Dr. D. Y. PATIL VIDYAPEETH
FACULTY OF ALLIED MEDICAL SCIENCES
ACADEMIC REGULATIONS

BACHELOR OF PHYSIOTHERAPY (BPT)

PREAMBLE:

The Bachelor of Physiotherapy (BPT) undergraduate degree course is a 4-year and 6 months (8 semesters & 6 months internship) fulltime program. The program is generic in nature and has a component of additional learning of one area leading to another area with choice based study in the final year to focus the career development based on his/her interest. The program focuses on overall development of the student including language and soft skill, emergency care and professional ethics. Psychosomatic aspects of training are a component through all the areas.

NOMENCLATURE:

The course will be referred to as a Bachelor of Physiotherapy (BPT).

OBJECTIVES:

At the end of the BPT programme, the graduate shall:

- Acquire the knowledge of foundation courses like Human Anatomy, Human Physiology, Exercise Therapy and Electrotherapy along with the basic medical subjects which will provide a strong foundation for their practice of Physiotherapy.
- Develop the required skills & techniques of physiotherapy to assess & treat various physical and functional disorders of the human body.
- Acquire the attitude to practice the profession with moral and ethical values.
- Have the interests for providing physiotherapy services to the needy in the community.
- Inculcate the various skills in patient care handling including communication skills, confidence, clinical reasoning, counseling and research. .

ELIGIBILITY FOR ADMISSION:

Eligibility of a candidate for admission to Bachelor of Physiotherapy programme will be according to the regulations for admission decided by Dr.D.Y.Patil Vidyapeeth, Pune.

DURATION OF THE PROGRAM:

The duration of Bachelor of Physiotherapy (BPT) programme shall be of four academic years (8 semesters) and six months of Compulsory Rotatory Internship. It shall have 8 semesters each having a span of 20 weeks of working, of which the teaching and learning program shall not be less than 16 weeks of course duration (672 clock hours) excluding the time scheduled for examination and evaluation process of the university and college. It includes a 6 months (24 weeks) internship leading to degree that equips the student with analytical and hands-on skills. Each academic year shall comprise of two semester viz. Odd and Even semesters. Odd semesters shall be from July/August to December and Even Semesters shall be from January to May/June.

MEDIUM OF INSTRUCTION:

English shall be the medium of instruction for all the courses of study and for the examinations

FACULTY/STUDENT RATIO:

The teacher: student ratio should be such that the number of teachers to the number of students admitted per year is 1:5.

CLINICAL TRAINING OUTLINE OF THE COURSE:

Clinical training comprises all of the formal and practical "real-life" learning experiences provided for students to apply classroom knowledge and skills in the clinical environment. Experiences would include those of short and long duration (Supervised Clinical Training & Internships) and those that provide a variety of learning experiences (e.g. rotations on different units within the same practice setting, rotations between different practice settings within the health care system) to include comprehensive care of patients across the life span and related activities. Each student will be under the supervision of a faculty at the clinical education site who directly instructs and supervises students during their clinical learning experiences.

ATTENDANCE

A student must have a minimum of 80% attendance to be eligible to take up the examinations. Only those students who have pursued a regular prescribed course of study for the semester will be allowed to appear in the University Examinations that are held at the end of their respective semesters.

CONDONATION OF ATTENDANCE

There shall be no condonation of attendance in graduate studies. (However 5% compensation shall be permitted with the discrete permission of the authorities in case of Epidemic illness only.)

EXAMINATIONS AND ASSESSMENT

1. The examination for the BPT degree will consist of both formative and summative pattern: Written assignment as required or stipulated by the teacher, Clinical, oral, and practical examinations as the case maybe.
2. For the course subjects, two internal assessment examinations (one periodical & one preliminary examination) shall be conducted by the faculty at specified intervals, during the course of the semester, will be calculated and simplified for 20% of the final total of the University marks and submitted to the Head of the institution for including in the University examination.
3. For the Supervised Clinical/Practical Training of the respective semester, student should complete the assignments, records, journals, case submissions, case presentations, as applicable per subject. The SPT/SCT shall carry 5 marks and submitted to the Head of the institution for including in the University practical examination.
4. Student should pass in the Internal Assessment exams with 35 % to appear for the University examinations. Continuous clinical assessment will be carried out though out the semester.

CRITERIA FOR PASSING UNIVERSITY EXAMINATION

To pass the University Examination,

1. A candidate must pass in two heads of passing i.e. Theory and Practical separately at the same time.
2. In the Theory Examination the Candidate must obtain 50 % of the total Marks to pass theory examination irrespective of the parts.

3. To pass in practical exam, candidate must obtain 50% of total marks to pass practical exam.
4. A candidate must obtain an aggregate of 50 % to pass in the respective subject(s).

RULES FOR ATKT

The candidate shall be promoted to subsequent semester (from I semester to II semester, II semester to III semester, III semester to IV semester, from IV semester to V semester, V semester to VI semester, VI semester to VII semester, VII semester to VIII semester,) even if he/she fails in one or two subjects in the current semester of study. However, he/she must pass in these subjects within six months. To appear for subsequent examinations he/she must pass in all subjects of the previous semester. (ie, a candidate shall be promoted from I semester to II semester even if he/she has failed in two subjects or less, the candidate shall be permitted to appear for both I & II semester during his/her term of second semester. However he/she shall not be permitted to appear for the III semester unless he/she completely clears the first semester, this continues for rest of the semesters).A candidate failing in more than two subjects will not be permitted to proceed to next class. It is mandatory for the candidate to pass in all subjects of the previous odd semester to be eligible for the next odd semester, and to pass in all subjects of the previous even semester to be eligible for the next even semester. The candidate shall be eligible for internship program only after successful completion of the VIII semester.

RULES FOR GRACE MARKS

The grace marks up to a maximum of five may be awarded to a student who has failed only in one subject but has passed in all other subjects. These five marks shall be distributed in different heads of passing of that subject. Provided that these grace marks shall be awarded only if the student passes after awarding these marks. (Refer clause 59, Bye-laws of Dr. D. Y. Patil Vidyapeeth, Pune.).

SCORING – THE CBCS SYSTEM

All Programmes mention shall run on Choice Based Credit System (CBCS). It is an instructional package developed to suit the needs of students to keep pace with the developments in higher education and the quality assurance expected of it in the light of liberalization and globalization in higher education.

COURSE

Each Course (subject) shall be designed under lectures / tutorials / laboratory or field work / seminar / practical training / Assignments / Term paper or Report writing etc., to meet effective teaching and learning needs.

BIOETHICS IN THE CURRICULUM.

It is the study of the typically controversial ethical issues emerging from new situations and possibilities brought about by advances in biology and medicine. It is also moral discernment as it relates to medical policy and practice. Bioethicists are concerned with the ethical questions that arise in the relationships among life-sciences, biotechnology, medicine, politics, law, and philosophy. It also includes the study of the more commonplace questions of values ("the ethics of the ordinary") which arise in primary care and other branches of medicine. The curriculum does not have complete course, but is a source of inspiration. The course content should not be treated as a comprehensive curriculum in bioethics. It is recognized that the content of the core curriculum does not necessarily cover all aspects of bioethics. Traditional issues that have not been included could be incorporated as examples that are pertinent to one or several of the Declaration’s principles within the curriculum’s framework.

RATIONALE FOR INTRODUCTION OF CBCS

The UGC while outlining the several unique features of the Choice-Based Credit System (CBCS) has, in fact, given in a nutshell, the rationale for its introduction. Among the features highlighted by the UGC are:

- Enhanced learning opportunities, ability to match learners' scholastic needs and aspirations, inter-institution transferability of learners(following the completion of a semester),
- Improvement in educational quality and excellence,
- Flexibility for working learners to complete the programme over an extended period of time,
- Standardization and comparability of educational programmes across the country, etc. Some of the specific advantages of using the Credit system as outlined in the available literature on the topic are as listed below:

ADVANTAGES OF THE CREDIT SYSTEM

- Represents a much-required shift in focus from teacher-centric to learner-centric education since the workload estimated is based on the investment of time in learning, not in teaching.
- Helps to record course work and to document learner workload realistically since all activities are taken into account - not only the time learners spend in lectures or seminars but also the time they need for individual learning and the preparation of examinations etc.
- Segments learning experience into calibrated units, which can be accumulated in order to gain an academic award.
- Helps self-paced learning. Learners may undertake as many credits as they can cope with without having to repeat all the courses in a given semester if they fail in one or more courses.
- Alternatively, they can choose other courses and continue their studies.
- 'Learner Autonomy'.
- Makes education more broad-based. One can take credits by combining unique combinations.
- Credits earned at one institution can be transferred to another.
- Helps in working out twinning programmes.
- Is beneficial for achieving more transparency and compatibility between different educational structures.
- A credit system can facilitate recognition procedures as well as access to higher education for non-traditional learners

GRADING:

The total of the internal evaluation marks and final University examination marks in each course will be converted to a letter grade on to confirm as per the following scheme as recommended by UGC:

Letter Grades and Grade Points:

Letter Grades	Grade Points	% of marks
O (Outstanding)	10	80 and above
A+(Excellent)	9	75-79
A(Very Good)	8	70-74
B+(Good)	7	65-69
B(Above Average)	6	60-64
C(Average)	5	55-59
P(Pass)	4	50-54
F(Fail)	0	<50
Ab (Absent)	0	0

A student obtaining Grade F (or) Grade point '0'shall be considered failed and will be required to reappear in the examination.

COMPUTATION OF SGPA AND CGPA:

The UGC recommends the following procedure to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA):

- The SGPA is the ratio of sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone by a student, i.e
  SGPA (Si) = Σ(Ci x Gi) / ΣCi
  where Ci is the number of credits of the ith course and Gi is the grade point scored by the student in the ith course.
- The CGPA is also calculated in the same manner taking into account all the courses undergone by a student over all the semesters of a programme, i.e.
  CGPA = Σ(Ci x Si) / Σ Ci
  where Si is the SGPA of the ith semester and Ci is the total number of credits in that semester.
- The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts.

Illustration of Computation of SGPA and CGPA and Format for Transcripts

i. Illustration for computation of SGPA for I semester

Course	*Credit*	*Grade Letter*	*Grade Point*	*Credit Point (Credit x Grade)*
Course 1	*7*	*B+*	*7*	*7X7=49*
Course 2	*6*	*A*	*8*	*6X8=48*
Course 3	*3*	*B*	*6*	*3X6=18*
Course 4	*10*	*A+*	*9*	*10X9=90*
Total	*26*			*205*

*Thus, **SGPA =205/26 =7.884***

i. Illustration for computation of CGPA

Semester 1	*Semester 2*	*Semester 3*	*Semester 4*	*Semester 5*	*Semester 6*
Credit:20	*Credit:22*	*Credit:25*	*Credit:26*	*Credit:26*	*Credit:25*
SGPA:6.9	*SGPA:7.8*	*SGPA:5.6*	*SGPA:6.0*	*SGPA:6.3*	*SGPA:8.0*

$$\textit{Thus, CGPA} = \frac{20 \times 6.9 + 22 \times 7.8 + 25 \times 5.6 + 26 \times 6.0 + 26 \times 6.3 + 25 \times 8.0}{144} = 6.73$$

INTERNSHIP:

There shall be six months (24 weeks) of Internship after successfully completing the eighth semester examination for candidates and had been declared to have passed the examination in all the subjects. Internship shall be done in any hospital recognized by the Vidyapeeth. 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 Orthopaedics, Cardiothoracic including ICU, Neurology, Paediatrics, General Medicine, General Surgery, Obstetrics and Gynaecology both at the inpatient and outpatient 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. The student has to do the project in the internship as part of the curriculum of BPT course and submit it for the fulfillment of the degree which shall be evaluated by two examiners. Passing from the project work is mandatory for completing the internship program.

AWARD OF DEGREE :

Every student of the programme who fulfils the following criteria will be eligible for the award of the degree provided

- He/She should have earned at least minimum required credits as prescribed in course structure,
- He/She should have cleared all internal and external evaluation components in every course,
- He/She should have successfully completed the internship with project work.
- He/She should have secured a minimum CGPA of 4.00 at the end of the programme BPT.

AWARD OF CLASS:

The class awarded to a student in the programme is decided by the final CGPA as per the following scheme:

Distinction: CGPA $\geq$ 7.50

First class: CGPA of 6.50 – 7.49

Second Class: CGPA of 5.00 to 6.49

TRANSCRIPT:

The transcript issued to the student at the time of leaving the University will contain a consolidated record of all the courses taken, credits earned, grades obtained, SGPA,CGPA, class obtained, etc.

CLASSIFICATION OF COURSE IN UG DEGREE PROGRAM:

Sem.	Foundation course	Core course	Allied course	Enhancement course
1	• Human Anatomy - I • Human Physiology - I • Electro Therapy- I *			• English & Communication Skills
2	• Human Anatomy - II • Human Physiology- II • Exercise Therapy - I*		• Biochemistry	• Computer Science
3	• Exercise Therapy- II* • Biomechanics		• Pathology & Microbiology	• Psychology • First Aid & Emergency care
4	• Electro Therapy- II*	• Gen. Medicine (including Gerontology & Dermatology)	• Pharmacology, • Community Medicine, Sociology & Environmental. Sciences	
5	• Physical & Functional Diagnostic skills*	• Orthopaedics & Traumatology • Neurology (including Pediatrics &Psychiatry)	• Obstetrics and Gynecology	
6	• Physiotherapeutic Skills	• General Surgery (including Plastic Surgery)	• Research Methodology and Biostatistics	• Bioengineering & Professional Ethics*
7		• Physiotherapy in Musculoskeletal Sciences • Physiotherapy in Community Based Rehabilitation.*		• Choice Based (Paediatrics/ Manual Therapy)
8		• Physiotherapy in Neurological Condition* • Physiotherapy in Cardio-Respiratory & General Conditions		• Choice Based Course (Sports Physiotherapy /Hand Rehabilitation)

***the course curriculum of bioethics, has been segregated as per the applicability in the following subjects

SEMESTER – I

Course Code	Course Title	Hours			
		Th	Pr	SPT	Total
PT-101	Human Anatomy- I	64	64	48	176
PT-102	Human Physiology- I	64	32	48	144
PT-103	English & Communication Skills	32	0	48	80
PT-104	Electro Therapy- I	80	96	96	272
	Total	240	192	240	672

Th: Theory, Pr: Practical, Tot: Total, Lec: Lecture Demonstration/Tutorial/Discussion, IA: Internal Assessment

Course Title :- Human Anatomy-I
Course Code:- PT 101

Course Credit for Human Anatomy –I

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
64	64	48	176	4	4	3	11	4	2	1	7	10	40	50	10	40	50

Learning Objectives:

At the end of the course, the candidate will-

1. The student should be able to identify and describe anatomical aspects of muscle, bones & joints, & to understand and analyze movements of upper extremity.
2. To understand the anatomical basis of various clinical conditions e.g. Trauma, deformities, pertaining to upper limbs & spine.
3. To be able to localize various surface landmarks.
4. To identify and describe various components and contents of the Thorax- with special emphasis to tracheo-bronchial tree, & cardio- pulmonary system.
5. To be able to demonstrate the movements of various joints.
6. To be able to distinguish major arteries, veins and Lymphatic with special emphases to extremities and spine.
7. To be able to identify and describe the source, course of major arterial, venous and lymphatic system, with special emphasis to upper extremities, thorax and spine.

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1	**General Introduction**	**6**	**-**
	• Histology-Cell, tissues of the body, epithelium, connective tissue, cartilage, bone, lymph, • muscle, nerve etc.	2	-
	• Osteology-Formation, function, growth and repair of bones.	2	-

	• General Embryology-Ovum, spermatozoas, fertilization, differentiation, development of • various systems and foetal circulation	2	-
2	**Systems of Human body (a brief Outline)**	**20**	**12**
	• Cardio Vascular System –Arteries, capillaries, veins, heart, lymphatic system. • Respiratory System –Anatomy of upper and lower respiratory tract including nose, larynx, trachea, bronchi, pleura and lungs. • Urogenital System –Anatomy of Urinary system, male and female reproductive system (special emphasis to female system). • Axial skeleton • Sensory Organs • Digestive System –Anatomy of the gastro-intestinal tract.	4 4 4 3 3 2	2 2 2 2 2 2
3	**UPPER EXTREMITY**	**15**	**25**
	• Osteology Outline the anatomical features, attachments, ossification and side determination of the bones of U/L : Clavicle, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, Phalanges	5	15
	Myology • Fascia and Muscles of front and back of upper arm: origin, insertion, nerve supply and action. • Muscles of front and back of forearm: origin, insertion, nerve supply and action. • Mention the small muscles of hand with their origin, insertion, nerve supply and action. • Identify the nerves of upper limb and mention their position course, relations and distribution. • Detail explanation of joints of upper limb: shoulder guide, Shoulder joint, Elbow, • Wrist and joints of hand. • Indicate the blood vessels of upper limb and mention their position course, relations, distribution and main branches. Lymphatic damage of upper limb • Applied anatomy of all structures of U/L	10	10
4	**THORAX**	**3**	**4**
	• Ribs: Parts and main features of typical rib and define true, false and floating ribs. • Sternum: State the parts and anatomical features. • Intercostal muscles and diaphragm: origin,	2	2

	insertion, nerve supply and action. • List layers of anterior Abdominal wall and mention its origin, insertion, nerve supply and action of these muscles.		
	Joints of Thorax • Identify the various joints and explain in detail: Manubriosternal joint • Costo vertebral joint • Costo transverse joint • CostoChondral joint • Chondro sternal joints • Inter vertebral joint • Movements of vertebral column – Respiratory movements • Mention the course and branches and nerves, blood vessels and lymphatic drainage of thorax. • Intercostal space and its content • Diaphragm-structures passing through it. • Applied Anatomy of structures of thorax	1	2
5	**HEAD, NECK AND FACE** (special emphasis on myology and osteology)	**20**	**23**
	(Must Know) • Muscles & Vessels of neck • Facial muscles & orbit. • Temporo-Mandibular (T.M) joint, cervical vertebrae & Skull. • Endocrine glands. • Cranial nerves,	10	15
	(Desirable to know) • Triangles of neck • Lateral wall of nose • Larynx, Pharynx • Salivary glands	10	8

Text Books

Sr.No.	Title
1	Williams & Warwick, Gray's Anatomy-Churchill Livingstone.
2	Inderbir Singh, Textbook of Anatomy with colour Atlas-Vol. 1, 2, 3 Jaypee Brothers.
3	B.D. Chaurasia, Human Anatomy-Volume 1, 2, 3 CBS Publishers & Distributors.
4	Mcminn's Last's Anatomy-Regional and applied, Churchill Livingstone.
5	Cunningham Manual of Practical Anatomy Vol. I, II, III, Churchill Livingstone.
6	Inderbir Singh, A Textbook on Human NeuroAntomy, Jaypee Brothers.
7	Snell-Clinical Anatomy-Lippincott.
8	Mcminn's et al-A Colour Atla s of Human Anatomy, Mosby.

Reference Books

Sr.No.	Title
1	Gray's Anatomy
2	Extremities by Quining Wasb
3	Anatomy & Physiology by Smout and McDowell
4	Kinesiology by Katherine Wells [Saunders co.]

SCHEME OF EXAMINATION

Evaluation Pattern					
Written		Total	Practical		Total
IA	Final exam	Final exam	IA	Final exam	Final exam
10	40	50	10	40	50

Periodical Examination:

- Written Examination:-20 MCQ for 10 marks, 20 minutes
- Practical Examination:- 10 marks

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	MCQ	10x1=10 marks
Sec B	1. Short Notes - Answer any 5 out of 6	5x2=10 marks
	2. Short answer questions - Answer any 2 out of 3	2x5=10 marks
	3. Long Answer Questions - Answer any 1 out of 2	1x10=10 marks

- **Practical Examination (40 marks)**

Sr.No.		Marks
1	**Spots**	**10x2=20 marks**
	i. 3 Spots based on Urogenital/Reproductive/special senses/Cardiovascular system	3x2=06 marks
	ii. 2 Spots based on Soft part of Thorax/neck	2x2=4 marks
	iii. 5 Spots based on upper extremity	5x2=10 marks
2.	**Viva (15 marks) + Journal (5 marks)** i. Soft Parts ii. Osteology	**15+5=20 marks**

- **<u>SUPERVISED PRACTICAL TRAINING:</u>**
  - Journals marks = 5 marks

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the Preliminary examination .

Internal Assessment Marks

Theory / Practical:-

Periodical exam = 10 marks

Prelim exam = 40 marks

Total = 50 marks

The total shall be Converted to 10 marks (50/5=10)

Course Title :- Human Physiology-I

Course Code:- PT 102

Course Credit for Human Physiology-I

Hours				**Hrs/Wk**				**Credits**				**Evaluation Pattern**					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
64	32	48	144	4	2	3	9	4	1	1	6	10	40	50	10	40	50

Learning Objectives:

At the end of the course, the candidate will-

1. Acquire the knowledge of the relative contribution of each organ system in maintenance of the milieu interior [Homeostasis].
2. Be able to describe physiological functions of various systems, with special reference to Musculo-skeletal, Cardio-respiratory, and alterations in function with aging.
3. Analyze physiological responses & adaptation to environmental stresses- with special emphasis on physical activity & temperature.
4. Acquire the skill of basic clinical examination, with special emphasis to Cardiovascular and Respiratory system, & Exercise tolerance/Ergography.

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1	**General Physiology**	**4**	**-**
	Must know • The cell & cell organelles – structure & functions • Homeostasis, biofeedback mechanisms • Transport across cell membrane • Outline of membrane potential & action potential		
2	**Nerve muscle**	**6**	**-**
	Must know • Muscle –classification, structure, sarcomere & properties of muscles • Myoneural junction & transmission • Molecular basis of muscle contraction • Motor unit, EMG • Structure, Properties & Classification of nerves • Propagation of nerve impulse. • Degeneration and regeneration of nerve.	3	-

	Desirable to know • Applied aspects – Myasthenia gravis, Rigor mortis • Reaction of degeneration • Muscle disorders	3	-
3	**Haematology**	**8**	-
	Must know • Composition and functions of blood • Red blood cell – morphology, formation, normal count, functions, physiological and pathological variation. • White blood cell – morphology, classification, properties, functions, physiological & pathological variation • Haemoglobin – basic chemistry, fate and functions. • Immunity – definition, classification, concept of antigen & antibody • Haemostasis – steps, role of platelets • Blood groups – A,B,O,AB and Rh system • Anemias, ESR & PCV	4	-
	Desirable to know • Plasma proteins • Anticoagulants • Blood transfusion	3	-
	Nice to know • Haemophilia • Thrombocytopenia	1	-
4	**Cardiovascular system**	**20**	-
	Must know • General organization and properties of cardiac muscle • Origin and conduction of cardiac impulse • Cardiac cycle and heart sounds • Normal heart rate, bradycardia, tachycardia • Normal ECG • Cardiac output- normal values, physiological variations, factors affecting cardiac out- put and regulation • Blood pressure – normal values, measurement, determinants, short term and long term regulation • Regional circulation- Coronary, muscular, cerebral • Functions of Lymph • Pressure and volume changes during cardiac cycle	16	
	Desirable to know • Patho-physiology of circulatory shock and edema • Hypertension, hypotension	3	
	Nice to know • Hemodynamic	1	

5	**Respiratory system**	**18**	**-**
	Must know • General organization of respiratory system • Mechanics of respiration – Inspiratory and expiratory muscles, intrapleural pressure, lung & thoracic compliance, surfactant, lung volumes & capacities. • Diffusion of gases • Transport of respiratory gases • Regulation of respiration • Outline of hypoxia (types & physiological changes) • Acclimatization to high altitude. • Dead space, Ventilation/ perfusion ratio • Maximum breathing capacity & breathing reserve • Pulmonary function tests.	12	-
	Desirable to know • Artificial respiration	3	-
	Nice to know Asphyxia, cyanosis (types and physiological changes)	3	-
6	**Digestive System**	**8**	**-**
	Must know • General organization • Mastication and deglutition • Saliva – composition, functions and regulation of salivary secretion • Gastric secretion – composition, mechanism, phases of secretion, regulation and functions. • Outline of gastric emptying and peristalsis • Pancreatic secretion – composition, regulation and functions. • Liver and gall bladder – composition and functions of bile • Movements and functions of small and large intestine, • Defecation reflex, constipation, diarrhea	6	-
	Nice to know • Jaundice • Peptic ulcer	2	-

HUMAN PHYSIOLOY PRACTICAL

Course Content			
Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1	**Haematology**	**-**	**10**
	Hb, RBC, WBC ,Blood groups, BT & CT		

2	**Properties of muscles**	**-**	**10**
	• **Skeletal muscle.** SMC, effect of temperature, velocity of nerve conduction, fatigue, tetanus, all or none law & effect of load.	-	5
	• **Cardiac muscle.** Normal cardiogram, effect of speed, temperature, Stannius ligature, all or none law & incomplete tetanus, Nervous regulation of heart, vagal escape. Effect of drugs (adrenaline & acetylcholine)	-	5
3.	**Other L. Ds**	**-**	**12**
	• Physical fitness- Cardiopulmonary efficiency tests • Stethography, Spirometry • Ergography, Perimetry • ECG	-	

Text Books

Sr.No.	Title
1	Text book on Medical Physiology-By Guyton
2	Text book of physiology for physiotherapy – Prof. A. K Jain.
3	Concise Medical Physiology – Sujit K. Chowdhuri

Reference Books

Sr.No.	Title
1	Samson & Wrights Applied physiology.
2	Principles of Anatomy & Physiology – Tortora.
3	Textbook of Medical Physiology – Indu Khurana
4	Samson & Wrights Applied physiology.

SCHEME OF EXAMINATION

Written		Total	Practical		Total
IA	Final exam	Final exam	IA	Final exam	Final exam
10	40	50	10	40	50

Periodical Examination:

- Written Examination:-20 MCQ for 10 marks, 20 minutes.
- Practical Examination:- 10 marks

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	MCQ	10x1=10 marks
Sec B	1. Short Notes - Answer any 5 out of 6 2. Short answer questions - Answer any 2 out of 3 3. Long Answer Questions - Answer any 1 out of 2	5x2=10 marks 2x5=10 marks 1x10=10 marks

- **Practical Examination (40 marks)**

Sr.No.		Marks
1	**Spots** • Haematology- 1 • Graphs-2 • Physical fitness-1 • BP/ ECG/HR-2 • Spirometry- 1 • Ergography/ Stethography-1 • Perimetry-1	10x2=20
2.	**Viva(15 marks) + Journal (5marks)** -Based on Theory portion	15 +5 =20

- **<u>SUPERVISED PRACTICAL TRAINING:</u>**
  - Journals marks = 5 marks

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination .

Internal Assessment Marks

Theory / Practical:-

Periodical exam = 10 marks

Prelim exam = 40 marks

Total = 50 marks

The total shall be Converted to 10 marks (50/5=10)

Course Title :- English and Communication Skills
Course Code:- PT 103

Course Credit for English and Communication Skills

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
32	0	48	80	2	0	3	5	2	0	1	3	10	40	50	--	-	-

Learning Objectives:

At the end of the course, the candidate will-

1. Develop good vocabulary skills for better communication
2. Effectively communicates with teachers, patients and public
3. Understands methods of writing and drafting letters in English

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1	**GRAMMAR AND VOCABULARY**	**12**	**-**
	• Reading Comprehension • Verb Forms • Right Words (Synonyms, Antonyms, Homonyms and One-Word Substitutes) • Detection of Errors • Reported Speech • Transformation • Tenses • Punctuation • Phrases and Idioms • Precise writing • Essay	12	-
2	**COMPOSITION**	**9**	**-**
	• Resume Writing • Letter writing and e-Correspondence • Note-Making • Report Writing • Expansion of Proverbs and Ideas • Description of Pictures.	9	-
3	**COMMUNICATION SKILLS :**	**10**	**-**
	• The ability to present ideas clearly, effectively and confidently, in both oral and written form. • The ability to practice active listening skills and provide feedback. • The ability to present clearly with confidence and appropriate to the level of the listener. • The ability to use technology in presentation	2	-

	• The ability to negotiate and reach an agreement • The ability to communicate with others from different cultures • The ability to develop interpersonal communication skills. • The ability to use non-verbal skills. • Clinical application • Role Play		
	Critical Thinking and problem solving skills • The ability to identify and analyse problems in complex and vague situations as well as to make justified evaluations. • The ability to develop and improve thinking skills such as to explain, analyse and evaluate discussions. • The ability to find ideas and alternative solutions. • The ability to think out of the box. • The ability to make decisions based on concrete evidence. • The ability to persevere as well as to fully concentrate on given task. • The ability to understand and to fit in with the culture of the community and new work environment. • Clinical application • Role Play **Team work** • The ability to build to good relation interacts with others and work effectively with them to achieve the same objectives. • The ability to understand and interchange roles between that of a team leader and a team member. • The ability to recognize and respect the attitude, behavior and beliefs of others. • The ability to contribute towards the planning and coordination of the team's efforts is responsible for the group's decisions. • Clinical application • Role Play	3	-
	Life long learning and information management • The ability to search and manage relevant	1	

	information from different sources. • The ability to accept new ideas and the capability for autonomous learning. • The ability to develop a curious mind and thirst for knowledge. • Clinical application • Role Play		
	Entrepreneurial skills • The ability to identify business opportunities • The ability to outline business frameworks, • The ability to build explores and seizes business and work. • The ability to work independently. • Clinical application • Role Play	1	
	Professional ethics and morals • The ability to recognize the effects on the economy, environmental and socio-culture in professional practice. • The ability to analyse and make decisions in solving problems related to ethics. • The ability to practice ethically apart from being responsible towards the society, have the knowledge of basic leadership theory. • Clinical application, Role Play	1	
	Leadership skills • The ability to lead a project. • The ability to understand and interchange roles between that of a team leader and a team member. • The ability to supervise team members. • Clinical application. Role Play	1	
	Introduction to ethics & bioethics • Meaning, nature of ethics, ethical statements • Meaning of bioethics • Health & disease as values and facts • Principles of bioethics • Medical ethics- goals, committees,	2	

Reference Books

Sr.No.	Title
1	Sherfield, R., Montgomery,R.J. & Moody,P.G. (2011). Developing Soft Skills. 3rd Edi. Pearson Education, New Delhi.
2	Kumar,S.S. (2010). Communication Skills and Soft Skills. Pearson Education, New Delhi
3	JagdishChander, 'Creative English', OxfordUniversity Press, New Delhi.

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
10	40	50

Periodical Examination:

- Written Examination:-20 MCQ for 10 marks, 20 minutes.

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	MCQ (5 English+5 Communication skills)	10x1=10
Sec B	1. Short Notes 2. Answer any 5 out of 6 (3 English+3 Communication skills)	5x3=15
Sec C	1.Short Notes- Answer any 5 out of 6 (3 English+3 Communication skills)	5x3=15

- **SUPERVISED PRACTICAL TRAINING:**

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination

Internal Assessment Marks

Theory:-

Periodical exam = 10 marks

Prelim exam = 40 marks

Total = 50 marks

The total shall be Converted to 10 marks (50/5=10)

Course Title :- ELECTRO THERAPY- I

Course Code:- PT 104

Course Credit for ELECTRO THERAPY- I

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
80	96	96	272	5	6	6	17	5	3	2	10	20	80	100	20	80	100

Learning Objectives:

At the end of the course, the candidate will-

1. Recall physics principles and Laws of Electricity, Electro-magnetic spectrum, and ultra -sound.
2. Describe effects of environmental & man made electro- magnetic field at the cellular level & risk factors on prolonged exposure.
3. Describe the main electrical supply, Electric shock & precautions-;
4. Describe in brief, certain common electrical components such as transistors, valves, capacitors, transformers etc and the simple instruments used to test /calibrate these components [such as potentiometer, oscilloscope etc] of the circuitry, and will be able to identify such components.
5. Acquire knowledge of various superficial thermal agents such as Paraffin wax bath, Cryotherapy, homemade remedies, etc; their physiological and therapeutic effects, Merits/ demerits; and also acquire the skill of application.
6. Acquire knowledge of high frequency modalities, their basic physics, working, physiological and therapeutic effects

Course Content – (section A/B/C if applicable)

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1	**BIOELECTRONICS**	**30**	**16**
	• Structure and properties of matter – solids, liquids and gases, adhesion, surface tension, • Viscosity, density and elasticity. • Structure of atom, molecules, elements and compounds. • Electron theory, static and current electricity. • Conductors, Insulators, Potential difference, Resistance & Intensity. • Ohm's Law – Its application to AC & DC currents. • Rectifying Devices – Thermionic Valves, Semiconductors, Transisters, • Amplifiers, Transducers Oscillator circuits. • Capacitance, condensers in DC and AC Circuits. • Display devices & indicators – analogue & digital. • Effects of Current Electricity: • Chemical effects - Ions and electrolytes,Ionisation, Production of a E.M.F. by chemical actions. • Magnetic effects, Molecular theory of Magnetism, Magnetic fields, Electromagnetic Induction, eddy		

	currents, • Mili ammeter and Voltmeter, Transformers and Choke Coil. • Thermal Effects – Joule's Law and Heat production. • Physical Principles of sound and its properties. • Physical Principles of light and its properties. • Electromagnetic spectrum – biophysical application. • Laws of Transmission- reflection, refraction, absorption, attenuation		
2	**ELECTRIC SUPPLY**	**5**	**-**
	• Brief outline of main supply of electric current. • Dangers – short circuits, electric shocks. • Precautions – safety devices, earthing, fuses etc. • First aid & initial management of electric shock	5	-
3	**THERMO & ACTINOTHERAPY**	**23**	**32**
	• Physiological responses to heat gain or loss on various tissues of the body. • Therapeutic effects of heat, cold • Physical principles of Electro – magnetic radiation. • Physics of sound including characteristics and propagation. • Therapeutic cold (Cryotherapy)– Sources, biophysical effects, types, therapeutic effects, Indications,contraindications, precautions, application techniques and patient preparation. • Thermotherapy modalities: parafine wax bath, contrast bath, whirl pool bath, moist heat therapy:principles of application, mode of application, therapeutic uses, indication and contraindication. • **Infra red rays –** Wavelength, frequency, types & sources of IRR generation, techniques of irradiation, physiological & therapeutic effects, indications, contraindications, precautions, • Operational skills of equipment & patient preparation. • Home remedies of heat and cold	3 3 3 3 3 2 2 2 2	3 3 3 3 3 4 5 4 4
4	**HIGH FREQUENCY CURRENTS AND WAVES**	**15**	**35**
	High frequency currents (S.W.D.)	8	17
	Production, biophysical effects, types, therapeutic effects, techniques of application, indications, contraindications, precautions, operational skills and patient preparation.		

	High frequency sound waves (Ultrasound)	7	18
	Production, biophysical effects, types, therapeutic effects, techniques of application, indications, contraindications, precautions, operational skills and patient preparation.		
5	**TRACTION**	**7**	**13**
	• Principles of traction, classification, types • Physiological & therapeutic effects • Indications, contraindications • Techniques of application • Operational skills & precautions	7	13

Text Books

Sr.No.	Title
1	Clayton's Electro therapy-3rd, 9th& 10thed,
2	Electro therapy explained –by Low & Reed
3	Principles and Practice of Electro Therapy –by Joseph Kahn

Reference Books

Sr.No.	Title
1	Clinical Electro Therapy-by Nelson & Currier
2	Electrotherapy – Evidence Based Practice – Sheila Kitchen

SCHEME OF EXAMINATION

Written		Total	Practical		Total
IA	Final exam	Final exam	IA	Final exam	Final exam
20	80	100	20	80	100

Periodical Examination:

- Written Examination:-20 MCQ for 20 marks, 20 minutes.
- Practical Examination:- 20 marks

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

Sec A	MCQ	10x1=10 marks
Sec B	1. Short Notes - Answer any 5 out of 6 2. Short answer questions - Answer any 2 out of 3	5x3=15 marks 3x5=15 marks
Sec C	1. Long Answer Questions (compulsory) 2. Long Answer Questions Answer any 1 out of 2	1x15=15 1x15=15

- **Practical Examination (80 marks)**

S.No.		Marks
1.	**Long Case:** Superficial thermal agents/IR, Cold packs, Hot pack, wax bath	35 marks
2.	**Short Case:** any one of the following. SWD, US, Contrast Bath, Whirl pool Bath	20 marks
3	**Spots + Journal** 5 Spots - (5 Minutes per Spot and four marks per spots) spots based on identification of electronic equipments & panel diagram of equipment etc.	20+5=25 marks (5x4=20)

- **<u>SUPERVISED PRACTICAL TRAINING:</u>**
  - Journals marks = 5 marks

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination

Internal Assessment Marks

Theory / Practical:-

Periodical exam = 20 marks

Prelim exam = 80 marks

Total = 100 marks

The total shall be Converted to 20 marks (100/5=20)

SEMESTER – II

Course Code	Course Title	Hours			
		Th	Pr	SPT	Total
PT-201	Human Anatomy- II	48	64	48	160
PT-202	Human Physiology- II	48	32	48	128
PT-203	Biochemistry	48	0	-	48
PT-204	Exercise Therapy- I	64	96	96	256
PT-205	Computer Science	32	0	48	80
	Total	**240**	**192**	**240**	**672**

Th: Theory, Pr: Practical, Tot: Total, Lec: Lecture Demonstration/Tutorial/Discussion, IA: Internal Assessment

Course Title :- Human Anatomy-II (112 Hours)
Course Code:- PT 201

Course Credit for Human Anatomy II

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	To t	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
48	64	48	160	3	4	3	10	3	2	1	6	10	40	50	10	40	50

Learning Objectives:

At the end of the course, the candidate will-

1. The student should be able to identify and describe anatomical aspects of muscle, bones & joints, & to understand and analyze movements of lower extremity
2. To understand the anatomical basis of various clinical conditions e.g. trauma, deformities, pertaining to lower limbs & pelvis.
3. To be able to localize various surface landmarks
4. To be able to demonstrate the movements of various joints of lower limb
5. To be able to distinguish major arteries, veins and lymphatic with special emphases to extremities and pelvis.
6. To be able to identify and describe the source, course of major arterial, venous and lymphatic system, with special emphasis to lower extremities and pelvis.
7. To identify and describe various parts of Central Nervous System (C.N.S) - Fore-brain, Midbrain, Hind-brain, Brain stem, courses of cranial nerves; functional components - course distribution- Anatomical bases of clinical lesions .
8. To describe the source and course of spinal tracts.
9. To describe blood circulation of C.N.S. & spine.
10. Be able to identify the components of various Trans-sections.

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
SECTION I	**Neuro- anatomy-** • Peripheral Nerves • Neuromuscular Junction	**20**	**15**

	• Sensory End Organs • Spinal Cord Segments & Areas • Brainstem • Cerebellum • Inferior colliculi • Superior Colliculi • Diencephalon • Hypothalamus • Epithalamus • Thalamus • Cerebral hemispheres • Corpus striatum • Rhinencephalon • Lateral ventricles • Meninges • Bloody supply of the brain • Internal Capsule • Visual radiation • Auditory radiation • Thalamocortical radiations • Pyramidal systems • Extra-pyramidal systems • Sympathetic system • Para-sympathetic system • Cranial nerves		
SECTION II	**TRUNK & ABDOMEN** **Osteology** • Vertebral columns: Identify the parts of typical vertebra and state the main features, attachments and ossification. • Intervertebral disc and mention its part. **Myology** • Fascia and muscles of back • Fascia and muscles connecting U/L with vertebral column: origin, insertion, nerve supply, action. • Fascia and muscles of post Abdominal Wall: origin, insertion, nerve supply and action. ➢ Mention the course and branches and nerves, blood vessels and lymphatic drainage of • Trunk & abdomen. ➢Lumbar Plexus: Position, formation and branches. ➢Rectus sheath: formation and contents. ➢Contents of vertebral canal • Applied Anatomy of structures of trunk & abdomen.	**4**	**6**

SECTION III	PELVIS • Features of pubic symphysis and sacroiliac joints. • Muscles of pelvic floor and mention their attachments, action and nerve supply. • Difference between male and female pelvis. • Main features of subdivision, boundaries, walls and floor of pelvis. • Urogenital diaphragm (outlines only) ▪ Applied anatomy of lumbar plexus ▪ Lymphatic drainage ▪ Nerve supply ▪ Sacral Plexus ▪ Mention the blood vessels of the region with course, variations, distribution and main branches.	**4**	**12**
SECTION IV	**LOWER EXTRIMITY** **Osteology** • Hip bone, femur, Tibia, Fibula, Patella, and bones of the foot • Myology-,-Origin, Insertion, Nerve Supply, Action of the following: • Fascia and muscles in anterior of thigh • Fascia and muscles of medial side of thigh • Fascia and muscles of posterior of thigh • Fascia and muscles of gluteal region Fascia and muscles of lateral side of leg • Fascia and muscles of back of leg and sole of foot • Detailed explanation of joints of Lower Limb: Pelvic Girdle, Hip, joint, Knee joint, Ankle joint, joints of foot. • Identify the nerves of Lower Limb and mention their position course, relations distribution • Indicate the blood vessels of Lower Limb a mention their position course, relation, distribution and main branches • Lymphatic drainage of Lower Limb • Explain femoral triangle and subsartorial canal • Poptileal fossa • Anatomy of structures of Lower Limb	**16**	**19**
SECTION V	**REGIONAL ANATOMY** • Radiographic appearance of Musculo-skeletal system of Upper limb, Lower limb, Spine. **Surface Anatomy** • Bony landmarks of HNF, upper extremity, lower extremity, spine ▪ Demonstration of muscles – HNF, superior extremity, inferior extremity ▪ Demonstration of movements of joints • Palpation of peripheral arteries & nerves	**4**	**12**

Text Books

Sr.No.	Title
1	Williams & Warwick, Gray's Anatomy-Churchill Livingstone.
2	Inderbir Singh, Textbook of Anatomy with colour Atlas-Vol. 1, 2, 3 Jaypee Brothers
3	B.D. Chaurasia, Human Anatomy-Volume 1, 2, 3 CBS Publishers & Distributors.
4	Mcminn's Last's Anatomy-Regional and applied, Churchill Livingstone.
5	Mcminn's et al-A Colour Atlas of Human Anatomy, Mosby.
6	Cunningham Manual of Practical Anatomy Vol. I, II, III, Churchill Livingstone.
7	Inderbir Singh, A Textbook on Human NeuroAntomy, Jaypee Brothers.
8	Snell-Clinical Anatomy-Lippincott

Reference Books

Sr.No.	Title
1	Gray's Anatomy
2	Extremities by Quining Wasb
3	Anatomy & Physiology by Smout and McDowell
4	Kinesiology by Katherine Wells [Saunders co.]

SCHEME OF EXAMINATION

Written		Total	Practical		Total
IA	Final exam	Final exam	IA	Final exam	Final exam
10	40	50	10	40	50

Periodical Examination:

- Written Examination:-20 MCQ for 10 marks, 20 minutes.
- Practical Examination:- 10 marks

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	MCQ	10x1=10 marks
Sec B	1. Short Notes - Answer any 5 out of 6 2. Short answer questions - Answer any 2 out of 3 3. Long Answer Questions - Answer any 1 out of 2	5x2=10 marks 2x5=10 marks 1x10=10 marks

- **Practical Examination (40 marks)**

S.No.		Marks
1	**Spots** 1. 2 Spots based on Urogenital/Reproductive/special senses/Cardiovascular system 2. 3 Spots based on Soft part of Thorax/neck 3. 5 Spots based on upper extremity	10x2=20
2.	**Viva + Journal** 1. Soft Parts 2. Osteology	15+5=20

- **<u>SUPERVISED PRACTICAL TRAINING:</u>**
  - Journals marks = 5 marks

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination.

Internal Assessment Marks

Theory / Practical:-

Periodical exam = 10 marks

Prelim exam = 40 marks

Total = 50 marks

The total shall be Converted to 10 marks (50/5=10)

Course Title :- Human Physiology-II
Course Code:- PT 202

Course Credit for Human Physiology II

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
48	32	48	128	3	2	3	8	3	1	1	5	10	40	50	10	40	50

Learning Objectives:

At the end of the course, the candidate will-

1. Acquire the knowledge of the relative contribution of each organ system in maintenance of the milieu interior [Homeostasis].
2. Be able to describe physiological functions of various systems, with special reference to Neuro-motor, Female uro-genital function, and alterations in function with aging.
3. Acquire the skill of basic clinical examination, with special emphasis to Peripheral and Central Nervous system,

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1	Renal Physiology- **Must know** • General introduction, structure and functions of kidney • Formation of urine- filtration, re-absorption and secretion • Physiology of micturition **Desirable to know** • Renal circulation • Plasma clearance test **Nice to know** • Neurogenic bladder • Automatic bladder	**4**	-
2	Body Temperature regulation- **Must know** • Normal body temperature & its regulation • Hypothermia, hyperthermia • Skin-structure and functions	**4**	-
3	Endocrine system- **Must know** • Introduction - General organization of endocrine glands • Releasing hormones from hypothalamus • Anterior & Posterior pituitary hormones – physiological actions, regulation & disorders • Thyroid Hormones – physiological actions, regulation &disorders • Parathyroid Hormones — physiological actions, regulation& disorders • Adrenal cortex & medulla– physiological actions, regulation& disorders	**8**	-

	• Pancreatic hormones – physiological actions, regulation& disorders • Mechanism of hormone action		
4	**Must know** • Functional anatomy of reproductive system • Puberty, changes in males and females, menarche, menopause • Spermatogenesis - stages and regulation, Physiological actions of testosterone • Menstrual cycle and ovarian cycles – phases and hormonal regulation, ovulation • Physiology of pregnancy • lactation – initiation, maintenance and control, • Functions of placenta **Desirable to know** • Pregnancy tests **Nice to know** • Sex chromosomes • Precocious and delayed puberty	**6**	**-**
5	**Must know** • General organization of nervous system • Receptors – definition, classification and functions • Synapse – definition, physiological anatomy, synaptic transmission • Reflexes – classification, properties and functions • Spinal cord – ascending and descending tract and functions • Ascending tracts – sensations carried, pathways and functions • Descending tract – Origin, course and termination and functions • Pain sensation – types of pain, pathways for conduction of pain, referred pain, central analgesia system • Posture & equilibrium, Vestibular apparatus • Thalamus – Functions • Hypothalamus – functions • Cerebellum – functions, effects of lesion • Basal ganglia – functions, effects of lesion, Parkinsonism • Muscle tone • Cerebral cortex – Gross anatomy and division, functions of each lobe • Autonomic nervous system – Organization & functions of parasympathetic, sympathetic system and functions • CSF – Composition, formation, circulation, functions & Blood brain barrier- Applied aspects • Differences between Upper Motor Neuron and Lower Motor Neuron lesions	**20**	**-**

	Desirable to know • Synthesis of neurotransmitters • Limbic system and its functions **Nice to know** • Effects of spinal transection • Decerebrate and decorticate rigidity • Thalamic syndrome • Ascending and descending reticular activating system • Speech, memory and learning,		
6	Special Senses- ***Vision*** **Must know** • Vision – Structure of eye ball, retina, refractory errors, • Accommodation, visual pathway, Pupillary reflexes **Desirable to know** • Light and dark adaptation • Photochemistry of vision ***Ear*** **Must know** • Functional anatomy of ear • Functions of middle ear, Functional anatomy of cochlea & functions of inner ear **Desirable to know** • Audiometry • Auditory pathway **Nice to know** • Physics of sound • Theories of hearing ***Taste & smell*** **Must know** • Functional anatomy, factor affecting.	**6**	**-**
	Lecture demonstrations & Practicals(L.Ds)- a) Clinical examination of arterial pulse. b) Determination of arterial blood pressure. c) Clinical examination of cardiovascular system. d) Clinical examination of respiratory system. e) Clinical examination of higher functions. f)Clinical examination of sensory system. g) Clinical examination of motor system –I. h)Clinical examination of motor system –II i) Clinical examination of all cranial nerves.	-	**32** 3 4 3 3 3 4 4 4 4

Text Books

Sr.No.	Title
1	Text book on Medical Physiology-By Guyton
2	Text book of physiology for physiotherapy – Prof. A. K Jain
3	Concise Medical Physiology – Sujit K. Chowdhuri

Reference Books

Sr.No.	Title
1	Samson & Wrights Applied physiology.
2	Textbook of Medical Physiology – Indu Khurana

SCHEME OF EXAMINATION

Written		Total	Practical		Total
IA	Final exam	Final exam	IA	Final exam	Final exam
10	40	50	10	40	50

Periodical Examination:

- Written Examination:-20 MCQ for 10 marks, 20 minutes.
- Practical Examination:- 10 marks

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	MCQ	10x1=10 marks
Sec B	1. Short Notes - Answer any 5 out of 6	5x2=10 marks
	2. Short answer questions - Answer any 2 out of 3	2x5=10 marks
	3. Long Answer Questions - Answer any 1 out of 2	1x10=10 marks

PRACTICAL **40 Marks**

S.No.		Marks
1	**Clinical physiology** • Respiration – clinical examination of respiratory system • CVS- pulse B.P. clinical examination of CVS • Cranial nerves • Reflexes • Motor and Sensory system	20 marks
2.	**Viva(15) + Journal(5)** Based on Theory portion	15+5=20

- **<u>SUPERVISED PRACTICAL TRAINING:</u>**
  - Journals marks = 5 marks

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Internal Assessment Marks

Theory / Practical:-

Periodical exam = 10 marks

Prelim exam = 40 marks

Total = 50 marks

The total shall be Converted to 10 marks (50/5=10)

Course Title :- Biochemistry (48 Hours)

Course code :- PT 203 Biochemistry

Course Credit for Biochemistry

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
48	-	-	48	3	-	-	3	3	-	-	3	10	40	50	-	-	-

Learning Objectives:

At the end of the course, the candidate will-

1. Be able to describe structures & functions of cell in brief.
2. Be able to describe normal functions of different components of food, enzymes,
3. Define Basal Metabolic Rate & factors affecting the same [in brief], with special reference to obesity.
4. Be able to discuss nutritional aspects of carbohydrates, lipids, proteins & vitamins & their metabolism with special reference to obesity.
5. Define enzymes; discuss in brief, factors affecting enzyme activity.
6. Describe in details biochemical aspects of muscle contraction.
7. Acquire knowledge in brief about the Clinical biochemistry, with special reference to Liver & renal function test, Blood study for Lipid profile, metabolism of fat, Carbo-hydrates, proteins, bone minerals, and electrolyte balance.

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1	**CELL BIOLOGY** **Must Know** • Membrane, structure & function • Junction of intracellular organelle in brief- [no structural details needed]	1	
2	**CARBOHYDRATES-** **Must Know** • Metabolism-Digestion and absorption of carbohydrates, Glycolysis- aerobic, anaerobic & its regulation • Kreb`s cycle &its regulation • Glycogenesis, glycogenolysis& their regulation, role of liver in muscle glycogen • Glyconeogenesis, significance of H.M.P. shunt • Hormonal regulation of blood sugar levels, Important metabolic disorders of glycogen, lactose intolerance, Diabetes mellitus. • Clinical biochemistry: Relevance of blood levels of glucose, Glycosuria	6	
3	**PROTEINS-** **Must Know** • Chemistry-definition-function-classification of Amino acids-protein structure-effect of temperature on proteins- denaturation-coagulation; isoelectric pH &	6	

	its importance • Metabolism-Digestion and absorption-Decarboxylation- De-amination- Transmethylation-transamination & their importance-Detoxification of ammonia including urea cycle. • Clinical biochemistry: Relevance of blood levels of, urea, & uric acid, Protein in urine		
4	**LIPIDS-** **Must Know** • Chemistry-definition-classification-[including fatty acids with examples]-function • Metabolism-Digestion and absorption of lipids—β oxidation of saturated fatty acids and its energetics and regulation of fat metabolism in adipose tissue-Ketone bodies formation & utilization—cholesterol and its importance[no biosynthesis needed]-classification, sources & function of lipoproteins-lipoproteinemia atherosclerosis. • Clinical Biochemistry - Lipid profile-Tri - glyceride, cholesterol/HDL/LDL/VLDL etc**,** Liver function test & Renal function test **Nice to Know** • Phospholipid synthesis	6	
5	**NUCLEIC ACIDS-** **Desirable to Know** • D.N.A. /R.N.A.-definition-structure and function-types-Genetic code-catabolism of purine –gout	2	
6	**ENZYMES-** **Must Know** • Definition-Co-Enzymes, modern classification, factors affecting enzymes action • Iso-enzymes • Clinical and therapeutic use of enzymes: • Clinical relevance: Enzymes-Amylase, CPK, LDH, isoenzymes **Desirable to Know** • Inhibition and types of inhibitors	3	
7	**VITAMINS-** **Must Know** • Water and fat soluble-definition-classification • Individual vitamins-sources-Co-enzyme forms- function • RDA, absorption and transport-deficiency and toxicity	7	
8	**BIOLOGICAL OXIDATION-** **Desirable to Know** • Oxidative phosphorylation & ETC in brief.	2	

9	**MINERALS-** **Must Know** • Phosphate, calcium and iron [in detail] • Magnesium, Flouride, Zinc, Copper, Selenium Molybdenum, Iodine-sources, absorption, transport-excretion, functions and deficiency • Clinical Biochemistry-Relevance of blood levels of Ca, phosphate & Iron	4	
10	**ACID – BASE BALANCE, WATER & ELECTROLYTE-** **Must Know** • Body water, pH-osmolarity Extra and Intra cellular fluid. • Buffers-pH, buffer system in blood. • Role of kidneys & lungs in acid-base balance. • Water- electrolyte balance - imbalance-dehydration.	4	
11	**MUSCLE CONTRACTION-** **Must Know** • Contractile elements • Biochemical events during contraction • Energy metabolism in skeletal & cardiac muscle	2	
12	**CONNECTIVE TISSUE-** **Must Know** • Biochemistry of connective tissue-collagen – Glyco-protein – proteoglycans	2	
13	**NUTRITION-** **Must Know** • Importance of nutrition • Basal metabolic rate – definition – normal values-factors affecting BMR • energy requirement with – age/sex/ thermogenesis – specific dynamic action of food,-energy expenditure for various activities • Composition of food, balanced Diet, dietary recommendations, nutritional supplementation – nutritional value of carbohydrates/proteins/fats & Fibers, • Nitrogen balance & its significance, Protein energy malnutrition – Kwashiorkor & Marasmus	3	

Text Books

S.NO	Title
1	Biochemistry-by Dr. Deb Jyoti Das,
2	Biochemistry-by-Dr. Satyanarayan
3	Text book of Biochemistry for Medical students by-Dr Vasudevan/ Shrikumar

Reference Books

S.NO	Title
1	Review of Biochemistry [26th edition] by Harper.

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
10	40	50

Periodical Examination:

- Written Examination:-20 MCQ for 10 marks, 20 minutes.

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	MCQ	10x1=10 marks
Sec B	1. Short Notes - Answer any 5 out of 6 2. Short answer questions - Answer any 2 out of 3 3. Long Answer Questions - Answer any 1 out of 2	5x2=10 marks 2x5=10 marks 1x10=10 marks

Internal Assessment Marks

Theory:-

Periodical exam = 10 marks

Prelim exam = 40 marks

Total = 50 marks

The total shall be Converted to 10 marks (50/5=10)

Course Title :- Exercise Therapy- I [160 hours]
Course Code:- PT 204

Course Credit for Exercise therapy- I

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	To t	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
64	96	96	256	4	6	6	16	4	3	2	9	20	80	100	20	80	100

Learning Objectives:

At the end of the course, the candidate will-

1. To define the various terms used in mechanics, Biomechanics and Kinesiology.
2. Recall the basic principles of Physics related to mechanics of movement /motion & will be able to understand the application of such principles to the simple equipment designs, and their efficacy in therapeutic gymnasium and various starting positions used in therapeutics.
3. To describe and also acquire the skill of use of various tools of the Therapeutic gymnasium.
4. To demonstrate passive movements in terms of various Anatomical planes.
5. To demonstrate various starting and derived positions.
6. Acquire the skill of application of various massage manipulations and describe the Physiological effects, therapeutic use, merits /demerits of the same.
7. Acquire a skill of assessment of sensations, superficial and deep reflexes, pulse rate/ Blood pressure, Chest expansion/respiratory rate, and limb length/girth measurement on Models.
8. To demonstrate and also acquire the skill of relaxation.
9. To describe types of Goniometer ,merits and demerits of goniometry and to demonstrate and acquire the skill of measuring ROM with goniometer.
10. To describe the skill and usefulness of group and recreational activities-and will be able to demonstrate general fitness exercises used in Physical Training.
11. Be able to define Yoga and its types, its physiological and Psycho-somatic effects and will be able to demonstrate standard yoga postures used by the beginners.
12. Be able to demonstrate General Fitness exercises and shall gain fitness for self.

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1	Basic Biomechanics- • Axis/planes, Newton's law of motion, mechanics of Forces,levers, pendulum, equilibrium ,Torque, stability, base of support, COG,law of gravity • Types of muscle work-angle of pull- Mechanical advantage- applied mechanics in the Therapeutic Gymnasium	14	-
2	Starting and derived positions	3	10
3	Classification of movements (active, passive, assisted, resisted)	5	20
4	Goniometry- principles, techniques, uses, types.	5	14
5	Limb length (only lower limb - apparent, true, supratrochantric) and girth measurements	4	4
6	Assessment of Sensations / Reflex testing.	2	4

7	Assessment of Blood pressure / pulse rate /chest expansion and Respiratory rate	2	4
8	Relaxation- all methods. • Describe relaxation, muscle fatigue, muscle spasm and tension (mental & physical). • Factors contributing to fatigue & tension. • Techniques of relaxation (local and general). • Effects, uses & clinical application. • Indication & contraindication.	4	6
9	Massage manipulations-principles effects/merits/demerits -skills on extremities / scalp / spine/ abdomen / face. • History, various types of soft tissue manipulation techniques. • Physiological effects of soft tissue manipulation on the following systems of the body; • Circulatory, Nervous, Musculoskeletal, Excretory, Respiratory, Integumentary system and Metabolism. • Classify, define and describe: - effleurage, stroking, kneading, petrissage, deep friction,percussions ,vibration and shaking etc. Preparation of patient: Effects, uses, indications and contraindications of the above manipulation.	5	10
10	Therapeutic Gymnasium- • Setup of a gymnasium & its importance. • Various equipment in the gymnasium. • Operational skills, effects & uses of each equipment (shoulder wheel, finger ladder, therapeutic balls, parallel bars etc.) • Suspension therapy, use of accessories such as pulleys, springs	4	8
11	Walking aids – Introduction, types, parts, measurement	3	2

12	Principles of Yoga & basic Yogic postures and their physiological effects. **Yogic postures:-** • Supine Position ➢ Shavasana ➢ Halasana ➢ Sarvangasana ➢ Setubandhasana ➢ Pavanmuktasana • Prone Position ➢ Dhanurasana ➢ Salabhasana ➢ Bhujangasana ➢ Naukasana • Standing ➢ Padahastasana ➢ Trikonasana ➢ Utkatasana • Sitting ➢ Padmasana ➢ Siddhasana ➢ Paschimottanasan ➢ Yogamudrasana ➢ Vajrasana ➢ Gomukhasana	5	10
13	Hydrotherapy-physics-application-effects-merits /demerits - Basic principles of fluid mechanics, as they relate to hydrotherapy. • Physiological & therapeutic effects of hydrotherapy, including joint mobility muscle Strengthening & wound care etc. • Types of Hydrotherapy equipment, indications, contraindications, operation skills & patient preparation	6	4
14	**Human dignity and human rights** • Human dignity as an intrinsic value • Respect , care and Equality in dignity of all human beings • human dignity in different cultural and moral traditions • ethical aspects of physiotherapists in patients relation in regard to human dignity in handling children, women, elderly ,mental & Physically challenged.	**2**	

Text Books

Sr.No.	Title
1	Principles of Exercise Therapy – Dena Gardiner
2	Massage, manipulation & traction- Sydney Litch
3	Therapeutic Exercise Colby Kisner
4	Massage- Hollis
5	Suspension Therapy in Rehabilitation-Margaret Hollis
6	Biomechanics- Cynthia Norkins
7	Hydrotherapy - Duffield
8	Measurement of joint motion - Cynthia Norkins

Reference Books

Sr.No.	Title
1	Clinical Kinesiology – Brunnstrom

SCHEME OF EXAMINATION

Written		Total	Practical		Total
IA	Final exam	Final exam	IA	Final exam	Final exam
20	80	100	20	80	100

Periodical Examination:

- Written Examination:-20 MCQ for 20 marks, 20 minutes.
- Practical Examination:- 20 marks

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

THEROY

Theory-80 marks Internal Assessment 20 marks

Sec A	MCQ	20x1=20 marks
Sec B	1.Short Notes. Answer any 5 out of 6 2.Short answer questions. Answer any 3 out of 4	5x3=15 3x5=15
Sec C	1.Long Answer Questions (compulsory) 2.Long Answer Questions Answer any 1 out of 2	1x15=15 1x15=15

PRACTICAL

Theory-80 marks Internal Assessment 20 marks

1.	Long Case: Massage/ Goniometry / Suspension therapy	35 marks
2.	Short Case: any one of the following. Short case based on passive movements /Relaxation/Limb	20 marks

	Length-Girth/Sensation/Reflex testing/ Yoga/posture/Aerobics/group exercise/warm ups /BP & Pulse/Chest Expansion and Respiratory Rate/Starting and Derived position etc.	
3	Spots (20)+ Journal(5) Five spots based on therapeutics gymnasium. 4 marks per spot, 5 minutes per spot.	20+5=25 marks (5x4=20)

- **<u>SUPERVISED PRACTICAL TRAINING:</u>**
  - Journals marks = 5 marks

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination

Internal Assessment Marks

Theory / Practical:-

Periodical exam = 20 marks

Prelim exam = 80 marks

Total = 100 marks

The total shall be Converted to 20 marks (100/5=20)

Course Title :- Computer Science [32 hours] Course Code:- PT 205																	
Course Credit for Computer Science																	
Hours				**Hrs/Wk**				**Credits**				**Evaluation Pattern**					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
32	-	48	80	2	-	3	5	2	-	1	3	10	40	50	-	-	-

Learning Objectives:

At the end of the course, the candidate will-

1. Develop good skills for better communication.
2. Effectively use Microsoft Office to communicate with patients while rendering care.
3. To utilize PowerPoint presentations and Picture management for effective teaching and learning.
4. To learn the use of computer for basic statistics using excel.
5. To learn the use of Internet services for Research and Documentation.

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1	Introduction of Computer application for Physiotherapy practice.	5	-
2	Introduction of use of computers in teaching, learning, research.	5	-
3	Windows, MS office, Word, Excel, Power Point.	6	-
4	Internet, Literature search.	6	-
5	Introduction to Statistical Package	5	-
6	Introduction to Hospital management information system software.	5	-

Text Books

Sr.No.	**Title**
1	Fundamental of Computer system

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
10	40	50

SCHEME OF EXAMINATION

Periodical Examination:

- Written Examination:-20 MCQ for 10 marks, 20 minutes.

Preliminary Examination / University (Final) Examination

- Written Examination (40 marks)

Theory-40 marks Internal Assessment 10 marks

Sec A	MCQ	10x1=10
Sec B	1. Short Notes-Answer any 5 out of 6 2. Short answer questions-Answer any 2 out of 3 3. Long Answer Questions-Answer any 1 out of 2	5x2=10 2x5=10 1x10=10

- **SUPERVISED PRACTICAL TRAINING:**

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination

Internal Assessment Marks

Theory :-

Periodical exam = 10 marks

Prelim exam = 40 marks

Total = 50 marks

The total shall be Converted to 10 marks (50/5=10)

SEMESTER – III

Syllabus

Course Code	Course Title	Hours			
		Th	Pr	SPT	Tot
PT-301	Pathology & Microbiology	80	0	0	80
PT-302	Exercise Therapy-II	64	128	96	288
PT-303	Psychology	48	0	0	48
PT-304	Biomechanics	64	32	48	144
PT-305	First Aid & Emergency care	32	32	48	112
	Total	288	192	192	**672**

Th: Theory, Pr: Practical, Tot: Total, Lec: Lecture Demonstration/Tutorial/Discussion, SPT:Supervised Practical Training, IA: Internal Assessment

Course Title :- Pathology & Microbiology
Course Code:- PT 301

Course Credit for Pathology & Microbiology

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
80	--	--	80	5	--	--	5	5	--	--	5	20	80	100	--	-- -	--

Learning Objectives

At the end of the course, the candidate will-

1. Acquire the knowledge of concepts of cell injury & changes produced thereby in different tissues & organs - capacity of the body in healing process.
2. Recall the Etio – pathogenesis, the pathological effects & the clinico – pathological correlation of common infections &non-infectious diseases.
3. Acquire the knowledge of concepts of Neoplasia with reference to the Etiology, gross & microscopic features, diagnosis & prognosis in different tissues & organs of the body.
4. Correlate normal & altered morphology of different organ systems in different diseases needed for understanding disease process & their clinical significance (with special emphasis to Neuro-Musculo-skeletal & cardio-respiratory systems).
5. Acquire knowledge of common Immunological disorders & their resultant effects on the human body.
6. Understand in brief, about the Hematological diseases & investigations necessary to diagnose them & determine their prognosis.
7. At the end of the Microbiology course, the candidate will have sound knowledge of the agents responsible for causing human infections, pertaining to C.N.S., C.V.S. Musculoskeletal & Respiratory system.

Course Content- A/B if applicable

Topic Serial No.	A) Pathology	Hours of teaching/learning	
		Theory	Practical
1	**Cell injury**	4	-

	• causes, mechanism & toxic injuries with special reference to Physical, • Chemical & ionizing radiation. • Reversible injury (degeneration)-types-morphology, swelling, hyaline, fatty • changes. • Intra-cellular accumulation-hyaline mucin& pigment disorders. • Irreversible cell injury-types of necrosis-apoptosis • Extra-cellular accumulation- amyloidosis, calcification -– metastasis, &dystrophic – Pathogenesis, morphology		
2	**Inflammation & Repair** • Acute inflammation – features, causes, vascular & cellular events, • Morphologic variations, • Inflammatory cells & mediators, • Chronic inflammation:-causes, types, non- specific & granulomatous – with • examples • Wound healing by primary &secondary union factors promoting & delaying • healing process. • Healing at various sites - including-bones, nerve & muscle • g) Regeneration & repair	3	-
3	**Immuno – pathology – (basic concepts)** • Immune system:-organization-cells- antibodies - regulation of immune responses, • Hyper-sensitivity, • Secondary immuno-deficiency including HIV, • d) Organ transplantation	2	-
4	**Circulatory disturbances** • Edema -pathogenesis -types -transudates /exudates, • Chronic venous congestion-lung, lever, spleen, • Thrombosis – Mechanism and Morphology • Embolism – types-clinical effects, • Infarction – types – common sites • Gangrenes – types – etiopathogenesis • Shock – Pathogenesis, types, morphologic changes	3	-
5	**Growth Disturbance** • Atrophy-malformation, agenesis, dysplasia, • Neoplasia classification, histogenesis, biologic behavior, difference between	3	-

	• benign & malignant tumour • Malignant neoplasms -grades-stages-local & distal spread • Precancerous lesions &ca in situ • Tumor & host interactions – systemic effects-metastatic or direct spread of • tumors affecting bones, spinal cord, leading to paraplegia, etc.		
6	**Cardiovascular system** • Atherosclerosis -Ischemic heart diseases–myocardial • infarction – Pathogenesis / Pathology • Hypertension • CongestiveCardiacFailure,Pericarditis, Cardiomyopathy • Rheumatic Heart Disease, Infective endocarditis • Peripheral vascular diseases	3	-
7	**Respiratory system** • COPD, • Pneumonia (lobar, broncho, viral), • T.B. Primary, secondary – morphologic types, • Pleuritis, complications, • Lung collapse – atelectasis	3	-
8	**Neuropathology** • Reaction of nervous tissue to injury – infection & ischemia • Pyogenic meningitis, TBM, Viral • Cerebrovascular disease, atherosclerosis, Thrombosis, embolism, aneurysm, hypoxia, infarction & hemorrhage. • Effects of Hypotension on CNS • Coma • Poliomyelitis, Leprosy, Demyelinating diseases, Parkinsonism, Cerebral palsy, metachromatic leucodystrophy, Dementia, Hemiplegia, paraplegia, Wilson's disease • Space Occupying Lesions (SOL) - (in brief) • Peripheral nerve injury	3	
9	**Diseases of muscle** Muscular dystrophy, hypertrophy, Pseudo, hypertrophy, atrophy, Myositis ossificans, necrosis, regeneration, Myotonia, Muscle biopsy.	1	
10	**Neuromuscular junction** Myasthenia gravis, Myasthenic syndrome, Nerve biopsy.	1	

11	**Bone & Joints:** Fracture healing, Osteomyelitis, rickets, Osteomalacia, Bone Tumors, Osteoporosis, Spondylosis, Prolapse Interverbral Disc, Scoliosis, Haemarthrosis, Gout, T.B., Arthritis –degenerative, inflammatory, RA, Ankylosing spondylitis, Tenosynovitis.	2	
12	**Clinical pathology – (including Demonstrations)** Lab investigation in liver & renal failure	2	
13	**Haematology** • T.C./D.C./PBS, Eosinophilia, E.S.R., Anaemia • Bleeding and coagulation disorders • Disorders of haemoglobin structure and synthesis • Lymphoid and myeloid neoplasmas	3	
	Desirable to Know: - • Growth Disturbance - Carcinogenesis – environmental • carcinogens • Endocrine – Hyperthyroidism – Diabetes • Hepatic diseases -Cirrhosis – emphasis to systemic effects of portal Hypertension.	3	
	Nice to Know: - • Deficiency disorders – Vitamins A, B, C, D. • Growth Disturbance - Chemical, Occupational, heredity, viral. • Medical Genetics – (In Brief) • Urinary – commonly encountered in paralytic bladder, common urinary tractinfections (brief)- urinary calculi. • G.I. system- -Gastric/duodenal ulcer, enteric fever, TB, enteritis, Gastritis(Related to consumption of NSAID) • Skin - Melanin pigment disorders, Vitiligo, Teniaversicolor, Psoriasis, Bacterial / fungal infections, cutaneous TB, Scleroderma, SLE, Leprosy, Alopecia, Skin Biopsy.	4	
Topic Serial No.	B) Microbiology	Hours of teaching/learning	
		Theory	Practical
1	General Microbiology - Introduction & scope	2	
2	Classification of Micro - organisms & morphology of Bacteria a)Bacterial cell, its organelles Gram and Ziehl - Neelson and itsImportance in lab diagnosis.	2	
3	**Sterilization & disinfection [basic concepts]** **Must know -** Definition of Sterilization, Disinfection, Enumeration of	3	

	physical methods of sterilization including principles and their applications, commonly used Disinfectants. **Desirable to know: -** Central sterile department (CSSD) concept only. **Hospital Acquired Infection** **Must know –** Definition, factor influencing infection, mode of transmission & prevention of MAI. **Desirable to know: -** Infection control committee. **Universal safety precautions** **Must know : -** Universal safety precautions, definition of waste classification, segregation Transport & disposal.	2 1	
4	**Immunology** **Must know : -** • Definition. Types of Immunity active & passive, local Immunity vaccines. • Antigen antibody reaction – Definition of Antigen & antibody, Types and property & application for diagnosis. • **Immune response –** **Must Know –** Type of cells involved Ag processing & presentation Primary &secondary immune response. CMI – Definition, role of T. cells and macrophages. **Desirable to know** – Principles & uses of monoclonal Abs. • **Hypersensitivity & auto-immunity -** **Must know –** Definition, Classification Anaphylaxis – mechanism, manifestations & tests for Anaphylaxis, definitions of autoimmunity, Classification& Mechanism.	6	
5	**Laboratory diagnosis of Infection** • **Host parasite relationship & bacterial infections.** **Must know** – Different sources and modes of transmission of infection, microbial factors leading to establishment of infection. • **Methods of identification of bacteria -** **Must know** – Principle of laboratory diagnosis of infectious diseases, General procedure for collection. • **Diagnosis of infectious diseases.** **Must know –** Transport and processing of specimen for microbial diagnosis.	4	
6	**Bacteriology** Infection caused by GM + ve& GM – Vecocci **Must know –** Morphology, pathogenicity & lab diagnosis of Staphylococci, Streptococci & Neisseria. **Desirable to know –** Role of Staphylococci in hospital infection. Infection caused by GM + ve bacillus – **Must know –** Morphology, pathogenicity & lab diagnosis of	8	

	Coryne bacterium diphtheria, Clostridium Perfringens& clostridiumtetani. Infection caused by Gram –ve bacilli – **Must know –** Morphology, pathogenicity & lab diagnosis of E. coli, Klebsiella, Pseudomonas, Shigella, Salmonella, V. Cholera. **Desirable to know –** Role of Pseudomonas in HAI. Infection caused by Mycobacteria – **Must know** - Morphology, pathogenicity & lab diagnosis of M. tuberculosis, M leprae& atypical Mycobacteria. Spirochaetes – **Must know -** Morphology, pathogenicity & lab diagnosis of TreponemaPallidum (VDRL test & TPHA) **Desirable to know** – LeptospiraBorrelia.		
7	**Viruses** • Introduction & General properties of viruses – **Must know –** Size, shape, symmetry, Structure of viruses, classification, cultivation of Viruses& methods for diagnosis of viral infections • **HIV.** **Must know –** Morphology transmission clinical syndromes, Laboratory diagnosis & Prevention. • **Hepatitis –** **Must know –** List of viruses causing Hepatitis, pathogenicity, Laboratory diagnosis & Prevention. • Polio, measles, congenital, Viral infection, Rubella, CMV, Herpes - **Must know –** Clinical syndrome & Laboratory diagnosis.	4	
8	**Mycology** **Must know –** Morphological classification & general lab Diagnosis, Definition, causative Agents & lab Diagnosis of mycetoma, Pathogenicity & lab diagnosis of Aspergillosis& Candidiasis	**2**	
9	**Parasites affecting CNS** **Must know –** List of parasites affecting CNS, on short about lab diagnosis of malaria, Filarial, Toxoplasma, Cysticercosis, echinococcus.	**2**	
10	**Applied Microbiology** • **Diseases affecting bones, joints & muscles -** **Must know** – Osteomyelities – etiology, lab diagnosis, Arthritis. • **Disease involving brain & nerves -** **Must know** – Meningitis, brain abscess is Infective neuritis, etiology & clinical manifestations & lab diagnosis. • **Diseases involving cardiopulmonary system, skin & burns -** **Must know** – Infective Carditis PUO, URTL, LRTI, Skin & burn Infections etiology Laboratory diagnosis.	**4**	

Text Books

Sr.No.	Title
1	Text book of Pathology -by Harsh Mohan
2	Pathologic basis of disease by Cotran, Kumar, Robbins
3	A Hand book of medical laboratory technology – V. H. Talib
4	General Pathology – by Bhende
5	Textbooks of Microbiology – by R. Ananthnarayan& C. K. JayramPanikar

Periodical Examination:

- Written Examination:-20 MCQ for 20 marks , 20 minutes.(10 pathology & 10 Microbiology)

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

THEORY

Theory-80 marks Internal Assessment 20 marks

Sec A	MCQ (10 Pathology, 10 Microbiology)	20x1=20 marks
Sec B Pathology	1.Short Notes. Answer any 5 out of 6 2.Short answer questions. Answer any 3 out of 4	5x3=15 3x5=15
Sec C Microbiology	1.Short Notes. Answer any 5 out of 6 2.Short answer questions. Answer any 3 out of 4	5x3=15 3x5=15

Internal Assessment Marks

Theory:-

Periodical exam = 20 marks

Prelim exam = 80 marks

Total = 100 marks

The total shall be Converted to 20 marks (100/5=20)

Course Title :- Exercise Therapy II
Course Code:- PT 302

Course Credit for Exercise Therapy II

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
64	128	96	288	4	8	6	18	4	4	2	10	20	80	100	20	80	100

Learning Objectives:

At the end of the course, the candidate will

1. Analyze Normal human posture [static &dynamic] & various Normal Musculo skeletal movements during Gait, activities of daily living, & describe the movements of the Thorax during breathing.
2. Describe the Biophysical properties of connective tissue, effect of mechanical loading, factors influencing the Muscle strength, mobility of articular &peri-articular soft tissues.
3. Describe the physiological & Therapeutic uses, merits /demerits of various exercise modes.
4. Demonstrate various therapeutic exercises on self & acquire the application skill on models.
5. Acquire the skill of assessment of isolated &group muscle strength, & Range of motion of the joints subjectively & objectively.
6. Describe the pattern of normal and abnormal movements of various joints and activities.

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1	Principle, classification, techniques, physiological& therapeutic effects, indications & contraindications of therapeutic exercises	2	-
2	**Muscle Strength** • Assessment of muscle strength, [group/individual] subjective & objective methods 1/10 RM – dynamometry • Factors that influence the strength, hypertrophy, recruitment of motor units, change after training /type of contraction - Isometric / Isotonic / Isokinetic / Eccentric. • General principles of strength training:-overload /intensity / Motivation / learning / duration / frequency / reversibility / specificity	10	16
3	**Joint & connective tissues.** Bio-physical properties of connective tissue, [contractile &non-contractile]Elasticity /Plasticity – response to sudden/slow/sustained loading –Stress strain Curve, Creep, Hysteresis, joint classification and joint movements, Open Kinetic Chain and Closed Kinetic Chain exercises. Mobilization – Methods - stretching /traction [cervical &lumbar] rhythmic movements/oscillations. Mobilization of muscles & Fasciae - around the shoulder /elbow/wrist/Hip/knee/ankle /Spine [dorso-lumbar fascia], /Hold – Relax	10	12

4	**Posture** • Normal Posture – Overview of the mechanism of normal posture. • Abnormal Posture – Assessment, Types, etiogenesis, management, including therapeutic exercises. • Methods of Assessment of the Posture – Sitting /standing /Lying • /Physiological, Deviations of the posture • Methods of assessment – Sagittal & frontal plane with plumbline& postural • frame, by spondylometer, retraining after assessment. • Mobility evaluation of joint / muscles & its implication on posture. • Static and Dynamic Balance – Assessment & management including • therapeutic exercises.	5	5
5	**Gait** • Overview of normal gait & its components. • Gait deviations - Assessment, Types, etiogenesis, management, including therapeutic exercises • Methods of assessment of Gait-measurements for walking aids • Types of walking aids: (axillary /elbow crutches, walking sticks) indications, effects & various training techniques • Crutch gaits, Crutch muscle, Pre – crutch training – on bed, parallel Bar, off Bed, crutch hold / balance. • Training for different conditions (Paraplegia, Hemiparesis, Amputation, etc.)	5	14
6	**Co-ordination & Balance** Principles, Technique, Neural control, Methods of co-ordination exercises, Frenkel's exercises Differentiate types of co-ordination loss & balance loss. Physiology of inco-ordination, Balance loss & training.	4	8
7	**Principles of P.N.F.** Theory, Principles ,Patterns of P.N.F., Techniques of P.N.F.	3	3
8	**Breathing exercises** Goals –Inspiratory – Expiratory /Segmental Forced Expiratory – coughing – huffing /Modified Inspiratory /Active cycle of breathing. Indication & its importance for patients. Physiology of the above mentioned techniques.	5	10
9	**Bronchial Hygiene** Postural drainage position / Autogenic drainage. Humidification	5	12

10	**Principles of Home programme& Ergonomic advice**	2	3
11	**Functional Re-education** • Functional motor skills, -Motor skills to function independently in ADL • Mobility, Bed /Wheel chair mobility, ambulation training • Practical application on – Hemiplegia, Paraplegia, General Weakness. • Application of mat exercises [to practice on self & on models]	10	14
12	**6 Minute walk test – on models (with interpretations)** Procedure, Data recording and data Interpretation, Indications & contra indication & practical execution.– Risk factors and care to be taken during the test. Other tests similar to this (3min. walk test, 12 min walk test)	1	4
13	**Benefit and harm of patient's right & dignity in Health care settings by physiotherapy** • The WHO definition of health as a possible solution of health problems • What is the health benefit by physiotherapy • Possible harm for a patient during physiotherapy • Dimensions of comparing harms and benefits in individual patients	2	
13	**SUPERVISED LABORATORY TRAINING**		25

Text Books

Sr.No.	Title
1	Progressive resisted exercises – by Margaret Hollis,
2	Therapeutic Exercise by Carolyn Kisner
4	PNF – Knott and Voss
5	Principles of Exercise therapy – Dena M. Gardiner

Reference Books

Sr.No.	Title
1	Therapeutic exercise by Basmijjan& Wolf.
2	Muscle testing by Daniel Kendall
3	Clinical evaluation – Lacote (for isolated assessment of abdominal muscles)
4	Muscle stretching & Auto stretching – Olaf Evjenth
5	Orthopaedic Evaluation – Magee (only for assessment of posture)

SCHEME OF EXAMINATION

Written		Total	Practical		Total
IA	Final exam	Final exam	IA	Final exam	Final exam
20	80	100	20	80	100

Periodical Examination:

- Written Examination:-20 MCQ for 20 marks, 20 minutes.
- Practical exam – 20 MARKS

Preliminary Examination / University (Final) Examination

- Written Examination (80 marks)
- Practicals – (80 marks)

Sec A	Q-1 MCQ	20x1=20 marks
Sec B	1. Short answer questions - Answer any 5 out of 6 2. Short answer questions - Answer any 2 out of 3	5x3=15 marks 3x5=15 marks
Sec C	L.A.Q.– 1. [Compulsory] Based on Muscle strength/ mobility 2. Therapeutic application for Posture / Gait ------15 marks **OR** Therapeutic application for Pulmonary function --------15 marks *[LAQ should give Break up of 15 marks – e.g. [3+5+7] etc]	1x15=15 marks 1x15=15 marks

- **Practical Examination (80 marks)**

S.No.		Marks
1	**A. Long case (any one) including Journal marks –** • Muscle training (Testing & strengthening) • Mobility (Passive, Active, Active Assisted, Mobilization of Peripheral joints , stretching) • Pulmonary function training ➢ Breathing exercises ➢ Bronchial hygiene technique • Co-ordination training • Crutch training & assisted ambulatory training	35 +5 = 40
2.	**. Two Short Case:-** • M.M.T. (Individual & group) • Posture Assessment • Posture re-training • Normal Gait, Abnormal Gait Demonstration & reasoning. • Functional re-education ➢ Bed mobility ➢ Wheel chair Mobility ➢ Gait Re-training • Mat Activities • Muscle work analysis • 6 minute walk test.	20 x2=40

- **SUPERVISED PRACTICAL TRAINING:**
    - Journals marks = 5 marks

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination

Internal Assessment Marks

Theory / Practical:-

Periodical exam	= 20 marks
Prelim exam	= 80 marks
Total	= 100 marks

The total shall be Converted to 20 marks (100/5=20)

Course Title :- Psychology Course Code:- PT 303																	
Course Credit for Psychology																	
Hours				**Hrs/Wk**				**Credits**				**Evaluation Pattern**					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
48	--	--	48	3	--	--	3	3	--	--	--	10	40	50	--	--	--

Learning Objectives:

At the end of the course, the candidate will-

1. Be able to define the term Psychology& its importance in the Health delivery System & will gain knowledge of Psychological maturation during human Development & growth & alterations during aging process.
2. Be able to understand the importance of psychological status of the person in Health &disease, environmental &emotional influence on the mind & personality.
3. Acquire the Knowledge as to how to deal with the patients.
4. Socio economic and cultural differences.
5. Socioeconomic and cultural issues related to morbidity owing to the physical disability and handicaps.

Topic Serial No.	Psychology **Section – I - General Psychology**	Hours of teaching/learning	
		Theory	Practical
	Must know		
1	a. Introduction to Psychology b. Definition and nature of Psychology, Fields & subfields of psychology. c. Schools of thoughts – Structuralism, functionalism, Behaviorism, Gestalt, Psycho-analytic Theory	3	-
2	Developmental Psychology d. Definition & its Theories - Physiological and psychological changes during Infancy, Early & Late childhood, adolescent stage, Puberty, adulthood & old age	6	-
3	Emotions-nature & relationship with autonomic nervous system- Theories of emotions a)James Lange theory, b. Schachter Singer theory, c. Cannan Bard theory	3	-
4	Motivation- Maslow's hierarchy of motives, Theories of motivation; Conflict & Frustration – Types of conflicts, Common Defense mechanism, stress	3	-
	Desirable to know -		-
1	Attention & perception Nature of attention, Nature of perception, Principle of grouping	2	-
2	Memory- Definition and nature, types of memory and forgetting cause Learning	3	-
3	Learning : Definition and theories, conditioning, Role of learning in human life – Conditioning	3	-
4	Abnormal Psychology -Deference between normal & Abnormal, Causes of abnormality	1	-

Topic Serial No.	Psychology **Section – II-Health Psychology**	Hours of teaching/learning	
		Theory	Practical
1	Psychological Reactions of a Patient: Psychological reactions of a patient during admission and treatment anxiety, shock, denial, suspicion, questioning, loneliness, regression, shame, guilt, rejection, fear, withdrawal, depression, egocentricity, concern about small matters, narrowed interests, emotional overreactions, perpetual changes, confusion, disorientation, hallucinations, delusions, illusions, anger, hostility, loss of hope.	4	-
2	Reactions to Loss: Reactions to loss, death and bereavement shock and disbelief, development of awareness, restitution, resolution. Stages of acceptance as proposed by Kubler – Ross.	4	-
3	Stress: Physiological and Psychological relation to health and sickness: psychosomatic, professional stress burnout.	4	-
4	Compliance: Nature, factors, contributing to non – compliance, improving compliance.	4	-
5	Behavior Modifications: Application of various conditioning and learning principles to modify patient behaviours.	4	-
6	Personality Styles: Different personality styles of patients.	4	-

Textbooks

Sr.No.	Title
1	Morgan C.T. & King R. A. Introduction to Psychology – 7 thedn [Tata McGraw-Hill publication]
2	Hurlock, E.B, (2005). Developmental Psychology – A life span Approach. (5th Ed.) Tata McGraw Hill Publication, New Delhi
3	Feldman, R.S. (1997). Understanding Psychology, (4th Ed), Tata McGraw Hill Publication, New Delhi

SCHEME OF EXAMINATION

Written		Total	Practical		Total
IA	Final exam	Final exam	IA	Final exam	Final exam
10	40	50	-	-	-

Periodical Examination:

- Written Examination:-20 MCQ for 10 marks , 20 minutes.

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	MCQ	10x1=10 marks
Sec B	1. Short Notes - Answer any 5 out of 6	5x2=10 marks
	2. Short answer questions - Answer any 2 out of 3	2x5=10 marks
	3. Long Answer Questions - Answer any 1 out of 2	1x10=10 marks

Internal Assessment Marks

Theory :- Periodical exam = 10 marks

Prelim exam = 40 marks

Total = 50 marks

The total shall be Converted to 10 marks (50/5=10)

Course Title :- Biomechanics Course Code:- PT 304																	
Course Credit for Biomechanics																	
Hours				**Hrs/Wk**				**Credits**				**Evaluation Pattern**					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
64	32	48	144	4	2	3	9	4	1	1	6	20	80	100	--	--	--

Learning Objectives:

At the end of the course, the candidate will-

1. To acquire the knowledge of axis and planes.
2. To review the anatomy of each joint.
3. Learn thoroughly about each movement occurring at each joint.
4. To acquire the knowledge of forces acting at various joints.
5. To acquire the knowledge of muscle and joint work in activities of daily living.

Topic Serial No.	**Biomechanics**	Hours of teaching/learning	
		Theory	Practical
1	**Section – I - Mechanics** • Introduction to mechanics including motion, forces, parallel forces system • Newton's law of motion, concurrent force systems – composition forces, muscle action line etc. • Centre of Gravity, line of gravity, stability and equilibrium. • Introduction to Bio-Mechanics and terminology. • Axes and planes with movements occurring at each joint in respective plane.	2	1
2	**Section – II - Muscle Structure and function** Muscle structure: Composition, unit, structure, architecture of muscle • Classification of Muscles • Functions of muscles and factors affecting its function. • Effect of immobilization, injury and aging on muscle. • Group action of muscle	3	2

3	**Section – III** • Basic principles of Joint design and a human joint. • Tissues present in human joint including fibrous tissue, bone cartilage and connective tissue. • Classification of joints. • Recall anatomy and study the biomechanics in detail of following joints- ➢ Upper limb: shoulder girdle, elbow, wrist and hand ➢ Lower Limb: Hip complex, knee, ankle and foot ➢ Vertebral Column: Cervical, Thoracic, thoracic cage, ➢ Lumbar and Sacroiliac spine. • Temporomandibular joint • Joint function, Kinematics chains and range of motion. Kinetics &Kinematics of various activities of daily living e.g. supine to sitting, sitting to standing, squatting, climbing up &down, lifting, pulling, pushing, overhead activities, walking running, jogging	2 1 2 18 18 11 2 3	1 - 1 5 5 5 1 9
	Desirable to know – Biomechanical alterations of all joint due to muscle weakness, joint stiffness and its implications	2	2

Textbook

Sr.No.	Title
1	Joint Structure and Function- Cynthia Norkins&Pamela Lavengie
2	Clinical Kinesiology – Brunnstroms.
3	Fundamentals of biomechanics- nihatozkaya,margaretanordin
4	Fundamentals of biomechanics- duaneknudson

SCHEME OF EXAMINATION

Written		Total	Practical		Total
IA	Final exam	Final exam	IA	Final exam	Final exam
20	80	100	-	-	-

Periodical Examination:

- Written Examination:-20 MCQ for 20 marks, 20 minutes.

Preliminary Examination / University (Final) Examination

- Written Examination (80 marks)

THEROY

Theory-80 marks Internal Assessment 20 marks

Sec A	MCQ	20x1=20 marks
Sec B	1.Short Notes. Answer any 5 out of 6 2.Short answer questions. Answer any 3 out of 4	5x3=15 3x5=15
Sec C	1.Long Answer Questions (compulsory) 2.Long Answer Questions Answer any 1 out of 2	1x15=15 1x15=15

- **SUPERVISED PRACTICAL TRAINING:**

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination

Internal Assessment Marks

Theory :-

Periodical exam = 20 marks

Prelim exam = 80 marks

Total = 100 marks

The total shall be Converted to 20 marks (100/5=20)

Course Title :- FIRST AID AND EMERGENCY CARE Course Code:- PT 305																	
Course Credit for FIRST AID AND EMERGENCY CARE																	
Hours				**Hrs/Wk**				**Credits**				**Evaluation Pattern**					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
32	32	48	112	2	2	3	7	2	1	1	4	10	40	50	--	--	--

Learning Objectives:

At the end of the course, the candidate will-

1. To acquire knowledge about first aid, emergencies

Topic Serial No.	FIRST AID AND EMERGENCY CARE	Hours of teaching/learning	
		Theory	Practical
1	**SECTION I** • Introduction to First Aid - Assessment, immediate actions and the priorities within first aid • Bandages – Types, binders, splints & slings. • Promoting safety consciousness. • Examination of Vital Signs. • First Aid - ➢ RTA including fractures and spinal cord injuries ➢ Cardiac arrest ➢ Respiratory failure ➢ Burns ➢ Shock- Electric, Hypovolemic and control of ➢ Bleeding, Hypothermia and Hyperthermia ➢ Drowning ➢ Poisoning, Snake Bite.	2 3 5 6 12	2 4 4 6 10
2	**SECTION II** Medical Triage- concept of Emergency: Definition importance and rules, code tags and triage terminology.	3	4
3	Instruments used in First Aid (First Aid kit).	1	2

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
10	40	50

Periodical Examination:

- Written Examination:-20 MCQ for 10 marks, 20 minutes.

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	MCQ	10x1=10 marks
Sec B	1. Short Notes - Answer any 5 out of 6 2. Short answer questions - Answer any 2 out of 3 3. Long Answer Questions - Answer any 1 out of 2	5x2=10 marks 2x5=10 marks 1x10=10 marks

- **<u>SUPERVISED PRACTICAL TRAINING:</u>**

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination

Internal Assessment Marks

Theory :-

Periodical exam = 10 marks

Prelim exam = 40 marks

Total = 50 marks

The total shall be Converted to 10 marks (50/5=10)

IV SEMESTER

SYLLABUS

Course Code	Course Title	Hours			
		Th	Pr	SCT	Tot
PT-401	Pharmacology	48	-	-	48
PT-402	Electro Therapy- II	64	96	96	256
PT-403	Gen. Medicine(including Gerantology& Dermatology)	80	32	96	208
PT-404	Community Medicine, Sociology & Environmental Sciences	80	32	48	160
	Total	272	160	240	672

Th: Theory, Pr: Practical, Tot: Total, Lec: Lecture Demonstration/Tutorial/Discussion, IA: Internal Assessment

Course Title :- Pharmacology
Course Code:- PT 401

Course Credit for Pharmacology

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
48	-	-	48	3	-	-	3	3	-	-	3	10	40	50	-	-	-

Learning Objectives:

At the end of the course, the candidate will-

1. Describe Pharmacological effects of commonly used drugs by patients referred for Physiotherapy, list their adverse reactions, precautions to be taken & contraindications, Formulation& route of administration.
2. Identify whether the pharmacological effect of the drug interferes with the Therapeutic response of Physiotherapy & vice-versa
3. Indicate the use of analgesics & anti-inflammatory agents with movement disorders with consideration of cost, efficiency & safety for individual needs.
4. Get the awareness of other essential &commonly used drugs by patients-The bases for their use & common as well as serious adverse reactions.

Topic Serial No.	**Pharmacology** A] Must know – Topic 1 and Drugs described in topics 2 to 9. B] Desirable to Know – Major groups of drugs described in topics 10, 11	Hours of teaching/learning	
		Theory	Practical
1	**General Pharmacology** • Introduction to pharmacology, drug development. • Routes of administration. • Pharmaco-kinetics - Absorption and distribution of drugs. • Pharmaco-kinetics – Drug Biotransformation and drug Excretion. • Pharmaco-dynamics – Dose response relationship. • Adverse drug reactions.	6	-

	• Factors modifying drug action.		
2	**Drugs acting on Central Nervous System** • Alcohol • Sedatives and Hypnotics • Anti-epileptic drugs • General Anaesthetics • Opioid Analgesics • NSAIDS • Antipyretics • Anti-psychotics, Antidepressants • Drug Therapy in Parkinsonism	8	-
3	**Drugs acting on Peripheral Nervous System** • Skeletal muscle relaxants. • Local Anaesthetics.	2	-
4	**Drugs acting on CVS and blood** • Anti-hypertensives, B blockers, Ca channel ACEI • Treatment of Angina • Treatment of Congestive cardiac failure • Haematinics and erythropoietin • Drugs affecting coagulation, bleeding, thrombosis. • Treatment of Shock.	6	-
5	**Drugs acting on Respiratory system** • For upper respiratory tract infections, Sinusitis – cough, laryngitis, Pharyngitis. • Drugs for treatment of bronchial asthma, COPD	2	-
6	**Drugs acting on Autonomic Nervous System** • Introduction to ANS and Cholinergic agonists – I • Cholinergic agonists – II • Cholinergic antagonists • Adrenergic agonists – I • Adrenergic agonists – II • Adrenergic antagonists	4	-
7	**Endocrinology** • Introduction to Endocrinology, Thyroid hormones and Antithyroid drugs. • Treatments of diabetes mellitus. • Corticosteroids • Oestrogen and Progesterone	4	-
8	**Drugs acting on Kidney** • Diuretics	2	-
9	**Chemotherapy** • General principles of chemotherapy. • Sulfonamides &Fluoroquinolones. • Beta – Lactam antibiotics – I (Penicillins) • Beta – Lactam antibiotics – II (Cephalosporins) • Macrolides &aminoglycides • Tetracyclines& chloramphenicol (Broad spectrum	8	-

	antibiotics) • Anti-Tuberculosis drugs • Anti –Leprosy drugs		
10	**Drugs used in Gastrointestinal Disorders** • Peptic Ulcer • Antiemetics • Laxatives • Antidiarrhoeal drugs	4	
11	**Miscellaneous Topics** • Vaccines & Sera • Dermatological – Scabies – Psoriasis – Local Antifungals • Vitamins & Calcium Metabolism, Phosphorus, magnesium	2	

Text Books

Sr.No.	Title
1	Essentials of Medical Pharmacology – K. D. Tripathi
2	Pharmacology and Pharmaco therapeutics – R.S. Satoskar
3	Pharmacology by Gaddum

Reference Books

Sr.No.	Title
1	Medical Pharmacology by Drill
2	Pharmacology principle of Medical practice – by Krantx& Carr
3	Pharmacological basis of Therapeutics – by Goodman, L.S. Gilman A.

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
10	40	50

Periodical Examination:

- Written Examination:-20 MCQ for 10 marks , 20 minutes.

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	MCQ	10x1=10 marks
Sec B	1. Short Notes - Answer any 5 out of 6 2. Short answer questions - Answer any 2 out of 3 3. Long Answer Questions - Answer any 1 out of 2	5x2=10 marks 2x5=10 marks 1x10=10 marks

- **SUPERVISED PRACTICAL TRAINING:**

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination .

Internal Assessment Marks

Theory :-

Periodical exam	= 10 marks
Prelim exam	= 40 marks
Total	= 50 marks

The total shall be Converted to 10 marks (50/5=10)

Course Title :- ELECTROTHERAPY- II
Course Code:- PT 402

Course Credit for ELECTROTHERAPY- II

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
64	96	96	256	4	6	6	16	4	3	2	9	20	80	100	20	80	100

Learning Objectives:

At the end of the course, the candidate will-

1. Describe the Production &Physiological effects, Therapeutic uses, merits, demerits indication &contraindications of various low/medium Frequency Currents modes.
2. Describe the Physiological effects &therapeutic uses of various therapeutic ions & Topical Pharmaco-therapeutic agents to be used for the application of Iontophoresis & sono/phonophoresis
3. Acquire the skill of Application of the Electro therapy modes like UVR and LASER on models, for the purpose of Assessment &Treatment.
4. Acquire an ability to select the appropriate mode as per the tissue specific & area specific application.

Course Content – (section A/B/C if applicable)

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1	**Low frequency currents –** **Must know**		
	• Physiological effects, therapeutic uses, indications and contraindications and dangers of faradic type current, intermittent galvanic current and galvanic current	10	15
	• Cathodal /Anodal Galvanism, Iontophoresis – with various ions &Pharmaco therapeutic drugs.	3	5
	• Electrical stimulation for re-education – short /long pulse motor points	8	10
	• Strong surged faradic current under pressure /elevation.	2	4
	• Electrical Reactions and Electro – diagnostic tests: Electrical Stimuli and normal behaviour of Nerve and muscle tissue.	10	20
	• Types of lesion and development of reaction of degeneration. - Faradic – Intermittent direct current test. - S.D. Curve and its application and characterstics Chronaxie, Rheobase& pulse ratio	1 4	2 4
	• High voltage pulsed galvanic current		
	• TENS: Define, Principles of production, types,	1	0

	dosage, electrode placement, Physiological and therapeutic effects, indication and contraindications. **Desirable to know -** • Micro –currents • Didynamic currents	1 1	1 1
2	**Medium frequency currents** **must know –** Interferential therapy: Define, Principles of production, static Interferential system, dynamic interference system, dosage, electrode placement, Physiological and therapeutic effects, indication and contraindications. • Russian currents • Rebox type currents	5 1 1	10 1 1
3	**Biofeedback method:** Instrumentation, principles, therapeutic effects, indications, contraindications, limitations, precautions, operational skills and patient preparation	2	2
4	**Ultra – violet rays (UVR):** • Wavelength, frequency, types & sources of UVR generation, techniques of irradiation, physiological & therapeutic effects, indications, contraindications, precautions, operational skills of equipment & patient preparation. Dosimetry of UVR.	4	6
5	**Light Amplification of stimulated Emission of Radiation (LASER)–** Definition, historical background, physical principles, biophysical effects, types, production, therapeutic effects, techniques of application, indications, contraindications, precautions, operational skills and patient preparation.	3	5
6	**Care of wound** –application of Therapeutic currents, Ultrasound, U.V.R. & LASER	2	3
7	**Combination Therapy**	2	2
8	**Desirable to Know** **Intermittent Therapy** unit, its operation and different methods of application region wise. **Interferential Pneumatic Therapy** unit, its operation and different methods of application – region wise.	1 1	2 2
9	**Respect for human vulnerability and personal integrity** • Different aspects of vulnerability - biological , social , cultural • Success and failures in physiotherapy treatments • Problems with the basic assumption that vulnerability should be eliminated • Care ethics- New approaches in bioethics, Solidarity, The duty to care • Relation between vulnerability and personal integrity	1	

Text Books

Sr.No.	Title
1	Clayton's Electro Therapy
2	Electro therapy Explained – by Low &Reed
3	Electro Therapy – by Kahn
4	Therapeutic Electricity – by Sydney Litch

Reference Books

Sr.No.	Title
1	Clinical Electro Therapy – by Nelson & Currier

SCHEME OF EXAMINATION

Written		Total	Practical		Total
IA	Final exam	Final exam	IA	Final exam	Final exam
20	80	100	20	80	100

Periodical Examination:

- Written Examination:-20 MCQ for 20 marks, 20 minutes.
- Practical Examination:- 20 marks

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

Sec A	1. MCQ	20x1=20 marks
Sec B	1. Short answer questions - Answer any 5 out of 6 2. Short answer questions - Answer any 2 out of	5x3=15 marks 3x5=15 marks
Sec C	Long Answer Questions 1. Based on Low frequency modes ----------15 marks 2. Based on Medium frequency currents ---------- **OR** 2. Based on U.V.R./LASER ----------15 marks LAQ should give break up of 15 marks – e.g. [3 +5+7]	 15 marks 15 marks 15 marks

PRACTICAL /LABORATORY (80 marks)

1. Long Case + Journal :– On model Motor points /U. V. R. Test Dose. Faradism under Pressure (35 + 5 = 40 marks)

2. Two Short Cases - based on TENS/LASER/ medium Freq current/low frequency current (20 x 2 =40 marks)

- **SUPERVISED PRACTICAL TRAINING: Journal=5marks**

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination

Internal Assessment Marks

Theory/ Practical :-

Periodical exam	= 20 marks
Prelim exam	= 80 marks
Total	= 100 marks

The total shall be Converted to 20 marks (100/5=20)

Course Title :- GENERAL MEDICINE (INCLUDING CARDIO-RESPIRATORY, GERANTOLOGY, DERMATOLOGY)
Course Code:- PT 403

Course Credit for GENERAL MEDICINE (INCLUDING CARDIO-RESPIRATORY, GERANTOLOGY, DERMATOLOGY)

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
80	32	96	208	5	2	6	13	5	1	2	8	20	80	100	--	--	--

Learning Objectives:

At the end of the course, the candidate will

1. Be able to describe Etiology, Pathophysiology, Signs &Symptoms &Management of the various Endocrinal, Metabolic, Geriatric &Nutrition Deficiency conditions.
2. Be able to describe Etiology, Pathophysiology, Signs & Symptoms, Clinical Evaluation & Management of the various Rheumatological Cardiovascular and Respiratory Conditions.
3. Be able to interpret Chest X-ray, Blood gas analysis, P.F.T. findings, Blood investigations done for various medical and Rheumatological conditions.
4. Be able to describe the principles of Management at the Medical Intensive Care Unit.

Course Content – (section A/B/C if applicable)

Topic Serial No.	**A-CARDIO-VASCULAR & RESPIRATORY/ PULMONARY MEDICINE**	Hours of teaching/learning	
		Theory	Practical
1	**MUST KNOW AREA** **DISEASES OF THE CARDIO-VASULAR SYSTEM**		
	• Examination of Cardiovascular System	3	
	• ECG – Normal & Variations due to ischemia &infarction	2	
	• Stress Test	1	
	• Definition, Etiology, Clinical Features, Complications, Management of the following Cardio-vascular diseases:		
	➢ I.H.D.–Myocardial infarction	2	
	➢ Valvular Heart Disease – i) Congenital ii) Acquired	2	
	➢ Rheumatic Fever & Rheumatic Heart Disease	2	
	➢ Infective Endocarditis	1	
	➢ Congenital Heart Diseases	2	
	➢ Unstable Angina	1	
2	**DISEASES OF THE RESPIRATORY SYSTEM**		
	• Examination of Respiratory System	2	
	• Introduction of clinical examination–Breath sounds, X ray chest, ABG, PFT	1	

	• Patterns of Respiratory Diseases: Obstructive & Restrictive • Definition, Etiology, Clinical Features, Complications, Management of Diseases of the respiratory system : ➢ Common Infectious diseases like Tuberculosis, Pneumonia, Lung Abscess, Bronchiectasis. ➢ Diseases of Pleura like Pleural Effusion, Pneumothorax, Hydropneumothorax,Empyema. ➢ Obstructive Lung Diseases like Bronchitis, Emphysema, Bronchial Asthma, Cystic Fibrosis. ➢ Interstitial Lung Diseases ➢ Respiratory Failure: Definition, Types, Causes, Clinical Features, Diagnosis and Management ➢ Intensive Medical Unit – Infrastructure & Treatment DESIRABLE TO KNOW • Arrhythmia – classification • Occupational lung diseases like Silicosis Asbestosis, Pneumoconiosis, Brucellosis, Farmer's Lung	1 5 5 2 2 2 1 1 1	
B	**GENERAL MEDICINE, RHEUMATOLOGY & GERONTOLOGY**		
1 2	**General Medicine** **MUST KNOW** • **Diabetes Mellitus** Etiology and pathogenesis, Clinical manifestations, Management and Complications of diabetes. • **Diseases of Blood** Anemia : Signs and symptoms – types and management Hemophilia Cause – clinical features severity of disease – management – Complications due to repeated haemorrhages – complications due to therapy **DESIRABLE TO KNOW** Disorders of Endocrine system • Thyroid, • Pituitary & Adrenal conditions • Calcium Metabolism **Rheumatological Conditions** **MUST TO KNOW AREA** • Introduction to Rheumatology and Classification • Rheumatoid Arthritis , Juvenile RA • Chicken Gunia, Psoriatic, Gouty Arthritis **DESIRABLE TO KNOW AREA** • S S A **Geriatric Conditions** **MUST KNOW**	 3 3 3 1 2 1 1	

3	• Osteoporosis : Causes, Clinical features,Complications, Management- medical and surgical of the following conditions • Hypertension: Definition, causes, classification, types, assessment, investigations and management. **DESIRABLE TO KNOW** • Aging Process • General Health Care, Wellness Clinic • Nutrition Deficiency Disease & Drug Abuse / Intoxication	2 1 2 1 1	
C	**Dermatology**		
	At the end of the course, the student will • Be able to describe the Pathophysiology, Signs & Symptoms, Clinical Features, Examination & Management of Common Skin Conditions like Leprosy, Psoriasis, Vitiligo, Acne, Bacterial &Fungal Infections of the skin, Auto-Immune Disorders, H.I.V& Sexually Transmitted Diseases.		
	MUST TO KNOW AREA • Structure, function and lesions of skin • Acne • Pigmentary disorders ➢ Localised ➢ Gen Pigmentary • Papula-squamous disorders ➢ Psoriasis, PR ➢ Lichenplanus, PRP • Topical therapy in Dermatology & Hair disorders - ➢ Alopecia ➢ Hair deformity ➢ Hirsutism **Nice to know area** • Bacterial (impetigo, carbuncle. SSSS)& Viral infections (Warts, Molluscum, Herpes, Hz, HSV) • Fungal infections a] Superficial – TC, TV b] Deep fungal – Candidiasis, • Scabies, Pediculosis • Eczema – ➢ Exogenous ➢ Endogenous • Sexually Transmitted skin lesions ➢ HIV ➢ Syphillis ➢ ChaneroidLGV ➢ G. inguinale	2 2 2 2 2 2 2 2 2 2	

	CLINICAL **Medicine** **Dermatology**		**32** 20 12

Text Books

Sr.No	Title
1	API - Text book of Medicine – 5th edition
2	Golwalla – Medicine for students
3	Principles & Practice of Medicine – 16thedn - by Davidson
4	Clinical Medicine :- P. J. Mehta

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
20	80	100

Periodical Examination:

- Written Examination:-20 MCQ for 20 marks, 20 minutes.

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

THEROY

Theory-80 marks Internal Assessment 20 marks

Sec A	MCQ	20x1=20 marks
Sec B	1. Short Notes. Answer any 5 out of 6 2. Short answer questions. Answer any 3 out of 4	5x3=15 3x5=15
Sec C	1.Long Answer Questions (compulsory) 2.Long Answer Questions Answer any 1 out of 2	1x15=15 1x15=15

- **SUPERVISED PRACTICAL TRAINING:**

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination

Internal Assessment Marks

Theory :-

Periodical exam = 20 marks

Prelim exam = 80 marks

Total = 100 marks

The total shall be Converted to 20 marks (100/5=20)

Course Title: COMMUNITY MEDICINE, SOCIOLOGY AND ENVIRONMENT SCIENCE
Course Code:- PT 404

Course Credit for COMMUNITY MEDICINE, SOCIOLOGY AND ENVIRONMENT SCIENCE

Hours				**Hrs/Wk**				**Credits**				**Evaluation Pattern**					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
80	32	48	160	5	2	3	10	5	1	1	7	20	80	100	--	--	--

Learning Objectives:

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

Course Content – (section A/B/C if applicable)

Topic Serial No.	**A.COMMUNITY MEDICINE**	Hours of teaching/learning	
		Theory	Practical
1	**MUST TO KNOW** **Health & Disease** • Definitions: National & International, Concepts, Dimensions and Indicators of Health, Concept of well-being, Spectrum and Determinants of Health • Concept and natural history of Disease, Concepts of disease control and prevention, Modes of Intervention • Population Medicine • The role of socio-economic and cultural environment in health and disease	6	-
2	**Epidemiology** • Definition and scope. • Principles of Epidemiology and Epidemiological methods, Uses of Epidemiology	3	-
3	**Socio-Economical &Cultural Issues related to Morbidity owing to the Physical** Disability & Handicaps of Structural /Neuro-motor &Psycho-somatic origin: • Health problem in vulnerable groups • Pregnant & lactating women, Pelvic floor Dysfunction, Urinary incontinence, • Pre-term babies with high risk, Infants &Pre-School Children-Brain Damage, during birth injury	7	-
4	**Demography and Family Planning** • Family planning-objectives of national family planning programme • Family planning methods: A general idea of advantage and disadvantages of the methods.	2	-

5	**Immunization programmes –** children & hospital staff.	1	-
6	**Occupational Health:** • Occupational hazards, • Occupational diseases • Prevention of occupational diseases. • Social security and other measures for the protection from occupational hazard accidents and diseases, • Compensation acts.	4	2
7	**Hospital waste management** • Sources of hospital waste, Health hazards, Waste management	3	2
8	**Disaster Management** • Natural and man-made disasters • Disaster impact and response • Relief phase • Epidemiologic surveillance and disease control, Nutrition, Rehabilitation, Disaster preparedness	3	2
9	**Health Education** • Concepts, aims and objectives • Approaches to health education • Models of health education • Contents of health education • Principles of health education • Practice of health education	3	2
10	**Addiction** – Alcholism, Neuromotor, Psychosomatic disorders and Smoking	1	2
11	**DESIRABLE TO KNOW** • Environmental Hygiene including man & his surrounding, Occupational & Industrial hygiene, Village & Town Sanitation. • Overview of Public Health Administration at Central & State levels – Strategies of Health Delivery System for "Millennium Development goals" National health Programme. Brief role of WHO.	1 1	1 1
	Mental Health • Characteristics of a mentally healthy person • Types of mental illness • Causes of mental ill health • Preventive aspects • Mental health services • Alcohol and drug dependence	1	-
	Nutrition and Health • Nutritional problems in public health • Community nutrition programmes	1	1

	NICE TO KNOW **Health programmes in India** • Vector borne disease control programme • National leprosy eradication programme • National tuberculosis programme, • National AIDS control programme, • National programme for control of blindness • Iodine deficiency disorders (IDD) programme, • Universal Immunisationprogramme • Reproductive and child health programme • National cancer control programme • National mental health programme • National diabetes control programme • National family welfare programme • National sanitation and water supply programme, • Minimum needs programme	3	3
Topic Serial No.	**B. SOCIOLOGY**	Hours of teaching/learning	
		Theory	Practical
1	**MUST KNOW** Introduction – Definition & Relevance with Physiotherapy.	1	-
2	Sociology & Health – Social factors affecting Health Status, Social Consciousness & Perception of Illness, Decision Making in taking Treatment.	1	-
3	Socialization – Definition, Influence, of Social Factors, on Personality, Socialization in the Hospital &Rehabilitation of the patients.	1	-
4	Social groups-Concepts, Influence of formal & informal groups of Health & Diseases.	2	-
5	Community Role of Rural & Urban communities in Public Health, Role of community in determining Beliefs, Practices & Home Remedies in Treatment.	2	-
6	Social problems of the Disabled-Consequences of the following social problems in relation to sickness disability, remedies to prevent these problems • Population Explosion • Poverty & Unemployment	1	-
7	Social Security & Social Legislation in relation to the Disabled	1	-
1	**DESIRABLE TO KNOW** Role of Primary & Secondary Groups in the Hospital & Rehabilitation Setting.	2	-
2	Family-Influence on human personality, Individual Health, Family & Nutrition, Effects of Sickness on Family Psychosomatic Diseases & Family	1	-
3	Culture-Components Impact on Human Behaviour Cultural Meaning of Sickness, Response to Sickness & Choice of Treatment.	2	-

4	Caste systems-Features of Modern Cast Systems & its Trends, Social change factors–Human Adaptation, Stress, Deviance, Health Programme, Role of Social Planning in the improvement of Health & in Rehabilitation.	1	-
5	Social Control – Definition, Role of norms, Folkways, Customs, Morals, Religion, Law & other means of social controls in the regulation of Human Behavior, Social Deviance & Disease	1	-
6	Prostitution, Alcoholism, Beggary, Problems of Women in Employment, Role of a Social Worker.	2	-
1	**NICE TO KNOW** Role of Culture as Social consciousness in moulding the Perception of Reality, Culture induced Symptoms & Diseases, Sub-Culture of Medical Workers	1	-
2	Social problems of the Disabled-Consequences of the following social problems in relation to sickness disability, remedies to prevent these problems – Juvenile delinquency	1	-
Topic Serial No.	**C. ENVIRNOMENTAL STUDIES**	Hours of teaching/learning	
		Theory	Practical
1	**Multidisciplinary nature of environmental studies** Definition, scope and importance Need for public awareness. III	1	-
2	**Natural Resources** • Renewable and non-renewable resources • Natural resources and associated problems. • Forest resources: Use and over-exploitation, deforestation, case studies. • Timber extraction, mining, dams and their effects on forest and tribal people. • Water resources : Use and over-utilization of surface and ground water, • Floods, drought, conflicts over water, dams-benefits and problems. • Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. • Food resources : World food problems, changes caused by agriculture and • overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water • Logging, salinity, case studies. • Energy resources : Growing energy needs, renewable and non-renewable • Energy sources, use of alternate energy sources. Case studies.	2	-

	• Land resources : Land as a resource, land degradation, man induced • Landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.		
3	**Ecosystems** • Concept of an ecosystem. IV • Structure and function of an ecosystem. • Producers, consumers and decomposers. • Energy flow in the ecosystem. • Ecological succession. • Food chains, food webs and ecological pyramids. • Introduction, types, characteristic features, structure and function of the following ecosystem :- ➢ Forest ecosystem ➢ Grassland ecosystem ➢ Desert ecosystem ➢ Aquatic ecosystems (ponds, streams, lakes, rivers oceans, estuaries)	2	-
4	**Biodiversity and its conservation** • Introduction – Definition: genetic, species and ecosystem diversity. • Biogeographically classification of India • Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic • and option values • Biodiversity at global, National and local levels. • India as a mega-diversity nation V • Hot-sports of biodiversity. • Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. • Endangered and endemic species of India • Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.	3	3
5	**Environmental Pollution** • Definition, Cause, effects and control measures of :- ➢ Air pollution ➢ Water pollution ➢ Soil pollution ➢ Marine pollution ➢ Noise pollution ➢ Thermal pollution ➢ Nuclear hazards • Solid waste Management: Causes, effects and	3	3

	control measures of urban and industrial wastes. • Role of an individual in prevention of pollution. • Pollution case studies. • Disaster management: floods, earthquake, cyclone and landslides.		
6	**Social Issues and the Environment** • From Unsustainable to Sustainable development • Urban problems related to energy • Water conservation, rain water harvesting, watershed management • Resettlemsent and rehabilitation of people; its problems and concerns. Case Studies • Environmental ethics: Issues and possible solutions. • Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies. • Wasteland reclamation. • Consumerism and waste products. • Environment Protection Act. • Air (Prevention and Control of Pollution) Act. • Water (Prevention and control of Pollution) Act • Wildlife Protection Act • Forest Conservation Act • Issues involved in enforcement of environmental legislation. • Public awareness.	3	2
7	**Human Population and the Environment** • Population growth, variation among nations. • Population explosion – Family Welfare Programme. VII • Environment and human health. • Human Rights. • Value Education. • HIV/AIDS. • Women and Child Welfare. • Role of Information Technology in Environment and human health. • Case Studies.	6	8

Text books:

Sr.No.	Title
1	K. Park – Park 's Textbook of Preventive & Social Medicine
2	P. K. Mahajan & M. C. Gupta – Textbook of Preventive & Social Medicine

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
20	80	100

Periodical Examination:

- Written Examination:-20 MCQ for 20 marks , 20 minutes.

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

THEROY

Theory-80 marks Internal Assessment 20 marks

Sec A	MCQ (10 community+5 Sociology+ 5 Env. Sci)	20x1=20 marks
Sec B Community Medicine	1. Short answer questions. Answer any 5 out of 6 2. Short answer any 3 out of 4 questions.	5x3=15 3x5=15
Sec C Sociology & Env. Sci.	Short answer questions. Answer any 5 out of 6 Short answer questions. Answer any 3 out of 4	5x3=15 3x5=15

- **SUPERVISED PRACTICAL TRAINING:**

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination .

Internal Assessment Marks

Theory :-

Periodical exam = 20 marks

Prelim exam = 80 marks

Total = 100 marks

The total shall be Converted to 20 marks (100/5=20)

SEMESTER – V

Course Code	Course Title	Hours			
		Th	Pr	SCT	Total
PT-501	Orthopaedics and Traumatology	64	32	48	144
PT-502	Neurology (Paediatrics, Psychiatry)	64	32	84	144
PT-503	Physical and Functional Diagnostics skills	80	96	96	272
PT-504	Obstetrics and Gynaecology	32	32	48	112
	Total	240	192	240	672

Th: Theory, Pr: Practical, Tot: Total, Lec: Lecture Demonstration/Tutorial/Discussion, IA: Internal Assessment

Course Title :- Orthopaedics and Traumatology
Course Code:- PT 501

Course Credit for Orthopaedics and Traumatology

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
64	32	48	144	4	2	3	9	4	1	1	6	20	80	100	--	--	--

Learning Objectives:

At the end of the course, the candidate will

1. Be able to discuss the Patho-physiology, clinical manifestations & conservative/Surgical management of various traumatic & cold cases of the Musculo-skeletal Conditions
2. Gain the skill of clinical examination & interpretation of the preoperative cold cases & all the post- operative cases
3. Will be able to read & interpret a] salient features of the X-ray of the spine & Extremities
4. pathological/ biochemical studies pertaining to Orthopaedic Conditions
5. Will be able to correlate the radiological findings with the clinical findings

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1.	**Introduction** • Introduction to orthopaedics. • Clinical examination in an Orthopaedic patient. • Common investigative procedures. • Radiological and Imaging techniques in Orthopeadics.	3	-
2.	**Traumatology** • Fracture: definition, types, signs and symptoms. • Fracture healing. • Complications of fractures. • Conservative and surgical approaches. • Principles of management – reduction (open/closed, immobilization etc).	3	-

	• Subluxation/ dislocations – definition, signs and symptoms, management (conservative and operative).		
3.	**Fractures and Dislocations of Upper Limb** Fractures of Upper Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures: • Fractures of clavicle and scapula. • Fractures of greater tuberosity and neck of humerus. • Fracture shaft of humerus. • Supracondylar fracture of humerus. • Fractures of capitulum, radial head, olecranon, coronoid, and epicondyles. • Both bone fractures of ulna and radius. • Fracture of forearm – monteggia, galaezzi fracture – dislocation. • Chauffer's fracture. • Colle's fracture. • Smith's fracture. • Scaphoid fracture. • Fracture of the metacarpals. • Bennett's fracture. • Fracture of the phalanges. (Proximal and middle.) **Dislocations of Upper Limb :** • Anterior dislocation of shoulder – mechanism of injury, clinical feature, complications, conservative management, surgical management. • Recurrent dislocation of shoulder. • Posterior dislocation of shoulder – mechanism of injury, clinical features and management. • Posterior dislocation of elbow– mechanism of injury, clinical feature, complications & management.	5	-
4.	**Fracture of Spine** • Fracture of Cervical Spine - Mechanism of injury, clinical feature, complications (quadriplegia); • Management- immobilization (collar, cast, brace, traction); Management for stabilization, management of complication (bladder and bowel, quadriplegia). • Clay shoveller's fracture. • Hangman's fracture. • Fracture odontoid. • Fracture of atlas. • Fracture of Thoracic and Lumbar Regions -	5	-

	Mechanism of injury, clinical features, conservative and surgical management of common fractures around thoracic and lumbar regions. • Fracture of coccyx. • Fracture of Rib Cage - Mechanism of injury, clinical features, management for Fracture Ribs, Fracture of sternum.		
5.	**Fractures and Dislocations of Lower Limb** Fracture of Pelvis and Lower Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures: • Fracture of pelvis. • Fracture neck of femur – classification, clinical features, complications, management - conservative and surgical. • Fractures of trochanters. • Fracture shaft femur—clinical features, mechanism of injury, complications, management-conservative and surgical. • Supracondylar fracture of femur. • Fractures of the condyles of femur. • Fracture patella. • Fractures of tibial condyles. • Both bones fracture of tibia and fibula. • Dupuytren's fracture • Maisonneuve's fracture. • Pott's fracture – mechanism of injury, management. • Bimalleolar fracture , Trimalleolar fracture • Fracture calcaneum – mechanism of injury, complications and management. • Fracture of talus. • Fracture of metatarsals—stress fractures Jone's fracture. • Fracture of phalanges. Dislocations of Lower Limb Mechanism of injury, clinical features, complications, management of the following dislocations of lower limb. • Anterior dislocation of hip. • Posterior dislocation of hip. • Central dislocation of hip. • Dislocation of patella. Recurrent dislocation of patella.	5	-
6.	**Diseases of Bones and Joints** Causes, Clinical features, Complications, Management-		-

	medical and surgical of the following conditions : • Infective: Osteomyelitis, TB Spine and other major joints • Bone tumors: classification, clinical features, management • Perthes, Slipped Capital Femoral Epiphysis , Avascular Necrosis • Metabolic: Osteoporosis, Osteopenia Osteomalacia, Rickets	5	
7.	**Peripheral nerve injuries** Mechanism, Clinical Features, Management and Complications	3	-
8.	**Deformities** Clinical Features, Complications, Medical and Surgical Management of the Following Congenital and Acquired Deformities. <u>Congenital Deformities</u> • CTEV • CDH. • Torticollis. • Scoliosis. • Flat foot. • Vertical talus. • Hand anomalies- syndactyly, polydactyly and ectrodactly. • Arthrogryposis multiplex congenita(amyoplasia congenita). • Limb deficiencies- Amelia and Phocomelia. • Klippel feil syndrome. • Osteogenesis imperfecta(fragile ossium). • Cervical rib. **<u>Acquired Deformities</u>** • Acquired Torticollis. • Scoliosis. • Kyphosis. • Lordosis. • Genu varum, Genu valgum, Genu recurvatum • Coxa vara. • Pes cavus, Pes Planus • Hallux rigidus. Hallux valgus. Hammer toe. Metatarsalgia.	3	-
9.	**InfIammatory and Degenerative Conditions** Causes, clinical feature, complications, deformities, radiological features, management- conservative and surgical for the following conditions : • Osteoarthritis. • Rheumatoid arthritis. • Ankylosing spondylitis	5	-

	• Gouty arthritis. • Psoriatic arthritis. • Hemophilic arthritis. • Still's disease (Juvenile Rheumatoid Arthritis). • Charcot's joints. **Connective Tissue Disorders** • Systemic Lupus Erythematosis • Scleroderma • Dermatomyositis • Mixed connective tissue Disease (MCTD)		
10.	**Soft Tissue Injuries** • Define terms such as sprains, strains, contusion, tendinitis, rupture, tenosynovitis, tendinosis, bursitis. • Mechanism of injury, clinical features, managements- conservative and surgical of the following soft tissue injuries: ➢ Meniscal injuries of knee. ➢ Ligamentous injuries of knee. ➢ Ankle Sprain ➢ Wrist sprain ➢ Strains- quadriceps, hamstrings, calf, biceps, triceps etc. ➢ Contusions- quadriceps, gluteal, calf, deltoid etc. ➢ Tendon ruptures-Achilles, rotator cuff muscles, biceps, pectorals etc.	5	-
11.	**Regional Conditions** Definition, Clinical features and management of the following regional conditions: • Shoulder: Periarthritic shoulder (adhesive capsulitis). Rotator cuff tendinitis. Subacromial Bursitis. • Elbow: Tennis Elbow. Golfer's Elbow. Olecranon Bursitis (student's elbow). Triceps Tendinitis. • Wrist and Hand: De Quervain's Tenosynovitis. Ganglion. Trigger Finger/ Thumb. Mallet Finger, Carpal Tunnel Syndrome, Dupuytren's Contracture. • Pelvis and Hip : IT Band Syndrome. Piriformis Syndrome. Trochanteric Bursitis. • Knee: Osteochondritis Dissecans. Prepatellar and Suprapatellar Bursitis. Popliteal Tendinitis. Patellar Tendinitis. Chondromalacia Patella. Plica Syndrome. Fat Pad Syndrome (Hoffa's syndrome). • Ankle and Foot: Ankle Sprains. Plantar Fasciitis / Calcaneal Spur. Tarsal Tunnel Syndrome. Achilles Tendinitis. Metatarsalgia. Morton's Neuroma	5	-

12.	**Amputations** • Definition • Levels of amputation of both lower and upper limbs • Indications • Complications • Management	3	-
13.	**Hand Injuries** Mechanism of injury, clinical features, and management of the following: • Crush injuries. • Flexor and extensor injuries. • Burn injuries of hand.	2	-
14.	**Cervical and Lumbar Pathology** Causes, clinical feature, patho-physiology, investigations, management-Medical and surgical for the following : • Prolapsed interverbral disc (PID) • Spinal Canal Stenosis. • Spondylosis (cervical and lumbar) • Spondylolysis. • Spondylolisthesis. • Lumbago/ Lumbosacral strain. • Sacralisation. Lumbarisation. • Coccydynia. • Hemivertebra.	3	-
15.	Re-constructive surgeries in Polio & cerebral palsy (bone & soft tissues)	3	-
16.	**Syndromes** Causes, Clinical features, complications, management-conservative and surgical of the following: • Cervico brachial syndrome • Thoracic outlet syndrome • Vertebro- basilar syndrome • Scalenus syndrome • Costo clavicular syndrome • Levator scapulae syndrome • Piriformis syndrome.	3	-
17.	**Orthopedic Surgeries** Indications, Classification, Types, Principles of management of the following Surgeries : • Arthrodesis • Arthroplasty (partial and total replacement) • Osteotomy • External fixators	3	-

	• Spinal stabilization surgeries (Harrington's, Luque rod, Steffi plating) etc.		
CLINICAL -			32
Independent Clinical Orthopaedic evaluation, presentation & recording of : • 1 acute soft tissue injury [including nerve injury], • 2 cases of infections of bones and joints • 2 cases of degenerative arthritis of extremity joints, • 2 degenerative arthritis of spine, 2 chronic backaches, • 1 case of acute P.I.D • 1 post operative cases of fractures of extremities • 1 traumatic paraplegia/quadriplegia OBSERVATION: At least 2 surgeries of fracture internal fixation, one knee/hip replacement & Re-constructive surgery of the tendons			

Text Books

Sr.No.	Title
1	Apley`s textbook of Orthopaedics
2	Outline of Fractures - John Crawford Adams.
3	Outline of Orthopedics.— John Crawford Adams.
4	Text book of Orthopedics.—Maheswari.
5	Textbook of Orthopedics and Traumatology— M.N.Natarajan
6	Apley`s textbook of Orthopaedics
7	Outline of Fractures - John Crawford Adams.

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
20	80	100

Periodical Examination:

- Written Examination:-20 MCQ for 20 marks , 20 minutes.

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

Sec A	MCQ	20x1=20
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Sec C	3. Long Answer Questions (compulsory) 4. Long Answer Questions Answer any 1 out of 2	1x15=15 1x15=15

- **<u>SUPERVISED PRACTICAL TRAINING:</u>**

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination .

Internal Assessment Marks

Theory :-

Periodical exam = 20 marks

Prelim exam = 80 marks

Total = 100 marks

The total shall be Converted to 20 marks (100/5=20)

Course Title :- Neurology (Including Paediatrics, Psychiatry)
Course Code:- PT 502

Course Credit for Neurology (Including Paediatrics, Psychiatry)

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
64	32	48	144	4	2	3	9	4	1	1	6	20	80	100	--	--	--

Learning Objectives:

Learning Objectives: A/B/C if applicable

At the end of the course, the candidate will

1. Be able to describe Etiology, Pathophysiology, Signs &Symptoms &Management of the various Neurological and Paediatric conditions.
2. Acquire skill of clinical examination of Neurological System.
3. Acquire knowledge in brief about intra-uterine development of the foetus
4. Be able to describe normal development &growth of a child, importance of iImmunization & breast-feeding & psychological aspect of development.
5. Acquire skill of clinical examination of a neonate /child with respect to neurological, Musculoskeletal, Respiratory & Cardiovascular conditions.

Course Content – (Section A)
Neurology

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1.	Circulation of the brain & spinal cord	1	-
2.	**Neurological Investigations** X-Ray, CT, MRI, Evoked Potentials, LP, CSF, EMG, NCV, EEG	2	-
3.	**Cerebro –vascular accidents** Define: Stroke, TIA, RIA, Stroke in evolution, Lacunar infarct. Risk Factors, Causes, Investigations, Differential Diagnosis, Management- Medical & Surgical, Complications	2	-
4.	**Movement Disorders** Definition, etiology, risk factors, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders : • Parkinson's disease • Dystonia • Chorea • Ballismus, • Athetosis • Tics, Myoclonus • Wilson's disease	2	-
5.	**Polyneuropathy** • Classification of Polyneuropathies • Causes, clinical features, management of GBS, Diabetic and Alcoholic Neuropathy	2	-

6.	**Disorders & Diseases of muscle** • Classification, investigations, imaging methods, Muscle biopsy, management of muscle diseases, genetic counselling. • Classification, etiology, signs & symptoms of Muscular dystrophy and Myotonic dystrophy	2	-
7.	**Motor neuron diseases** Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications of following disorders: • Amyotrophic lateral sclerosis • Spinal muscular atrophy • Hereditary bulbar palsy • Neuromyotonia • Post-irradiation lumbosacral polyradiculopathy.	2	-
8.	**Multiple Sclerosis** Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications	1	-
9.	**Infections of brain and spinal cord** Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders: • Meningitis • Encephalitis • Neurosyphilis • Herpes • HIV infection • Poliomyelitis and Post-polio syndrome • Leprosy • Tetanus	2	-
10.	**Higher cortical, neuro psychological and neurobehavioral disorders** • Physiological nature of Epilepsy, classification, clinical features, investigations, medical& surgical management of following disorders – Non-epileptic attacks of childhood, Epilepsy in childhood, Seizers, and Epilepsy syndromes in adult. • Classification and clinical features of Dementia, Alzheimer's disease. • Causes & investigations of Coma, criteria for diagnosis of Brain death.	**2**	-
11.	**Cerebellar & Co-ordination disorders** • Congenital Ataxia • Friedrich's Ataxia • Tabes dorsalis	1	-
12.	**Disorders of lower cranial nerves & Special Senses**	2	-

	Etiology, clinical features, investigations, and management of following disorders • Trigeminal neuralgia • Lesions in facial nerve: Facial palsy, Bell's palsy, Hemi facial spasm • Glossopharangial neuralgia • Lesionns of Vagus, Spinal accessory nerve, Hypoglossal nerve. • Disorders of special senses		
13.	**Disorders of Myoneural Junction** Etiology, classification, signs & symptoms, investigations, management, of following Disorders: • Myasthenia gravis • Eaton-Lambert syndrome • Botulism	1	-
14.	**Spinal cord Disorders** • Functions of tracts Definition, etiology, risk factors, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders: • Spinal Cord Injury , • Epidural abscess, • Transverse myelitis, • Spina bifida, • Conus medullaris syndrome • Bowel & Bladder Dysfunction	2	-
15.	**Head injury** Etiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications.	2	-
16.	**Brain tumors and spinal tumors** Classification, clinical features, investigations, medical and surgical management.	1	-
DESIRABLE TO KNOW AREA			
17.	Disorders of Anterior Horn Cell	1	-
18.	Dysfunction of Autonomous Nervous System	2	-
19.	Cerebrospinal Fluid i) Formation & Absorption ii) Status in Various Disorders	1	-
CLINICAL			
History, Evaluation, presentation and recording of cases in • Central nervous system – 3 cases • Peripheral nervous system- 2 cases		20	

Text Books

Sr.No.	Title
1	Davidson's Principles and Practice of Medicine
2	Textbook of Neurology- Victor Adams
3	Brains Clinical Neurology.
4	Illustrated Neurology & Neurosurgery: Lindsay
5	Brains Diseases of Nervous System
6	Davidson's Principles and Practice of Medicine
7	Textbook of Neurology- Victor Adams

Course Content – (Section B) Paediatrics			
Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1.	Normal development & growth	1	-
2.	Breast feeding and immunization	1	-
3.	**Prenatal, Perinatal and Postnatal problems and management (**Birth injuries): Neck, shoulder dystocia, Brachial plexus injury, Fractures	1	-
4.	Congenital abnormalities and management	1	-
5.	Problems and management of LBW infants	1	-
6.	**Developmental Delay:** Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications	2	-
7.	**Respiratory conditions of childhood:** Pneumonias in children – Bacterial & Tubercular, Empyema, Asthma	2	-
8.	**Orthopedic and Neurological disorders in childhood, Clinical features and management ;** • Cerebral palsy • Meningitis • Encephalitis • Hydrocephalus • Ataxia • Arnold-chiari malformation • Basilar impression & Cerebral malformations • Dandy walker syndrome • Down's syndrome • Floppy infant • GBS • Poliomyelitis	**3**	-

	• Epilepsy • Neural tube defects in Paediatrics • Muscular dystrophies & Neuropathy		
9.	**Sensory disorders – problems resulting from loss of vision and hearing**	1	-
10.	**Learning and behavioural problems** Attention Deficit Hyperactivity Disorder • Autism, • Challenging behaviours, • Educational delay, • The Clumsy Child	1	-
11.	**Nutritional disorders of childhood** Rickets and scurvy, PEM (Kwashiorkar and Marasmus)		-
12.	Infections – Congenital & Neonatal, Mental retardation	1	-
13.	Coma in Paediatrics and Acute rheumatic fever	1	-
14.	Normal intra-uterine development of foetus	1	-
15.	Bronchiolitis, & Wheezy baby	1	-
Clinical			**12**
• Normal & abnormal reflexes in neonate & child • Examination of the nervous system • Examination of respiratory system • Examination of cardiovascular system			

Text Books

Sr.No.	Title
1	Essentials of Paediatrics – by O. P. Ghai - Inter Print publications
2	D. K. series in Paediatrics

Course Content – (Section C) Psychiatry			
Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1.	Psychiatric History, classification and mental status examination	1	-
2.	Organic mental disorders (delirium, dementia, organic amnestic syndrome and other organic mental disorders)	1	-
3.	Mood disorders (manic episodes, depressive episodes, bipolar mood disorders)	1	-
4.	Neurotic stress related and somatoform disorders (Anxiety disorder, phobic anxiety disorders, obsessive compulsive disorders, adjustment disorders, dissociative disorders, somatoform disorders post-traumatic stress Disorder	1	-
5.	Schizophrenia, delusional disorders and schizoaffective disorders.	1	-

6.	Substance use disorders, sexual disorders, sleep disorders and eating disorders.	2	-
7.	Child psychiatry, (mental retardation, developmental disorders, attention deficit, hyperkinetic disorder, enuresis, conduct disorders)	2	-
8.	Disorders of adult personality and behavior (specific personality disorders, habit and impulse disorders, gender identity disorders)	1	-
9.	Stress, psychosomatic disorders, suicide, psychiatric emergencies and their management	2	-
10.	Psychopharmacological management, electroconvulsive therapy and other biological methods of treatment. Psychiatric History, classification and mental status examination	2	-

Text Books

S.NO	Title
1	A short book of Psychiatry – 3 rd edn-by Ahuja – Jaypee bros – medical publishers
2	Shah L.P. Handbook of Psychiatry

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
20	80	100

Periodical Examination:

- Written Examination:-20 MCQ for 20 marks , 20 minutes.

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**
-

Sec A	MCQ (10 neurology+5 Paediatrics+ 5Psychology)	20x1=20
Sec B Neurology	1. Short answer questions-Answer any 5 out of 6 2. Short answer questions-Answer any 3 out of 4	5x3=15 3x5=15
Sec C Paediatrics Psychology	1. Short answer questions-Answer any 5 out of 6 2. Short answer questions-Answer any 5 out of 6	5x3=15 3x5=15

- **SUPERVISED PRACTICAL TRAINING:**

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination .

Internal Assessment Marks

Theory :-

Periodical exam = 20 marks
Prelim exam = 80 marks
Total = 100 marks
The total shall be Converted to 10 marks (100/5=20)

Course Title :- Physical and Functional Diagnostic Skills
Course Code:- PT 503

Course Credit for Physical and Functional Diagnostic Skills

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
80	96	96	272	5	6	6	17	5	3	2	10	20	80	100	20	80	100

Learning Objectives:

At the end of the course, the candidate will

1. Be able to describe the human development & maturation; with special emphasis to sensory, motor, psychological & social aspects and 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 & paediatric conditions & acquire skill & interpretation of Exercise tolerance test to arrive at the Functional diagnosis as per International Classification of Functioning.
3. Acquire the skills to use on patients, the therapeutic currents, for Electro-diagnosis of sensory, &motor dysfunction & pain.
4. Be able to describe the physiology of nerve conduction & motor units, interpretation of Normal & Abnormal EMG, Nerve Conduction studies & Late responses.
5. Acquire the simple skills of mobilization of the extremities on models
6. Acquire the Neuro therapeutics skills on models
7. Be able to do Interpretation of common investigations used for functional diagnosis.

Course Content – **PHYSICAL & FUNCTIONAL DIAGNOSTIC SKILLS**

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1	**ASSESSMENT OF MUSCULO SKELATAL FUNCTION** SOAP Format of Assessment : • Demographic Data Collection • Chief Complaint • History Taking	25	
2	**ASSESSMENT OF PAIN** • Intensity & quality • Body Diagram • Objective assessment & documentation – VAS, Mc Gill's modified questionnaire, Numerical Rating Scale • Assessment of Posture • Assessment of Gait • Palpation : Limb Length and Girth measurement • Selective Tissue Tension Testing: Examination of joint integrity (Contractile tissNon contractile tissues) • Active movement		

	• Passive movement : Assessment of accessory movement & End feel • Resisted isometric contraction • Tightness Testing • Assessment of Muscle Strength (Group and Individual) • Special Tests		
3 4 5 6	Observational Movement analysis and Analysis of Muscle Work Assessment of articular &extra- articular soft tissue status • Myofascial assessment • Acute & Chronic muscle hold Outcome Measures Functional Diagnosis using ICF Interpretation of X-ray of extremities &spine, routine, bio-chemical investigation		
ASSESSMENT OF HAND		**5**	-
1 2 3 4 5	Sensations Mobility of joints Strength Special Tests like Froment's Sign, Bunnel – Litter's Test, Phalen's Test, Tinels Sign, Wartenberg's Sign Hand Function – Precision and Power grips		
ASSESSMENT OF NEUROMUSCULAR FUNCTION		**25**	-
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	Higher functions • Cranial nerves • Sensations & sensory organization (Dermatome, Myotome and Sclerotome) • Joint mobility • Body image • Tone • Reflexes-Superficial &Deep • Voluntary control • Muscle Strength • Co-ordination • Balance • Endurance • Trick movements • Limb Length • Posture • Gait • Scales-Berg 's Balance, Ashworth, Glasgow Coma, DGI • Functional Diagnosis using ICF • Interpretation of Electro diagnostic findings, routine Biochemical investigations.		

• **ASSESSMENT OF CARDIO VASCULAR & PULMONARY DYSFUNCTION**		15	-
1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13 14	• Demographic Data • Chief complaint • HOPI • History of Symptoms • Past Relevant Histories • Vital Parameters • Examinatiom: Head and Neck, Chest and Extremities • Palpation: Head and Neck, Chest and Extremities • Measurements: Chest Expansion, symmetry of chest movement • Auscultation: Normal and Abnormal Breath Sounds • Special tests : Breath Holding Test etc. • Outcome Measures & Investigations: ➢ Quality of life questionnaire ➢ BORG and Modified BORG scale for Rating of Perceived Exertion (RPE) ➢ Exercise Tolerance – six minutes walk test, Theoretical bases of Bruce's protocol. ➢ Peak Flow Meter ➢ ABG, PFT, ECG- (Normal & Variations in common pathologic conditions) ➢ X-ray Chest • Tests for Peripheral Arterial & Venous circulation • Ankle Brachial Index		
ASSESSMENT OF OBESITY		5	-
1. 2. 3. 4.	• Pathophysiology • Assessment – BMI, Waist – Hip Ratio • Assessment of Fitness-Flexibility,Endurance and Agility • Obesity – Skin fold measurement, Anthropometric measurements, Newer Methods		
Bioethics	**Autonomy and individual responsibility, Consent** • Autonomy and individual responsibility (2 hrs) o Different levels and notions of autonomy o Responsibility: its different aspects and dual nature o Autonomy and patient's right to self-determination in treatment o The patient's right to refuse a health care provider's recommendation o Special measures for protecting the rights	5	

	and interests of socially and mentally disabled patients o patient responsibilities • consent (2 hrs) o Purpose of the principle of consent ▪ Prior , free & informed consent in patient treatment & handling o What is express consent? o Withdrawal of consent o The patient's right to refuse o Consent of subjects of scientific research. o Compare the provisions for consent in scientific research with those for medical interventions o Consent by individual, group and community o Exceptional circumstances for the application of the principle of consent • Persons without the capacity to consent (1 hr) o Criteria for capacity to consent o Categories of persons without the capacity to consent How to obtain consent in health care practice for these special categories?		
CLINICALS AND PRACTICAL TRAINING			**96**
1. 2. 3. 4. 5.	• Identification of abnormal breath sounds, measurement of chest expansion, pattern of breathing, Vital parameters, Grades of Dyspnoea, Rate of Perceived exertion, Ankle Brachial Index. • Exercise tolerance testing – 6 minutes walk test & Bruce 's protocol on models only • Interpretation of reports – EMG, NCV Studies, ABG, PFT, X-ray of Chest Extremities, Spine & ECG. • Observation analysis • Muscle work & pathological movements (Trick movements)		
TERM WORK IN CLINICAL			
1	Documentation & Interpretation of following investigations • Cardio Vascular &Pulmonary – ABG, PFT, ECG, X-ray Chest, Exercise Tolerance Test-1 each • Neurological – Scales like Modified Ashworth,		

	Berg 's Balance, Dynamic Gait Index, Glasgow Coma, Barthel Index, STREAM Format – Any 3		
2	Case presentation with Functional diagnosis – Three cases Each in – • Musculoskeletal • Neurological • Cardiovascular & Pulmonary To maintain the Record/Journal of the term work & to get each assignment duly singed by the Incharge.		

Text Books

Sr.No.	Title
1	Maitlands book on Manual therapy,
2	Clinical Electro Therapy – Nelson – Currir ---Appleton &Lange publication
3	Physical Rehabilitation, Assessment and treatment by Susan B O 's Sullivan
4	Physiotherapy for Respiratory & Cardiac Problems- Jennifer Pryor & Barbara Webber
5	Cash's Textbook of Physiotherapy for Heart, Lungs & Valvular Diseases- Patricia Downie

Reference Books

Sr.No.	Title
1	Orthopaedic Physical examination – by Magee
2	Mobilization methods – Kaltonborn
3	Clinical Electromyography – Kimura
4	Orthopaedic Physical therapy – Donnatelli
5	Exercise &Heart – Wenger
6	Exercise Physiology – William D Mc 'Ardle
7	Facilitation techniques based on NDT principles by Lois Bly Allison Whiteside
8	Neurological Examination by John Patten
9	Movement therapy in Hemiplegia by Brunnstrom
10	Cash textbook of Physiotherapy in neurological conditions by Patricia Downie

SCHEME OF EXAMINATION

Written		Total	Practical		Total
IA	Final exam	Final exam	IA	Final exam	Final exam
20	80	100	20	80	100

Periodical Examination:

- Written Examination:-20 MCQ for 20 marks , 20 minutes.
- Practical Examination:- 20 marks

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

Sec A	MCQ	20x1=20
Sec B	1. Short Notes Answer any 5 out of 6 2. Short answer questions Answer any 3 out of 4	5x3=15 3x5=15
Sec C	3. Long Answer Questions (compulsory) 4. Long Answer Questions Answer any 1 out of 2	1x15=15 1x15=15

- **Practical Examination (80 marks)**

Long Case + Journal (Case Based Evaluation)	**35 + 5 = 40**
Short Case (Technique/Skill Based Evaluation)	**20x1=20**
Spots (X Ray, ABG, PFT, EMG, NCV, Outcome Measures)	**5x4=20**

- **<u>SUPERVISED CLINICAL TRAINING</u>**

  - Journals = 5 marks

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination

Internal Assessment Marks

Theory / Practical :-

Periodical exam = 20 marks

Prelim exam = 80 marks

Total = 100 marks

The total shall be Converted to 20 marks (100/5=20)

Course Title :- Obstetrics and Gynecology
Course Code:- PT 504

Course Credit for Obstetrics and Gynecology

Hours				**Hrs/Wk**				**Credits**				**Evaluation Pattern**					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
32	32	48	112	2	2	3	7	2	1	1	4	10	40	50	--	--	--

Learning Objectives:

At the end of the course, the candidate

1. Be able to describe the normal &abnormal physiological events during the Puberty, Pregnancy, Labour, Peurperium, & Pre, Peri & Post Menopause.
2. Be able to discuss common complications during Pregnancy, Labour, Puerperium & Pre, Peri &Post Menopausal stage &various aspects of Urogenital Dysfunction &the management in brief.
3. Acquire the skills of the clinical examination of Pelvic Floor.

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1.	**Anatomy of female genital system and pelvic floor**	2	-
2.	**Menstrual cycle and its Disorders**	3	-
3.	**Pregnancy** • Normal Gestations • Maternal Physiology in Pregnancy • Musculoskeletal disorders in Pregnancy • Antenatal Care • Prenatal and Perinatal Complications • Labour- Stages, Normal & Complications • Pain relief in Labour • Post Natal – Puerperium, Lactation	7	-
4.	**Menopause** • Physiology • Complications • Effect on Various systems • Management	4	-
5.	**Uro-genital dysfunction** • Uterine prolapse – classification & management (Conservative /Surgical) • Cystocoele, Rectocoele, Enterocoele • Urinary Incontinence: Types, Causes, Assessment and Management. • Pelvic Inflammatory Diseases • Polycystic Ovarian Disease (PCOD)	4	-
6.	**Surgical Procedures involving child birth**	3	-

	• Caesarian Section • Episiotomy		
7.	**Definition, Indications and Management of the following surgical procedures** • Dilatation and Curettage • Hysterectomy – Total Abdominal and Vaginal Salphigectomy and oopherectomy	3	-
8.	Multiple gestations	1	-
9.	Neoplasm of Female reproductive organs – surgical management	1	-
10.	Sterility – management	2	-
11.	Methods of family planning	2	-
CLINICAL		-	32
	Evaluation & presentation of Two cases Each in • Uro-genital dysfunction • Antenatal care • Postnatal care ➢ Following normal labour ➢ Following Caesarean section • Pelvic Inflammatory Diseases OBSERVATION – One Normal & One Caesarian delivery, One case of Tubectomy & One Hysterectomy /Repair of the Uro-genital Prolapse.		

Text Books

Sr.No.	Title
1	Text book of Gynecology – by Dutta – New Central Book Agency
2	Text book of Obstetrics - by Dutta – New Central Book Agency

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
10	40	50

Periodical Examination:

- Written Examination:-20 MCQ for 10 marks , 20 minutes.

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	MCQ	10x1=10 marks
Sec B	1. Short Notes - Answer any 5 out of 6 2. Short answer questions - Answer any 2 out of 3 3. Long Answer Questions - Answer any 1 out of 2	5x2=10 marks 2x5=10 marks 1x10=10 marks

- **SUPERVISED PRACTICAL TRAINING:**

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination

Internal Assessment Marks

Theory :-

Periodical exam = 10 marks

Prelim exam = 40 marks

Total = 50 marks

The total shall be Converted to 10 marks (50/5=10)

SEMESTER – VI

Course Code	Course Title	Hours			
		Th	Pr	SCT	Total
PT-601	General Surgery(including Plastic Surgery)	64	32	96	192
PT-602	Research Methodology and Biostatistics	48			48
PT-603	Physiotherapeutic Skills	80	96	96	272
PT-604	Bio-engineering & Professional Ethics	32	32	96	160
	Total	224	160	288	672

Th: Theory, Pr: Practical, Tot: Total, Lec: Lecture Demonstration/Tutorial/Discussion, IA: Internal Assessment

Course Title :- General Surgery (Including Plastic Surgery)
Course Code:- PT 601

Course Credit for General Surgery (Including Plastic Surgery)

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
64	32	96	192	4	2	6	12	4	1	2	7	20	80	100	-	-	-

Learning Objectives:

At the end of the course the candidate will

1. Understand & describe pre operative evaluation various surgical indications in abdominal thoracic, Neuro Surgical & Peripheral vascular conditions.
2. Understand surgical steps & approaches in short & should be able to describe components of soft tissues cut to reach target tissue & complications.
3. Assess post operative complications & its implications in ward treatment, prognosis, morbidity & mortality.
4. Describe effects of surgical trauma & Anaesthesia in post operative course.
5. Understand classify, clinically assess, evaluate & describe surgical management in brief in. a) Wounds and Ulcers b) Burns c) Head Injuries
6. Be able to read & interpret finding of X-ray chest & Abdomen, CT Scan, USG.

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1.	Infection and inflammation-acute / chronic-signs, symptoms, complications & management.	4	-
2.	**Wounds and ulcers** – classification, healing, management.	4	2
3.	**Abdominal Surgeries:** • Surgical anatomy of Anterior Abdominal wall • Surgical approaches. • Common abdominal surgeries like Cholecystectomy, Colostomy, Ileostomy, Gastrectomy, Hernias, Appendicectomy, Neprectomy, Prostectomy.	3	2

4.	**Thoracic surgeries** • Thoracotomy - Definition, Types of Incisions with emphasis to the site of incision, muscles cut and complications. **A) Lung surgeries:** • Pnumonectomy • Lobectomy, • Segmentectomy – Indications, Physiological changes and Complications • Thoracoplasty • Pleurectomy • Pleurodesis and Decortication of the Lung. • Intercostal Drainage System **B) Cardiac surgeries** • An overview of the Cardio-Pulmonary Bypass Machine • Extracardiac Operations: Closed Heart surgery, Open Heart surgery. • Transplant Surgery – Heart, Lung and Kidney – Indications, Physiological changes and Complications • Chest Injuries, evaluation, management.	3 4 4	2 3 3
5.	**Peripheral vascular diseases** Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases: • Atherosclerosis • Arteriosclerosis • Buergers • Raynauds • Varicose veins & DVT	4	
6.	**Burns and Plastic Surgery** • Burns- causes, classification, ward management, post burn contractures, various Reconstructive & plastic surgeries • Skin grafts/flaps- pedicle/ Tube /Muscle flap Types, indications with special emphasis to burns/ wounds, ulcers, post surgical head, neck, face defects and reconstruction. • Hypertropic scar & keloid – management c]-Principles of tendon transfers-with special emphasis to hand, foot & facial paralysis	6	-
7.	**Surgical Oncology** – Cancer – definition, types, clinical manifestations of cancer, Staging of Cancer, surgical procedures involved in the management of cancer.	3	-
8.	Bariatric Surgeries	2	-
9.	**Emergency Surgical Procedures:** Tracheostomy, Indications: steps, post operative care	3	-
10.	**Introduction, Indications and Complications of following Neuro surgeries**	5	-

	• Burr-hole, Craniotomy • Cranioplasty • Deep brain stimulation • Shunting • Laminectomy • Hemilaminectomy • Microvascular decompression surgery • Embolization • Ablative surgery - Thalamotomy and Pallidotomy • Coiling of aneurysm and Clipping of aneurysm • Neural implantation		
11.	**Surgical trauma:** • Response of body • Effect of Anesthesia, • Shock & its types. • Fluid & electrolyte balance. Total Parenteral Nutrition.	4	-
12.	**Common ENT problems** • ENT conditions & its management : Otitis Media • Surgical treatments in VII (facial) & VIII nerve palsy	5	-
13.	**Clinical Radiology-X-ray-chest-normal/abnormal**	4	-
14.	NICE TO KNOW AREA • Various eye problems – surgeries for III, IV nerve palsy, cataract IOL. • Surgeries on arteries, veins (Vascular surgery)	3 3	
15.	**CLINICAL:** Evaluation, presentation & recording of one case each in –1]-burns, 2]-wound & ulcer, 3] Head Injury, 4] Peripheral vascular condition 5] Post Radical mastectomy 6] Post thoracic surgery, 7]-post abdominal surgery, 8] Post oral cancer excision, 9] Renal Surgery **DESIRABLE TO KNOW** Auscultation & its interpretation, with special emphasis to Pulmonary Function, Reading & Interpretation of the X-ray chest, P.F.T., Blood-Gas analysis-	32	

Text Books

Sr.No.	Title
1	Under-graduate Surgery by Nan
2	Bailey & Love's short practice of Surgery-21st edn.
3	Manipal's Text book of surgery. Rajagopal Shenoy.
4	Clinical & Operative surgery by S. Das
5	T .B. of surgery by S. Das

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
20	80	100

Periodical Examination:

- Written Examination:-20 MCQ for 20 marks, 20 minutes.

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

THEROY

Theory-80 marks Internal Assessment 20 marks

Sec A	MCQ	20x1=20 marks
Sec B	1. Short Notes. Answer any 5 out of 6 2. Short answer questions. Answer any 3 out of 4	5x3=15 3x5=15
Sec C	1.Long Answer Questions (compulsory) 2.Long Answer Questions Answer any 1 out of 2	1x15=15 1x15=15

- **SUPERVISED PRACTICAL TRAINING:**

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination.

Internal Assessment Marks

Theory :-

Periodical exam = 20marks

Prelim exam = 80marks

Total = 100 marks

The total shall be Converted to 20 marks (100/5=20)

Course Title :- RESEARCH METHODOLOGY AND BIOSTATISTICS
Course Code:- PT 602

Course Credit for RESEARCH METHODOLOGY AND BIOSTATISTICS

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
48			48	3			3	3			3	10	40	50	-	-	-

Learning Objectives:

At the end of the course the candidate will

1.Gain knowledge of the basic concepts of Biostatistics & its need for professional practice & research.

2. Be able to describe an Over - view- a] Ethnography & Anthropology b] Design & Methodology of an Experiment or Survey c] Demography & vital statistics d] Sampling & interpretation of Data.

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1.	**Introduction to Research methodology** • Meaning of research • Objectives of research • Motivation in research • Types of research & research approaches • Criteria for good research • Problems encountered by researchers in India.	4	-
2.	**Research Design** • Meaning of research design • Need for research design • Features for good design • Different research designs	4	-
3.	**Sampling Design** • Criteria for selecting sampling procedure • Steps in sampling design • Characteristics of good sample design • Different types of sample design	4	-
4.	**Measurement & scaling techniques** • Measurement in research- Measurement scales • Sources of error in measurement • Technique of developing measurement tools • Meaning of scaling, its classification. • Important scaling techniques.	4	-
5.	**Methods of data collection** • Collection of primary data • collection data through questionnaires & schedules • Difference between questionnaires & schedules.	4	-

6.	**Testing of hypothesis** • What is hypothesis • Basic concepts concerning testing of hypothesis • Procedure of hypothesis testing • Measuring the power of hypothesis test, • Tests of hypothesis • Limitations of the tests of hypothesis	3	-
7.	**Computer technology** • Introduction to Computers • Computers & researcher.	1	-
	BIOSTATISTICS		
1.	**Introduction** • Meaning, definition of statistics • Importance of the study of statistics • Branches of statistics • Statistics and health science including physiotherapy, • Variables and their types • Measurement scales.	4	-
2.	**Tabulation of Data** • Basic principles of graphical representation • Types of diagrams – histograms, frequency polygons, smooth frequency polygon, cumulative frequency curve • Normal probability curve.	4	-
3.	**Measure of Central Tendency** • Definition and calculation of mean, median, mode. • Comparison of mean, median and mode	2	-
4.	**Probability and Standard Distributions** • Meaning of probability of standard distribution • The binominal distribution • The normal distribution • Divergence from normality – skewness, kurtosis.	4	-
5.	**Sampling techniques** • Need for sampling - Criteria for good samples • Procedures of sampling and sampling designs errors • Sampling variation and tests of significance.	3	-
6.	**Statistical Significance** • Parametric tests:- t test, • Non parametric tests :- chi square test, Mannwhitney U test, Z test, Wilcoxons matched pair test • Correlations	5	-

7.	**Analysis of variance & covariance** • Basic principle of Analysis of Variance ANOVA and Analysis of Co variance (ANCOVA)	4	-
8.	**DESIRABLE TO KNOW** 1] Demographic & vital statistics.	2	-

Text Books

S.NO	Title
1	B. K. Mahajan – Methods in Biostatistics
2	Kulkarni, Bairde, Muzumdar – Manual of Biostatistics
3	Elements of Health Statistics: Rao.N.S.N
4	An introduction of Biostatistics: Sunder Rao.P.S.S.
5	Methods in Bio-Statistics 6th Edn. 1997: B.K. Mahajan
6	Biostatistics : A manual of Statistics Methods: K. Visweswara Rao
7	Elementary Statistics 1 st Edn, 1990. in Medical Workers: Inderbir Singh
8	An Introduction to Gupta C.B. Statistical Methods, 1972: Ram Prasad & Sons
9	Basic Statistics, 3 rd Edn.: Simpsory G. Kaftha. P
10	Research; Principles and Methods:L Denise F. Poli & Hungler
11	Fundamentals of Research, 4 th Edn.: David J. Fox

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
10	40	50

Term Examination:

- Written Examination:-20 MCQ for 20 marks, 20 minutes.

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	1. MCQ (10+10)	20x1=20
Sec B	2. Short Notes-Answer any 5 out of 6 3. Short answer questions-Answer any 3 out of 4	5x3=15 3x5=15

Internal Assessment Marks

Theory :-

Periodical exam = 10 marks

Prelim exam = 40 marks

Total = 50 marks

The total shall be Converted to 10 marks (50/5=10)

Course Title :- PHYSIOTHERAPEUTIC SKILLS

Course Code:- PT 603

Course Credit for PHYSIOTHERAPEUTIC SKILLS

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
80	96	96	272	5	6	6	17	5	3	2	10	20	80	100	20	80	100

Learning Objectives: At the end of the course the candidate will

1. Be able to describe the human development & maturation; with special emphasis to sensory, motor, psychological & social aspects and 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 & ADLs in adult & paediatric conditions & acquire skill & interpretation of Exercise tolerance test to arrive at the Functional diagnosis as per International Classification of Functioning.
3. Acquire the skills to use on patients, the therapeutic currents, for Electro-diagnosis of sensory, &motor dysfunction & pain.
4. Be able to describe the physiology of nerve conduction & motor units, interpretation of Normal & Abnormal EMG, Nerve Conduction studies & Late responses.
5. Acquire the simple skills of mobilization of the extremities on models
6. Acquire the Neuro therapeutics skills on models
7. Be able to do Interpretation of common investigations used for functional diagnosis.

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1.	**GENERAL PRINCIPLES OF HUMAN DEVELOPMENT & MATURATION** a] Aspects – i) Physical ii) Motor iii) Sensory iv) Cognitive v) Emotional vi) Cultural vii) Social b] Factors influencing human development &growth i) Biological ii) Environmental iii) Inherited. c] Principles of maturation • in general • In anatomical directional pattern – Cephelo – caudal, Proximo – distal, Centero- lateral, Mass to specific pattern, Gross to fine motor development, Reflex maturation tests • Development in specific fields ➢ Oromotor development ➢ Sensory development ➢ Neurodevelopment of hand function	22 7 3 12	-
2.	**ELECTRO DIAGNOSIS** • Physiology of resting membrane potential & action		

	potential, Propagation of Action • Potential, Volume conduction • Physiology of muscle contraction • Motor unit &Recruitment pattern of motor unit – Size principle **Electroneuromyography** • Electro – myography ➢ Principles ➢ Instrumentation – Basic components like CRO, Filter, Amplifier & Premplifier, Types of Electrodes. ➢ Normal & Abnormal EMG pattern a) At rest b) On minimal contraction c) On maximal contraction • Nerve Conduction Studies- Principles & Technique	1 1 1 6	 4
3.	**BASICS IN MANUAL THERAPY & APPLICATIONS WITH CLINICAL REASONING** Basic principles, Indications & Contra-Indications of schools of thoughts of Manual Therapy • Maitland • Kaltenborn • Mulligan • Mckenzie • Butler • Muscle Energy Technique • Myofascial stretching • Cyriax : Pain-Original and Referred	**25** 4 2 4 4 4 2 3 4	**34** 5 3 6 5 4 4 4 3
4.	**BASICS IN NEURO THERAPEUTICS SKILLS & APPLICATIONS WITH CLINICAL REASONING.** • Principles and Indications of application of Neuro Developmental Technique • Principles and Indications of application of Rood's Technique • Principles and Indications of application of PNF • Principles and Indications of application of Brunnstrom • Introduction to Vojta, SI, MRP,CIMT, and TOA	**20** 3 3 3 3 8	**20** 3 3 3 3 8
5.	**DESIRABLE TO KNOW** • F wave • H reflex • Technique and application of Neuro Developmental Technique on models • Technique and application of Rood's Technique on models • Technique and application of PNF on models	3	3 8

	• Technique and application of Brunnstrom on models		8
6.	**NICE TO KNOW** 1] Demonstration of EMG & NCV Technique	1	-
7.	**CLINICALS** 1] Practice of Manual Therapy in Kaltenborn, Maitland, Mulligan &Cyriax on extremities only & only on models 2] Practice to Neuro Therapeutic Skills of NDT, PNF, Rood's Technique & Brunnstrom on models only. 3] Exercise tolerance testing – 6 minutes walk test & Bruce 's protocol on models only	-	5 5 9

Text Books

S.NO	Title
1	Orthopaedic Assessment- David J Magee
2	Physical Rehabilitation- Susan O' Sullivan
3	Clinical Assessment in Respiratory Care- Wilkins
4	Physiotherapy for Respiratory and Cardiac Problems- J. Pryor & Prasad
5	Cash's Textbook of Heart, Lungs & Vascular Diseases- Patricia Downnie
6	Palpation of Spine & Extremities- Hoppenfield
7	Cash's Textbook of Neurologiocal Diseases

SCHEME OF EXAMINATION

Written		Total	Practical		Total
IA	Final exam	Final exam	IA	Final exam	Final exam
20	80	100	20	80	100

Periodical Examination:

- Written Examination:-20 MCQ for 20 marks, 20 minutes.
- Practical Examination:- 20 marks

Preliminary Examination / University (Final) Examination

- Written Examination (80 marks)

SCHEME OF EXAMINATION

Theory-80 marks Internal Assessment 20 marks

Sec A	MCQ	20x1=20
Sec B	1. Short Notes-Answer any 5 out of 6 2. Short answer questions-Answer any 3 out of 4	5x3=15 3x5=15
Sec C	1. Long Answer Questions (compulsory) 2. Long Answer Questions-Answer any 1 out of 2	1x15=15 1x15=15

PRACTICAL

Long Case (Manual Therapy , Neuro Techniques)	35+5=40
Short Case (Simulated Cases)	20x1=20
5 Spots (EMG-NCV, Manual and Neuro Techniques)+ Journal	5x3=15 + 5 = 20

- **<u>SUPERVISED PRACTICAL TRAINING: (</u>Journal=**Case Records/Case Presentations) **05 MARKS**

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination

Internal Assessment Marks

Theory /Practical-

Periodical exam	= 20 marks
Prelim exam	= 80 marks
Total	= 100 marks

The total shall be Converted to 20 marks (100/5=20)

Course Title :- BIO-ENGINEERING & PROFESSIONAL ETHICS

Course Code:- PT 604

Course Credit for BIO-ENGINEERING & PROFESSIONAL ETHICS

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
32	32	96	160	2	2	6	10	2	1	2	5	10	40	50	-	-	-

Learning Objectives:

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

Course Content – (section A/B/C if applicable)

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1.	Classification of Aids & appliances.	1	-
2.	Biomechanical principles in designing of appliances	1	-
3.	Knowledge of various component of prosthesis & orthosis. Assessment procedures for static & dynamic alignment of the following: Aids & appliances, Splints, Orthosis for spine, upper & lower limb, Prosthesis for Lower limbs & Upper limbs.	2 1	-
4.	Prescription and designing of footwear and modifications	1	-
5.	Assessment of Gait post Prosthetic / Orthotic (Lower Limb) fitting.	2	-
6.	Designing and construction of adaptive devices	2	
7.	**Desirable to know –** Care of prosthesis & orthosis.	1	-
8.	Methods of donning & doffing	1	-
9.	Decision making for prosthetic fitting	1	-
10.	**Nice to know –** Psychological aspect of orthotic and prosthetic application (practical analysis with patient discussion)	1	-
11.	**Project-** To fabricate one Temporary splint in each by using P.O.P, aluminum strips, sheets, wires, rubber bands, rexin, orfit etc. • Cock up [dorsal / volar] • Outrigger. • Opponence splint. • Anterior and posterior guard splints for gait training. • Foot drop splint. • Facial splint. • Mallet Finger Splint. • C bar for 1st web space of hand	-	24

SECTION - I I Professional Practice (Including Ethics, Evidence Based Practice, Administration, Management & Marketing)			
1.	Concepts of morality, Ethics & Legality-rules of professional conduct & their Medico-legal &moral implications-The need of Council Act for Physiotherapy.	2	-
2.	Constitution & Functions of the Indian association of Physical therapy	1	-
3.	Functioning of the World Confederation of Physical therapy [W.C.P.T.] & its various branches-Special Interest groups [brief]	1	-
4.	Role of W.H.O.& WCPT	1	-
5.	Introduction to Evidence Based Practice: Definitions, Evidence Based Physiotherapy Practice	1	-
6.	Management studies related to–local health care organization management & structure- planning delivery with quality assurance & funding of service delivery information technology -Time management - career development in Physiotherapy.	2	-
7.	Administration - principles-based on the Goal & functions - at large hospital set up/domiciliary services/private clinic /academic.	2	2
8.	Methods of maintaining records	1	2
9.	Budget-planning.	1	2
10.	Performance analysis--physical structure /reporting system [man power / status/functions /quantity &quality of services/turn over-cost benefit- revenue contribution.	1	2
11	**Privacy and confidentiality, equality & Non discrimination.** • Privacy and confidentiality (2 hrs) o Definitions of 'privacy' and 'confidentiality' with reason in physiotherapy o Justified breaches of confidentiality- ▪ Sharing information for patient care ▪ Using interpreters ▪ Teaching medical students ▪ Mandatory reporting Serious danger to others ▪ Patient or guardian consent • Equality, justice and equity (2 hrs) o Definitions of 'equality', 'justice' and 'equity' o The right to health care & Physiotherapy o Disparities in health status ▪ Local disparities	6	

	▪ National disparities ▪ Global disparities ○ Roles of Physiotherapists in establishing health care priorities and allocating scarce health care resources as direct health care providers • Non-discrimination and non-stigmatization, (1 hr) ○ What is discrimination and stigmatization? • Respect for cultural diversity and pluralism (1 hr) ○ Definition of culture and cultural diversity ○ Definition and value of pluralism ○ Limits to the consideration for cultural specificities Human dignity, human rights and fundamental freedoms •		

Text Books

Sr.No.	Title
1	Amputation & prosthetic - Bella may.
2	Atlas of orthosis & Assistive Device - Bertram Goldberg & John Hsu
3	Orthotic in Rehabilitation – McKee / Morgan
4	Physical rehabilitation- Susan. B.O` Sullivan

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
10	40	50

Periodical Examination:

- Written Examination:-10 MCQ for 10 marks, 10 minutes.

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	MCQ	10x1=10 marks
Sec B	1. Short Notes - Answer any 5 out of 6 2. Short answer questions - Answer any 2 out of 3 3. Long Answer Questions - Answer any 1 out of 2	5x2=10 marks 2x5=10 marks 1x10=10 marks

- **SUPERVISED PRACTICAL TRAINING:**

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination.

Internal Assessment Marks

Theory :-

Periodical exam	= 10 marks
Prelim exam	= 40 marks
Total	= 50 marks

The total shall be Converted to 10 marks (50/5=10)

SEMESTER – VII

Course Code	Course Title	Hours			
		Th	Pr	SCT	Tot
PT-701	Physiotherapy in Musculoskeletal sciences	64	96	96	256
PT-702	Physiotherapy in Community Based Rehabilitation	64	96	96	256
PT-703	Choice based(Paediatrics/Manual Therapy)	32	32	96	160
	Total	160	224	288	672

Th: Theory, Pr: Practical, Tot: Total, Lec: Lecture Demonstration/Tutorial/Discussion, IA: Internal Assessment

Course Title :- Physiotherapy in Musculoskeletal Sciences
Course Code:- PT 701

Course Credit for Physiotherapy in Musculoskeletal Sciences

Hours				Hrs/Wk				Credits				Evaluation Pattern					
												Written		Total	Practical		Total
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
64	96	96	256	4	6	6	16	4	3	2	9	20	80	100	20	80	100

Learning Objectives:

This course is formulated on the "Problem based" method. At the end of the course, the candidate will –

1. Be able to identify, discuss & analyze, the Musculoskeletal Dysfunction in terms of Biomechanical, Kinesiology & Biophysical basis & correlate the same with the provisional diagnosis, routine radiological & Electrophysiological investigations & arrive at appropriate Functional diagnosis with clinical reasoning.
2. Be able to plan & Prescribe as well as acquire the skill of executing short & long term Physiotherapy treatment by selecting appropriate modes of Mobilization / Manipulations, Electro-Therapy, Therapeutic exercise & appropriate Ergonomic advise for the relief of pain, restoration / Maintenance of function & rehabilitation for maximum functional independence in A.D.L. at home & work place.

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1.	**Fractures and dislocation of the spine, extremities – classification, management & complications.**	**10 hrs**	**15 hrs**
	• PT assessment and management of upper limb fractures and dislocations. • PT assessment and management of lower limb fractures and dislocations including pelvis. • PT assessment and management of spinal fractures		

	• PT management in complications - early and late - shock, compartment syndrome, VIC, fat embolism, delayed and mal-union, RSD, myositis ossificans, AVN, pressure sores etc. • Principles of PT management in fractures - Guidelines for fracture treatment during period of immobilization and guidelines for treatment after immobilization period.		
2.	**Physiotherapy Management of Deformities**	**4 hrs**	**10 hrs**
	• Congenital: CTEV, CDH, Torticollis, pes planus, pes cavus and other common deformities. • Acquired: scoliosis, kyphosis, coxa vara, genu varum, valgum and recurvatum.		
3.	**Infectious diseases of the bone & joints**	**4 hrs**	-
	• Osteomyelitis – acute and chronic • Septic arthritis and Pyogenic arthritis • TB spine and major joints - knee and hip		
4.	**Degenerative and Inflammatory conditions**	**4 hrs**	-
	• Osteoarthritis - emphasis mainly on knee, hip and hand • Rheumatoid Arthritis • Ankylosing spondylitis • Gout • Perthes disease		
5.	**Metabolic & hormonal disorders of the bone tissue - Osteoporosis.**	1 hrs	-
6.	**Management of Peripheral Nerve Injury**	2 hrs	5 hrs
7.	**Physiotherapy following re-constructive surgeries in Cerebral Palsy, Poliomyelitis and Leprosy.**	2 hrs	5 hrs
8.	**Amputation**	2 hrs	5 hrs
	• Definition, levels, indications, types, PT assessment, aims, management pre • And post operatively. • PT management with emphasis on stump care and bandaging. • Prosthesis Prescription and Training		
9.	**Traction**	2 hr	2 hrs
	• Effect, Types, Modes, Indications, Contraindications, Dosage	2 hrs	
10.	**Spinal conditions**	2 hr	12 hrs
	PT assessment, aims, and management and home program of the following conditions • Cervical spondylosis • Lumbar spondylosis • Intervertebral disc prolapse • Spinal canal stenosis • Spondylolisthesis • Spondylolysis • Coccydynia		

11.	**Shoulder joint**	5 hrs	10 hrs
	• TOS • RSD • Shoulder instabilities • Periarthritis Shoulder • Rotator cuff Tears : Conservative and Post-Surgical PT Management • Impingement syndrome (Supraspinatus and Bicipital tendonitis) - conservative and Post operative (sub-acromial decompression) PT management. • AC joint injuries- rehabilitation.		
12.	**Elbow and forearm**	1 hr	5 hrs
	a. Tennis and Golfer's elbow		
13.	**Wrist and Hand**	3 hrs	5 hrs
	• Wrist sprains. • Dequervain's Tenosynovitis. • Trigger and Mallet finger • Repair of ruptured Flexor and Extensor tendons: Post operative PT management • Carpal tunnel syndrome. • Hand injury- types and their management		
14.	**Hip**	2 hrs	5 hrs
	• Joint surgeries - hemi and total hip replacement- Post operative PT management		
15.	**Knee**	6 hrs	12 hrs
	• ACL, PCL and MCL reconstruction surgeries - Post operative rehabilitation. • Meniscectomy and meniscal repair - Post operative management. • Pre patellar and Subacromial bursitis. • Anterior Knee pain : PFPS, Plica syndrome, patellar dysfunction and Hoffa's syndrome etc. - conservative management. • TKR- rehabilitation protocol. • Patellar tendon ruptures and Patellectomy- rehabilitation.		
16.	**Ankle and foot**	4 hrs	5 hrs
	• Ankle instability: Lateral ligament sprain of ankle • Ligamentous tears- Post operative management. • TA rupture. • Plantar fasciitis, metatarsalgia, hammer toe, turf toe		
17.	**Hamstring strains & Quadriceps contusion**	1 hr	1 hr
18.	• PT Management for • Sacro-iliac joint dysfunction • Sacralisation • Lumbarisation,	2 hr	

19.	**Orthopedic surgeries**	1 hr	1 hr
	Pre and post operative PT assessment, goals, precautions and PT management of following surgeries such as: • Arthrodesis • Osteotomy		
20.	**Nice to know** **1.** Total shoulder replacement and Hemi replacement: Post operative PT management **2.** Excision of radial head - Post operative PT management **3.** Radiological positions, angle calculations for Orthopaedic problems by X ray **4.** Biomechanics of Internal fixators & implants. **5.** Physiotherapy Management for Tumours of the bone.	 1hr 1 hr 1 hr 1 hr 1 hr	

Reference Books

Sr.No.	Title
1	Orthopedic Physical therapy – by Donatelli.
2	Manual mobilization of extremity joints – by Freddy Kaltenborn, Maitland.
3	Neural tissue mobilization – Butler
4	Textbook of Orthopaedic Medicine – By James Cyriax.
5	Outline of orthopedics – Adams Hamblen
6	Taping Techniques – by Rose Mac Donald.
7	Physical Rehabilitation Assessment and Treament – O'Sullivan Schmitz

SCHEME OF EXAMINATION

Written		Total	Practical		Total
IA	Final exam	Final exam	IA	Final exam	Final exam
20	80	100	20	80	100

Periodical Examination:

- Written Examination:-20 MCQ for 20 marks, 20 minutes.
- Practical Examination:- 20 marks

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

Sec A	MCQ	20x1=20 marks
Sec B	1. Short Notes - Answer any 5 out of 6 2. Short answer questions - Answer any 3 out of 4	5x3=15 marks 2x5=15 marks
Sec C	3. Long Answer Question(Compulsory) 4. Long Answer Question(Answer any 1 out of 2)	1x15=15 marks 1x15=15 marks

- **Practical Examination (80 marks)**

S.No.		Marks
1	1. Long Case: based on the History 10 marks, Evaluation 10 marks, Treatment Plan on Patient 20 marks	40 Marks
	2. Short Case: Simulated	20 Marks
	3. Five spots: spots based on, X – ray (limb, spine), Orthosis, Prosthesis, Metal implants etc 3 minutes each spot and 3marks per spot (3x5) +Journal(5)	15+5=20 Marks

- **<u>Supervised Clinical Training :Journal (05 marks)</u>**

  All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination.

Internal Assessment Marks

Theory /Practical:-

Periodical exam = 20 marks

Prelim exam = 80 marks

Total = 100 marks

The total shall be Converted to 20 marks (100/5=20)

Course Title :- Physiotherapy in Community Based Rehabilitation
Course Code:- PT 702

Course Credit for Physiotherapy in Community based Rehabilitation

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
64	96	96	256	4	6	6	16	4	3	2	9	20	80	100	20	80	100

Learning Objectives:

At the end of the course the candidate will:

1. Be able to describe:
   - The general concepts about health, disease and physical fitness.
   - Physiology of aging process and its influence on physical fitness.
   - National policies for the rehabilitation of disabled – role of PT.
   - The strategies to access prevalence and incidence of various conditions responsible for increasing morbidity in the specific community – role of PT in improving morbidity, expected clinical and functional recovery, reasons for non-compliance in specific community environment solution for the same.
   - The evaluation of disability and planning for prevention and rehabilitation.
   - Community Based Rehabilitation in urban and rural set up.
2. Be able to identify with clinical reasoning the prevailing contextual (e.g. environmental and psycho-social cultural}factors, causing high risk responsible for various dysfunctions and morbidity related to sedentary life style and specific community like women, children, aged as well as industrial workers and describe planning strategies of interventional policies to combat such problems.
3. Be able to conduct as small project {cross sectional study /survey} to access to the prevalence of specific physical health problem and /or morbidity in specific community – which may be based at the institutional level or in field.

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1.	**Women's Health: -**	1.	25 hrs
	• Introduction to Woman's Health and Anatomy of pelvic floor. • Anatomical and physiological variations associated with pregnancy and menopause. • Antenatal, perinatal and postnatal physiotherapy and PT advice on labor positions, pain relief and PT Management of various problems faced in this period • Uro-genital dysfunctions: Infections, prolapse, Polycystic Ovarian Disease, incontinence and their therapeutic interventions. • Common Gynecological surgeries and role of physiotherapy		

	• Physical fitness in women during pregnancy & menopause. • Radical mastectomy and therapeutic intervention. **Desirable to Know** – • Social issues having impact on Physical function. **Nice to know –** • Legal rights & benefits for women.		
2.	**Geriatrics: -**	2.	25 hrs
	• Theories of Aging. • Anatomical and Physiological changes of aging in - ➢ Musculoskeletal system. ➢ CNS. ➢ CVS. ➢ RS. ➢ Metabolic, Endocrine, Immune System • Assessment in geriatrics. • Role of physiotherapy in geriatrics fitness (Institutionalized & Community dwelling elders), Role of PT in: Half-way homes, Residential Homes, Meals on wheels, Home for the aged, etc. • Falls and its prevention in Geriatrics. • Rehabilitation for Parkinson's disease, Alzheimer's, Dementia, Incontinence, stroke etc. • Ethics, Legal Rights and benefits for geriatric Rehabilitation		
3.	**Industrial Health**	3.	25 hrs
	I – Ability Assessment • Job description • Job demand analysis • Task analysis • Ergonomic evaluation • Injury prevention • Employee fitness programme II – Disability management – • Acute case • Concept of functional capacity assessment • Work conditioning • Work hardening III – Environmental stress in the industrial area a. Occupational Hazards: • Physical agents- Heat, cold, light, noise, Vibration, U.V. radiation, Ionizing radiation, • Chemical agents-Inhalation, local action & ingestion, • Mechanical hazards- overuse, fatigue.		

	• Psychological hazards – monotonic, dissatisfaction in job, anxiety of work completion with quality, mechanical stress in various occupations for eg. ➢ Sedentary table work –eg. in executives, clerk, ➢ Inappropriate seating arrangement- eg. vehicle drivers ➢ Constant standing- eg. watchman, Defense forces, surgeons, ➢ Over- eg. exertion in laborers. ➢ Biological Hazards • Role of P.T. in industrial set up & Stress management with relaxation mode. • Vocational Training and Rehabilitation Industrial Laws: Legal Right and benefits		
4.	**Fitness & Health Promotion**	4.	21 hrs
	• Physiological effects of aerobic and anaerobic exercise. • Assessment of Fitness • Fitness training and clinical reasoning for advocating aerobic exercise as preventive measures in special population: ➢ Elderly, Women, Children ➢ Obesity, Diabetes Mellitus, Renal Failure ➢ Hypertension • De-conditioning effects of prolonged bed rest. • Exercise Testing & Prescription		
5.	**Community Health**	5.	
	• WHO definition of health & disease, Health care delivery system – 3 tier Syste -- - *Rehabilitation: definition, types and Team * Community: Definition, Community based approach, * Community entry strategies, Community initiated v/s Community oriented programme • Introduction to CBR: Definition, Historical review, Concept, Need, Objectives, Scope, Members, Models • CBR strategies in Health Promotion Urban area – ➢ UHC – Community centre, clubs, ➢ mahila mandals, social centers. ➢ Schools, Industries, Sport centers. Rural area by using PHC, rural hospital, district hospital. • Principles of CBR, Difference between Community v/s Institutional Based Rehabilitation, Extension services and mobile units: Introduction, Need, Camp approach • Planning and management of CBR programme • Disaster management and role of PT • Disability **:** Evaluation, types & prevention & role of physiotherapy		

	• National policies for rehabilitation of disabled, Architectural barriers for disabled and their modification		

6	**Solidarity and cooperation (2hrs)**
	• Solidarity in health care & Physiotherapy
	• Ethical perspective
	  o Solidarity as instrumental value
	  o Solidarity as moral value
	• Threats to solidarity in present-day societies		

7.	**Social responsibility and health, Sharing of benefits**
	• Highest attainable standard of health as a fundamental human right
	  o Universal Declaration of Human Rights
	  o WHO Constitution
	  o Duty, obligation and responsibility physiotherapists for Highest attainable standard of health as a fundamental human right
	  o Responsibilities for governments and various sectors of society
	  o Health and contemporary challenges to global justice
	  ▪ Access to essential health services
	  ▪ The protection of vulnerable populations
	  ▪ Providing health care services across national boundaries
	• Sharing of benefits
	  o Models of benefit-sharing agreements
	  ▪ Fair and equitable options for research subjects
	  ▪ Biopiracy and fair sharing of benefits of genetic resources
	  ▪ Patents and intellectual property
	  ▪ Valid options for promoting fair and equitable access to new diagnostic and therapeutic modalities or to products stemming from them
	  o Integration of capacity-building components to externally funded research and other initiative		

Text Books

S.NO	Title
1	Physiotherapy in Gynaecological &Obstetrical conditions – by Poldon – Jaypee
2	Text book of Work Physiology - Astrand P A Rodahe K
3	Therapeutic Exercise – By Kisner & Colby.
4	Text book of community medicine &Community Health – by Bhaskar Rao.
5	Geriatrics Physiotherapy – By Andrew Guccione.
6	Industrial Therapy – by Glenda Key
7	Preventive &Social Medicine –by Park

Reference Books

S.NO	Title
1	Mural K F –Ergonomics: Man in his working environment
2	Exercise Physiology-by Mc 'Ardle.
3	Musculoskeletal Disorders in work place: Principle &Practice-by Nordin Andersons pope.
4	Indian Social Problem Vol 2 – by G R Madan.
5	Disability 2000 - RCI.
6	Legal Rights of disabled in India-by Gautam Bannerjee.
7	ICF –WHO Health Organisation 2001 publication.

SCHEME OF EXAMINATION

Written		Total	Practical		Total
IA	Final exam	Final exam	IA	Final exam	Final exam
20	80	100	20	80	100

Periodical Examination:

- Written Examination:-20 MCQ for 20 marks, 20 minutes.
- Practical Examination:- 20 marks

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

Sec A	MCQ	20x1=20 marks
Sec B	1. Short Notes - Answer any 5 out of 6 2. Short answer questions - Answer any 3 out of 4	5x3=15 marks 2x5=15 marks
Sec C	1. Long Answer Question(Compulsory) 2. 4. Long Answer Question(Answer any 1 out of 2)	1x15=15 marks 1x15=15 marks

- **Practical Examination (80 marks)**

S.No.		Marks
1	1.Long Case: Women's health/Geriatric/Industrial health/health promotion 2.Short Case: Simulated 3.Spots + Journal	40 Marks 20 Marks 15 + 5 = 20 M.

- **<u>SUPERVISED PRACTICAL TRAINING:</u>**
  - Case Presentation & Documentation: = 5 marks

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination

Internal Assessment Marks

Theory/ Practical :-

Periodical exam = 20 marks

Prelim exam = 80 marks

Total = 100 marks

The total shall be Converted to 20 marks (100/5=20)

Course Title :- Physiotherapy in Paediatric Conditions
Course Code:- PT 703 A

Course Credit for Physiotherapy in Paediatric Conditions

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
64	64	96	160	2	2	6	10	2	1	2	5	10	40	50	10	40	50

Learning Objectives:

1.Acquire the knowledge of normal neurodevelopment, with specific reference to Locomotion
2.Embryology of nervous system, Embryology of cardiovascular, pulmonary & musculoskeletal system , Developmental &congenital anomalies, Deformities of vertebral column, deformities of chest wall

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1.	Embryology of nervous system, Embryology of cardiovascular, pulmonary & musculoskeletal system , Developmental deformities &congenital anomalies, Deformities of vertebral column, deformities of chest wall	2 hrs	--
2.	Congenital dislocation of hip ,CTEV, vertical talus, Blount disease, Perthe's disease, slipped capital femoral epiphysis, limb length discrepancies and Osteogenesis Imperfecta.	4 hrs	2 hrs
3.	Traumatic injuries in child – fractures, dislocations, epiphyseal injuries	2 hrs	2 hrs
4.	Assessment of Reflex & Reactions	1 hr	2 hrs
5.	Cerebral palsy -assessment & management with approaches, Roods, Vojta, Sensory integration, N.D.T	3 hrs	10 hrs
6.	Attention deficit Hyperactive disorder, Autism	1 hr	1 hr
7.	Gravitational insecurity, Mental retardation, Epilepsy	2 hrs	2 hrs
8.	Genetic disorder – Down's syndrome, Marfan's syndrome	1 hr	
9..	Movement disorder – Chorea, Athetosis, Dystonia, Choreoathetosis, Ataxia	1 hr	2 hrs
10.	Disorder of muscle – Muscular dystrophy (Duchenne's, Becker's, Limb girdle, Facio-scapulohumeral, Spinal muscular atrophy)	3 hrs	2 hrs
11.	Developmental anomalies – Spina bifida, hydrocephalus, cranio-vertebral junction anomalies	2 hrs	4 hrs
12.	Traumatic head injury	2 hrs	1 hr
13.	Neonatal ICU, Paediatric ICU, Complications of low birth Weight	2 hrs	2 hrs
14..	Anatomical & physiological differences of cardio-vascular & respiratory system in neonates, childhood & adults	1 hr	
15.	Fetal circulation ,.Congenital heart disease – pathodynamics, clinical presentation, investigation, medico-surgical & physiotherapy management of cyanotic & acyanotic heart disease , Rheumatic heart disease	2 hrs	1 hr
16.	Respiratory disorder in childhood – IRDS, Bronchopulmonary dysplasia, pneumonia, lung abscess, asthma, cystic fibrosis, bronchitis, bronchiectasis, bronchiolitis, pertusis, CROUP, epiglotitis, chronic lung disease, primary ciliary dyskinesia, fatigue, sleep apnoea, hyperventilation syndrome	2 hrs	1 hr
17.	Role of Orthotics in Paediatric conditions.	1 hr	--

Text Books

S.NO	Title
1	Paediatric physical Therapy- Stephen Tecklin
2	Physical therapy for children –Campbell
3	Nelson Textbook of Paediatrics
4	Handbook of Paediatric physical therapy-Toby M Long

SCHEME OF EXAMINATION

Written		Total	Practical		Total
IA	Final exam	Final exam	IA	Final exam	Final exam
10	40	50	10	40	50

Periodical Examination:

- Written Examination:-20 MCQ for 10marks, 20 minutes.
- Practical Examination:- 10 marks

Preliminary Examination / University (Final) Examination

(10 marks internals & 40 marks University exam)

- **Written Examination (40 marks)**

Sec A	MCQ	10x1=10 marks
Sec B	1.Short Notes - Answer any 5 out of 6 2.Short answer questions - Answer any 2 out of 3 3. Long Answer Question(Answer any 1 out of 2)	5x2=10 marks 2x5=10 marks 1x10=10 marks

- **Practical Examination (40 marks)**

S.No.		Marks
1	1. Long Case: based on the History 5 marks, Evaluation 5 marks, Treatment Plan on Patient 15 marks 2. Short Case: Simulated + Journal	25 Marks 10+5 =15 Marks

- **<u>SUPERVISED PRACTICAL TRAINING:</u>** Journal=5 marks

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination

Internal Assessment Marks

Theory/Practical :-

Periodical exam = 10 marks

Prelim exam = 40 marks

Total = 50 marks

The total shall be Converted to 10 marks (50/5=10)

Course Title :- Physiotherapy in Manual Therapy
Course Code:- PT 703 B

Course Credit for Physiotherapy in Manual Therapy

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
64	64	96	160	2	2	6	10	2	1	2	5	10	40	50	10	40	50

Learning Objectives:

At the end of the course, the candidate will –

1. Acquire the knowledge and skill of various approaches of Manual therapy for joints of the limbs/spine.
2. Be able to integrate the manual therapies to rehabilitate the Mechanical Neuro-Muscular problems.
3. Be able to impart knowledge and train the undergraduate in Manual Therapy.

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1.	Introduction to Manual Therapy. Definition and Terminolgies	1 hr	
2.	History of Manual Therapy	1 hr	
3.	Subjective and Objective Assessment of Pain	3 hrs	2 hrs
4.	Basic principles, Indications & Contra-Indications of Maitland's school of thought	3 hr	4 hrs
5.	Basic principles, Indications & Contra-Indications of Kaltenborn's Technique	2 hrs	4 hrs
6.	Basic principles, Indications & Contra-Indications of Mulligan's concept	3 hrs	4 hrs
7.	Basic principles, Indications & Contra-Indications of Mckenzie's Mechanica Diagnosis and Treatment (MDT)	3 hrs	3 hrs
8.	Basic principles, Indications & Contra-Indications of Butler's neural mobilization	3 hrs	4 hrs
9.	Basic principles, Indications & Contra-Indications of Neurodynamic Testing	3 hrs	4 hrs
10.	Basic principles, Indications & Contra-Indications of Muscle Energy Technique	2 hrs	3 hrs
11.	Basic principles, Indications & Contra-Indications of Myofascial Release Technique	3 hrs	3 hrs
12.	Basic principles, Indications & Contra-Indications of Cyriax's concept	1 hr	3 hrs
13.	Introduction to osteopathy	1 hr	
14.	Introduction to Chiropractics	1 hr	
15.	Introduction to Cranio-sacral Therapy	1 hr	2 hrs
16.	Introduction to Clinical Reasoning	1 hr	

Text Books

Sr.No.	Title
1	Maitlands book on Manual therapy
2	Orthopaedic Physical examination – by Magee
3	Mobilization methods – Kaltonborn
4	Cyriax Mobilisation

SCHEME OF EXAMINATION

Written		Total	Practical		Total
IA	Final exam	Final exam	IA	Final exam	Final exam
10	40	50	10	40	50

Periodical Examination:

- Written Examination:-20 MCQ for 10 marks, 10 minutes.
- Practical Examination:- 10 marks

Preliminary Examination / University (Final) Examination

(10 marks internals & 40 marks University exam)

- **Written Examination (40 marks)**

Sec A	MCQ	10x1=10 marks
Sec B	1.Short Notes - Answer any 5 out of 6 2.Short answer questions - Answer any 2 out of 3 3. Long Answer Question(Answer any 1 out of 2	5x2=10 marks 2x5=10 marks 1x10=10 marks

- **Practical Examination (40 marks)**

S.No.		Marks
1	1. Long Case (based on the History 10 marks, Evaluation 15 marks, Treatment Plan on Patient) 2. Short Case: Simulated + Journal	25 Marks 10 +5 =15 Marks

- **<u>SUPERVISED PRACTICAL TRAINING:</u>** Journal=5 marks

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination

Internal Assessment Marks

Theory/Practical :-

Periodical exam = 10 marks

Prelim exam = 40 marks

Total = 50 marks

The total shall be Converted to 10 marks (50/5=10)

SEMESTER – VIII

Course Code	Course Title	Hours			
		Th	Pr	SCT	Total
PT-801	Physiotherapy in Neurosciences	64	96	96	256
PT-802	Physiotherapy in Cardiorespiratory and General Conditions	64	96	96	256
PT-803	Choice based course(Sports Physiotherapy/Hand Conditions)	32	32	96	160
	Total	160	224	288	672

Th: Theory, Pr: Practical, Tot: Total, Lec: Lecture Demonstration/Tutorial/Discussion, IA: Internal Assessment

Course Title :- Physiotherapy in Neurosciences
Course Code:- PT 801

Course Credit for Physiotherapy in Neurosciences

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
64	96	96	256	4	6	6	16	4	3	2	9	20	80	100	20	80	100

Learning Objectives:

At the end of the course, the candidate will –

1. Acquire the knowledge of normal neurodevelopment, with specific reference to
2. locomotion
3. 2.Be able to assess, identify & analyze Neuro-motor & psychosomatic dysfunction in
4. terms of alteration in the muscle tone, power, coordination, involuntary movements
5. Sensations/perception etc, E.M.G./ N.C. Studies & arrive at functional diagnosis with clinical reasoning.
6. Acquire the skills of application of P.N.F. technique on patients.
7. Be able to plan, prescribe & execute short term & long term treatment, with special reference to relief of Neuropathic & psycho-somatic pain, mat exercises, functional re-education, gait training, postural & functional training for A.D.L., ergonomic
8. Advice, & parents education in Neuro-pediatric care.
9. Be able to prescribe appropriate Orthosis / splints & will be able to fabricate
10. Temporary protective & functional splints.

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1	Structure and function of Nervous System	1	-
2	Theories of motor control & motor learning	1	-
3	Neurological Assessment • Assessment of Higher mental functions,Cranial Nerves, • Sensory system, Motor system,Reflexes,Co-ordination,	5	3 3

	• Balance, functional abilities, neuropathic pain and investigaton.		3
4	Understanding sensory system & Organization of sensory strategies for efficient motor output.	1	1
5	Skills of sensory – motor learning & Neuro-muscular skeletal training	1	**3**
6	Application of skills of Co-ordination & Balancing exercises by using techniques based on Neuro-physiological principles	1	3
7	Application of transfer & functional re-education exercises-Postural exercises, & Neurological Gait Assessment and management/ training	1	4
8	Principles of Application of Neuro therapeutic skills like PNF, NDT, Brunnstrom & Rood 's approaches.	2	5
9	Principles and methods of using tools of Therapeutic gymnasium such as Vestibular ball, tilt board, bolsters, etc. in neurological conditions	1	3
10	Evaluation & physiotherapy assessment with appropriate reasoning for planning & implementation of treatment technique for following neurological conditions: i. Cerebrovascular Accidents: • Hemiplegia, • Disorders of cerebral circulation • Space occupying lesions ii. Disorders of spinal cord • Spinal Cord Injury • Syringomyelia, • Transverse myelitis • Sub-acute combined degeneration of spinal cord iii. Traumatic Head Injury iv. Infections of Nervous System • Meningitis • Encephalitis • Neurosyphilis • Tabes dorsalis • Poliomyelitis and Post Polio Residual Paralysis • Leprosy v. Demyelinating diseases of the nervous system • Multiple sclerosis vi. Lesions of Extra-pyramidal system & Basal ganglia • Parkinson's Disease • Spasmodic torticolis	2 2 2 2 1 2	5 5 2 3 2 4

	• Athetosis,Chorea & Dystonia vii. Degenerative disorders • Motor Neuron Diseases • Hereditary Ataxia • Peroneal muscle atrophy, S.M.A viii. Disorders of Peripheral nerves • Traumatic Nerve Injury, Tumors, • Infective & Metabolic lesions of nerves ix. Disorders of muscles and neuromuscular junction • Muscular Dystrophies • Myasthenia Gravis & myasthenia syndrome x. Polyneuropathy • Classification of Polyneuropathies • GBS, Diabetic and Alcoholic Neuropathy xi.Cerebellar & Co-ordination disorders • Congenital Ataxia • Friedrich's Ataxia **Paediatric Neurology** a) Developmental milestones and Developmental reflexes b) Neuro developmental screening tests c) Evaluation & Management : • Observation, Palpation, Milestone Examination, developmental reflex Examination, • Higher mental function, Cranial nerve examination, Motor & Sensory examination, Reflex testing, • Differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, • List of Problems & Complications, Short & Long Term goals d) Use of various Neurophysiological approaches & Modalities in • High Risk babies • Minimum brain damage • Developmental disorders • Cerebral palsy • Autism • Down's Syndrome • Hydrocephalus • Spina bifida and spinal dysraphism	2 2 2 2 2 2 3 2 10	2 3 2 4 4 4 4 6 - - 12

11	**Protecting future generations, Protection of the environment** ▪ Why care about the future? Contexts of concern ▪ The scope and limits of future related responsibilities Intergenerational; distant generations, all unborn generations? ▪ Obligations over health care providers to the possible people of the future? ▪ Health care and future generations ▪ The relation of bioethics and environmental issues ▪ Basic principles of environmental ethics i. environmental justice ii. intergenerational justice iii. respect for nature	2	
	DESIRABLE TO KNOW		
1	Parent / care takers education about handling of a paralytic patient	1	2
2	Lifting techniques, Wheel chair modifications & adaptive devices	1	4
3	Disorders of autonomic nervous system	2	
	NICE TO KNOW		
1	Embryology of nervous system	2	
2	Psycho-somatic Pain & Paralysis.	1	
3	Fabrication of temporary splints during urgent requirement with clinical reasoning	2	
4	Developing a philosophy for caring.	1	
	CLINICAL		
	Evaluation & treatment planning; its presentation & documentation of minimum ten cases in following: • U.M.N. lesion • L.M.N. lesion, • Paediatric Neuro case		

Text Books

Sr.No.	Title
1	Cash's Text book for Physio Therapists in Neurological disorders --Jaypee brothers Publication
2	Practical Physical therapy by Margaret Hollis
3	Therapeutic Exercise by Carolyn Kisner & Colby
4	Physical Rehabilitation by Susan. B.O` Sullivan
5	Tidy's Physiotherapy by Stuart Porter
6	Neurological Rehabilitation by Darcy Umphred
7	"Right in the middle of stroke" by Patricia Davis

Reference Books

Sr.No.	Title
1	Therapeutic exercise by Basmajiian-5th edn.
2	Physical Rehabilitation by Krusen
3	Brain`s disorders of Nervous system

SCHEME OF EXAMINATION

Written		Total	Practical		Total
IA	Final exam	Final exam	IA	Final exam	Final exam
20	80	100	20	80	100

Term Examination:

- Written Examination:-20 MCQ for 20 marks, 20 minutes.
- Practical Examination:- 20 marks

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

Sec A	1.MCQ	20x1=20 marks
Sec B	2.Short Notes - Answer any 5 out of 6 3.Short answer questions - Answer any 2 out of 3	5x3=15 marks 3x5=15 marks
Sec C	4. Long Answer Questions (compulsory) 5. Long Answer Questions –any 1 out of 2	1X15=15marks 1X15=15marks

- **Practical Examination (80 marks)**

S.No.		Marks
1.	Long case History Evaluation Treatment Plan on patient	 5 marks 15 marks 20 marks
2.	Short case	20 marks
3.	Five spots: - Spots based on EMG/NCV Studies Orthosis/Prosthesis Neuro-assessment scale (3 minute & 3Marks each spot) Journal	3x5=15 5 marks

- **<u>SUPERVISED PRACTICAL TRAINING:</u>** Journal=5 marks

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination

Internal Assessment Marks

Theory/Practical :-

Periodical exam	= 20 marks
Prelim exam	= 80 marks
Total	= 100 marks

The total shall be Converted to 20 marks (100/5=20)

Course Title :- Physiotherapy in Cardio-respiratory and General Conditions Course Code:- PT 802																	
Course Credit for Physiotherapy in Cardio-respiratory and General Conditions																	
Hours				**Hrs/Wk**				**Credits**				**Evaluation Pattern**					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
64	96	96	256	4	6	6	16	4	3	2	9	20	80	100	20	80	100

Learning Objectives:

At the end of the course, the candidate will -

1. Identify, discuss & analyze cardio-vascular & pulmonary dysfunction, based on Patho-physiological principles, & arrive at the appropriate functional diagnosis,
2. Acquire knowledge of rationale of basic investigative approaches in the medical system, &surgical intervention regimes related to cardio-vascular & pulmonary impairment.
3. Acquire the skill of evaluation & interpretation of functional capacity, using simple exercise tolerance tests, such as 6 minutes walk test, symptom limited test.
4. Be able to select strategies for cure, care & prevention; adopt restorative & rehabilitative measures for maximum possible functional independence of a patient at home, work place & in community.
5. Be able to execute the effective Physio Therapeutic measures [with appropriate clinical reasoning] with special emphasis to Breathing retraining, nebulization, humidification, bronchial hygiene, General mobilization, & Exercise conditioning.
6. Acquire knowledge of the overview of patients` care at the Intensive care area, artificial ventilation suctioning, positioning for bronchial hygiene, & continuous monitoring of the patient at the Intensive care area.
7. Acquire the skill of basic Cardio – pulmonary resuscitation.
8. Be able to execute the effective Physio therapeutic measures with appropriate clinical reasoning to improve general surgical & medical condition.

Course Content – (section A/B/C if applicable)

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1	Assessment of Cardio-Vascular and Respiratory system.	2	3
2	Anatomical and Physiological differences between the Adult and Paediatric lungs	1	
3	Interpretation of radiological & Biochemical Investigations & correlate the same with clinical findings.	2	3
4	Functional diagnosis of cardio respiratory dysfunction (ECG, PFT, serum enzymes, ABG)	3	3
5	Physiotherapy techniques to increase lung volume • Positioning and Mobilization • Breathing exercises • NeurophysiologicalFacilitation of Respiration • Mechanical aids –Incentive Spirometry, CPAP, IPPB	3	3

6	Physiotherapy techniques to decrease work of breathing • Energy Conservation • Positioning • Breathing re-education – Breathing control techniques • Mechanical aids – IPPB, CPAP, BiPAP	2	3
7	Physiotherapy techniques to clear secretions • Hydration, Humidification & Nebulisation, • Mobilisation and Breathing exercises • Postural Drainage • Manual techniques – Percussion, Vibration and Shaking, Rib Springing, ACBT, Autogenic Drainage • Mechanical Aids – PEP, Flutter, Acapella, RC Cornet, IPPB • Facilitation of Cough and Huff • Suctioning	5	8
8	Drug Therapy	1	-
9	Patterns of Lung Disorders & their PT Management	5	5
10	Physiotherapy following Lung Surgeries	2	5
11	Pulmonary Rehabilitation	2	3
12	Intensive care unit a. Assessment of the critically ill patients b. Monitoring in the ICU c. Physiotherapy in the ICU – Common conditionsin the ICU – Head Injury, Pulmonary Oedema, Multiple Organ Failure, Neuromuscular Disease, Poisoning, Aspiration, ARDS, Shock etc d. Dealing with Emergency situations in ICU NICU / PICU treatment & rehabilitation.	5	15
13	O_2 therapy and Mechanical Ventilation	3	3
14	Physiotherapy management for cardiac disorders	3	5
15	Physiotherapy for Cardiac Surgeries (including Critical Cardiac Care)	3	5
16	Cardiac Rehabilitation	1	3
17	Cardio-pulmonary resuscitation.	2	2
18	Physiotherapy intervention in the management of Medical and Surgical Oncology Cases	3	3
19	PT Management of Abdominal Surgeries	2	4
20	Prescription of home program & ergonomic advice & parent's education in case of paediatric cases with reference to energy cost.	1	2
21	Assessment PT Management following Peripheral vascular diseases.	2	4
22	Management of wounds and ulcers, Diabetes and its complications	2	4

	• Care, electrotherapeutic measures • Care of surgical scars-U.V.R and other electro therapeutics for healing of wounds, prevention of Hypergranulated Scars,Keloids, • Electrotherapeutics measures for relief of pain during mobilization of scars tissues		
23	Burns management Role of physiotherapy in the management of burns, Post grafted cases Mobilization and Musculoskeletal restorative exercises following burns	2	2
24	Treatment of Lymphoedema	1	
25	Physiotherapy in dermatology • U.V.R therapy in various skin conditions; Vitiligo; Hair loss; Pigmentation; Infected wounds ulcers. • Faradic foot bath for Hyperhydrosis. • Care of anesthetic hand and foot	2	4
	DESIRABLE TO KNOW		
1	Cardiorespiratory changes associated with ageing & fitness programme.	1	2
2	Familiarization with concept of Quality of life	1	1
3	Precautions with HIV	1	
	NICE TO KNOW		
	Outcome Measures in Cardio-vascular & Pulmonary Conditions	1	1
	CLINICAL		
1	Skill to palpate all pulses, rhythm, rate, volume & Heart rate/pulse rate discrepancy		
2	Skill to assess B.P. at various sites, & its Physiological variation, & to assess Ankle- Brachial Index		
3	Skill of exercise testing- a]-6/12 min walk, b]-symptom limited		
4	Interpretation of a tread mill & Ergo-cycle test findings b. ECG.-,I.H.D. & Blocks, c. Biochemical analysis-serum enzymes, C.P.K levels,L.D.H., S.G.O.T., S.G.P.T., Troponin T, Lipid profile, electrolyte balance d. Chest X-ray- , e. P.F.T.-obstructive/ restrictive/reversibility, f. A.B.G.- g. R.P.E.-Borge`s scale h. Quality of life questionnaires		

5	Evaluation & treatment planning, presentation & documentation of **TEN** cases • Medical Respiratory condition • Paediatric respiratory condition • Thoracic Surgical condition, • Cardiac Medical condition • Cardiac Surgical condition • Peripheral vascular disorders • Abdominal surgical condition • h. Mastectomy / Amputation		

Text Books

Sr.No.	Title
1	Cash`s Text book for Physiotherapists in Chest, Heart & Vascular diseases- Jaypee bros. Publication
2	Cash`s text book in General Medical & Surgical conditions for Physio therapists
3	Chest Physical therapy & Pulmonary rehabilitation-by Donna Frownfilter
4	Brompton`s hospital guide
5	Physical Rehabilitation - O'sullivan

Reference Books

Sr.No.	Title
1	Physio Therapy in Cardio- Vascular rehabilitation-Webber
2	Exercise & the Heart –Wenger
3	ECG by P.J. Mehta,
4	J. Hampton (Hand book of ECG made easy)
5	Cardiopulmonary Physical therapy by Irwin Scott.
6	Physiotherapy in respiratory care – Alexandra Hough

SCHEME OF EXAMINATION

Written		Total	Practical		Total
IA	Final exam	Final exam	IA	Final exam	Final exam
20	80	100	20	80	100

Periodical Examination:

- Written Examination:-20 MCQ for 20marks , 20 minutes.
- Practical Examination:- 20 marks

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

Sec A	1.MCQ	20x1=20 marks
Sec B	2.Short Notes - Answer any 5 out of 6 3.Short answer questions - Answer any 2 out of 3	5x3=15 marks 3x5=15 marks
Sec C	4. Long Answer Questions (compulsory) 5. Long Answer Questions –any 1 out of 2	1X15=15marks 1X15=15marks

- **Practical Examination (80 marks)**

S.No.		**Marks**
1.	Long case History(5),Evaluation(15),Treatment Plan on patient(20)	40
2.	Short case	20
3.	Five spots + journal 5 Spots based on ABG/X -ray/ECG/PFT/RPE/Bruce, protocol etc. 3 minute each spot 3x5=15	15+5=20

- **SUPERVISED PRACTICAL TRAINING:** Journal=5 marks

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination

Internal Assessment Marks

Theory/Practical :-

Periodical exam = 20 marks

Prelim exam = 80 marks

Total = 100 marks

The total shall be Converted to 20 marks (100/5=20)

Course Title :- CHOICE BASED COURSE- PHYSIOTHERAPY IN SPORTS
Course Code:- PT 803A

Course Credit for CHOICE BASED COURSE- PHYSIOTHERAPY IN SPORTS

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
32	32	96	160	2	2	6	10	2	1	2	5	10	40	50	10	40	50

Learning Objectives:

At the end of the course, the candidate will

1. Be able to identify, discuss & analyse, the Musculo skeletal dysfunction in terms of Biomechanical, Kinesiological and Biophysical basis & co-relate the same with the provisional diagnosis, routine radiological & Electro-physiological investigations and arrive at appropriate functional diagnosis with clinical reasoning for fitness training & rehabilitation.
2. Understand the psychosocial factors, environmental factors & individual factors affecting the performance.
3. Use the anatomical rationale for the clinical tests used in differential diagnosis.
4. Be able to identify, discuss & analyse, the various cardio-respiratory function & co-relate the same with the provisional diagnosis, for fitness training & rehabilitation.
5. Lay down rehabilitation protocol for sports specific injuries focusing an early rehabilitation to injuries.
6. Identify the causes prone for injury & prevent them.
7. Guide participants for a confident sports activity & rehabilitation to attain maximal achievement.
8. Understand the role of Sports physiotherapist in the team.

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1	Training the aerobic and anaerobic energy system	2	-
2	Physiological responses, changes & adaptations to various exercises - aerobic exercises & anaerobic exercises in Pulmonary, Cardiovascular, Neuromuscular system, Hormones	2	-
3	Detraining effects of cardiovascular, musculoskeletal and nervous system	2	-
4	Sports specific training and cross training.	2	-

5	**Musculoskeletal injuries** • Pre–participation examination • Causes & Mechanism of Sports Injuries, prevention of sports injuries to various structures. • Common acute, chronic and overuse injuries in various sports at: ➢ Shoulder girdle, Shoulder, Arm, Elbow, Forearm, Wrist & hand ➢ Pelvis, hip, thigh, knee, leg, ankle & foot ➢ Spine ➢ Head ➢ Thoracic cage and abdomen ➢ vi.Peripheral nerve injuries, injuries to muscles, ligament, tendon, bone, synovial joint structure(with physiological response to injury)	2 2 6	- - -
6	**Cardiopulmonary section**	6	-
	• Sporting emergencies & first aid		
	• Cardio pulmonary Resuscitation; Shock management, Internal and External bleeding, Splinting, Stretcher use–Handling and transfer, Management of Cardiac arrest, Acute asthma, epilepsy, drowning, burn, Medical management of mass participation. Heat stroke and Heat illness.		
7	**Various Body measurements**: Gross size and mass, length and height measurement, circumference of body parts, Skinfold thickness measurements	3	-
8	**Body composition** • Different Body composition • Various methods to estimate body composition : water displacement method, under water weighing method, skinfold method, surface anthropometry, bioelectrical impedence analysis, ultrasound assessment of fat, arm X-ray assessment of fat, CT assessment of fat	3	-
9	Electrotherapy in sports injuries	2	-
	PRACTICALS		
1	Taping		2
2	On field Assessment		2
3	Evaluation of Physical Fitness:Assesement of strength,power, endurance (muscular & cardiac),$VO_{2max,}$ flexibility, reaction time and pulmonary function.		8
4	Assessment of lower limb complex: Pelvis, hip, thigh, knee, leg, ankle and foot		10
5	Assessment of upper limb complex: Shoulder girdle, shoulder, arm, elbow, forearm, wrist and hand		10

Reference Books

Sr.No.	Title
1	Sport and physical therapy – Bernhardt Donna, Churchill Livingstone, London 1995.
2	Bird, S. R., Black, N. Sports Injuries: Causes, Diagnosis, Treatment and Prevention. Cheltenham: Stanley Thomes, 1997 ISBN: 0748731814
3	Brownstein, B. Functional movement in Orthopaedic and Sports Physical Therapy: Evaluation, Treatment and Outcomes.New York; London: Churchill Livingstone, 1997 ISBN: 0443075301
4	Cash, M. Sport and Remedial Massage Therapy.London: Edbury, 1996 ISBN: 0091809568
5	Johnson, R. J. and Lombardo, J (eds.) Current Review of Sports Medicine Philadelphia: Butterworth-Heinemann, 1998 (2nd edition) ISBN: 0750699655
6	Hollis, M. Massage for Therapists. Oxford: Blackwell Science, 1998 (2nd edition) ISBN: 0632047887
7	Hutson, M.A. Sports Injuries, Recognition and Management. Oxford: Oxford University Press, 2001 (3nd edition) ISBN: 0192632728

SCHEME OF EXAMINATION

Written		Total	Practical		Total
IA	Final exam	Final exam	IA	Final exam	Final exam
10	40	50	10	40	50

Term Examination:

- Written Examination:-20 MCQ for 10 marks, 20 minutes.

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

S.No.		Marks
Sec A	MCQ	1x10=10 marks
Sec B	1. Short Notes-Answer any 5 out of 6 2. Short answer questions-Answer any 2 out of 3 3. Long Answer Questions-Answer any 1 out of 2	5x2=10 marks 2x5=10 marks 1x10=10 marks

Practical Examination (40 marks)

S.No.		Marks
1.	Long Case: based on the History 10 marks, Evaluation 10 marks, Treatment Plan on Patient	25 marks
2.	Short Case: Simulated + Journal	10 + 5 = 15 marks

-

- **SUPERVISED PRACTICAL TRAINING:** Journal=5 marks

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination

Internal Assessment Marks
Theory/Practical :-
Periodical exam = 10 marks
Prelim exam = 40 marks
Total = 50 marks
The total shall be Converted to 10 marks (50/5=10)

Course Title :- CHOICE BASED COURSE- PHYSIOTHERAPY IN HAND CONDITIONS
Course Code:- PT 803B

Course Credit for CHOICE BASED COURSE- PHYSIOTHERAPY IN HAND CONDITIONS

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Written		Total	Practical		Total
												IA	Final exam	Final exam	IA	Final exam	Final exam
32	32	96	160	2	2	6	10	2	1	2	5	10	40	50	10	40	50

Learning Objectives:

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

1. Be able to identify, discuss & analyse, the Hand dysfunction in terms of Biomechanical, Kinesiological and Biophysical basis & co-relate the same with the provisional diagnosis, routine radiological & Electro-physiological investigations and arrive at appropriate functional diagnosis with clinical reasoning.
2. Use the anatomical rationale for the clinical tests used in differential diagnosis.
3. Learn the ability to perform an appropriate subjective and physical examination, with development of suitable analytical skills to evaluate data obtained.
4. Further develop clinical reasoning that incorporates theoretical concept with evidence-based practice in the field of Hand rehabilitation.
5. Recognize the implication of dysfunction on the Neuro- Musculoskeletal system on hand function and the student's clinical decision making for rehabilitation.
6. Asses and diagnose all possible findings on the patient to plan a Rehabilitation programme.
7. Lay down rehabilitation protocol for sports specific hand injuries focusing an early rehabilitation to injuries.
8. Identify the causes prone for injury & prevent them.
9. Document patients with scale, out come measures and asses the progression.
10. Use recent Technique/ approaches to treat & train patients with hand dysfunction in children, adults & geriatrics.

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1	General upper extremity examination	1	1
2	Sensory examination of hand	2	1
3	Motor Examination of hand	2	1
4	Functional Evaluation of hand	2	1
5	Outcome measures of hand	2	2
6	PT Management of Flexor tendon injuries	2	2
7	PT Management of Extensor tendon injuries	2	2
8	PT Management of Burnt hand + deformities	2	2
9	PT Management of Arthritic hand + deformities	2	2
10	PT Management of Crush injuries	2	2
11	PT Management of Peripheral Nerve Injuries- median, radial, ulnar, musculocutaneous, axillary	2	2
12	PT Management of Entrapment neuropathies- cubital	2	2

	tunnel,carpal tunnel, supinator tunnel, pronator teres syndrome		
13	PT Management of Brachial Plexus Palsies	2	2
14	PT Management of Fractures of phalanges	1	2
15	PT Management of Complex Regional Pain Syndrome	1	2
16	PT Management of Upper limb Orthosis and training	2	2
17	Preparation of splints using POP, Orthoplast, thermoplastic	2	2
18	Taping for wrist and hand conditions	1	2

Reference Books

Sr.No	Title
1	Rehabilitation of Hand; J.M. Hunter [C.V.Mobsy]
2	The Hand; Fundamental of therapy (2nd edn); Judith Boscheinen Morrin & Victoria Davey [Butter worth Heinemann]
3	Examination of hand & wrist; Tubiana [Mobsy publications]
4	Fundamentals of hand rehabilitation; Salter [Mobsy publications]
5	Concepts of hand rehabilitation [Mobsy publications]

SCHEME OF EXAMINATION

Written		Total	Practical		Total
IA	Final exam	Final exam	IA	Final exam	Final exam
10	40	50	10	40	50

Periodical Examination:

- Written Examination:-20 MCQ for 10 marks, 20 minutes.
- Practical Examination:- 10 marks

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sr.No.		Marks
1	MCQ	1x10=10 marks
2	1. Short Notes-Answer any 5 out of 6 2. Short answer questions-Answer any 2 out of 3 3. Long Answer Questions-Answer any 1 out of 2	5x2=10 marks 2x5=10 marks 1x10=10 marks

- **Practical Examination (40 marks)**

Sr.No.		**Marks**
1.	Long Case: based on the History 5 marks, Evaluation 5 marks, Treatment Plan on Patient 15 marks	20+5=25 marks
2.	Short Case: Simulated + Journal	15 marks

- **SUPERVISED PRACTICAL TRAINING:** Journal=5 marks

All the SPT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the file(s) to the teacher before the examination

Internal Assessment Marks

Theory/Practical :-

Periodical exam	= 10 marks
Prelim exam	= 40 marks
Total	= 50 marks

The total shall be Converted to 10 marks (50/5=10)

Compulsory Rotatory Internship(1092hrs across 26 weeks)

Course Code	Course Title	Hours			
		Th	Pr	Clinical	Total
PT-901	Compulsory Rotatory Internship	-	-	858	858
PT-902	Internship Project	-	-	234	234
	Total	-	-	1092	1092

Course Title :- Compulsory Rotatory Internship
Course Code:- PT 901

Course Credit for Compulsory Rotatory Internship

Hours				Hrs/Wk				Credits				Evaluation Pattern					
												Written		Total	Practical		Total
Th	Pr	Clinic	Tot	Lec	Pr	Clinics	Tot	Lec	Pr	Clinics	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
-	-	858	858	-	-	33	33	-	-	11	11	-	-	-	50	-	50

Course Title :- Internship Project
Course Code:- PT 902

Course Credit for Internship Project

Hours				Hrs/Wk				Credits				Evaluation Pattern					
												Written		Total	Practical		Total
Th	Pr	Clinic	Tot	Lec	Pr	Clinics	Tot	Lec	Pr	Clinics	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
-	-	234	234	-	-	9	9	-	-	3	3	-	-	-	20	30	50

Distribution of internal marks for Compulsory Rotatory Internship

Sr.no	Particulars	Internal marks
1	Case Presentation (5x4=20 cases) i.Musculoskeletal PT ii.Neurophysiotherapy iii.PT in Cardiorespi iv.CBR	20
2	Journal club(02)	10
3	Posters/Wall magazines (02)	10
4	Short term project (01)	10
	Total	50

Distribution of internal marks for Internship Project

Sr.no	Particulars	Internal marks
1	Timely submission of project work	10
2	Submission of 10 review of literature	10
	Total	20