Review of physics: Current, electricity, Ohm's law, Resistance, Rheostats, potentiometers, Electromagnetic induction, capacitor valves, semiconductors and transistors	10
	Nerve Muscle Physiology: Resting potential, action potentia propagation of action potential, motor unit, synapse and synapti transmission of impulses. Effect of negative and positive electrodes on nerve & accommodation	10
	Faradic Current: Definition, characteristic and modified faradi current, sinusoidal current, parameters of faradic stimulation physiological and therapeutic effects of faradic-stimulation.Indication contra-indications and precautions, techniques of stimulation- grou muscle stimulation, faradic foot bath, faradism under pressure and pelvic floor muscle re-education	20
	Interrupted Direct Current: Introduction & characteristics, Parameters of stimulation, physiological and therapeutic uses of stimulation, precautions	15

	Galvanic Current: Introduction & characteristics, Parameters c stimulation, physiological and therapeutic uses of stimulation, precautions	05
	Iontophoresis: Definition, principles of iontophoresis, physiologicalan therapeutic uses, indications, techniques of iontophoresis, principles of treatment, contra-indications and dangers	05
	a) Sinusoidal Current & Diadynamic Current in Brief b) Cathodal / Anodal galvanism c) Microcurrents **d)** High Voltage Pulsed Galvanic Stimulation (HVPGS**)**	05
	TENS: a) Definition b) Theories of pain modulation emphasizing on "Pain Supressio System", c) Types of TENS d) Techniques of application e) Types of Electrodes & Placement of Electrodes f) Physiological Effects and therapeutic uses g) Indication and contra –indications	25
2	**MEDIUM FREQUENCY CURRENT**	
	Interferential current: Definition, characteristics, physiological a therapeutic effects of Interferential current, techniques of applicatio indications, contra-indications and precautions **Russian Currents** Parameters, technique of application, effects and use Indications and Contraindications **Rebox currents** Parameters, technique of application, effects and use Indications and Contraindications	25
	Bio-feedback: a) Introduction b) Principles of bio-feedback c) Therapeutic effects of bio-feedback d) Different types of biofeed back e) EMG biofeedback f) Positive and negative feedback g) Technique of application **h)** Indications and contra-indications	10
	Advanced Electrotherapy: a) Computerization in electrotherapy, b) Programming of parameters of treatment, c) Appropriate selections of parameters and combination therapy Combination therapy- a) Principles, **b)** Therapeutic uses and indications like, Ultrasound therapy wit stimulation or TENS etc.	10

	Electrical currents for Care of the wound	05
3	**HIGH FREQUENCY CURRENT**	
	Short Wave Diathermy (SWD): a) Introduction b) Physiological effects and Therapeutic effects of SWD c) Methods of application (capacitor field method and cable method etc.) d) Techniques of treatment, indication, contra-indications and dangers.	25
	Pulsed SWD: a) Definition b) Characteristics c) Mechanism of work d) Physiological effects and therapeutic effects e) Indications, techniques of application **f)** Principles of treatment and contra-indications	05
	Ultrasonic Therapy: a) Introduction and characteristics b) Ultrasound Therapy parameters c) Coupling media d) Therapeutic effects e) Indications contra-indications and dangers f) Testing of apparatus **g)** Techniques of application & dosage, Phonophoresis	30
	Infra Red Rays (IRR): a) Production of infra red rays b) Luminous and non – luminous generators, penetration, technique o application, physiological effects and therapeutic uses of infra- red ray duration and frequency of treatment, indications and contra indication dangers and precautions.	05
	Ultra Violet Rays(UVR): a) Production of UVR, test dose, physiological effects of UVR dosimeter i UVR. PUVA	05
	LASER: a) Introduction and characteristics b) Effects on tissue c) Therapeutic effects d) Principles of application e) Indications **f)** Contra-indications and dangers	15
	Microwave Diathermy (MWD): a) Introduction and characteristics, physiological effects b) Therapeutics effects c) Techniques of application and principles of treatment d) Indications	05

	e) Contra-indications and dangers	
	Superficial heat modalities: a) Structure of the apparatus b) Composition of wax and mineral oils physiological effects an therapeutic uses of wax bath **c)** Technique of application	05
	Other Heating Modalities: a) Heating pad **b)** Moist heat and fluid therapy	05
	Cryotherapy: a) Physiological effects and therapeutic uses of ice therapy b) Techniques of application **c)** Contra – indication to ice treatment	05
	Hydrotherapy: a) Properties of water buoyancy b) Effects of buoyancy on movement c) Hubbard tank d) Contrast bath, **e)** Whirlpool bath	15
	Care of the wound: a) UVR, b) LASER **c)** Ultrasound	05
	Recent advances in Electro-physiotherapy: a) High power class IV LASER b) Shockwave c) PEMF (Pulse Electro Magnetic Energy), High Intensity Magnetotherapy d) Spinal Decompression, e) Pneumatic Compression therapy f) Functional Electrical Stimulation g) TECAR Therapy h) Cold air cryotherapy i) Virtual and Augmented Reality **j)** Brief idea about Robotic therapy	34

MISCELLANEOUS MEDICINE SUBJECTS

(Not for University Exam)

1152206 - PSYCHIATRY

COURSE OUTCOMES:

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

1. Enumerate various psychiatric disorders with special emphasis to movement, pain and ADL & describe the various causative factors and methods of assessment and management
2. Acquire the knowledge in brief about the pathological and etiological factors, common signs and symptoms and management of various psychiatric conditions
3. Describe in brief the various treatment modalities commonly used.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	**Mental health:** a) Normal Mental Health b) Criteria of normality or matured personality c) Factors contributing to normal mental health.	03
2	**Study of Abnormal Personality:** a) Neurotic b) Hysterical c) Psychotic d) Paranoid e) Schezoid **f)** Psychopathic etc.	05
3	**General Etiological Factors:** a) Hereditary b) Genetical Constitutional c) Acquired d) Traumatic e) Infective f) Toxic g) Degenerative h) Social and Environmental including pathogenic family patterns i) Precipitating causes **j)** Frustration and conflicts.	05
4	**Symptomatology and Treatment of Psychoses:** a) Functional - Functional Schizophrenic, reaction group, simple paranoid, catatonic, hebephrenic paranoid state, paranoia, juvenile schizophrenia, autistic thinking, dementia. b) Organic - Toxic confused states, senile psychoses, arteriosclerotic	05

	degenerative, G.P.I. c) Affective Disorders: Dynamics of Mania, hypomania, chronic mania M.P.D. Involutional depression, senile depression, postpartur depressive reactions, reactive and neurotic depression, endogenou depression, suicide (egoistic, Altruistic, Anomic) Epileptic Disorders Epileptic Psychoses.	
5	**Neurosis :** a) Symptomatology, diagnosis and treatment and psychodynamics o anxiety state, hysteria, conversion reaction, dissociative reaction, dua personality, obsessional neurosis, phobias, hypochondriasis, neurasthenia and mental fatigue.	05
6	**Mental Retardation:** a) Definition, b) Etiological factors - Prenatal, postnatal, infective, hormona congenital. **c)** Types of mental retardation, clinical types-microcephaly hydrocephalus, mongot, family idiocy, phenylketonuria etc Symptomatology of various grades of retardation, differentia diagnosis and treatments.	05
7	**Child Psychology:** a) Behavior disorders - Nail biting, Enuresis, Truancy, Thumb sucking, Speech difficulties, Pica, Vomiting, Anorexia, delinquency.	05
8	**Introduction to dynamics of Psychophysical disorders:** a) Asthma, skin rashes, hypertension, bowel disorders. b) Introduction to treatment in psychiatry - E.C.T., Insulin, coma therapy c) Drug therapy - Tranquilizer, Mood elevators, hypnotics and sedatives Psychotherapy - Deep and superficial, individual and group expressive, suppressive, environmental manipulation, re- educative. d) Psychodrama e) Psychoanalysis **f)** Play Therapy	05

1152207 - RADIOLOGY

COURSE OUTCOMES:

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

1. Identify common chest conditions together with basic traumatic, infective, inflammatory and degenerative conditions and bony skeletal
2. Read CT, MRI of different joints.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	Introduction to Radiology	01
2	Importance of Radiology in Physiotherapy	01
3	X-rays of fractures of different bones in the body	01
4	X-rays of different stages of fracture healing	01
5	X-rays of different Orthopedic conditions - Osteoarthritis, Rheumatoid arthritis	01
6	Cervical & lumbar spondylosis, foot deformities etc.	01
7	X-rays of common chest conditions	01
8	C.T Scan, M.R.I., Angiography, 3D reconstruction of bones & joints	02

1152208 - ENT
(Not for University Exam)

COURSE OUTCOMES:

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

Identify common ear, nose, throat conditions together with basic traumatic, infective,inflammatory and degenerative conditions and skeletal, muscular or any other structural abnormalities.

COURSE CONTENTS:-

Sr, No.	Topic	Hours
1	**Anatomy & Physiology of Hearing:** Assessment & Management of Hearing Loss	01
2	**Introduction to Disease of ENT**: Otitis media, Sinusitis & Rhinitis	01
3	**Facial Nerve Palsy**: Causes & Management	01
4	Larynx & Associated functional paralysis with tracheostomy & Care of tracheostomy	01
5	**Vertigo**: Causes, Assessment & Management.	01

1152209 - OPTHALMOLOGY

(Not for University Exam)

COURSE OUTCOMES:

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

1. Acquire knowledge of structure and function of the eye
2. Describe etiology, patho-physiology, sign and symptoms and clinical evaluation of common ophthalmic conditions related to Physiotherapy

COURSE CONTENTS:-

Sr.No.	Topic	Hours
1	**Definition of blindness, and visual disability evaluation, investigative procedures used for testing visual failures.** **Common eye diseases** a) Including Refractory errors b) Conjunctivitis c) Trachoma	01
2	**Cataract and glaucoma,Squint and ptosis.**	01
3	**Eye lesions in leprosy, including causes treatment an complications of lagophthalmos.**	01
4	**Causes, clinical features and treatment of disorders of ocula movement occurring in diseases such as myasthenia gravi progressive supranuclear palsy and lower motor neuron diseases.**	01
5	**Causes, clinical features, treatment and prognosis in inflammator disorders, vitamin A deficiency, emphasis on preventable cause and** **prophylactic measures.**	01

1152210 - ALLIED THERAPEUTICS (Basics only)

(Not for University exam)

COURSE OUTCOMES:

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

1. Comprehend the use of various allied therapeutic sciences in health care delivery.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	Acupuncture and acupressure: definition, principles, techniques, physiological and therapeutic effects, contraindications and dangers	02
2	Introduction to Naturopathy	02
3	Magneto therapy	02
4	**Yoga Sana -pranayama and their scientific study** a) Definition b) Principles of Yoga c) Yogasana- Technique, Benefits, Contraindications & cautions fo each Asanas: **i. Asanas in supine** Pawanamuktasana, Ardha Halasana, Halasana, Setubandhasana, Naukasana, Matsyasana, Shavasana, Sarvangasana **ii. Asanas in prone** Bhujangasana, Ardha-Shalabhasana, Dhanurasana, Makarasana **iii. Asanas in sitting** Padmasana, Siddhasana, Sukhasana, Yogamudrasan Virasana.Vajrasana, Gomukhasana, Pashchimottanasana **iv. Asanas in standing** Padhastasana, Padangusthasana, Uttanasana, Utkatasana Tadasana, Trikonasana v. **Pranayama Anulom-vilom, Kapalbhati**	11
5	**Dry Needling**	05

1152211- PROFESSIONAL PRACTICE & ETHICS - II

(Not for University exam)

COURSE OUTCOMES:

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

1. Be able to understand the moral values and meaning of ethics
2. Acquire bedside manners and communication skills in relation with patients, peers seniorsand other professionals.
3. Be able to develop psychomotor skills for physiotherapist patient relationship.
4. Skill to evaluate and make decision for plan of management based on sociocultural valuesand referral practice.
5. Be able to develop behavioral kills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals
6. Be able to develop bedside behavior, respect & maintain patients' confidentiality.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	Ethical code of concept	01
2	Communication skills	02
3	Physiotherapist-patient relationship	03
4	Interviews – Types of interview, skills of interviewing	03

1152212- EVIDENCE BASED PRACTICE & ICF

COURSE OUTCOMES:

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

1. Understand concept of Evidence Based Practice and its implementation inPhysiotherapy
2. Search, review and use the evidences in Physiotherapy

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	**Introduction to Evidence Based Practice** Definitions,	02
	Evidence Based Practice, **Evidence Based Physiotherapy Practice**	
2	**Concepts of Evidence based Physiotherapy** **Awareness, consultation, judgment, creativity**	02
3	**Development of Evidence based knowledge** **The individual professional, professionals within a disciplin professionals across disciplines**	03
4	**Evidence Based Practitioner** **The reflective practitioner, the E model**	03

COURSE CONTENTS

THIRD YEAR

B. PHYSIOTHERAPY

1151301 - GENERAL MEDICINE

COURSE OUTCOMES:

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

1. Acquire the knowledge of Etiology, Patho-physiology, signs and symptoms and management in brief, of the infectious diseases, diseases of metabolism especially obesity and other related medical conditions, diseases of hematopoietic system, diseases of GI and urinary tract & endocrine disorders
2. Describe etiology, patho-physiology, sign and symptoms, clinical evaluation and management of the various cardio-vascular and respiratory disorders with interpretation of investigations: chest x-ray, Echocardiography, blood gas analysis, blood investigations and pulmonary function test
3. Acquire the knowledge of auto-immune & rheumatological conditions with special emphasis to those involving Musculoskeletal system and skin, with regards to etiology, pathophysiology, signs and symptoms, differential diagnosis and medical management of same

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	**Respiratory Diseases:** a) Lung function tests b) Pneumonia, ILD c) Respiratory failure d) Pulmonary edema e) Pulmonary embolism lung abscess f) Bronchiectasis g) Asthma h) Emphysema i) Pleural effusion j) Pneumothorax k) Empyema l) Chronic bronchiectasis m) Corona Virus Disease n) Swine Flu	14
2	**Cardio Vascular Diseases:** a) Rheumatic fever b) valvular lesions c) congestive cardiac failure d) ischaemic heart diseases (Angina pectoris and myo-cardia infarction) stress test, hypertension, peripheral vascular-diseases **(TAO, Raynauds disease).**	15

3	**Endocrinal Disorders:** a) Diabetes mellitus b) obesity c) Thyrotoxicosis **d)** Myxodema	05
4	**Gastro-intestinal Disorders:** a) Peptic ulcer b) Pancreatitis c) Dysentries and diarrhea d) Inflammatory bowel diseases e) Jaundice **f)** Cirrhosis of liver	05
5	**Infectious Disease:** a) Tuberculosis b) Malaria c) Typhoid d) Infective hepatitis **e)** Tetanus	05
6	**Nutritional Disorder:** a) Vitamins and its deficiencies b) Disorders including rickets and osteomalacia **c)** Anaemia**.**	05
7	**UrogentialSystem:** a) Structure and functions of kidneys including physiology o micturition b) Acute and chronic renal failure c) Glomerulo-nephritis **d)** Pyelonephritis**.**	05
8	**Rheumatology:** a) Rheumatoid arthritis b) Ankylosing spondylitis c) Gout d) Osteoarthritis e) Spondyloarthritis f) Systemic lupus erythromatous g) Polyarteritisnodosa h) Mixed connective tissue disorders **i)** Scleroderma	20
9	**Fungal Infections with emphasis on Mucormycosis**	02

1151301 - SKIN & V.D. (DERMATOLOGY)

COURSE OUTCOMES:

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

1. Acquire knowledge in structure and function of the skin and about various primary, secondary and special skin lesions related to systemic disorders
2. Describe etiology, clinical features and management of bacterial, fungal, viral, allergic, autoimmune skin diseases
3. Acquire knowledge in sexually transmitted diseases and leprosy.

COURSE CONTENTS:-

Sr.No.	Topic	Hours
1	**Structure and functions of normal skin:** Primary and secondary skin lesions.	01
2	Scabies and pediculosis.	02
3	**Fungal infections of skin:** a) Dermatophytosis b) Pityriasisversicolor c) Candidiasis.	02
4	**Bacterial infections of skin-lmpetigo / Boil.**	02
5	**Viral infections of skin-Herpes zoster.**	02
6	**Eczema / Dermatitis / Allergies.**	02
7	**Psoriasis / Acne / Alopecia / Vitiligo and Leucoderma.**	04
8	**Leprosy / Lepra - Reaction/Physiotherapy in leprosy.**	02
9	**Sexually transmitted diseases:** a) Syphillis - primary & secondary, b) Gonorrhoea c) Chancroid d) AIDS.	02

1151302 - NEUROLOGY

COURSE OUTCOMES:

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

1. Describe etiology, patho-physiology, sign and symptoms, clinical evaluation and management of the various neurological conditions with interpretation of laboratory & radiological investigations.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	Anatomy, Physiology, Lesions and diseases of Pyramidal system, extra pyramidal system, cerebellar system, spinal cord, upper and lower moto neuron, cranial nerves, brachial plexus, lumbosacral plexus and peripheral nerves.	08
2	Causes, Clinical features, and management of: Unconscious patient, Hemiplegia, paraplegia, quadriplegia, cerebral diplegia, spastic child foot drop and wrist drop.	15
3	Disorders of cerebral circulation.	08
4	Infections: Encephalitis, meningitis, poliomyelitis, transverse myelitis, slow viral diseases.	05
5	Diseases of Peripheral nerves: Peripheral neuropathy, other Neuropathies.	10
6	Muscle disorders: Myopathy, polymyositis, Muscular dystrophies.	05
7	Degenerative diseases: Parkinsonism, myasthenia gravis motor neuron Diseases, spinocerebellar degenerations and diseases of anterior horn cell, dementia.	13
8	Costo-clavicular syndrome.	02
9	Demyelinating disorders including multiple sclerosis.	05
10	Basic concept of electrophysiology and electromyography.	03
11	Giddiness and vertigo	02

1151302-PEDIATRICS

COURSE OUTCOMES:

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

1. Describe normal development and growth of a child, importance of immunization and breast feeding and psychological aspect of development
2. Describeneuro muscular, musculo skeletal and cardio pulmonary conditions related to immunological conditions, nutritional deficiencies, infectious disease and genetically transmitted conditions
3. Acquired skill of clinical examination of a neonate / child with respect to neurological, musculoskeletal and respiratory function.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	Growth and development of a child from birth to 12 years, Including physical, social, adaptive development.	02
2	The maternal and neonatal factors contributing to high risk pregnancy, th neonate, inherited diseases, maternal infections - viral and bacteria maternal diseases incidental to pregnancy, induced hypertension, chroni maternal diseases such as heart diseases, renal failure, tuberculosis, diabetes, epilepsy, bleeding in the mother at any trimester.	02
3	Community programs: International (WHO), national and local, for prevention of poliomyelitis, blindness, deafness, mental retardation an hypothyroidism, the immunization schedule for children.	02
4	Cerebral Palsy : Etiology - prenatal, perinatal and postnatal cause pathogenesis, types of cerebral palsy (classification), findings o examination, general examination, examination of C.N.S musculoskeletal system, respiratory system, G.I. Tract and nutritional status.	05
5	Associated defect-down's syndrome, Mental retardation, microcephaly, blindness, hearing and speech impairment, squint and convulsions.	03
6	Prevention - Appropriate management of high risk pregnancies, prevention of neonatal and postnatal infections, metabolic problems.	02
7	Muscular Dystrophy: Various forms, modes of inheritance and clinica manifestation, physical findings in relation to disabilities, progression o various forms and prognosis, treatment goals in forms which are not fatal.	05
8	Spinabifida, Meningomyelocele : Development, clinical features – lowe limbs, bladder and bowel complications - U.T.I. and hydrocephalu medical management.	05
9	Still's Disease: Classification, pathology in brief, physical findings, courseand prognosis, treatment, prevention and correction o deformity.	02
10	Acute C.N.S. infections, Classification (Bacterial and Viral), the acut illness, C.N.S. squeal leading to mental retardation, blindness, deafnes speech defect, motor paralysis, bladder and bowel problems, seizur	05

	disorder and specific problems such as subdural effusion, hydrocephalus, pressure sores, feeding difficulties.	
11	Normal diet of newborn and child: List dietary calorie, fat, Protein, minera and vitamin requirement in normal child and in a child with malnutritio Childhood obesity. Etiology, findings, and treatment of rickets, vitamin D deficiency and resistant rickets	02
12	**Lung infections**: Clinical findings, complications and medical treatment of bronchiectasis, lung abscess and bronchial asthma.	03

1151303-SURGERY

GENERAL SURGERY, CARDIOTHORACIC SURGERY, PLASTIC SURGERY & NEUROSURGERY

COURSE OUTCOMES:

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

1. Describe the effects of surgical trauma and anesthesia in general
2. Classify, clinically evaluate and describe the surgical management in brief in
   a) wounds-ulcers b) burns
3. Describe pre-operative evaluation, surgical indications and various surgical approaches in various abdominal conditions and peripheral vascular conditions
4. Recall the surgical approaches in the form of line diagram and will be able to describe the components of soft tissues cut to reach the target tissue, and the possible post-operative complications in movement
5. Clinically evaluate post-operative abdominal conditions with special reference to the cardio-vascular and pulmonary function, describe post-operative management in brief.
6. Describe the management of head injury, spinal surgeries, intracranial tumors, peripheral nerve lesions and pain

GENERAL SURGERY

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	Acute infections: Inflammatory fever, bacteremia, septicemia, pyeremia, toxemia.	04
2	Specific types: Cellulitis-sites, lymphangitis, abcess with special reference to hand infection, carbuncle.	04
3	Specific Types Contd.: Tetanus, Gas gangrene, hospital infection, cross infection with modes of spread and prevention	03
4	General survey of chronic inflammation: syphilis (reference to other veneral diseases),* leprosy and actinomycosis	05
5	Clean and contaminated wounds and infectious wound, principles c treatment, survey of factors affecting wound healing, ulcers and gangrene,	04
6	Post operative complications of abdominal surgery, specifically chest, wound infection, edema	05
7	Malignancy – spread and its behaviour	06
8	Various abdominal incisions, abdominal drainage tubes, catheters an nasogastric tubes Ward demonstration for an hour a day for a period of one week	06

9	Anaesthesia and OT Demonstrations	02
10	Urinary tract infections	01
11	Problems of trauma to the hand and their management	05
12	Breast Surgeries	05
13	Abdominal surgeries: appendisectomy, cholecystectomy, partial colostomy, ileostomy, hernia, prostractomy, nephrectomy	07

CARDIOTHORACIC SURGERY

COURSE OUTCOMES:-

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

1. Describe types of incision, pre and post-operative assessment and complications of Cardio-thoracic surgery and their management
2. Clinically evaluate post-operative cardio-vascular and pulmonary function status
4. Read and interpret investigations including findings of the x-ray chest, CT scan and MRIscan.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	Basic anatomy of chest wall, trachea and bronchial tree, lungs and bronchopulmonary segments, pleura and mediastinum.	02
2	Physiology and mechanics of breathing and use of mechanical breathing - ventilator: (respirators).	02
3	Pulmonary function tests.	02
4	Investigation of lung diseases including endoscopies.	02
5	Chest injury.	02
6	Common suppurative diseases of lung - Bronchiectasis, lung abscess.	02
7	Bronchogenic carcinoma	02
8	Common surgeries of chest Thoracoplasty, pulmonary dissections, thoracotomy Pneumothorax,hydrothorax-Pneumothorax, empyema.	05
9	Common diseases of oesophagus and related conditions causing dysphagia.	02
10	Surgery of portal hypertension.	02
11	Surgery of pulmonary tuberculosis.	02
12	Surgery of heart and great vessels.	02
13	Basic anatomy of heart, great vessels.	01
14	Investigation of patient undergoing cardiac surgery.	01
15	Cardiac arrest, its management.	02

16	Basic principles of open heart Surgery, Heart lung bypass (Extra Co-portal circulation)	02
17	Common diseases of heart requiring surgery both congenital and acquired including open heart surgery.	02
18	Common drugs used in cardiac surgery, its uses, side effects.	01
19	Common vascular surgery, Embolectomy, vascular reconstructiv surgery, (Thrombosis, Embolism, atherosclerotic and occlusive vascular diseases including coronary artery bypass)	02

Clinical:

1. Examination of patients as regards chest & heart diseases.
2. Demonstration - Acquaintances with C.T. Surgery,
3. Equipments, I.C.C.U.O.T.
4. Radiology - X-ray studies - X-ray chest in various lung diseases.

PLASTIC SURGERY

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	Burns as a specific types of severe trauma, classification, early andlat complications, management and reconstructive surgery – skin as an example of plastic procedure.	05
2	Types of skin grafting – take up of a graft – healing of a graft, post operative care of plastic surgery with specific role of physiotherapy.	05
3	Principles of cineplasty, tendon transplant, cosmetic surgery, types c graft, surgery of hands with emphasis on a management of traumatic and leprosy hand	05
4	Neck, skin contractures and management	01
5	Problems of trauma to hand and their management	03

NEUROSURGERY

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	NeuroPhysiology- Neurophysiology, basis of tone, disorders of tone an posture, bladder control, muscle contraction, movement and pain wit clinical features and management of the following a) Congenital and childhood disorders - hydrocephalus spina bifida b) Trauma - Broad localization, first aid and management of squeal c head injury and spinal cord injury. c) Diseases of the Spinal Cord - Craniovertebral junction anomalie syringomyelia, cervical and lumbar disc disease, tumors. d) Peripheral nerve disorders - Peripheral nerve injuries, localization	10

	& management. Entrapment neuropathies. e) Intracranial tumors - Broad classification, signs and symptoms. f) Pre-operative Assessment and indications and contra - indicationfo neurosurgery in intracranial tumors g) Management of pain, electrical stimulation of brain and spina cord. h) Miscellaneous.	
2	Outline of surgical disorders of brain - head injuries. General survey of surgical disorders of spine and spinal cord problemc paraplegia, malignancy -	09

Clinical: Operation Theator (O.T.) Visit

OBSTETRICS AND GYNAECOLOGY

COURSE OUTCOMES:

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

1. Describe the normal and abnormal physiological events during the puberty, labor, puerperium, post-natal stage and menopause
2. Discuss various complications during pregnancy, labor, puerperium and postnatal stage, pre- and post-menopausal stage and various aspects of urogenital dysfunction and the management in brief
3. Acquire knowledge in brief about intra uterine development of the fetus
4. Acquire the skill of clinical examination of the pelvic floor
5. Acquire the skill of the clinical examination of pregnant woman.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	Anatomy and physiology of the female reproductive organs. Puberty dynamics.	02
2	Physiology of menstrual cycle-ovulation cycle, uterine cycle Cx. cycle, Duration, amount.	02
3	Hormonal regulation of menstruation.	01
4	Diagnosis of pregnancy.	01
5	Abortion	01
6	Physiological changes during pregnancy.	02
7	Antenatal care.	04
8	High risk pregnancy., prenatal, common complications – investigation and management	02
8	Muscuskeletal disorders during pregnancy	02
9	Normal labour.	01
10	Multiple Child birth	01

11	Child birth complications, investigations and management	02
12	Normal puerperium, lactation and postnatal.	03
13	Family planning.	01
14	Medical Termination of pregnancy (MTP).	01
15	Infection of female genital tract including sexually transmitted diseases, low backache.	02
16	Prolapse of uterus and vagina.	03
17	Principles of common gynaecological operations Hysterectomy,D&C, D&E,PEP Smear	01
18	Menopause and its effects	02
19	Sterility- Pathophysiology, investigations, management	01
20	Urogenital dysfunction – pre and post natal condition	02
21	Carcinoma of female reproductive organs – surgical management in brief	01

Clinical: Operation Theater (O.T.) Visit

1151304-ORTHOPEDICS TRAUMATIC & NON TRAUMATIC

ORTHOPEDICS (TRAUMATIC):-

COURSE OUTCOMES:

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

1. Discuss the clinical manifestations and conservative/surgical management of various traumatic and cold cases of the musculo-skeletal conditions
2. Traumatic including both operative and non-operative
3. Gain the skill of clinical examination and interpretation of the preoperative cases andall the post-operative cases
4. Read and interpret salient features of the x-ray of the spine and extremities, and correlate the radiological findings with the clinical findings.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	**Introduction:** a) Fracture b) Dislocation and injuries of the upper limb c) Briefly mention general principles of Orthopedic surgery d) Definition and scope e) Brief history	02
2	**Fracture & dislocations:** a) Causes, types b) Mechanisms c) Displacement d) General symptoms e) Healing f) Principles of treatment g) Complications h) Malunion, delayed union i) Non-union j) Myositis ossificans k) Volkman's ischemic contracture l) Fat embolism **m)** Sudeck'sosteodystrophy	05
3	**Injuries to the hand:** a) Types (open, closed), b) Principles of treatment, c) Injuries to the phalanges, d) Sprains, dislocations of MP & IP joints, e) Fractures of the phalanges,	02

	f) Metacarpals, **g)** Bennet's fracture**,** h) Mallet finger, **i)** Tendon injuries (flexor & extensor)	
4	**Wrist & Forearm injuries:** a) Wrist dislocation b) Colle's fracture c) Displaced epiphysis d) Smith's fracture e) Barton's fracture f) Injuries to carpal g) Scaphoid and sprains h) Fractures of forearm bones – greenstick fracture i) Infraction injury j) Both bone fracture k) Galleazi l) Monteggia **m)** Fracture dislocation	02
5	**Injuries to the elbow:** a) Traumatic synovitis b) Sprain **c)** Dislocation of elbow joint	02
6	**Fractures involving elbow joint:** a) Supracondylar fracture b) Intercondylar fracture c) Fracture medial epicondyle d) Iracture of lateral condyle e) Myositis ossificans f) Fracture of the head of the radius **g)** Fracture of olecranon	03
7	**Injuries of shoulder and arm:** a) Fractures of the proximal end b) Neck and shaft of humerus c) fractures of clavicle d) acromioclavicular and sternoclavicular dislocations **e)** fractures of the scapula	05
8	**Injuries of the spine:** a) Injuries to the cervical spine (Both upper and lower), b) Atlanto-axial injuries c) Dorso Lumbar spine d) classification e) mechanism and types of injuries f) stable fracture without paraplegia g) fracture dislocation with paraplegia	07

	h) Management of fracture i) Management of paraplegia j) Bedsore and bladder care	
9	**Injuries of the pelvis:** a) Fractures - its Mechanism, classification, management b) Fractures of acetabulum, sacrum and coccyx	03
10	**Injuries of the lower limb:** a) Dislocations of the hip joint b) Intracapsular and trochantric fractures of femur c) Fractures of the neck of femur d) Fracture of the shaft of femur e) Fracture femur in childre f) Fracture of femoral condyles g) Tibial condyles and patella h) Injuries to extensor mechanism i) Contusion, haemarthrosis j) Knee joint dislocation and traumatic dislocation of patella k) Fracture and fracture dislocation of ankle l) Epiphyseal injury lower end of tibia Foot- fracture of talus m) Calcaneum **n)** Metatarsals and phalanges	10
11	**Soft tissue injuries:** a) Ligamentous injuries of ankle b) knee and injury to Muscles **c)** Orthopaedic splints and appliances for injuries to muscles and tendon	05
12	**Tendon transfer:** a) Principles b) Indications **c)** Common tendon transfer surgeries	02
13	**Amputation :** a) Types, site b) Ideal stump c) Complications d) General principles of treatment e) Upper extremity and lower extremity amputations – prosthesis ar prosthetic service Principles of operative management, indications and contraindications fo arthroplasty, osteotomy, arthrodesis, spinal stabilization, arthroscopy	03
14	**Limb reattachment:** a) Principles b) Indications **c)** Technique.	02

Clinical: Operation Theator (O.T.) Visit

ORTHOPADICS (NON-TRAUMATIC):-

COURSE OUTCOMES:

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

1. Discuss the patho-physiology, clinical manifestations and conservative/surgical management of various non-traumatic cases of the musculo-skeletal conditions
2. Non-traumatic including both operative and non-operative
3. Gain the skill of clinical examination and interpretation of the preoperative cases
4. Read and interpret pathological / biochemical studies pertaining to orthopedic conditionsand correlate the radiological findings with the clinical findings

COURSE CONTENTS:-

Sr.No.	Topic	Hours
1.	**General Orthopedics** a) Clinical examination of an orthopedic patient, investigation radiological and imaging techniques (salient features) b) Deformities, acquired deformities, causes and principles c management, splinting c) Traction: procedures, materials d) Preventive orthopedics e) Geriatric orthopedics	03
2.	**Congenital disorders** a) Torticollis , wry neck, kyphosis, lordosis, scoliosis, spina bifida myelomeningocele, congenital dislocation of hip, congenital gen recurvatum, talipesequinovarus b) Elevation of scapula, madelung's deformity, coxavara c) Endocranialdystosis, superior radio-ulna dysostosis, sternocleid mastoid tumor	10
3.	**Infection of bones &joints** a) Osteomyelitis (acute and chronic), Brody's abscess as a complication of open fracture b) Skeletal tuberculosis, principles of treatment, T.B. of shoulde elbow and wrist T.B. of hip, knee ankle, and foot c) Dactylitis, caries rib	05
4.	**Arthritis** a) Acute pyogenic arthritis, septic arthritis of infancy, small pox arthriti Syphilic infection of joint, Rheumatoid arthritis, osteoarthritis	05

5.	**Bone tumors** a) Classification, true bone tumors- osteosarcoma, giant cell tumo Ewing's sarcoma, chondroblastoma, chondrosarcoma, fibrosarcom lymphoma of bone, plasmacytoma b) Bone metastasis: synovial sarcoma, hemangioma of bon adamanatinoma of long bones and chondroma c) Tumor like lesions: osteoid osteoma, benign osteoblastoma, no osteogenic fibroma, osteoma, osteochondroma and enchondroma	05
6.	**Neurological and Muscular disorders** a) Definition, causes, clinical feature, complications, managemer (Multidisciplinary approach) medical and surgical of the followin conditions: Cerebral palsy, Poliomyelitis, Leprosy b) Muscular dystrophy – types and treatment c) Injuries to plexus and nerves: Radial, Ulnar, Median, Brachial plexu Sciatic and Lateral Popliteal	05
7.	**Regional conditions of Spine and Lower limb** a) Back: Kyphosis, Scoliosis, Spondylolisthesis, Lumbosacral strai intervertebral disc prolapse, fibrositis back, Lumbar canal stenosis, sacr iliac strain, spondylosis, spondylolysis b) Hip: Slipped capital femoral epiphysis, idiopathic chondrolysis of hip c) Knee: Genu valgum, genu varum, tibia varum, genu recurvatun quadriceps fibrosis, recurrent dislocation of patella, bursa around th knee, loose bodies in the knee, chondromalacia patella **d)** Foot: Painful heel, Plantar fasciitis, Posterior heel pain, flat foot, fo strain, pain in forefoot, Hallux valgus, anterior metatarsalgia	12

1151305-PREVENTIVE & SOCIAL MEDICINE

COURSE OUTCOMES:

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

1. Describe the concept of health and diseases, natural history of diseases
2. Describe the health administration at various levels (centre and state), health care deliveryat urban and rural areas
3. Describe the health problems of vulnerable groups and national healthPrograms
4. Explain principles and philosophy of health education and health education tools
5. Describe the role of various health agencies, ngos at international and national level
6. Identify occupational health hazards and its management

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	**General concept of health & disease** With reference to natural history of disease with pre-pathology phase	01
2	**The role of social economics in communities**	01
3	**Epidemiology and scope**	02
4	**Public health administration** a) Overall view of the health administration setup and central and sta levels. b) Health care delivery programs in urban and rural areas, health and population statistics	02
5	**The national health programs** Highlighting the role of social, economic and cultural factors in th implementation of the national programs	01
6	**Health problems of vulnerable groups** **Pregnant and lactating women, infants and pre-school childre occupational groups and geriatrics**	02
7	**Occupational health** a) Definition, scope, occupational diseases and hazards **b)** Social security and other measures for the protection from occupation hazards, accidents and diseases	05
8	**Family planning** a) Objectives of national family planning programs and family plannir methods **b)** General idea of advantages and disadvantages of methods	01
9	**Mental health** Community aspects of mental health: role of physiotherapists / therapists i mental health problems such as mental retardation	05

10	**Nutrition and Health** Classification of foods, nutritional profiles of principal foods, nutritional problems in public health, community nutrition programs	02
11	**Environment and Health** Components of environment, water and air pollution and public health Pollution control, disposal of waste, medical entomology	01
12	**Communicable diseases**	02
13	**An overall view of communicable diseases classified according to Principal mode of transmission. Role of insects and other vectors**	
14	**International health agencies**	01
15	**Principles and process of communication**	02
16	**IEC (Information Education and Communication)**	01
17	**Health education** a) Philosophy, main principles and objectives b) Methods and tools of health education individual and group methods c) The role of profession in health education d) Role of other personal in health education, co-ordination and co- operation health education with other members of the health team **e)** Elements of planning health education programs	02
18	**Hospital waste management** **Sources of hospital waste, health hazards, waste management**	02
19	**Disaster Management** Natural and manmade disasters, disaster impact and response, relief phase epidemiologic surveillance and disease control, nutrition, rehabilitation disaster preparedness.	05

1151306-PHYSICAL & FUNCTIONAL DIAGNOSIS

COURSE OUTCOMES:

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

1. Describe the human development & maturation; with special emphasis to psychomotor development, maturation & alteration during aging process
2. acquire the skill of detection & objective documentation of the neurological, musculoskeletal, cardiovascular & pulmonary dysfunctions such as pain, altered muscle power, mobility, endurance, limb length, posture, gait, hand function & A.D.L. in adult & pediatric conditions & acquire skill & to arrive at the Functional diagnosis as per International Classification of Functioning (ICF)
3. Describe the physiology of nerve impulse, motor unit, its electro-physiological characterand acquire the skill of performance and interpretation of various electro-diagnostic testsin the assessment of peripheral nerve lesions
4. Be able to do interpretation of common investigations used to arrive at the Physical & Functional diagnosis.
5. The student is also subjected to learn basics of manipulative, cardiovascular-respiratoryand neuro-therapeutic skills on models so that he/she will be able to apply theseprinciples eventually on patients.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	**General principles of Human development & maturation** Aspects: a) Physical b) Motor c) Sensory d) Cognitive e) Emotional f) Cultural g) Social Factors influencing human development & growth: a) Biological b) Environmental c) Inherited. Principles of maturation – a) In general - in anatomical directional pattern cephalo – cauda proximo – distal centero – lateral b) Mass to specific pattern c) Gross to fine motor development Reflex maturation tests 5. Development in specific fields:	10

	a) Oromotor development b) Sensory development, c) Neurodevelopment of hand function	
2	**Electro diagnosis** a) Bioelectricity-Physiology of generation & propagation of actio potential, volume conduction b) Therapeutic current-as a tool for electro diagnosis c) Physiological principles, use of alternating & direct currents i electro-diagnosis such as sensory & Pain threshold, Pain tolerance Short & long pulse test, S.D. curves, Chronaxie&Rheobas accommodation ratio, d) Principles of nerve conduction studies, late responses * e) E.M.G. instrumentation, basic components, panel diagram, types c electrodes f) Principles of Electro- myography, motor unit –Normal characteristics-activity at rest, recruitment/frequency pattern at minimal activity, Interference pattern	15
3	**Assessment of Neurological dysfunction** a) Higher functions, cranial nerves, sensations & sensoryorganizatio body image, tone, reflexes: superficial & deep, voluntary contro muscle strength, coordination, balance, posture,gait b) Scales: FRT, Berg's Balance, modified Ashworth, Glasgow Coma TUG, FIM c) Functional diagnosis using ICF d) Interpretation of electro diagnostic findings, routine biochemica investigations	70
4	**Assessment of Musculoskeletal Dysfunction** a) Tightness, deformity, joint mobility, muscle strength, limb lengt trick movement, girth, posture, gait, special tests b) Functional diagnosis using ICF c) Interpretation of X-ray of extremities & spine, routine bio-chemica investigations, CT scan, MRI d) Assessment of pelvic floor muscle strength and function i. Digita evaluation of vagina ii. Perineometer iii. Pad test e) Disability Evaluation – gait and gait parameters, percentage c disability (temporary and permanent) f) Scales - NDI, MODI, WOMAC,SPADI,UEFS, LEFS	63
5	**Assessment of cardio -pulmonary dysfunction** a) Vital parameters, chest expansion, chest excursion, breath holding test, breath sounds, rate of perceived exertion (RPE), peak flowrat	50

	b) Exercise Tolerance: six minutes' walk test, shuttle test, theoretical base of Bruce's protocol, step test c) Ankle Brachial Index, tests for peripheral arterial & venous circulation d) Functional diagnosis using ICF **e)** Interpretation of X-ray chest, routine bio-chemical investigations, ABG PFT, ECG (normal values)	
6	**Assessment of pain** a) Intensity & quality **b)** Objective assessment & documentation: VAS, Numerical Rating Scale Other scales	05
7	**Assessment of Hand** **Sensations, mobility of joints, strength Special tests** **Hand function: Precision& power grips**	05
8	**Assessment of Obesity** a) Classification b) Assessment – BMI, Waist circumference, Waist – Hip ratio **c)** Introduction to Quality of Life Questionnaire	05
9	**Assessment of wounds.** **PRACTICALS: Skills to be practiced on peer/model**	05

PT assessment for orthopedic conditions –

SOAP format- Subjective - history taking, informed consent, personal, past, medicaland socioeconomic history, chief complaints, history of present illness.

Pain assessment- intensity, character, aggravating and relieving factors, site andlocation.

Objective Examination -

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

On palpation- tenderness-grades, muscle spasm, swelling-methods of swellingassessment, bony prominences, soft tissue texture and integrity, warmth andvasomotor disturbances.

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 follow up.

1152307- PROFESSIONAL PRACTICE & ETHICS – III

(Not for University exam)

PROFESSIONAL PRACTICE & ETHICS

COURSE OUTCOMES:

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

1. Be able to understand the moral values and meaning of ethics
2. Acquire bedside manners and communication skills in relation with patients, peers seniorsand other professionals.
3. Be able to develop psychomotor skills for physiotherapist patient relationship.
4. Skill to evaluate and make decision for plan of management based on sociocultural valuesand referral practice.
5. Be able to develop behavioral kills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals
6. Be able to develop bedside behavior, respect & maintain patients' confidentiality.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	Collecting data on psychosocial factors in Medicine/Surgery/Reproductive Health/Pediatrics	07
2	Inter professional communication	06
3	Ethics in clinical practice	06

1152308 -EVIDENCE BASED PRACTICE & ICF

COURSE OUTCOMES:

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

1. Understand concept of Evidence Based Practice and its implementation inPhysiotherapy
2. Search, review and use the evidences in Physiotherapy

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	**Finding the Evidence** a) Measuring outcomes in Evidence Based Practice, b) Measuring health outcomes, c) Measuring clinical outcomes, d) Inferential statistics and causation	05
2	**Searching for the Evidence** a) Asking questions **b)** Identifying different sources of evidence	02
3	**Assessing the Evidence** a) Evaluating the evidence; b) Levels of evidence in research using quantitative methods, levels of evidence c) Classification system, d) Outcome measurements, e) Biostatistics, **f)** The critical review of research using qualitative methods	03
4	**Systematically reviewing the evidence** a) Stages of systematic reviews b) Meta analysis **c)** The Cochrane collaboration	02
5	**Using the evidence** a) Building evidence in practice **b)** Critically appraised topics (CATs)	02
6	**International Classification of Function, Disability and Handicap**	05

COURSE CONTENTS

FINAL YEAR

B. PHYSIOTHERAPY

1151401-PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS

COURSE OUTCOMES:

At the end of the course candidate will be able to

1. Acquire the knowledge of normal neurodevelopment with specific reference to locomotion.
2. Assess, identify and analyze neuro motor and psychosomatic dysfunction in terms of alteration in the muscle tone, power, coordination, involuntary movements, sensations, perceptions etc.
3. Correlate the assessment findings with provisional diagnosis and investigations such as EMG/NCS and arrive at Physical and functional diagnosis with clinical reasoning in various neuromuscular disorders.
4. Plan, prescribe and execute short term and long term treatment with special reference to relief of neuropathic and psychosomatic pain and use of various physiotherapeutic techniques/ modalities, including ergonomic advice and parent education in neuropediatric cases.
5. Prescribe appropriate orthoses/splints and fabricate temporary protective and functional splints.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	**Review of basic Neuro anatomy and physiology**	02
2	**Physiotherapy techniques to improve tone, voluntary control, co-ordination**	05
3	**Neuro physiotherapeutic Techniques:** Concepts, principles, techniques and effects of: NDT, PNF, Brunnstrom movement therapy, Vojta therapy, Rood's sensory moto approach, Contemporary task oriented approach.	10
4	**Application of skills** as PNF, co-ordination, functional re- education, Balancing exercise by using techniques based on neuro physiologica principles.	10
5	**Tools used for neuro rehabilitation like vestibular balls, tilt board etc.**	05
6	**Application of transfer, functional re-education exercises & gait training**	05
7	**Bladder training.**	02
8	**Developing a philosophy for caring.**	01
9	**Prescription of appropriate orthotic devices & fabrication of Temporary splints.**	02
10	**Lifting techniques, wheel chair modifications, adaptive devices.**	05

11	**Ergonomic advice for prevention/rehabilitation to the patients / parents /caregivers**	05
12	**Education about handling of a patient.**	01
13	**Pediatric Neuro-physiotherapy** Use of various Neurophysiological approaches & modalities in high ris babies, minimum brain damage, developmental disorders, Cerebra palsy, Down's syndrome, Hydrocephalus, Spina bifida	15
14	**Assessment & management of brain Disorders** Stroke, Meningitis, Encephalitis, Head Injury, Parkinson's disease parkinsonism syndromes, Multiple sclerosis, Brain tumors	15
15	**Assessment & management of spinal cord lesions and bladde dysfunction** Multiple sclerosis, transverse myelitis, Poliomyelitis/PPRI syringomyelia, spinal cord injury and sub-acute combined degeneratio of spinal cord, Motor neuron disease (ALS, SMA and other types), spinal tumors	15
16	**Assessment & Management of Co-ordination Disorders** Ataxia, Friedriech's ataxia, Cerebellar ataxia, Sensory ataxia	15
17	**Assessment & Management of Muscle Disorders** Muscular dystrophy (DMD) & other myopathies	05
18	Assessment & Management of disorders of neuromuscular junction Myasthenia Gravis	02
19	**Assessment & management of neuropathies and nerve injuries** Emphasis on 5th, 7th and 8th cranial nerves, Peripheral nerve Polyneuropathy – Classification of Polyneuropathies	05
20	**Pre and post-surgical assessment & management in neurosurger** Hydrocephalus and myelomeningocele, C.V. junction anomalies, syringomyelia	03
21	**Electro diagnostic procedures and prognosis in neurologica disorders** SD curves, EMG & NCS.	05

1151402-PHYSIOTHERAPY IN MUSCULO-SKELETAL CONDITIONS

COURSE OUTCOMES:

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

1. Identify, discuss and analyze the musculoskeletal dysfunction in terms of biomechanical, kinesiological and biophysical basis and correlate the same with the provisional diagnosis, routine radiological and electro physiological investigations and arrive at appropriate physical and functional diagnosis with clinical reasoning
2. Describe as well as acquire the skill of executing short and long term physiotherapy treatment by selecting appropriate modes of mobilization/ manipulation, electrotherapy, therapeutic exercise and appropriate ergonomic advise for the relief of pain, restoration / maintenance of function & / or rehabilitation for maximum functional independence in ADLs at home & workplace
3. Understand the nature of sports injuries, able to evaluate and treat sports injuries, understand the role of physiotherapist in training and rehabilitating a sports person
4. Prescribe appropriate walking aids, orthosis and prosthesis

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	Evaluation, interpretation of investigations & functional diagnos (ICF) with appropriate clinical reasoning for planning & implementation of management techniques	02
2	Planning, Prescription & Implementation of short term & long term goals with clinical reasoning	02
3	Documentation	02
4	Different physiotherapeutic techniques for functional restoration/ maintenance and prevention of disability	03
5	Different electro therapeutic techniques for relief of acute and chronic pain, swelling, wound healing, re-education with clinic reasoning	02
6	Different physiotherapeutic techniques to improve/maintain muscle performance	05
7	Different physiotherapeutic techniques to increase joint mobility.	05
8	Different physiotherapeutic strategies for correction / maintenance of good posture	05
9	Different physiotherapeutic strategies to improve efficiency and safety of gait pattern	05
10	Prescription of appropriate orthotic & prosthetic devices & fabrication of simple temporary splints.	02

11	Appropriate Home Program & Ergonomic advice for preventive measures & Functional efficiency at home & work place	03
12	**Physiotherapy approach in traumatology** Definition of fracture, classification of fracture, signs and symptoms of fracture, healing process of fracture, factors affecting healing methods of reduction, complications of fracture	05
13	**Physiotherapy assessment in fracture cases** Principles of PT management in fractures - Guidelines for fractur treatment during period of immobilization and guidelines for treatmer after immobilization period Physiotherapy assessment andmanagemer of upper limb fractures and dislocations, lower limb fractures and dislocations including pelvis and spinal fractures	05
14	**Physiotherapy assessment & management of soft tissue injury** Contusion, sprains, strains, ruptures	03
15	**Physiotherapy assessment & management of degenerativ conditions** Osteoarthritis (OA) with emphasize on Knee, Hip and Hand cervical spondylosis, lumbar spondylosis	20
16	**Physiotherapy assessment & management of inflammator conditions** Rheumatoid arthritis (RA), ankylosing spondylitis (AS), Still'sdiseas gout, periarthritis, bursitis, synovitis, capsulitis, tendinitis, tenosynovitis, fasciitis, Osgood Schlatter disease	05
17	**Physiotherapy assessment and management of infective Conditions** Tuberculosis (TB) of spine and other major joints, osteomyelitis, pyogenic arthritis, septic arthritis	03
18	**Physiotherapy assessment & management of congenital an acquired deformities** Congenital - CTEV, CDH, Torticollis, pesplanus, pescavus, Sprengel's scapula, Madelung's deformity Acquired: scoliosis, kyphosis, coxavara, genu varum, valgum and recurvatum, wry neck	05
19	**Physiotherapy assessment & management of spinal conditior** Spondylolisthesis, Spinal canal stenosis, Spondylolysis, Intervertebral disc prolapse, Sacro-iliac joint dysfunction, Coccydynia Sacralisation, Lumbarisation, Spina bifida occulta	10
20	**Physiotherapy assessment & management of amputation** Definition, indications, types, levels of amputation of lower an upper extremities, pre and post-operative assessment and management with emphasize on stump care and bandaging, pre and post prosthetic training and complete rehabilitation	10

21	**Rehabilitation of patient with orthopedic surgery** Pre and post operative management of arthroplasty of all major joint girdle stonearthroplasty , arthrodesis, arthroscopy, oesteotom Reattachment of limb	10
22	**Physiotherapy assessment & management of re-constructiv surgery** Cerebral Palsy, poliomyelitis, leprosy	03
23	**Physiotherapy assessment & management of hand injury**	05
24	**Physiotherapy assessment & management of metabolic an hormonal disorders of the bone tissue** a) Osteoporosis, rickets, osteomalacia	01
25	**Physiotherapy assessment & management of miscellaneou orthopedic conditions** a) Mallet finger b) Trigger finger c) Dequerian's disease d) Metatarsalgia e) hallux valgus f) Dupuytren's contracture g) Thoracic outlet syndrome h) Chondromalacia patellae i) Ganglion j) Tennis elbow **k)** Plantar fasciitis	02
26	**Sports Medicine** a) Introduction & classification of sports injury b) Aetiological factors c) Prevention of sports injury d) Frequency and site of injury **e)** Investigation and assessment in sports injury	07
27	**Management of sports injuries** a) Pharmacology in sports **b)** Rehabilitation in sports	03

1151403-PHYSIOTHERAPY IN CARDIO RESPIRATORY & MEDICAL SURGICAL CONDITIONS

PHYSIOTHERAPY IN CARDIO-PULMONARY CONDITIONS

COURSE OUTCOMES:

At the end of the course candidate will be able to

1. Identify, discuss and analyze cardio vascular and pulmonary dysfunction based on pathophysiological principles and arrive at the appropriate physical and functional diagnosis.
2. Select strategies for cure, care and prevention to adopt restorative and rehabilitative measures for maximum possible functional independence of a patient at home, work placeand in community
3. Execute the effective physiotherapeutic measures (with appropriate clinical reasoning) withspecial emphasis to breathing retraining, nebulization, humidification, bronchial hygiene,general mobilization and exercise conditioning in general medical and surgical conditions
4. Acquire knowledge of the overview of patients care at the intensive care area, artificial ventilation, suctioning, positioning for bronchial hygiene and continuous monitoring of the patient at the intensive care area
5. Acquire the skill of evaluation and interpretation of functional capacity using simpleexercise tolerance tests, symptom limited tests
6. Acquire the skill of basic cardiopulmonary resuscitation

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	**Anatomy and physiology of respiratory & cardiac system** a) Anatomy of thorax b) Biomechanics of thoracic cage c) Muscles of respiration d) Ventilation perfusion matching /mismatching, compliance	02
2	**Investigations and tests** a) Sub maximal /maximal exercise tolerance testing b) Cardiac & Pulmonary radiographs c) PFT d) ABG e) ECG f) Hematological and biochemical Tests	05
3	**Physiotherapy techniques to increase lung volume** a) Positioning, breathing exercises b) Neurophysiological facilitation of respiration, mechanical aids - Incentive spirometry c) CPAP	10

	d) IPPB	
4	**Physiotherapy techniques to decrease the work of breathing** a) Measures to optimize the balance between energy supply an demand, positioning, Breathing re-education – Breathing contr techniques b) Mechanical aids: IPPB, CPAP, BIPAP	10
5	**Physiotherapy techniques to clear secretions** a) Hydration b) Humidification & Nebulization c) Mobilization and breathing exercises d) Postural drainage e) **Manual techniques:** Percussion, vibration and shaking, ACBT, Autogenic Drainage, Mechanical aids: PEP, Flutter, IPPE facilitation of cough and huff, suctioning	10
6	**Physiotherapy in common complications following surgery An Drug therapy** a) Drugs to prevent and treat inflammation, drugs to treat bronchospasm b) Drugs to treat breathlessness c) Drugs to help sputum clearance, drugs to inhibit coughing d) Drugs to improve ventilation e) Drugs to reduce pulmonary hypertension drug delivery doses f) Inhalers and nebulizers	05
7	**Introduction to ICU & mechanical ventilator** a) ICU monitoring – apparatus, airways and tubes used in the ICU Physiotherapy in the ICU – common conditions in the ICU. b) Mechanical ventilator: types c) Modes of ventilator d) Advantages and disadvantages Oxygen therapy, e) CPR f) Aseptic precautions	13
8	**Physiotherapy assessment & management techniques in Obstructive lung conditions** a) Chronic bronchitis b) Emphysema c) Asthma d) Bronchiectasis e) Cystic fibrosis	07
9	**Physiotherapy assessment & management techniques in Restrictive lung conditions** a) Rib fracture b) Pleural effusion	07

	c) Pleurisy and empyema d) Pulmonary embolism e) Pulmonary tuberculosis f) Atelectasis, pneumothorax g) Bronchopulmonary fistula **h)** Pneumonia, ARDS	
10	**Physiotherapy following Lung surgeries** a) Pre and post operative physiotherapy b) Assessment and management in Lobectomy c) Pneumonectomy d) Decortication **e)** Thoracoplasty	05
11	**Pulmonary Rehabilitation** a) Definition b) Aims and objectives c) Team members d) Benefits **e)** Principles of exercise prescription and techniques of rehabilitation	07
12	**Anatomy and physiology of cardiovascular system** a) Anatomy **b)** Blood supply and conduction system of heart	01
13	**Physiotherapy assessment & management for cardiovascula disorders** a) Cardiovascular disease b) Congestive heart failure c) Myocardial infarction d) Valvular diseases of heart e) Cyanotic and acyanotic congenital heart diseases **f)** Endocarditis	05
14	**Cardiac Rehabilitation** a) Definition b) Aims and objectives c) Team members d) Benefits **e)** Principles of Exercise prescription and techniques of rehabilitation	07
15	**Physiotherapy assessment & management of vascular diseases** a) Venous: Thrombosis b) Phlebitis and phlebo-thrombosis c) Varicose veins d) DVT **e)** Venous Ulcers Arterial: Berger's disease, acute and chronic arteria occlusion, lymphedema	05

PHYSIOTHERAPY IN GENERAL MEDICAL-SURGICALCONDITIONS

COURSE OUTCOMES:

1. Acquire knowledge of rationale of basic investigative approaches in the medical system and surgical intervention regimes related to cardio vascular and pulmonary impairment
2. Select strategies for cure, care and prevention to adopt restorative and rehabilitative measures for maximum possible functional independence of a patient at home, work place and in community
3. Acquire the knowledge of evaluation and physiotherapy treatment for obstetrics and gynecological surgical conditions
4. Acquire the knowledge of various conditions where physiotherapy plays a vital rolein the rehabilitation (psychiatry, dermatology and ENT conditions)
5. Assess the various degrees of burns, plan and implement physiotherapy techniques for the rehabilitation of a burn and wound patient.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	**Physiotherapy assessment & management for abdominal surgerie** surgeries on upper gastro- intestinal tract - oesophagus- stomach duodenum, surgery on large and small intestine – apendicectomy cholecystectomy, partial colectomy, illieostomy, nephrectomy . Hernia: herniotomy, herniorraphy, hernioplasty	05
2	**Physiotherapy Assessment & management in onco surgeries** Mastectomy: simple, radical .Hysterectomy, prostatectomy, neck dissection	05
3	**Physiotherapy in obstetrics and gynecology surgeries** Electrotherapy and exercise therapy measures following pelvic repair and caesarean section	05
4	**Wounds, local infections, ulcers, pressure sores** UVR and other electrotherapeutic modalities for healing of wound prevention of hypergranulated scars, relief of pain and mobilization	05
5	**Physiotherapy in burns, skin grafts and re-constructive plastic surgery**	05
6	**Physiotherapy in ENT conditions** Nonsuppurative otitis media, chronic suppurative otitis media, otosclerosis labyrinthitis and mastoidectomy resulting into facial palsy,laryngectomy pharyngeo – laryngectomy, tracheostomy and its care, sinusitis	02
7	**Physiotherapy in skin conditions**	02

	Leprosy, acne, alopecia, psoriasis, syphilis	
8	**Physiotherapy in psychiatric conditions** Schizophrenia, depression, psychosis, anxiety	01
9	**Emergency Care** Basic Life Support, First aid & emergency care, Biomedical wast management	04

1151404- COMMUNITY HEALTH REHABILITATION AND ASSISTIVE TECHNOLOGIES

COMMUNITY HEALTH REHABILITATION:-

COURSE OUTCOMES:

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

1. Describe the general concepts about Health, Disease & Physical fitness
2. Describe policies for the rehabilitation of disabled and Role of Council to promote physiotherapy as a health delivery system
3. Describe the strategies to assess prevalence & incidence of various conditions responsible for increasing morbidity in the specific community, role of physiotherapy in reducing morbidity, expected clinical & functional recovery, reasons for non-compliance inspecific community & environmental solution for the same
4. Describe the evaluation of disability & planning for prevention & rehabilitation
5. Describe CBR in urban & rural set up, WHO policies, concept of team work, role of multi-purpose health worker
6. Identify with clinical reasoning the prevailing contextual (environmental & psychosocial, cultural) factors, causing high risk, responsible for various dysfunctions & morbidity related to lifestyle & specific community like women, aged, industrial workers & describe planning strategies of interventional policies to combat such problems.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	**Concepts of community health** a) Preventive, promotive, restorative and rehabilitative b) WHO definition of health and disease c) Health delivery system - 3 tier	03
2	**Disability types** a) Physical & Psychological Evaluation, b) Prevention & Legislation related to Persons with Disability (PWD)	03

3	**CBR** a) Definition b) Principles, types (institutional, reach out and community), concepts c) WHO policies d) Principles of Team work of medical practitioner, Physiotherapist e) Occupational Therapist f) Speech & Audiology Therapist g) Prosthetist & Orthotist h) Clinical psychologist i) Vocational counselor and social worker j) Role of Physiotherapy in team k) Concept of multipurpose health worker l) Role of Physiotherapy and strategies in 3 tier Health delivery system m) Communication strategies	15
4	**Health Care** a) Prevention, Promotion & Restoration b) In peri-pubertal age group c) In women-pregnancy and menopause d) In Geriatrics- neuromusculoskeletal, cardiovascular, pulmonary metabolic and degenerative conditions e) In Obese / over weight f) In Cardiovascular and Pulmonary conditions g) In Diabetes h) Health promotion for all	05
5	**Women and child care** a) Antenatal exercises, Specific Breathing exercises, Relaxation, Postura training, Pelvic floor strengthening exercises with clinical reasoning b) Physiotherapy during labor c) Postnatal exercises program after normal labor / labor with invasiv procedures with clinical reasoning d) Menopause - Osteoporosis, Mental health,Physiotherapy management e) Preterm babies f) Adolescent age group g) Nutritional disorders in women and children	10
6	**Geriatrics** a) Physiology of aging b) Environmental changes and adaptations, balance and falls c) Role of Physiotherapy in geriatric population	10

7	**Physical fitness** a) Energy system, b) Endurance c) Aerobic Exercise d) Pacing of activity	05
8	**Ergonomics**	05
9	**IQ Testing**	01

ASSISITIVE TECHNOLOGIES:-

COURSE OUTCOMES:

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

1. Acquire knowledge about biomechanical principles of application of variety of aids& appliances used for ambulation, protection & prevention
2. Acquire in brief knowledge about various materials used for splints/Orthosis&Prostheses and selection criteria for splints/Orthosis& Prostheses
3. Acquire the skill of fabrication of simple splints made out of low cost material.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	Introduction and terminology: prosthesis and orthosis	01
2	Classification of orthosis and prostheses	01
3	Bio-mechanical principles of orthotic application	02
4	Bio-mechanical principles of prosthetic application	02
5	Orthotic appliances for Hip, Knee, Ankle& foot - Prescription and design & modification	02
6	Spinal conditions inclusive of fractures, spondylolisthesis, kyphosis, scoliosis etc.	02
7	Upper limb conditions – splinting prescriptions with principles	02
8	Prosthesis –	04
	a) Upper & lower limb; endo skeletal & exo skeletal,	
	b) Hip, knee & foot prosthetic components with k-levels	
	c) Upper limbs: cosmetic restoration, terminal devices (body powered), self help devices (adl equipments), myoelectric, microprocessor / sensor cotrolled (externally powered)	
	d) Adaptive devices	
9	Psychological & Physiological aspects of orthotic and prosthetic application	01
	Material used in favbrication of Prosthetiscs & Orthotics briefly.	01
	Mobility aids:	01

Canes, crutches, walking frames, walkers, wheel chairs manual / electrically powered

1151405 - BIO-STATISTICS & RESEARCH METHODOLOGY

BIO-STATISTICS:-

COURSE OUTCOMES:

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

1. Recognize different variables as per their types and should be able to decide on how to treat them differently as per requirement
2. Differentiate complete enumeration and various forms of sampling (random: Simple, stratified, cluster, multi stage; non random: snow ball, quota, purposive, convenient) with understanding of merits and demerits of them
3. Decide when to apply what test or a measure of central tendency according to the need ofthe data and OBJECTIVES
4. Interpret a given output of regression or ANOVA according to the context.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	Introduction to statistics in physiotherapy.	01
2	Understanding 'Data' and its types.	02
3	Presentation of various data: tables, graphs and descriptive statistics.	02
4	Measures of central tendencies (CT): mean, median, mode; merits and demerits; when to apply which measure of CT for the given data.	02
5	Measures of dispersion: range, mean deviation, standard deviation, coefficient of variance	02
6	Application of normal distribution and its properties.	01
7	Testing of hypothesis (measuring change):one sample with populatio comparing two samples(Z test for proportion, difference of two proportion, independent sample 't' test, paired 't' test, chi square test.	02
8	Conceptual understanding of correlation, linear and multiple regression, analysis of variance (ANOVA) and analysis of co-varianc (ANCOVA).	04
9	Complete enumeration and sampling methods: random: simple, stratified, cluster, multi stage; non random: snow ball, quot purposive, convenient.	02
10	Simple statistical analysis through excel.	02

RESEARCH METHODOLOGY:-

COURSE OUTCOMES:

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

6. Understand and differentiate various study designs.
7. List the need of methodical and regular literature search in research
3. Plan a study choosing an appropriate design for a given problem according to givenobjectives.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	What is research? Why research?	01
	Research Design	02
2	Types of epidemiological studies & measurements of various indications.	02
3	Possible errors that may generate due to study design & how to overcome them.	02
4	How to read and what to read from journals.	02
5	Role of research in Physiotherapy.	02
6	Components of research proposal – introduction and rationale, material & methods, results and discussion.	03
7	Where to look for good literature and why.	02
8	The Evidence Based Practice.	02

1151406-PROFESSIONAL PRACTICE & ETHICS - IV

PROFESSIONAL PRACTICE & ETHICS:-

COURSE OUTCOMES:

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

1. Understand the moral values and meaning of ethics.
2. Acquire bedside manners and communication skills in relation with patients, peers seniorsand other professionals.
3. Develop psychomotor skills for physiotherapist patient relationship.
4. Develop skill to evaluate and make decision for plan of management based on sociocultural values and referral practice.
5. Develop behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals.
6. Develop bedside behavior, respect & maintain patients' confidentiality.
7. Understand the importance of council, its functioning and Act.

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	Outlines of Gujarat State Council for Physiotherapists (GSCPT) Act 201 with more emphasis on formation, functions of council, importance fc registration etc. Outline of The Indian Association of Physiotherapists, National Council of Allied and Healthcare Professionals	02
2	Ethical principles in health care services, research, teaching related to physiotherapy.	02
3	Scope of practice as patient manager, consultant, critical inquirer, educator, administrator.	01
4	**Rules of professional conduct** a) Physiotherapy as a profession b) Relationship with patients c) Relationship at health care institution i.e. hospital, clinic etc. d) Relationship with colleagues and peers e) Relationship with medical and other professionals	05
5	Confidentiality and responsibility	01
6	Malpractice and negligence	02
7	Professional development, competence and expertise	02
8	Sale of goods: personal and professional standards	02
9	**Legal aspects:** legal responsibility of physiotherapists for their action in theprofessiona context understanding liability and obligations in case of medico legal action.	02

1152407. ADMINISTRATION, MANAGEMENT & MARKETING

(Not for University exam)

COURSE OUTCOMES:

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

1. Learn the management basics in fields of clinical practice, teaching, research and physiotherapy practice in the community.
2. Acquire communication skills in relation with patients, peers, seniors and other professionals & the community.
3. Acquire the knowledge of the basics in managerial & management skills, & use of information technology in professional practice.
4. Develop psychomotor skills for physiotherapy practice.
5. Develop skill to evaluate and make decision for plan of management based on sociocultural values and referral practice.
6. Develop behavioral skill and humanitarian approach while communicating with patients, relatives, society at large and co-professionals

COURSE CONTENTS:-

Sr. No.	Topic	Hours
1	Management studies related to local health care organization managemer & structure, planning delivery with quality assurance & funding of servic delivery, information technology and career development in physiotherapy.	04
2	Administration-principles-based on the goal & functions at large hospital set up/domiciliary services/private clinic/ academics.	04
3	Budget-planning.	02
4	Performance analysis- physical structure/ reporting system (man powe status, functions, quantity & quality of services, turn over, cost benefit revenue contribution)	04
5	Setting up therapeutic gymnasium, fitness clinics, cardiac and pulmonary rehab centers etc	04
6	Time management	01