

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).

PROGRAMME OUTCOME:

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 (26 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 1:15.

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. The periodical Theory tests shall be in MCQ pattern & Practical shall be as OCSE /OSPE/SPOTS/demonstration form as applicable. However the prelims exam shall be as per the university examination pattern.
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 through 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 a ten point scale 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.
$$SGPA (S_i) = \frac{\sum(C_i \times G_i)}{\sum C_i}$$
where C_i is the number of credits of the i th course and G_i is the grade point scored by the student in the i th 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.
$$CGPA = \frac{\sum(C_i \times S_i)}{\sum C_i}$$
where S_i is the SGPA of the i th semester and C_i 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, $SGPA = 205/26 = 7.884$

ii. Illustration for CGPA

Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6
Credit:26	Credit:26	Credit:28	Credit:27	Credit:26	Credit:25
SGPA:7.05	SGPA:7.8	SGPA:5.6	SGPA:6.0	SGPA:6.3	SGPA:8.0
Semester 7	Semester 8	Internship			
Credit:23	Credit:23	Credit : 14			
SGPA:6	SGPA:6				

Thus, **CGPA** = $26 \times 7.05 + 26 \times 7.8 + 28 \times 5.6 + 27 \times 6.0 + 26 \times 6.3 + 25 \times 8.0 + 23 \times 6 + 23 \times 6$

= **6.58**

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INTERNSHIP:

There shall be six months (26 weeks) of Internship after successfully completing the VIII 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.

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.
- The student who fails to satisfy minimum requirement of CGPA will be allowed to improve the grades so as to secure a minimum CGPA for award of degree. Only latest grade will be considered.

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 to 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	<ul style="list-style-type: none"> • Human Anatomy -I • Human Physiology -I • Electro Therapy- I * 			<ul style="list-style-type: none"> • English & Communication Skills
2	<ul style="list-style-type: none"> • Human Anatomy -II • Human Physiology-II • Exercise Therapy -I* 		<ul style="list-style-type: none"> • Biochemistry 	<ul style="list-style-type: none"> • Computer Science
3	<ul style="list-style-type: none"> • Exercise Therapy-II* • Biomechanics 		<ul style="list-style-type: none"> • Pathology & Microbiology 	<ul style="list-style-type: none"> • Psychology • First Aid & Emergency care
4	<ul style="list-style-type: none"> • Electro Therapy-II* 	<ul style="list-style-type: none"> • Gen. Medicine (including Gerontology & Dermatology) 	<ul style="list-style-type: none"> • Pharmacology, • Community Medicine, Sociology & Environmental. Sciences 	
5	<ul style="list-style-type: none"> • Physical & Functional Diagnostic skills* 	<ul style="list-style-type: none"> • Orthopaedics & Traumatology • Neurology (including Pediatrics & Psychiatry) 	<ul style="list-style-type: none"> • Obstetrics and Gynecology 	
6	<ul style="list-style-type: none"> • Physiotherapeutic Skills 	<ul style="list-style-type: none"> • General Surgery (including Plastic Surgery) 	<ul style="list-style-type: none"> • Research Methodology and Biostatistics 	<ul style="list-style-type: none"> • Bioengineering & Professional Ethics*
7		<ul style="list-style-type: none"> • Physiotherapy in Musculoskeletal Sciences • Physiotherapy in Community Based Rehabilitation.* 		<ul style="list-style-type: none"> • Choice Based Course (Physiotherapy in Paediatrics/ Manual Therapy)
8		<ul style="list-style-type: none"> • Physiotherapy in Neurological Condition* • Physiotherapy in Cardio-Respiratory & General Conditions 		<ul style="list-style-type: none"> • 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 should be able to -

1. Identify and describe anatomical aspects of muscle, bones & joints and analyze movements of upper extremity, Thorax, Head, Neck & Face.
2. Understand Histology & general Embryology.
3. Know the anatomical basis of various clinical conditions e.g. Trauma, deformities, pertaining to upper limb, spine & Head, Neck & Face.
4. Localize various surface landmarks.
5. Identify and describe various components and contents of the Thorax- with special emphasis to tracheo-bronchial tree & cardio- pulmonary system.
6. Demonstrate the movements of various joints of upper extremity and spine.
7. Distinguish major arteries, veins and Lymphatic with special emphasis to extremities and spine.
8. 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	-
	<i>Must to know</i>		
	• 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	-
1	<i>Nice To Know</i>		
	General Embryology-Ovum, spermatozoas, fertilization, differentiation, development of various systems and foetal circulation	2	-
2	Systems of Human body (a brief Outline)	20	12
	Must to Know		
	• Cardio Vascular System –Arteries, capillaries, veins, heart, lymphatic system.	4	2

	<ul style="list-style-type: none"> Respiratory System –Anatomy of upper and lower respiratory tract including nose, larynx, trachea, bronchi, pleura and lungs. Axial skeleton Sensory Organs <p>Desirable To Know</p> <ul style="list-style-type: none"> Urogenital System –Anatomy of Urinary system, male and female reproductive system (emphasis on female system) <p>Nice To Know</p> <ul style="list-style-type: none"> Digestive System –Anatomy of gastro-intestinal tract. 	4 3 3 4 2	2 2 2 2 2
3	UPPER EXTREMITY (<i>Must to know</i>)	15	25
	Osteology <ul style="list-style-type: none"> Outline the anatomical features, attachments, ossification and side determination of the bones of : Clavicle, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, Phalanges 	5	15
	Muscles, Nerves & Joints of upper limb <ul style="list-style-type: none"> 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 <p>Surface Anatomy:</p> <ul style="list-style-type: none"> Bony landmarks of upper extremity, Palpation of peripheral arteries & nerves 	10	10
4	THORAX (<i>Must to know</i>)	8	5
	<ul style="list-style-type: none"> 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, insertion, nerve supply and action. List layers of anterior Abdominal wall and mention its origin, insertion, nerve supply and action of these muscles. <p>Joints of Thorax: <i>Identify the various joints & explain in detail:</i></p> <ul style="list-style-type: none"> Manubriosternal joint Costo vertebral joint Costo transverse joint CostoChondral joint Chondro sternal joints 	3 5	2 3

	<ul style="list-style-type: none"> • Inter vertebral joint • Movements of vertebral column-Respiratory movements • Mention the course, branches, nerves, blood vessels and lymphatic drainage of thorax. • Intercostal space and its content • Diaphragm-structures passing through it. • Applied Anatomy of structures of thorax 		
5	HEAD, NECK AND FACE (special emphasis on myology and osteology)	15	22
	Must Know <ul style="list-style-type: none"> • Muscles & Vessels of neck • Facial muscles & orbit. • Temporo-Mandibular joint, • Cervical vertebrae & Skull. • Cranial nerves Desirable to know <ul style="list-style-type: none"> • Triangles of neck • Larynx, Pharynx, • Endocrine glands. Nice To Know <ul style="list-style-type: none"> • Lateral wall of nose • Salivary glands 	08	15
		5	5
		2	2

Text Books

Sr.No.	Title
1	Inderbir Singh, Textbook of Anatomy with colour Atlas-Vol. 1, 2, 3 Jaypee Brothers.
2	B.D. Chaurasia, Human Anatomy-Volume 1, 2, 3 CBS Publishers & Distributors.
3	Cunningham Manual of Practical Anatomy Vol. I, II, III, Churchill Livingstone.
4	Snell-Clinical Anatomy-Lippincott

Reference Books

Sr.No.	Title
1	Williams & Warwick, Gray's Anatomy-Churchill Livingstone.
2	Extremities by Quining Wasb
3	Anatomy & Physiology by Smout and McDowell
4	Mcminn's et al-A Colour Atlas of Human Anatomy, Mosby.

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 (10 Minutes)	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 i. 3 Spots based on Urogenital/Reproductive/special senses/Cardiovascular system ii. 2 Spots based on Soft part of Thorax/neck iii. 5 Spots based on upper extremity	10x2=20 marks 3x2=06 marks 2x2=4 marks 5x2=10 marks
2.	Viva (15 marks) +Journal (5 marks) i. Soft Parts ii. Osteology	15+5=20 marks
3	journal	5 Marks

- **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 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 should be able to -

1. Acquire the knowledge of the relative contribution of each organ system in maintenance of the milieu interior [Homeostasis].
2. Describe the general organization and physiological functions of various systems, with special reference to Neuro-musculo-skeletal, Hematology, Cardio-respiratory, digestive system 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 <ul style="list-style-type: none"> • The cell & cell organelles – structure & functions • Homeostasis, biofeedback mechanisms • Transport across cell membrane • Outline of membrane potential & action potential 		
2	Nerve & muscle	7	-
	Must know <ul style="list-style-type: none"> • Muscle –classification, structure, sarcomere & properties • 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. • Reaction of degeneration 	5	-
	Desirable to know <ul style="list-style-type: none"> • Applied aspects – Myasthenia gravis, Rigor mortis • Muscle disorders 	2	-
3	Haematology	9	-
	Must know <ul style="list-style-type: none"> • 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. 	5	-

	<ul style="list-style-type: none"> • Immunity – definition, classification, concept of antigen & antibody • Haemostasis – steps, role of platelets • Blood groups – A,B,O,AB and Rh system • Anemias, ESR & PCV 		
	Desirable to know <ul style="list-style-type: none"> • Plasma proteins • Anticoagulants • Blood transfusion 	3	-
	Nice to know <ul style="list-style-type: none"> • Haemophilia • Thrombocytopenia 	1	-
4	Cardiovascular system	20	-
	Must know <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • Patho-physiology of circulatory shock and edema • Hypertension, hypotension 	3	
	Nice to know <ul style="list-style-type: none"> • Hemodynamic 	1	
5	Respiratory system	16	-
	Must know <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> Artificial respiration Nice to know Asphyxia, cyanosis (types and physiological changes)	2 2	
6	Digestive System	8	-
	Must know <ul style="list-style-type: none"> 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, 	6	-
	Nice to know <ul style="list-style-type: none"> Jaundice Peptic ulcer constipation, diarrhea 	2	-

HUMAN PHYSIOLOGY PRACTICAL

Topic Serial No.	Course Content	Hours of teaching/learning Practical
1.	Haematology	10
	Hb, RBC, WBC, Blood groups, BT & CT	
2.	Properties of muscles	10
	<ul style="list-style-type: none"> Skeletal muscle. SMC, effect of temperature, velocity of nerve conduction, fatigue, tetanus, all or none law & effect of load. 	5
	<ul style="list-style-type: none"> 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
	<ul style="list-style-type: none"> Physical fitness- Cardiopulmonary efficiency tests Stethography, Spirometry Ergography, Perimetry ECG 	
4	SPT	48

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
	Essential of Medical Physiology- K. Sembulingam

Reference Books

Sr.No.	Title
1	Samson & Wrights Applied physiology.
2	Principles of Anatomy & Physiology – Tortora.
3	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 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.	Spots	Marks
1.	<ul style="list-style-type: none"> • Haematology- 1 • Graphs-2 • Physical fitness-1 • BP/ ECG/HR-2 • Spirometry- 1 • Ergography/ Stethography-1 • Perimetry-1 	10x2=20
2.	Viva -Based on Theory portion	15
3	Journal	5

• **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 = 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 should be able to -																	
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																	
4. Acquire entrepreneur & leadership Skills																	
5. Understand the importance of ethics																	
Course Content																	
Topic Serial No.	Title of content											Hours of teaching/learning					
												Theory		Practical			
1	GRAMMAR AND VOCABULARY											7	-				
	<i>Must to know</i>											6	-				
	<ul style="list-style-type: none"> • Reading Comprehension • Verb Forms,Tenses • Right Words (Synonyms, Antonyms, Homonyms and One-Word Substitutes) • Detection of Errors • Reported Speech • Precise writing, Essay 											1					
	<i>Nice to know</i>																
	<ul style="list-style-type: none"> • Phrases and Idioms • Transformation • Punctuation 																
2	COMPOSITION (<i>Must to know</i>)											6	-				
	<ul style="list-style-type: none"> • Resume Writing • Note-Making • Report Writing • Letter writing and e-Correspondence • Expansion of Proverbs and Ideas • Description of Pictures. 											6	-				
3	COMMUNICATION SKILLS : (<i>Must to know</i>)											10	-				
	<ul style="list-style-type: none"> • 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 • The ability to negotiate and reach an agreement • The ability to communicate with others from different cultures • The ability to develop interpersonal communication skills. 												-				

	<ul style="list-style-type: none"> • The ability to use non-verbal skills. • Clinical application • Role Play 		
	<p>Critical Thinking and problem solving skills (<i>desirable to know</i>)</p> <ul style="list-style-type: none"> • 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. • Clinical application • Role Play <p>Team work</p> <ul style="list-style-type: none"> • 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 contribute towards the planning and coordination of the team’s efforts is responsible for the group’s decisions. <p>(Nice to know)</p> <ul style="list-style-type: none"> • 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. • The ability to recognize and respect the attitude, behavior and beliefs of others. • Clinical application, Role Play 	3	-
	<p>Life long learning and information management (<i>desirable to know</i>)</p> <ul style="list-style-type: none"> • The ability to search and manage relevant 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 	1	
	<p>Entrepreneurial skills (<i>Nice to know</i>)</p> <ul style="list-style-type: none"> • The ability to identify business opportunities • The ability to outline business frameworks, • The ability to work independently. • Clinical application • The ability to build explores, seizes business & work. • Role Play 	1	
	<p>Professional ethics and morals (<i>Must to know</i>)</p> <ul style="list-style-type: none"> • Ability to recognize the effects on the economy, environmental and socio-culture in professional practice. • Ability to analyse and make decisions in solving problems related to ethics. 	1	

	<ul style="list-style-type: none"> Ability to practice ethically apart from being responsible towards the society, have the knowledge of basic leadership theory. Clinical application, Role Play 		
	Leadership skills (Must to know) <ul style="list-style-type: none"> 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	
4	INTRODUCTION TO ETHICS & BIOETHICS (Must to know)	1	
	<ul style="list-style-type: none"> Meaning, nature of ethics, ethical statements Meaning of bioethics Health & disease as values and facts Principles of bioethics Medical ethics- goals, committees, 		
5	SPT- for students patient interaction & communication skills, role play and ethical issues		48

Reference Books

Sr.No.	Title
1	Sherfield, R., Montgomery,R.J. & Moody,P.G. (2011). Developing Soft Skills. 3 rd Edi. Pearson Education, New Delhi.
2	Kumar,S.S. (2010). Communication Skills and Soft Skills. Pearson Education, New Delhi
3	JagdishChander, ' <u>Creative English</u> ', 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	English 1.Very Short answer questions Answer any 5 out of 6	5x3=15
Sec C	Communication skills 1. Very Short answer questions- Answer any 5 out of 6	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-																	
<ol style="list-style-type: none"> 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 –																	
Topic Serial No.	Title of content											Hours of teaching/learning					
												Theory		Practical			
1	BIOELECTRONICS											27	16				
	Must to know											10					
	<ul style="list-style-type: none"> • 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, Transistors, • Amplifiers, Transducers Oscillator circuits. • Capacitance, condensers in DC and AC Circuits. • Display devices & indicators – analogue & digital. 																
	Effects of Current Electricity:											11					
	<ul style="list-style-type: none"> • 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, • Milliammeter and Voltmeter, Transformers and Choke Coil. • Thermal Effects – Joule’s Law and Heat production. • Electromagnetic spectrum – biophysical application. • Laws of Transmission- reflection, refraction, absorption, attenuation 																
	Desirable to know																
	<ul style="list-style-type: none"> • Structure and properties of matter – solids, liquids and gases, adhesion, surface tension, • Viscosity, density and elasticity. 											3					

	Nice to know <ul style="list-style-type: none"> • Structure of atom, molecules, elements and compounds. • Physical Principles of sound and its properties. • Physical Principles of light and its properties. 	3	
2	ELECTRIC SUPPLY (Desirable to know)	5	-
	<ul style="list-style-type: none"> • 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 	1 1 1 2	-
3	THERMO & ACTINOTHERAPY	25	32
	Must to know <ul style="list-style-type: none"> • Physiological responses to heat gain or loss on various tissues of the body. • Physical principles of Electro – magnetic radiation. • Therapeutic effects of heat & cold • Home remedies of heat and cold 	12	8
	Therapeutic cold : <ul style="list-style-type: none"> • Cryotherapy: Sources, biophysical effects, types, therapeutic effects, Indications, contraindications, precautions, application techniques and patient preparation. 	4	8
	Thermotherapy modalities: <ul style="list-style-type: none"> • Paraffin wax bath, contrast bath, whirl pool bath, moist heat therapy: Principles of application, mode of application, therapeutic uses, indication and contraindication. 	5	8
	Infra red rays: <ul style="list-style-type: none"> • Wavelength, frequency, types & sources of IRR generation • Techniques of irradiation, physiological & therapeutic effects • Indications, contraindications, precautions • Operational skills of equipment & patient preparation. 	2	8
	Desirable to know <ul style="list-style-type: none"> • Physics of sound including characteristics and propagation. 	2	
4	HIGH FREQUENCY CURRENTS AND WAVES (Must to know)	15	35
	Short wave diathermy(SWD) <ul style="list-style-type: none"> • Production, biophysical effects, types, • Therapeutic effects, techniques of application, • Indications, contraindications, precautions, • Operational skills and patient preparation. 	8	17
	Ultrasound(US) <ul style="list-style-type: none"> • Production, biophysical effects, types, • Therapeutic effects, techniques of application, • Indications, contraindications, precautions, • Operational skills and patient preparation. 	7	18
5	TRACTION (Must to know)	5	13
	<ul style="list-style-type: none"> • Principles of traction, classification, types • Physiological & therapeutic effects • Indications, contraindications • Techniques of application • Operational skills & precautions 		

	Nice to know <ul style="list-style-type: none"> • Open equipment demonstration of various equipments • Calibration techniques of equipments 	3	
6	SPT		96

Text Books

Sr.No.	Title
1	Clayton's Electro therapy-3 rd , 9 th & 10 th ed,
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 (Spots/ Simulated presentation of technique & demonstration)

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 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.	One Long Case: Superficial thermal agents (IR, Cold packs, Hot pack, wax bath)	35 marks
2.	One Short Case: SWD, US, Contrast Bath, Whirl pool Bath	20 marks
3	5 Spots (5 Minutes per Spot and four marks per spots) spots based on identification of electronic equipments & panel diagram of equipments	20 marks (5x4=20)
4	Journal	5 marks

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)

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	Tot	Written	Total	Practical	Total		
												IA	Final exam	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 should be able to -

1. Identify and describe anatomical aspects of muscle, bones & joints & to understand and analyze movements of lower extremity & pelvis
2. Understand the anatomical basis of various clinical conditions e.g. trauma, deformities, pertaining to lower limbs & pelvis.
3. Localize various surface landmarks
4. Demonstrate the movements of various joints of lower limb & pelvis
5. Distinguish major arteries, veins and lymphatic with special emphases to extremities and pelvis.
6. Identify and describe the source, course of major arterial, venous and lymphatic system, with special emphasis to lower extremities and pelvis.
7. 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. Describe the source and course of spinal tracts.
9. Describe blood circulation of C.N.S. & spine.
10. 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- Must Know	18	15
	<ul style="list-style-type: none"> • Peripheral Nerves • Neuromuscular Junction • Sensory End Organs • Spinal Cord Segments & Areas • Brainstem • Cerebellum • Inferior colliculi & Superior Colliculi 	15	

	<ul style="list-style-type: none"> • Diencephalon • Hypothalamus ,Thalamus • Corpus striatum • Cerebral hemispheres • Lateral ventricles • Meninges • Bloody supply of the brain • Internal Capsule • Thalamocortical radiations • Pyramidal systems • Extra-pyramidal systems • Sympathetic system • Para-sympathetic system • Cranial nerves <p>(desirable to know)</p> <ul style="list-style-type: none"> • Epithalamus • Rhinencephalon • Visual radiation • Auditory radiation 	3	
SECTION II	TRUNK & ABDOMEN	5	6
	<p>Must to know</p> <p>Osteology</p> <ul style="list-style-type: none"> • Vertebral columns: Identify the parts of typical vertebra and state the main features, attachments and ossification. • Intervertebral disc and mention its part. <p>Myology</p> <ul style="list-style-type: none"> • 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. <p>Applied Anatomy of structures of trunk & abdomen.</p> <p>Desirable to know</p> <ul style="list-style-type: none"> • 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 	3	
SECTION I II	PELVIS	4	12
	<p>(must to know)</p> <ul style="list-style-type: none"> • Features of pubic symphysis and sacroiliac joints. • Muscles of pelvic floor and mention their attachments, action and nerve supply. • Lymphatic drainage • Nerve supply • Mention the blood vessels of the region with course, variations, distribution and main branches. 	2	

	<i>(desirable to know)</i> <ul style="list-style-type: none"> • Sacral Plexus • Applied anatomy of lumbar plexus • Difference between male and female pelvis • Main features of subdivision, boundaries, walls and floor of pelvis. • Urogenital diaphragm (outlines only) 	2	
SECTION IV	LOWER EXTRIMITY Osteology <i>(must to know)</i> <ul style="list-style-type: none"> • Hip bone, femur, Tibia, Fibula, Patella, and bones of the foot • Myology-,-Origin, Insertion, Nerve Supply, Action of the following: <ul style="list-style-type: none"> • Fascia and muscles in anterior,& posterior of thigh • Fascia and muscles of medial side 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 • Explain femoral triangle and subsartorial canal • Poptileal fossa • Anatomy of structures of Lower Limb Nice to know <ul style="list-style-type: none"> • Lymphatic drainage of Lower Limb 	15 14 1	19
SECTION V	REGIONAL ANATOMY Surface Anatomy <i>(must to know)</i> <ul style="list-style-type: none"> • Bony landmarks of HNF, , lower extremity, spine • Demonstration of muscles – HNF, superior extremity, inferior extremity • Demonstration of movements of joints Nice to know <ul style="list-style-type: none"> • Palpation of peripheral arteries & nerves • Radiographic appearance of Musculo-skeletal system of Upper limb, Lower limb, Spine 	6 3 3	12
VI	SPT		48

Text Books

Sr.No.	Title
1	B.D. Chaurasia, Human Anatomy-Volume 1, 2, 3 CBS Publishers & Distributors.
2	Inderbir Singh, Textbook of Anatomy with colour Atlas-Vol. 1, 2, 3 Jaypee Brothers
3	Snell-Clinical Anatomy-Lippincott
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.

Reference Books

Sr.No.	Title
1	Williams & Warwick, Gray's Anatomy-Churchill Livingstone.
2	Extremities by Quining Wasb
3	Anatomy & Physiology by Smout and McDowell

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 (10 Minutes)	10x1=10 marks
Sec B	1. Very Short answer questions - 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 2. 3 Spots based on Soft part of Trunk & abdominal 3. 5 Spots based on lower extremity	10x2=20
2.	Viva 1. Soft Parts 2. Osteology	15
3	Journal	5

- **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 = 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 should be able to -																	
1. Acquire the knowledge of the relative contribution of each organ system in maintenance of the milieu interior [Homeostasis].																	
2. Describe physiological functions of various systems, with special reference to uro-genital function (female), Endocrine, Neuro-motor and alterations in function with aging.																	
3. Acquire the skill of basic clinical examination, with special emphasis to Peripheral and Central Nervous system, CVS & Respiratory system.																	
Course Content																	
Topic Serial No.	Title of content											Hours of teaching/learning					
												Theory			Practical		
1	Renal Physiology- Must know <ul style="list-style-type: none"> • General introduction, structure and functions of kidney • Formation of urine- filtration, re-absorption and secretion • Physiology of micturition • Neurogenic bladder Desirable to know <ul style="list-style-type: none"> • Renal circulation • Plasma clearance test 											4			-		
												3					
												1					
2	Body Temperature regulation- Must know <ul style="list-style-type: none"> • Normal body temperature & its regulation • Skin-structure and functions Desirable to know <ul style="list-style-type: none"> • Hypothermia, hyperthermia 											4			-		
												3					
												1					
3	Endocrine system- Must know <ul style="list-style-type: none"> • Introduction - General organization of endocrine glands • Releasing hormones from hypothalamus • Anterior & Posterior pituitary hormones – physiological actions, regulation & disorders • physiological actions, regulation & disorders of : <ul style="list-style-type: none"> • Thyroid Hormones, Parathyroid Hormones, Adrenal cortex & medulla, Pancreatic hormones • Mechanism of hormone action 											8			-		
4	Reproductive system Must know <ul style="list-style-type: none"> • Functional anatomy of reproductive system • Puberty, changes in males and females, menarche, menopause 											6			-		
												4					

6	<p>Special Senses-</p> <p>Vision</p> <p>Must know</p> <ul style="list-style-type: none"> • Vision – Structure of eye ball, retina, refractory errors, • Accommodation, visual pathway, Pupillary reflexes <p>Desirable to know</p> <ul style="list-style-type: none"> • Light and dark adaptation • Photochemistry of vision <p>Ear</p> <p>Must know</p> <ul style="list-style-type: none"> • Functional anatomy of ear • Functions of middle and inner ear • Functional anatomy of cochlea <p>Desirable to know</p> <ul style="list-style-type: none"> • Audiometry • Auditory pathway <p>Nice to know</p> <ul style="list-style-type: none"> • Physics of sound • Theories of hearing <p>Taste & smell</p> <p>Must know</p> <ul style="list-style-type: none"> • Functional anatomy, factor affecting. 	6	-
		1	
		1	
		1	
		1	
		1	
7	<p>Lecture demonstrations & Practicals(L.Ds)-</p> <p>a) Clinical examination of arterial pulse.</p> <p>b) Determination of arterial blood pressure.</p> <p>c) Clinical examination of cardiovascular system.</p> <p>d) Clinical examination of respiratory system.</p> <p>e) Clinical examination of higher functions.</p> <p>f) Clinical examination of sensory system.</p> <p>g) Clinical examination of motor system –I.</p> <p>h) Clinical examination of motor system –II</p> <p>i) Clinical examination of all cranial nerves.</p>	-	32
			3
			4
			3
			3
			3
			4
			4
			4
			4
8	SPT		48

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
4	Essential of Medical Physiology- K. Sembulingam

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 (10 Minutes)	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.	Description	Marks
1	Clinical physiology <ul style="list-style-type: none"> • Respiration – clinical examination of respiratory system • CVS- pulse rate, B.P, clinical examination of CVS • Cranial nerves • Reflexes • Motor and Sensory system 	20 marks
2.	Viva Based on Theory portion	15+5=20
3.	Journal	5

• **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 = 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 should be able to -																	
<ol style="list-style-type: none"> 1. Describe structures & functions of cell in brief. 2. 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. 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. 																	
Topic Serial No.	Title of content											Hours of teaching/learning					
												Theory		Practical			
1	CELL BIOLOGY Must Know <ul style="list-style-type: none"> • Membrane, structure & function • Junction of intracellular organelle in brief- [no structural details needed] 											1					
2	CARBOHYDRATES- Must Know <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • Chemistry-definition-function-classification of Amino acids- protein structure-effect of temperature on proteins- denaturation-coagulation; isoelectric pH & its importance • Metabolism-Digestion and absorption- Decarboxylation- Deamination- Transmethylation-transamination & their importance-Detoxification of ammonia including urea cycle. • Clinical biochemistry: Relevance of blood levels of, urea, & uric acid, Protein in urine 											6					

4	<p>LIPIDS- Must Know</p> <ul style="list-style-type: none"> • Chemistry-definition-classification-[including fatty acids with examples]-function • Metabolism-Digestion and absorption of lipids—β oxidation of saturated fatty acids and its energetics • Regulation of fat metabolism in adipose tissue- Ketone bodies formation & utilization—cholesterol and its importance [no biosynthesis needed] • Classification, sources & function of lipoproteins-lipoproteinemia. • Clinical Biochemistry - Lipid profile-Tri -glyceride, cholesterol/HDL/LDL/VLDL etc, <p>Nice to Know</p> <ul style="list-style-type: none"> • Phospholipid synthesis • Atherosclerosis. • Liver function test & Renal function test 	6 4 2	
5	<p>NUCLEIC ACIDS- Must Know</p> <ul style="list-style-type: none"> • D.N.A. /R.N.A.-definition-structure and function-types-Genetic code <p>Desirable to Know</p> <ul style="list-style-type: none"> • catabolism of purine –gout 	2 1 1	
6	<p>ENZYMES- Must Know</p> <ul style="list-style-type: none"> • Definition-Co-Enzymes, modern classification, factors affecting enzymes action • Clinical and therapeutic use of enzymes: • Clinical relevance: Enzymes-Amylase, CPK, LDH, isoenzymes <p>Desirable to Know</p> <ul style="list-style-type: none"> • Inhibition and types of inhibitors • Iso-enzymes 	3 2 1	
7	<p>VITAMINS- Must Know</p> <ul style="list-style-type: none"> • Water and fat soluble-definition &classification • Individual vitamins-sources- function • RDA, its deficiency and toxicity <p>Nice to Know</p> <ul style="list-style-type: none"> • Vitamin - absorption and transport • Co-enzyme forms 	7 5 2	
8	<p>BIOLOGICAL OXIDATION- Desirable to Know</p> <ul style="list-style-type: none"> • Oxidative phosphorylation & ETC in brief. 	2	
9	<p>MINERALS- Must to Know</p> <ul style="list-style-type: none"> • Phosphate, calcium and iron [in detail] • sources, absorption, transport-excretion, functions and deficiency of : Magnesium, Fluoride, Zinc,Copper, Selenium Molybdenum, Iodine 	4 3	

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 (10 Minutes)	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 :- Exercise Therapy- I

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	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 should be able to -

1. Define the various terms used in mechanics, Biomechanics and Kinesiology.
2. Recall the basic principles of Physics related to mechanics of movement /motion & 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. Demonstrate various starting and derived positions.
4. Demonstrate passive movements in terms of various Anatomical planes.
5. Describe types of Goniometer, merits and demerits of goniometry and to demonstrate and acquire the skill of measuring ROM with goniometer.
6. 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.
7. Demonstrate and acquire the skill of relaxation
8. Acquire the skill of application of various massage manipulations and describe the Physiological effects, therapeutic use, merits /demerits of the same.
9. Describe and also acquire the skill of use of various tools of the Therapeutic gymnasium.
10. Describe the skill and usefulness of group and recreational activities-and demonstrate general fitness exercises used in Physical Training.
11. Describe walking aids and its measurement
12. Define Yoga and its types, its physiological and Psycho-somatic effects and demonstrate standard yoga postures used by the beginners.

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1	Basic Biomechanics- Must to know <ul style="list-style-type: none"> • Axis/planes, Newton's law of motion, • mechanics of Forces, pendulum, equilibrium, Torque, levers, stability, base of support, COG, law of gravity • Types of muscle work • Angle of pull- Mechanical advantage Nice to know <ul style="list-style-type: none"> • Applied mechanics in the Therapeutic Gymnasium 	14 12	-
2	Starting and derived positions(<i>must to know</i>)	3	10
3	Classification of movements (active, passive, assisted, resisted)	5	20
4	Goniometry- principles, types, uses and techniques of measurement on each joint	4	14
5	Desirable to know <ul style="list-style-type: none"> • Limb length (only lower limb)- apparent, true, supratrochantric • Limb girth measurements 	4	4

6	Desirable to know Assessment of Sensations / Reflex testing.	2	4
7	Desirable to know Assessment of Blood pressure / pulse rate /chest expansion and Respiratory rate	2	4
8	Relaxation Must to know <ul style="list-style-type: none"> Describe relaxation, its Effects, uses & clinical application. Indication & contraindication. Techniques of relaxation (local and general) Nice to know <ul style="list-style-type: none"> Muscle fatigue, muscle spasm and tension (mental & physical) Factors contributing to fatigue & tension. 	4 3 1	5
9	Massage manipulations: must to know <ul style="list-style-type: none"> Principles, effects, merits, demerits, skills on extremities / Back / abdomen / face/ scalp. Physiological effects of soft tissue manipulation on the following systems of the body; <ul style="list-style-type: none"> ✓ Circulatory, Nervous, Musculoskeletal, Excretory, Respiratory, Integumentary and Metabolism. Classify, define and describe of massage techniques: - effleurage, stroking, kneading, petrissage, deep friction,percussions ,vibration and shaking etc. Preparation of patient: Effects, uses, indications and contraindications of the above manipulation. Nice to know <ul style="list-style-type: none"> History, various types of soft tissue manipulation techniques. 	5 4 1	10
10	Therapeutic Gymnasium- must to know <ul style="list-style-type: none"> Various equipment in the gymnasium. Operational skills, effects & uses of each equipment (shoulder wheel, finger ladder, therapeutic balls, parallel bars etc.) desirable to know <ul style="list-style-type: none"> Setup of a gymnasium & its importance Group therapy & recreation activities 	4 2 1	4
11	Suspension therapy (Must to know) <ul style="list-style-type: none"> Definition,type, effects,uses, parts & operational skills, use of accessories such as pulleys, springs 	4	5
12	Walking aids – Introduction, types, parts, measurement (Must to know) Principles of Yoga & basic Yogic postures and their physiological effects.(Must to know) Yogic postures:- Supine Position <ul style="list-style-type: none"> ➤ Shavasana ➤ Halasana 	2	2

	<ul style="list-style-type: none"> ➤ Sarvangasana ➤ Setubandhasana ➤ Pavanmuktasana Prone Position <ul style="list-style-type: none"> ➤ Dhanurasana ➤ Salabhasana ➤ Bhujangasana ➤ Naukasana Standing <ul style="list-style-type: none"> ➤ Padahastasana ➤ Trikonasana ➤ Utkatasana Sitting <ul style="list-style-type: none"> ➤ Padmasana Siddhasana		
	<ul style="list-style-type: none"> ➤ Paschimottanasan ➤ Yogamudrasana ➤ Vajrasana ➤ Gomukhasana Twisting <ul style="list-style-type: none"> ➤ Matsyendrasana ➤ Ardha Matsyendrasana 	4	10
13	Hydrotherapy <i>must to know</i> Physics-application-effects-merits /demerits Basic principles of fluid mechanics related to hydrotherapy. <ul style="list-style-type: none"> • Physiological & therapeutic effects of hydrotherapy, including joint mobility muscle Strengthening & wound care • Types of Hydrotherapy equipment, indications, contraindications, operation skills & patient preparation <i>Nice to know</i> Room based hydrotherapy aquasiser etc	6 5	4
14	Human dignity and human rights (<i>must to know</i>) <ul style="list-style-type: none"> • 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	
15	SPT		96

Text Books

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

Reference Books

Sr.No.	Title
1	Clinical Kinesiology – Brunnstrom
2	Massage- Hollis

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 (Spots/ Simulated presentation of technique & Demonstration)

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

Sec A	MCQ (20 minutes)	20x1=20 marks
Sec B	1.Very 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	1.Long Answer Questions (compulsory) 2.Long Answer Questions Answer any 1 out of 2	1x15=15 1x15=15

- **Practical Examination (80 marks)**

1.	Long Case: Massage/ Goniometry / Suspension therapy	35 marks
2.	Short Case: any one of the following. Passive movements / Starting and Derived position/ Relaxation/Limb Length-Girth measurement/Sensation/Reflex testing/ Yoga /group exercise/ BP & Pulse/Chest Expansion and Respiratory Rate/	20 marks
3	Spots Five spots based on therapeutics gymnasium. 4 marks per spot, 5 minutes per spot.	20 marks (5x4=20)
4	Journal	5

- **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 :- Computer Science
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 should be able to-

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

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical

Must Know

1	Introduction of Computer application for Physiotherapy practice.	5	-
2	Introduction of use of computers in teaching, learning, research.	6	-
3	Windows, MS office, Word, Excel, Power Point.	6	-
4	Internet, Literature search.	7	-

Desirable to know

5	Introduction to Statistical Package	5	-
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nice to know

6	Introduction to Hospital management information system software.	3	
7	SPT		48

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

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 should be able to -																	
<ol style="list-style-type: none"> 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 <ul style="list-style-type: none"> • 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 												4		-		

2	Inflammation & Repair <ul style="list-style-type: none"> cellular events, Morphologic variations, Inflammatory cells & mediators, Chronic inflammation:-causes, types, non- specific & granulomatous – with Examples Healing- regeneration & repair, Wound healing by primary & secondary union factors promoting & delaying healing process. Healing at various sites - including-bones, nerve & muscle 	3	-
3	Immuno – pathology – (basic concepts) <ul style="list-style-type: none"> Immune system:-organization-cells- antibodies -regulation of immune responses, Hyper-sensitivity, Secondary immuno-deficiency including HIV, Organ transplantation 	2	-
4	Circulatory disturbances <ul style="list-style-type: none"> Edema -pathogenesis -types -transudates /exudates, Chronic venous congestion-lung, liver, 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 <ul style="list-style-type: none"> Atrophy-malformation, agenesis, dysplasia, Neoplasia classification, histogenesis, biologic behavior, difference between 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. 	3	-
6	Cardiovascular system <ul style="list-style-type: none"> Atherosclerosis -Ischemic heart diseases– myocardial infarction – Pathogenesis / Pathology Hypertension Congestive Cardiac Failure, Pericarditis, Cardiomyopathy Rheumatic Heart Disease, Infective endocarditis Peripheral vascular diseases 	3	-
7	Respiratory system <ul style="list-style-type: none"> COPD, Pneumonia (lobar, broncho, viral), T.B. Primary, secondary – morphologic types, Pleuritis, complications, Lung collapse – atelectasis 	3	-

8	Neuropathology <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • Muscular dystrophy, Pseudohypertrophy, Myotonia • hypertrophy, atrophy, Myositis ossificans, • necrosis, regeneration, , 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 Intervertebral Disc, Scoliosis, Haemarthrosis, Gout, T.B., Arthritis –degenerative, inflammatory, RA, Ankylosing spondylitis, Tenosynovitis.	2	
12	Desirable to know Clinical pathology – (including Demonstrations) Lab investigation in liver & renal failure	2	
13	Haematology <ul style="list-style-type: none"> • T.C./D.C./PBS, Eosinophilia, E.S.R., Anaemia • Bleeding and coagulation disorders Desirable to Know: - <ul style="list-style-type: none"> • Disorders of haemoglobin structure and synthesis • Lymphoid and myeloid neoplasmas 	3 2 1	
	Must to know <ul style="list-style-type: none"> • Growth Disturbance - Carcinogenesis – environmental • carcinogens • Endocrine – Hyperthyroidism – Diabetes Desirable to Know: - <ul style="list-style-type: none"> • Hepatic diseases -Cirrhosis – emphasis to systemic effects of portal Hypertension. 	2 1	
	Desirable to Know: - <ul style="list-style-type: none"> • Deficiency disorders – Vitamins A, B, C, D. • Growth Disturbance - Chemical, Occupational, heredity, viral. Nice to Know: - <ul style="list-style-type: none"> • Medical Genetics – (In Brief) • Urinary – commonly encountered in paralytic bladder, common urinary tract infections (brief)-urinary calculi. • G.I. system- -Gastric/duodenal ulcer, enteric fever, TB, enteritis, Gastritis(Related to consumption of NSAID) • Skin - Melanin pigment disorders, Vitiligo, Taniaversicolor, Psoriasis, Bacterial / fungal infections, cutaneous TB, Scleroderma, SLE, Leprosy, Alopecia, Skin Biopsy. 	3 2	

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 its Importance in lab diagnosis.	2	
3	Sterilization & disinfection [basic concepts] Must know - Definition of Sterilization, Disinfection, Enumeration of physical methods of sterilization including principles and their applications, commonly used Disinfectants. Desirable to know <ul style="list-style-type: none"> • Central sterile department (CSSD) concept only • Hospital Acquired Infection: Definition, factor influencing infection, mode of transmission & prevention of MAI. Infection control committee. • Universal safety precautions- definition of waste classification, segregation Transport & disposal. 	2 4	
4	Immunology Must know : - <ul style="list-style-type: none"> • Definition. Types of Immunity active & passive, local Immunity vaccines. • Antigen antibody reaction – Definition of Antigen & antibody, Types and property & application for diagnosis. • Immune response – Type of cells involved Ag processing & presentation Primary & secondary immune response. CMI – Definition, role of T. cells and macrophages. • Hypersensitivity & auto-immunity - Definition, Classification Anaphylaxis – mechanism, manifestations & tests for Anaphylaxis, definitions of autoimmunity, Classification & Mechanism. • Desirable to know – Principles & uses of monoclonal Abs. 	5 4 1	
5	Laboratory diagnosis of Infection (Must know) <ul style="list-style-type: none"> • Host parasite relationship & bacterial infections- Different sources and modes of transmission of infection, microbial factors leading to establishment of infection. Nice to know <ul style="list-style-type: none"> • Methods of identification of bacteria -Principle of laboratory diagnosis of infectious diseases, General procedure for collection. • Diagnosis of infectious diseases- Transport and processing of specimen for microbial diagnosis. 	2 2	
6	Bacteriology : Must know Infection caused by GM + ve & GM – Vecocci- Morphology, pathogenicity & lab diagnosis of Staphylococci, Streptococci & Neisseria. <i>Infection caused by GM + ve bacillus</i> –Morphology, pathogenicity	4	

	<p>& lab diagnosis of Coryne bacterium diphtheria, Clostridium Perfringens & clostridium tetani.</p> <p><i>Infection caused by Gram -ve bacilli</i> – Morphology, pathogenicity & lab diagnosis of E.coli, Klebsiella, Pseudomonas, Shigella, Salmonella, V. Cholera.</p> <p><i>Infection caused by Mycobacteria</i> – Morphology, pathogenicity & lab diagnosis of M.tuberculosis, M leprae & atypical Mycobacteria.</p> <p>Nice to know</p> <p>Spirochaetes – Morphology, pathogenicity & lab diagnosis of Treponema Pallidum (VDRL test & TPHA), Role of Staphylococci in hospital infection, Leptospira Borrelia, Role of Pseudomonas in HAI.</p>	4	
7	<p>Viruses</p> <p>Must know</p> <ul style="list-style-type: none"> • Introduction & General properties of viruses – Size, shape, symmetry, Structure of viruses, classification, cultivation of Viruses & methods for diagnosis of viral infections • HIV – Morphology transmission clinical syndromes, Laboratory diagnosis & Prevention. • Hepatitis – List of viruses causing Hepatitis, pathogenicity, Laboratory diagnosis & Prevention. • Polio, measles, congenital, Viral infection, Rubella, CMV, Herpes. • Clinical syndrome & Laboratory diagnosis. 	4	
8	<p>Mycology</p> <p>Must know – Morphological classification & general lab Diagnosis, Definition, causative Agents & lab Diagnosis of mycetoma, Pathogenicity & lab diagnosis of Aspergillosis & Candidiasis</p>	2	
9	<p>Parasites affecting CNS</p> <p>Must know – List of parasites affecting CNS, on short about lab diagnosis of malaria, Filarial, Toxoplasma, Cysticercosis, echinococcus.</p>	2	
10	<p>Applied Microbiology</p> <p>Must know</p> <ul style="list-style-type: none"> • Diseases affecting bones, joints & muscles - Osteomyelitis – etiology, lab diagnosis, Arthritis. • Disease involving brain & nerves - Meningitis, brain abscess is Infective neuritis, etiology & clinical manifestations & lab diagnosis. • Diseases involving cardiopulmonary system, skin & burns - 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. Jayram Panikar

Periodical Examination:

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

Preliminary Examination / University (Final) Examination**• Written Examination (80 marks)**

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

1. Describe the physiological & Therapeutic uses, merits /demerits of various exercise modes.
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. Demonstrate various therapeutic exercises on self & acquire the application skill on models.
4. Analyze Normal human posture [static &dynamic] & various Normal Musculo skeletal movements during Gait, activities of daily living
5. Describe the movements of the Thorax during breathing & bronchial hygiene technique
6. Acquire the skill of assessment & training of isolated &group muscle strength & Range of motion of the joints for ADL'S

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	10	16
	Must to Know <ul style="list-style-type: none"> • 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 Nice To Know <ul style="list-style-type: none"> • Physiological adaptations to training 	8	2
3	Joint & connective tissues. <ul style="list-style-type: none"> • Open Kinetic Chain and Closed Kinetic Chain exercises. • Assessment of tightness. • Principal and technique of Stretching of contractile tissue • Indication &contraindication. 	8	12
4	Posture	7	5
	(must = 5 hrs, nice to know=2 hr) <ul style="list-style-type: none"> • Normal Posture – Overview of mechanism of normal posture • Methods of Assessment of the Posture – Sitting /standing 	3	

	<ul style="list-style-type: none"> • Methods of assessment – Sagittal & frontal plane with plumbline & postural frame, by spondylometer, • Abnormal Posture – Assessment, Types, etiogenesis, & Nice to know • management, including therapeutic exercises. <p>Must to Know</p> <ul style="list-style-type: none"> • Mobility evaluation of joint / muscles & its implication on posture. • Static and Dynamic postural balance – Assessment & Nice to know • Management including therapeutic exercises. 	1 2 1	
5	<p>Gait</p> <p>Must to know</p> <ul style="list-style-type: none"> • Overview of normal gait & its components. • Gait deviations - Assessment, Types, etiogenesis & (Nice to know)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. <p>Desirable to know</p> <ul style="list-style-type: none"> • Training for different conditions (Paraplegia, Hemiparesis, Amputation, etc.) 	5 3 2	14
6	<p>Co-ordination & Balance</p> <ul style="list-style-type: none"> • Principles, Neural control of coordination • Methods of co-ordination exercises, • Differentiate types of co-ordination loss & balance loss. • Physiology of inco-ordination, Balance loss & training- Frenkel’s exercises <p>Nice to know</p> <p>Training for different conditions (ataxia, parkinsonism, Stroke]</p>	4 3 1	8
7	Desirable to know- Principles of P.N.F	3	3
8	<p>Breathing exercises</p> <ul style="list-style-type: none"> • 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. <p>Nice to know</p> <p>Application for different conditions using different equipments)</p>	5 4 1	10
9	<p>Bronchial Hygiene</p> <p>Postural drainage position / Autogenic drainage. Humidification</p>	5	12
10	Desirable to know- Principles of Home programme& Ergonomic advice	2	3

11	<p>Functional Re-education</p> <ul style="list-style-type: none"> • Functional motor skills, -Motor skills to function independently in ADL • Mobility, Bed /Wheel chair mobility, ambulation training • Application of mat exercises [to practice on self & on models] <p>Desirable to know</p> <ul style="list-style-type: none"> • Practical application on – Hemiplegia, Paraplegia, General Weakness. 	10 7	14
12	<p>6 Minute walk test – on models (with interpretations)</p> <ul style="list-style-type: none"> • Indications & contra indication, • Procedure, data recording and Interpretation • Risk factors and precaution to be taken during the test. • Other tests 	1	4
13	<p>Benefit and harm of patient's right & dignity in Health care settings by physiotherapy</p> <ul style="list-style-type: none"> • 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 PRACTICAL TRAINING		25

Text Books

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

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(Simulated /OSPE/ Demonstration on Model)

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]	1x15=15 marks 1x15=15 marks

• **Practical Examination (80 marks)**

S.No.		Marks
1	A. Long case (any one)including Journal marks – <ul style="list-style-type: none"> • Muscle training (Testing & strengthening) • Mobility (Passive, Active, Active Assisted, Mobilization of Peripheral joints , stretching) • Pulmonary function training <ul style="list-style-type: none"> ➤ Breathing exercises ➤ Bronchial hygiene technique • Co-ordination training • Crutch training & assisted ambulatory training 	35
2.	Two Short Case:- <ul style="list-style-type: none"> • M.M.T. (Individual & group) • Posture Assessment • Posture re-training • Normal Gait, Abnormal Gait Demonstration & reasoning. • Functional re-education <ul style="list-style-type: none"> ➤ Bed mobility ➤ Wheel chair Mobility ➤ Gait Re-training • Mat Activities • 6 minute walk test. 	20 x2=40
3	Journal	5

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	--	--	03	10	40	50	--	--	--
Learning Objectives:																	
At the end of the course, the candidate should be able to -																	
1. 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. 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											Hours of teaching/learning					
	<u>Section – I - General Psychology</u>											Theory		Practical			
Must know																	
1	Introduction to Psychology Definition and nature of Psychology, Fields & subfields of psychology. Schools of thoughts – Structuralism, functionalism, Behaviorism, Gestalt, Psycho-analytic Theory											3		-			
2	Developmental Psychology 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. Cannon Bard theory											3		-			
4	Motivation- Maslow's hierarchy of motives, Theories of motivation; Conflict & Frustration – Types of conflicts, Common Defense mechanism, stress											2		-			
5	Learning : Definition and theories, conditioning, Role of learning in human life.											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		-			
4	Abnormal Psychology -Deference between normal & Abnormal, Causes of abnormality											2		-			

Topic Serial No.	Psychology Section – II-Health Psychology	Hours of teaching/learning	
		Theory	Practical
1	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	Behavior Modifications: Application of various conditioning and learning principles to modify patient behaviours.	4	-
5	Different personality styles of patients.	4	-
Nice to know			
6	Compliance: Nature, factors, contributing to non-compliance, improving compliance.	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. (5 th Ed.) Tata McGraw Hill Publication, New Delhi
3	Feldman, R.S. (1997). Understanding Psychology, (4 th 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 (10 minutes)	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 :- 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 should be able to																		
<ol style="list-style-type: none"> 1. Acquire the knowledge of axis and planes. 2. Review the anatomy of each joint. 3. Learn thoroughly about each movement occurring at each joint. 4. Acquire the knowledge of forces acting at various joints. 5. 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											4	1					
	<ul style="list-style-type: none"> • Introduction to mechanics including motion, forces, parallel forces system, Concurrent force systems, composition forces, muscle forces & action line • Introduction to Biomechanics and terminology. 											2						
	Desirable to know <ul style="list-style-type: none"> • Axes and planes with movements occurring at each joint in respective plane. 											1						
	Nice to know <ul style="list-style-type: none"> • COG, line of gravity, stability and equilibrium. • Newton’s law of motion 											2						
2	Section – II - Muscle Structure and function											4	2					
	<ul style="list-style-type: none"> • Composition, unit, structure, architecture of muscle • Classification of Muscles • Functions of muscles & factors affecting it. • Group action of muscle 											3						
	Desirable to know <ul style="list-style-type: none"> • Effect of immobilization, injury & aging on muscle. 											1						
3	Section – III - Joint structure											6	7					
	Must to know <ul style="list-style-type: none"> • Basic principles of Joint design and a human joint. • Bio-physical properties of connective tissue- contractile & non-contractile (fibrous tissue, bone cartilage and connective tissue) • Elasticity /Plasticity – response to sudden/slow/sustained loading –Stress strain Curve, Creep, Hysteresis 											4	3					
	<ul style="list-style-type: none"> • joint classification and joint movements, Desirable to Know <ul style="list-style-type: none"> • Effect of immobilization, injury & aging on Joint 											2	4					

4	Section – IV Anatomy and Biomechanics of the joints Must to know ➤ 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	12 15 09 2	5 5
5	Section V- Kinetics & Kinematics Must to know • Kinematics chains and range of motion. • Kinetics & Kinematics of various activities of daily living like supine to sitting, sitting to standing, walking and climbing up & down. Desirable to know – lifting, overhead activities, squatting, Nice to Know - Kinetics & Kinematics of running, jogging, pulling, pushing,	7 3 2 2	9
	Desirable to know: Biomechanical alterations of all joint due to muscle weakness, joint stiffness and its implications Nice to Know: Pathomechanics of abnormal gait patterns	2 2	2
6	SPT		48

Textbook

Sr.No.	Title
1	Joint Structure and Function- Cynthia Norkins & Pamela Lavengie
2	Clinical Kinesiology – Brunnstroms.
3	Fundamentals of biomechanics- Margareta Nordin

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:

Sec A	MCQ (20 Minutes)	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 should be able to -																	
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 – <ul style="list-style-type: none"> • Assessment, immediate actions and the priorities. • Bandages – Types, binders, splints & slings. • Promoting safety consciousness. • Instruments used in First Aid (First Aid kit). First Aid - <ul style="list-style-type: none"> ➤ RTA including fractures and spinal cord injuries ➤ Cardiac arrest,Respiratory failure ➤ Burns ➤ Shock- Electric, Hypovolemic and control ofBleeding, ➤ Poisoning Desirable to know <ul style="list-style-type: none"> • Examination of Vital Signs. Nice to know <ul style="list-style-type: none"> ➤ Snake Bite,Drowning, ➤ Hypothermia and Hyperthermia 												10	12			
													10	8			
													5	5			
													3	2			
2	SECTION II Must to know Medical Triage- concept of Emergency: <ul style="list-style-type: none"> • Definition, Importance and rules • Code tags and triage terminology • Transportation of the injured 												4	5			
3	SPT													48			

Textbook

Sr.No.	Title
1	Handbook of first Aid- Neelam Makheja

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	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

- **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)

IV SEMESTER SYLLABUS

Course Code	Course Title	Hours			
		Th	Pr	SPT	Tot
PT-401	Pharmacology	48	-	-	48
PT-402	Electro Therapy- II	64	96	96	256
PT-403	General Medicine(including Gerontology & 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 should be able to -

1. Describe Pharmacological effects of commonly used drugs on various systems, list their adverse reactions, precautions & 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, efficiency & safety for individual needs.
4. Get the awareness of other essential & commonly used drugs, need 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 8. B] Desirable to Know –Major groups of drugs described in topics 9 &10 C] nice to know- topics in 11 &12	Hours of teaching/learning	
		Theory	Practical
1	General Pharmacology <ul style="list-style-type: none"> • 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. • Factors modifying drug action. 	7	-
2	Drugs acting on Central Nervous System <ul style="list-style-type: none"> • Alcohol • Sedatives and Hypnotics • Anti-epileptic drugs 	7	-

	<ul style="list-style-type: none"> • General Anaesthetics • Opioid Analgesics • NSAIDS • Antipyretics • Anti-psychotics, Antidepressants • Drug Therapy in Parkinsonism 		
3	Drugs acting on Peripheral Nervous System <ul style="list-style-type: none"> • Skeletal muscle relaxants. • Local Anaesthetics. 	2	-
4	Drugs acting on CVS and blood <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • For URTI, Sinusitis – cough, laryngitis, Pharyngitis. • Drugs for treatment of bronchial asthma, COPD 	2	-
6	Drugs acting on Autonomic Nervous System <ul style="list-style-type: none"> • Introduction to ANS and Cholinergic agonists – I • Cholinergic agonists – II • Cholinergic antagonists • Adrenergic agonists – I • Adrenergic agonists – II • Adrenergic antagonists 	4	-
7	Endocrinology <ul style="list-style-type: none"> • Introduction to Endocrinology, • Thyroid hormones & Antithyroid drugs. • Treatments of diabetes mellitus. • Corticosteroids • Oestrogen and Progesterone 	4	-
8	Drugs acting on Kidney –Diuretics	2	-
9	Chemotherapy Desirable to know <ul style="list-style-type: none"> • General principles of chemotherapy. • Sulfonamides & Fluoroquinolones. • Beta – Lactam antibiotics – I (Penicillins) • Beta – Lactam antibiotics – II (Cephalosporins) • Macrolides & aminoglycosides • Tetracyclines & chloramphenicol (Broad spectrum antibiotics) Must to know <ul style="list-style-type: none"> • Anti-Tuberculosis drugs • Anti – Leprosy drugs 	7 4 3	-
10	Drugs in poisoning (Desirable to know)	3	

Nice to know			
11	Drugs used in Gastrointestinal Disorders <ul style="list-style-type: none"> • Peptic Ulcer • Anti-emetics • Laxatives • Anti-diarrhoeal drugs 	2	
12	Miscellaneous Topics <ul style="list-style-type: none"> • 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	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 :- ELECTRO THERAPY- II																		
Course Code:- PT 402																		
Course Credit for ELECTRO 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	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 should be able to -																		
<ol style="list-style-type: none"> Describe the Production & Physiological effects, Therapeutic uses, merits, demerits indication & contraindications of various low and medium Frequency Currents modes. Describe the Physiological effects & therapeutic uses of various therapeutic ions & topical Pharmaco-therapeutic agents to be used for the application of Iontophoresis & phonophoresis Acquire the skill of Application of the Electro therapy modes like UVR and LASER on models, for the purpose of Assessment & Treatment. Acquire an ability to select the appropriate mode as per the tissue specific & area specific application. 																		
Course Content																		
Topic Serial No.	Title of content											Hours of teaching/learning						
												Theory		Practical				
1	Low frequency currents – Must know <ul style="list-style-type: none"> Physiological effects, therapeutic uses, indications and contraindications and dangers of: faradic type current, intermittent galvanic current and galvanic current Cathodal /Anodal Galvanism, Iontophoresis with various ions & Pharmaco therapeutic drugs. Electrical stimulation for re-education – short /long pulse motor points Faradic current under pressure /elevation. Electrical Reactions and Electro – diagnostic tests: <ul style="list-style-type: none"> Electrical Stimuli and normal behaviour of Nerve and muscle tissue. Types of lesion and development of reaction of degeneration. Faradic – Intermittent direct current test. S.D. Curve and its application (characteristics, Chronaxie, Rheobase & pulse ratio) High voltage pulsed galvanic current TENS: Define, Principles of production, types, dosage, electrode placement, Physiological and therapeutic effects, indication and contraindications. Desirable to know - <ul style="list-style-type: none"> Micro –currents 											40		35			15	
												8		10				
												2		8				
												6		20				
												4		2				
												4		5				

	<ul style="list-style-type: none"> • Didynamic currents <p>Nice to know</p> <ul style="list-style-type: none"> ➤ Functional electrical stimulation ➤ Long wave diathermy ➤ NEMS 	3	3
2	<p>Medium frequency currents must know –</p> <p>Interferential therapy: Define, Principles of production, static Interferential system, dynamic interference system, Physiological and therapeutic effects, indication and contraindications. dosage, placement</p> <p>Desirable to know</p> <ul style="list-style-type: none"> • Russian currents • Rebox type currents 	6 4	10
3	<p>Desirable to know</p> <p>Biofeedback method:</p> <p>Instrumentation, principles, therapeutic effects, indications, contraindications, limitations, precautions, operational skills and patient preparation</p>	3	2
4	<p>Ultra – violet rays (UVR):</p> <ul style="list-style-type: none"> • 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	<p>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.</p>	4	5
6	<p>Care of wound –application of Therapeutic currents, Ultrasound, U.V.R. & LASER</p>	2	3
7	<p>Nice to know- Combination Therapy</p>	2	2
8	<p>Desirable to Know</p> <p>Intermittent Therapy unit, its operation and different methods of application region wise.</p> <p>Intermittent Pneumatic Therapy unit, its operation and different methods of application – region wise.</p>	2	4
9	<p>Respect for human vulnerability and personal integrity</p> <ul style="list-style-type: none"> • 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	
	SPT		96

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 (Simulated presentation of technique & demonstration)

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 3 out of 4	5x3=15 marks 3x5=15 marks
Sec C	Long Answer Questions 1. Based on Low frequency modes 2. Based on Medium frequency currents OR 2. Based on U.V.R./LASER LAQ should give break up of 15 marks – e.g. [3 +5+7]	15 marks 15 marks 15 marks

Practical examination (80 marks)

1.	Long Case On model Motor points /U. V. R. Test Dose. Faradism under Pressure	35 marks
2.	Short Cases-1 Based on TENS/LASER	20 marks
3.	Short Cases-2 Based on medium Frequency current/ low frequency current	20 marks
4	Journal	5 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 should be able to -

1. Describe Etiology, Pathophysiology, Signs &Symptoms &Management of the various Endocrinal, Metabolic, Geriatric, dermatology &Nutrition Deficiency conditions.
2. Describe Etiology, Pathophysiology, Signs & Symptoms, Clinical Evaluation & Management of the various Rheumatological, Cardiovascular and Respiratory Conditions.
3. Interpret Chest X-ray, Blood gas analysis, P.F.T. findings, Blood investigations done for various medical and Rheumatological conditions.

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	DISEASES OF THE CARDIO-VASULAR SYSTEM Must to Know <ul style="list-style-type: none"> • Examination of Cardiovascular System • ECG – Normal & Variations due to ischemia & infarction • Stress Test Definition, Etiology, Clinical Features, Complications, Management of the following Cardio-vascular diseases: <ul style="list-style-type: none"> ➤ I.H.D.–Myocardial infarction ➤ Valvular Heart Disease – i) Congenital ii) Acquired ➤ Rheumatic Fever & Rheumatic Heart Disease ➤ Infective Endocarditis ➤ Congenital Heart Disease, Unstable Angina 	16	
2	DISEASES OF THE RESPIRATORY SYSTEM Must to Know <ul style="list-style-type: none"> • Examination of Respiratory System • Introduction of clinical examination–Breath sounds, X ray chest, ABG, PFT • 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	23	

	Features, Diagnosis and Management Desirable To Know <ul style="list-style-type: none"> • Arrhythmia – classification • Occupational lung diseases like silicosis,Asbestosis, Pneumoconiosis,Brucellosis, Farmer’s Lung • Intensive Medical Unit – Infrastructure & Treatment 	2 5	
B	GENERAL MEDICINE, RHEUMATOLOGY & GERONTOLOGY		
1	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 <ul style="list-style-type: none"> • Thyroid, • Pituitary & Adrenal conditions • Calcium Metabolism 	8 3 2 3	
2	Rheumatological Conditions Must To Know <ul style="list-style-type: none"> • Introduction to Rheumatology and Classification • Rheumatoid Arthritis , Juvenile RA • Chicken Gunia, Psoriatic, Gouty Arthritis, S S A 	5	
3	Geriatric Conditions Must to Know <ul style="list-style-type: none"> • Osteoporosis : Causes, Clinical features,Complications, Management- medical and surgical • Hypertension: Definition, causes, classification, types, assessment, investigations and management. Desirable To Know <ul style="list-style-type: none"> • Aging Process • General Health Care, Wellness Clinic • Nutrition Deficiency Disease & Drug Abuse / Intoxication 	7 4 3	
C	Dermatology		
1	At the end of the course, the student will <ul style="list-style-type: none"> • Be able to describe the Pathophysiology, Signs & Symptoms, Clinical Features, Examination & Management of Common Skin Conditions 		
2	Must To Know <ul style="list-style-type: none"> • Structure, function and lesions of skin • Acne • Pigmentary disorders: Localized &Gen Pigmentary • Papule-squamous disorders: Psoriasis, PR, Lichen planus, PRP • Topical therapy in Dermatology & Hair disorders - Alopecia ,Hirsutism 	12	

	<ul style="list-style-type: none"> • Leprosy • Sexually Transmitted skin lesions- HIV, Syphilis <p>Nice to know</p> <ul style="list-style-type: none"> • Bacterial (impetigo, carbuncle. SSS)& 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 : Chaneroid LGV • G. inguinale, Hair deformity 	8	
3	CLINICAL Medicine Dermatology		32 20 12

Text Books

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

Sec A	<ul style="list-style-type: none"> • MCQ (10 MCQ CVS & Gerontology & 10 MCQs Dermatology) 	20x1=20 marks
Sec B	<ul style="list-style-type: none"> • Very Short answer questions. Answer any 5 out of 6 • Short answer questions. Answer any 3 out of 4 	5x3=15 3x5=15
Sec C	<ul style="list-style-type: none"> • Long Answer Questions (compulsory) • 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 ENVIRONMENTAL SCIENCES

Course Code:- PT 404

Course Credit for COMMUNITY MEDICINE, SOCIOLOGY AND ENVIRONMENTAL SCIENCES

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 should be able to –

1. Understand the concept of health & disease, epidemiological effects, socio economical and cultural issues
2. Know the importance of family planning immunization programme and physical & mental health
3. Understand occupation hazards, Health education and disaster management
4. Understand the concept of society, socialization & social problems in different communities
5. Know about natural resources, ecosystems, biodiversity and its conservation
6. Know and understand the environment and the effect on it due to social issue, population & pollution.

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 <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> Sources of hospital waste, Health hazards, Waste Management 	3	2
8	Disaster Management <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 – Alcoholism, Neuromotor, Psychosomatic disorders and Smoking	1	2
11	DESIRABLE TO KNOW <ul style="list-style-type: none"> 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. 	2	2
12	Mental Health <ul style="list-style-type: none"> 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	-

13	Nutrition and Health <ul style="list-style-type: none"> • Nutritional problems in public health • Community nutrition programmes 	1	1
14	NICE TO KNOW Health programmes in India <ul style="list-style-type: none"> • 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 Immunization programme • Reproductive and child health programme • National cancer control programme • National mental health programme • National diabetes control programme • National family welfare programme • National sanitation and water supply programme, • Minimum needs programme 	3	3
Topic Serial	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	-
	Family-Influence on human personality, Individual Health, Family & Nutrition, Effects of Sickness on Family Psychosomatic Diseases & Family	2	
6	Social problems of the Disabled-Consequences of the following social problems in relation to sickness disability, remedies to prevent these problems <ul style="list-style-type: none"> • 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	Culture-Components Impact on Human Behaviour Cultural Meaning of Sickness, Response to Sickness & Choice of Treatment.	1	-
3	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	-
4	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	-
5	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. ENVIRONMENTAL SCIENCES	Hours of teaching/learning	
		Theory	Practical
1	Must to know: Multidisciplinary nature of environmental studies Definition, scope and importance, Need for public awareness.III	1	-
2	Natural Resources Must to know: <ul style="list-style-type: none"> • Water resources : Use and over-utilization of surface &ground water, • Floods, drought, conflicts over water, dams-benefits &problems. • Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. • Energy resources : Growing energy needs, renewable and non-renewable • Energy sources, use of alternate energy sources. Case studies. • Role of an individual in conservation of natural resources.Equitable use of resources for sustainable lifestyles Desirable to know <ul style="list-style-type: none"> • 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. 	1	-

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 community+5 Sociology+ 5 Env. Sci)	20x1=20 marks
Sec B Community Medicine	1.Short answer questions.(Answer any 5out of 6 2.Short answer any 3 out of 4 questions.	5x3=15 3x5=15
Sec C Sociology & Env. Sci.	1. Short answer questions. Answer any 5 out of 6 2. 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	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	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 should be able to -

1. 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. Read & interpret a] salient features of the X-ray of the spine & Extremities pathological/ biochemical studies pertaining to Orthopaedic Conditions
4. Correlate the radiological findings with the clinical findings

Course Content

Topic Serial No.	MUST TO KNOW Title of content	Hours of teaching/learning	
		Theory	Practical
1.	Introduction <ul style="list-style-type: none"> • Introduction to orthopaedics. • Clinical examination in an Orthopaedic patient. • Common investigative procedures. • Radiological and Imaging techniques in Orthopaedics. 	3	-
2.	Traumatology <ul style="list-style-type: none"> • Fracture: definition, types, signs and symptoms. • Fracture healing. • Complications of fractures. • Conservative and surgical approaches. • Principles of management – reduction (open/closed, immobilization etc). • Subluxation/ dislocations – definition, signs and symptoms, management (conservative and operative). 	3	-
3.	Fractures and Dislocations of Upper Limb Fractures of Upper Limb - causes, clinical features, mechanism of injury, complications,	4	3

	<p>conservative and surgical management of the following fractures:</p> <ul style="list-style-type: none"> • 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, Galeazzi fracture – dislocation. • Chauffeur’s fracture. • Colle’s fracture. • Smith’s fracture. • Scaphoid fracture. • Fracture of the metacarpals. • Bennett’s fracture. • Fracture of the phalanges. (Proximal and middle.) <p>Dislocations of Upper Limb :</p> <ul style="list-style-type: none"> • 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. 		
4.	<p>Fracture of Spine</p> <ul style="list-style-type: none"> • 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). . • Hangman’s fracture. • Fracture odontoid. • Fracture of atlas. • Fracture of Thoracic and Lumbar Regions - 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. 	4	3
5.	<p>Fractures and Dislocations of Lower Limb</p> <p>Fracture of Pelvis and Lower Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures:</p> <ul style="list-style-type: none"> • Fracture of pelvis. 	4	3

	<ul style="list-style-type: none"> • Fracture neck of femur – classification, clinical features, complications, management - conservative and surgical. • Fractures of trochanters. <ul style="list-style-type: none"> a) Intertrochantric b) Subtrochantric • 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. <p>Dislocations of Lower Limb Mechanism of injury, clinical features, complications, management of the following dislocations of lower limb.</p> <ul style="list-style-type: none"> • Anterior dislocation of hip. • Posterior dislocation of hip. • Central dislocation of hip. • Dislocation of patella. Recurrent dislocation of patella. 		
6.	<p>Diseases of Bones and Joints Causes, Clinical features, Complications, Management-medical and surgical of the following conditions :</p> <ul style="list-style-type: none"> • Infective: Osteomyelitis, TB Spine and other major joints • Perthes, Slipped Capital Femoral Epiphysis , Avascular Necrosis • Metabolic: Osteoporosis, Osteopenia Osteomalacia, Rickets 	4	2
7.	<p>Peripheral nerve injuries Mechanism, Clinical Features, Management and Complications</p>	3	1
8.	<p>Deformities Clinical Features, Complications, Medical and Surgical Management of the Following Congenital and Acquired Deformities. <u>Congenital Deformities</u></p> <ul style="list-style-type: none"> • CTEV • CDH. • Torticollis. 	2	2

	<ul style="list-style-type: none"> • Scoliosis. • Flat foot. • Vertical talus. • Hand anomalies- syndactyly, polydactyly and ectrodactyly. • Cervical rib. <p><u>Acquired Deformities</u></p> <ul style="list-style-type: none"> • Acquired Torticollis. • Scoliosis. • Kyphosis. • Lordosis. • Genu varum, Genu valgum, Genu recurvatum • Coxa vara. • Pes cavus, Pes Planus • Hallux rigidus. Hallux valgus. Hammer toe. Metatarsalgia. 		
9.	<p>Inflammatory and Degenerative Conditions Causes, clinical feature, complications, deformities, radiological features, management- conservative and surgical for the following conditions :</p> <ul style="list-style-type: none"> • Osteoarthritis. • Rheumatoid arthritis. • Ankylosing spondylitis • Gouty arthritis. • Psoriatic arthritis. • Hemophilic arthritis. • Still's disease (Juvenile Rheumatoid Arthritis). • Charcot's joints. 	3	1
10.	<p>Soft Tissue Injuries</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> ➤ 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	4
11.	<p>Regional Conditions Definition, Clinical features and management of the following regional conditions:</p> <ul style="list-style-type: none"> • Shoulder: Periarthritic shoulder (adhesive capsulitis). Rotator cuff tendinitis. Subacromial Bursitis. • Elbow: Tennis Elbow. Golfer's Elbow. Olecranon 	4	3

	<p>Bursitis (student's elbow). Triceps Tendinitis.</p> <ul style="list-style-type: none"> • 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 		
12.	<p>Amputations</p> <ul style="list-style-type: none"> • Definition • Levels of amputation of both lower and upper limbs • Indications • Complications • Management 	3	2
13.	<p>Hand Injuries Mechanism of injury, clinical features, and management of the following:</p> <ul style="list-style-type: none"> • Crush injuries. • Flexor and extensor injuries. • Burn injuries of hand. 	2	1
14.	<p>Cervical and Lumbar Pathology Causes, clinical feature, patho-physiology, investigations, management-Medical and surgical for the following :</p> <ul style="list-style-type: none"> • Prolapsed intervertebral disc (PID) • Spinal Canal Stenosis. • Spondylosis (cervical and lumbar) • Spondylolysis. • Spondylolisthesis. • Lumbago/ Lumbosacral strain. • Sacralisation. Lumbarisation. • Coccydynia. • Hemivertebra. 	3	2
15	<p>Orthopedic Surgeries Indications, Classification, Types, Principles of management of the following Surgeries : Orthodesis Arthroplasty (partial and total replacement)</p> <ul style="list-style-type: none"> • Osteotomy • External fixators • Spinal stabilization surgeries (Harrington's, Luque rod, Steffi plating) etc. 	2	2
16	<p>DESIRABLE TO KNOW</p> <ul style="list-style-type: none"> • Bone tumors: classification, clinical features, management 	1	2

	<ul style="list-style-type: none"> • Re-constructive surgeries in Polio & cerebral palsy (bone & soft tissues) <p>Syndromes Causes, Clinical features, complications, management-conservative and surgical of the following:</p> <ul style="list-style-type: none"> • Cervico brachial syndrome • Thoracic outlet syndrome • Vertebro- basilar syndrome • Scalenus syndrome • Costo clavicular syndrome • Levator scapulae syndrome • Piriformis syndrome. <p>Connective Tissue Disorders</p> <ul style="list-style-type: none"> • Systemic Lupus Erythematosis • Scleroderma • Dermatomyositis • Mixed connective tissue Disease (MCTD) 	3	
		3	
		2	
17.	<p>NICE TO KNOW</p> <ul style="list-style-type: none"> • Arthrogryposis multiplex congenita (amyoplasia congenita). • Arthrodesis • Clay shoveller's fracture • Limb deficiencies- Amelia and Phocomelia. • Klippel feil syndrome. • Osteogenesis imperfecta(fragile ossium). 	6	1
CLINICAL -			
Independent Clinical Orthopaedic evaluation, presentation & recording of :			
<ul style="list-style-type: none"> • 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 <p>OBSERVATION: At least 2 surgeries of fracture internal fixation, one knee/hip replacement & Re-constructive surgery of the tendons</p>			
18	SCT		48

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	Orthopadic for physiotherapist – John Ebner

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

- **SUPERVISED CLINICAL TRAINING:**

All the SCT 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	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	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 should be able to -																	
<ol style="list-style-type: none"> 1. 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. Describe normal development & growth of a child, importance of Immunization & breast-feeding & psychological aspect of development. 5. Acquire skill of clinical examination of a neonate /child with respect to neurological, Musculoskeletal, Respiratory & Cardiovascular conditions. 6. Acquire the knowledge of behavioral disorder 																	
Course Content – (Section A)																	
Neurology																	
Topic Serial No.	Title of content											Hours of teaching/learning					
												Theory		Practical			
1	Cerebro –vascular accidents Define: Stroke, TIA, RIA, Stroke in evolution, Lacunar infarct. Risk Factors, Causes, Investigations, Differential Diagnosis, Management- Medical & Surgical, Complications											2		-			
2	Movement Disorders Definition, etiology, risk factors, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders : <ul style="list-style-type: none"> • Parkinson’s disease • Dystonia • Chorea • Ballismus, • Athetosis • Tics, Myoclonus • Wilson’s disease 											2		-			
3	Polyneuropathy <ul style="list-style-type: none"> • Classification of Polyneuropathies • Causes, clinical features, management of GBS, Diabetic and Alcoholic Neuropathy 											1		-			
4	Disorders & Diseases of muscle <ul style="list-style-type: none"> • Classification, investigations, imaging methods, Muscle biopsy, management of muscle diseases, genetic counselling. • Classification, etiology, signs & symptoms of Muscular dystrophy and Myotonic dystrophy 											2		-			

5	Motor neuron diseases Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications of following disorders: <ul style="list-style-type: none"> • Amyotrophic lateral sclerosis • Spinal muscular atrophy • Hereditary bulbar palsy • Neuromyotonia • Post-irradiation lumbosacral polyradiculopathy. 	2	-
6	Multiple Sclerosis Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications	1	-
7	Infections of brain and spinal cord Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders: <ul style="list-style-type: none"> • Meningitis • Encephalitis • Neurosyphilis • Herpes • HIV infection • Poliomyelitis and Post-polio syndrome • Leprosy • Tetanus 	2	-
8	Higher cortical, neuro psychological and neurobehavioral disorders <ul style="list-style-type: none"> • 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	-
9	Cerebellar & Co-ordination disorders <ul style="list-style-type: none"> • Congenital Ataxia • Friedrich’s Ataxia • Tabes dorsalis 	1	-
10.	Disorders of lower cranial nerves & Special Senses Etiology, clinical features, investigations, and management of following disorders <ul style="list-style-type: none"> • Trigeminal neuralgia • Lesions in facial nerve: Facial palsy, Bell’s palsy, Hemi facial spasm • Glossopharangeal neuralgia • Lesionns of Vagus, Spinal accessory nerve, Hypoglossal nerve. • Disorders of special senses 	2	-

11.	Disorders of Myoneural Junction Etiology, classification, signs & symptoms, investigations, management, of following Disorders: <ul style="list-style-type: none"> • Myasthenia gravis • Eaton-Lambert syndrome • Botulism 	1	-
12	Spinal cord Disorders <ul style="list-style-type: none"> • Functions of tracts Definition, etiology, risk factors, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders: <ul style="list-style-type: none"> • Spinal Cord Injury , • Epidural abscess, • Transverse myelitis, • Spina bifida, • Conus medullaris syndrome • Bowel & Bladder Dysfunction 	2	-
13.	Head injury Etiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications.	1	-
14.	Brain tumors and spinal tumors Classification, clinical features, investigations, medical and surgical management.	1	
Desirable To Know			
15.	Disorders of Anterior Horn Cell	1	-
16	Dysfunction of Autonomous Nervous System	1	-
17	Neurological Investigations X-Ray, CT, MRI, Evoked Potentials, LP, CSF, EMG, NCV, EEG	2	
Nice To Know			
18	Circulation of the brain & spinal cord	1	
19	Cerebrospinal Fluid i) Formation & Absorption ii) Status in Various Disorders	1	
CLINICAL			
History, Evaluation, presentation and recording of cases in <ul style="list-style-type: none"> • Central nervous system – 3 cases • Peripheral nervous system- 2 cases 		20	
20	SCT		23

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

Course Content – (Section B)			
Paediatrics			
Topic Serial No.	MUST TO KNOW 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	1	-
8.	Orthopedic and Neurological disorders in childhood, Clinical features and management ; <ul style="list-style-type: none"> • Cerebral palsy • Meningitis • Encephalitis • Hydrocephalus • Ataxia • Arnold-chiari malformation • Basilar impression & Cerebral malformations • Dandy walker syndrome • Down's syndrome • Floppy infant • GBS • Poliomyelitis • Epilepsy • Neural tube defects in Paediatrics • Muscular dystrophies & Neuropathy 	2	-
11.	Nutritional disorders of childhood Rickets and scurvy, PEM (Kwashiorkar and Marasmus)	1	-
12.	Infections – Congenital & Neonatal, Mental retardation	1	-
13.	Coma in Paediatrics and Acute rheumatic fever	1	-
14	DESIRABLE TO KNOW : <ul style="list-style-type: none"> • Sensory disorders Problems resulting from loss of vision and hearing Learning and behavioural problems • Attention Deficit Hyperactivity Disorder • Autism, • Challenging behaviours, • Bronchiolitis, & Wheezy baby 	3	

15	NICE TO KNOW : <ul style="list-style-type: none"> • Educational delay, • The Clumsy Child • Normal intra-uterine development of foetus 	2	
Clinical			12
<ul style="list-style-type: none"> • Normal & abnormal reflexes in neonate & child • Examination of the nervous system • Examination of respiratory system • Examination of cardiovascular system 			
16	SCT		15

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.	MUST TO KNOW 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 amnesic 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.	1	-
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, Psychopharmacological management	1	-
10	DESIRABLE TO KNOW: <ul style="list-style-type: none"> • psychiatric emergencies and their management 	2	
11	NICE TO KNOW: <ul style="list-style-type: none"> • Electroconvulsive therapy and other biological methods of treatment. 	1	-
12	SCT		10

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.
(10 neurology+5 Paediatrics+ 5Psychiatry)

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

Sec A	MCQ (10 neurology+5 Paediatrics+ 5Psychiatry)	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 Psychiatry	1. Short answer questions-Answer any 5 out of 6 2. Short answer questions-Answer any 5 out of 6	5x3=15 5x3=15

- **SUPERVISED PRACTICAL TRAINING:**

All the SCT 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	SC T	Tot	Lec	Pr	SC T	Tot	Lec	Pr	SC T	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 should be able to-																	
<ol style="list-style-type: none"> 1. Acquire the skill of detection & objective documentation of the Neurological, Musculoskeletal, cardiovascular & pulmonary dysfunctions 2. acquire skills to assess pain, altered muscle power, mobility, endurance, obesity, limb length, posture, gait, hand function & A.D.L. in adult to arrive at the Functional diagnosis as per International Classification of Functioning. 3. Acquire the skills to use the therapeutic currents, Electro-diagnosis of sensory, motor dysfunction & pain. 4. Interpret common investigations used for functional diagnosis. 																	
Course Content – PHYSICAL & FUNCTIONAL DIAGNOSTIC SKILLS																	
Topic Serial No.	MUST TO KNOW Title of content											Hours of teaching/learning					
												Theory		Practical			
1	ASSESSMENT OF MUSCULO SKELATAL FUNCTION											15					
2	SOAP Format of Assessment : <ul style="list-style-type: none"> • Chief Complaint • History Taking • Assessment of Posture • Assessment of Gait • Palpation : Limb Length and Girth measurement • Selective Tissue Tension Testing: Examination of joint integrity (Contractile tissues Non 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	Assessment of articular & extra- articular soft tissue status <ul style="list-style-type: none"> • Myofascial assessment • Acute & Chronic muscle strain Outcome Measures																
4	Functional Diagnosis using ICF																
5	Interpretation of X-ray of extremities & spine,																
ASSESSMENT OF HAND												5					
1	Sensations																
2	Mobility of joints																
3	Strength																
4	Special Tests like Froment's Sign, Bunnel – Litter's Test,																
5	Phalen's Test, Tinels Sign, Wartenberg's Sign Hand Function – Precision and Power grips																

ASSESSMENT OF NEUROMUSCULAR FUNCTION		15	-
	<ol style="list-style-type: none"> 1. Higher functions 2. Cranial nerves 3. Sensations & sensory organization (Dermatome, Myotome and Sclerotome) 4. Joint mobility 5. Body image 6. Tone 7. Reflexes-Superficial & Deep 8. Voluntary control 9. Muscle Strength 10. Co-ordination 11. Balance 12. Endurance 13. Trick movements 14. Limb Length 15. Posture 16. Gait 17. Scales-Berg 's Balance, Ashworth, Glasgow Coma, DGI,MMSE 18. Functional Diagnosis using ICF 		
• ASSESSMENT OF CARDIO VASCULAR & PULMONARY DYSFUNCTION		15	-
<ol style="list-style-type: none"> 1. Demographic Data 2. Chief complaint 3. HOPI 4. History of Symptoms 5. Past Relevant Histories 6. Vital Parameters 7. Dyspnoea assessment 8. Examination: Head and Neck, Chest and Extremities 9. Palpation: Head and Neck, Chest and Extremities 10. Measurements: Chest Expansion, symmetry of chest movement 11. Auscultation: Normal and Abnormal Breath Sounds Special tests : Breath Holding Test etc. Outcome Measures & Investigations: <ul style="list-style-type: none"> ➤ BORG and Modified BORG scale for Rating of Perceived Exertion (RPE), Exercise Tolerance – six minutes walk test, Theoretical bases of Bruce's protocol. ➤ ABG, PFT, ECG- (Normal & Variations in common pathologic conditions) ➤ X-ray Chest <ul style="list-style-type: none"> • Tests for Peripheral Arterial & Venous circulation • Ankle Brachial Index 			
ASSESSMENT OF OBESITY		5	-
<ul style="list-style-type: none"> • Pathophysiology • Assessment – BMI, Waist – Hip Ratio • Assessment of Fitness-Flexibility, Endurance and Agility • Obesity – Skin fold measurement, Anthropometric measurements, Newer Methods 			

	<p>Autonomy and individual responsibility, Consent</p> <ul style="list-style-type: none"> • Autonomy and individual responsibility (2 hrs) <ul style="list-style-type: none"> ○ Different levels and notions of autonomy ○ Responsibility: its different aspects and dual nature ○ Autonomy and patient’s right to self-determination in treatment ○ The patient’s right to refuse a health care provider’s recommendation ○ Special measures for protecting the rights and interests of socially and mentally disabled patients ○ patient responsibilities • consent (2 hrs) <ul style="list-style-type: none"> ○ Purpose of the principle of consent <ul style="list-style-type: none"> ▪ Prior , free & informed consent in patient treatment & handling ○ What is express consent? ○ Withdrawal of consent ○ The patient’s right to refuse ○ Consent of subjects of scientific research. ○ Compare the provisions for consent in scientific research with those for medical interventions ○ Consent by individual, group and community ○ Exceptional circumstances for the application of the principle of consent • Persons without the capacity to consent (1 hr) <ul style="list-style-type: none"> ○ Criteria for capacity to consent ○ Categories of persons without the capacity to consent <p>How to obtain consent in health care practice for these special categories?</p> 	5	
	<p>DESIRABLE TO KNOW</p> <ul style="list-style-type: none"> • Assessment of swelling • Observational Movement analysis and Analysis of Muscle Work • COPD questionnaire 	12	
	<ul style="list-style-type: none"> • Dyspnoea assessment • Scales: FIM, ASIA, BARTHEL INDEX, FUGEL MEYER, RLA, STREAM, MMSC, BOT, GMFS, ➤ ASSESSMENT OF PAIN • Intensity & quality • Body Diagram • Objective assessment & documentation – VAS, Mc Gill’s modified questionnaire, Numerical Rating Scale • Interpretation of Electro diagnostic findings, 		

	NICE TO KNOW : <ul style="list-style-type: none"> • Quality of life questionnaire • Routine, bio-chemical investigation • Ankle Brachial Index • Tinnels sign • Shuttle walk /run test • COPD questionnaire, • Demographic Data Collection • Peak Flow Meter 	8	
CLINICALS AND PRACTICAL TRAINING			96
	<ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • 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 		
	Case presentation with Functional diagnosis – Three cases Each in <ul style="list-style-type: none"> • Musculoskeletal • Neurological • Cardiovascular & Pulmonary To maintain the Record/Journal of the term work & to get each assignment duly signed by the Incharge.		
	SCT		96

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 (Spots/ Demonstration on model)

Preliminary Examination / University (Final) Examination

Written Examination (80 marks)

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

• Practical Examination (80 marks)

1	Long Case (Case Based Evaluation)	35
2	Short Case (Technique/Skill Based Evaluation/Simulated cases)	20x1=20
3	Spots (X Ray, ABG, PFT, Outcome Measures)	5x4=20
4	Journal	5

• SUPERVISED CLINICAL TRAINING

- Journals = 5 marks (Orthopedic- 3 ; Neuro-3; Cardiorespiratory-2; CBR-2)

All the SCT 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	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	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 should be able to																	
1. Describe the normal & abnormal physiological events during the Puberty, Pregnancy, Labour, Puerperium, & Pre, Peri & Post Menopause.																	
2. 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			Total		Theory		Practical			Total				
1.	Anatomy of female genital system and pelvic floor											2	-			-	
2.	Pregnancy <ul style="list-style-type: none"> • 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	-			-	
3.	Menopause <ul style="list-style-type: none"> • Physiology • Complications • Effect on Various systems • Management 											4	-			-	
4.	Uro-genital dysfunction <ul style="list-style-type: none"> • Uterine prolapse – classification & management (Conservative /Surgical) • Cystocoele, Rectocoele, Enterocoele • Urinary Incontinence: Types, Causes, Assessment and Management. • Pelvic Inflammatory Diseases • Polycystic Ovarian Disease (PCOD) 											4	-			-	
5.	Surgical Procedures involving child birth <ul style="list-style-type: none"> • Caesarian Section • Episiotomy 											3	-			-	
6.	Definition, Indications and Management of the following surgical procedures <ul style="list-style-type: none"> • Dilatation and Curettage • Hysterectomy – Total Abdominal and Vaginal Salphigectomy and oophorectomy 											4	-			-	

7.	Desirable to know : <ul style="list-style-type: none"> • Neoplasm of Female reproductive organs – surgical management • Menstrual cycle and its Disorders • Methods of family planning 	1 2 2	-
8.	Nice to know : <ul style="list-style-type: none"> • Sterility – management • Multiple gestations 	2 1	-
9.	CLINICAL	-	32
	Evaluation & presentation of Two cases Each in <ul style="list-style-type: none"> • Uro-genital dysfunction • Antenatal care • Postnatal care <ul style="list-style-type: none"> ➤ 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.		
10.	SCT		48

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 (10 Minutes)	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

- **SUPERVISED CLINICAL TRAINING:**

All the SCT 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																		
<ol style="list-style-type: none"> Understand & describe pre operative evaluation various surgical indications in abdominal thoracic, Neuro Surgical & Peripheral vascular conditions. Understand surgical steps & approaches in short & should be able to describe components of soft tissues cut to reach target tissue & complications. Assess post operative complications & its implications in ward treatment, prognosis, morbidity & mortality. Describe effects of surgical trauma & Anaesthesia in post operative course. Understand classify, clinically assess, evaluate & describe surgical management in brief in. a) Wounds and Ulcers b) Burns c) Head Injuries Read & interpret finding of X-ray chest & Abdomen, CT Scan, USG. 																		
Course Content																		
Topic Serial No.	MUST TO KNOW Title of content											Hours of teaching/learning						
												Theory	Practical					
1.	Infection and inflammation-acute / chronic-signs, symptoms, complications & management.											3	-					
2.	Wounds and ulcers – classification, healing, management.											3	2					
3.	Abdominal Surgeries: <ul style="list-style-type: none"> Surgical anatomy of Anterior Abdominal wall Surgical approaches. Common abdominal surgeries like Cholecystectomy, Colostomy, Ileostomy, Gastrectomy, Hernias, Appendicectomy, Nephrectomy, Prostatectomy. 											5	2					
4.	Thoracic surgeries <ul style="list-style-type: none"> Thoracotomy - Definition, Types of Incisions with emphasis to the site of incision, muscles cut and complications. 											3	2					
	A) Lung surgeries: <ul style="list-style-type: none"> Pneumonectomy 											4	3					

	<ul style="list-style-type: none"> • Lobectomy, • Segmentectomy – Indications, Physiological changes and Complications • Thoracoplasty • Pleurectomy • Pleurodesis and Decortication of the Lung. • Intercostal Drainage System <p>B) Cardiac surgeries</p> <ul style="list-style-type: none"> • 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. 	4	3
5.	<p>Peripheral vascular diseases Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases:</p> <ul style="list-style-type: none"> • Atherosclerosis • Arteriosclerosis • Buerger's • Raynaud's • Varicose veins & DVT 	4	
6.	<p>Burns and Plastic Surgery</p> <ul style="list-style-type: none"> • 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. • Hypertrophic scar & keloid – management c]-Principles of tendon transfers-with special emphasis to hand, foot & facial paralysis 	5	-
7.	<p>Emergency Surgical Procedures: Tracheostomy, Indications: steps, post operative care</p>	4	-
8.	<p>Introduction, Indications and Complications of following Neuro surgeries</p> <ul style="list-style-type: none"> • 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 	5	-

11.	Surgical trauma: <ul style="list-style-type: none"> • Response of body • Effect of Anesthesia, • Shock & its types. • Fluid & electrolyte balance. Total Parenteral Nutrition.	4	-
13.	Clinical Radiology-X-ray-chest-normal/abnormal	4	-
14.	DESIRABLE TO KNOW <ul style="list-style-type: none"> • Auscultation & its interpretation, with special emphasis to Pulmonary Function, Reading & Interpretation of the X-ray chest, P.F.T., Blood-Gas analysis • Surgical Oncology – Cancer – definition, types, clinical manifestations of cancer, Staging of Cancer, surgical procedures involved in the management of cancer. • Common ENT problems ENT conditions & its management : Otitis MediaSurgical treatments in VII (facial) & VIII nerve palsy NICE TO KNOW AREA <ul style="list-style-type: none"> • Various eye problems – surgeries for III, IV nerve palsy, cataract IOL. • Surgeries on arteries, veins (Vascular surgery) • Bariatric Surgeries 	3 3 2 2 2 2	
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		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)

Sec A	MCQ (10 MCQ'S – general surgery & 10 MCQ'S Plastic surgery)	20x1=20 marks
Sec B	1. Very Short answer questions. Answer any 5 out of 6	5x3=15
	2. Short answer questions. Answer any 3 out of 4	3x5=15
Sec C	1.Long Answer Questions (compulsory)	1x15=15
	2.Long Answer Questions Answer any 1 out of 2	1x15=15

• **SUPERVISED CLINICAL TRAINING:**

All the SCT 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	SC T	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SC T	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 should be able to -																	
1. Gain knowledge of the basic concepts of Biostatistics & its need for professional practice & research.																	
2. 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.	MUST TO KNOW Title of content											Hours of teaching/learning					
												Theory	Practical				
1.	Introduction to Research methodology <ul style="list-style-type: none"> • Meaning of research • Objectives of research • Types of research & research approaches • Criteria for good research • Problems encountered by researchers in India. 											3	-				
2.	Research Design <ul style="list-style-type: none"> • Meaning of research design • Need for research design • Features for good design • Different research designs 											3	-				
3.	Sampling Design <ul style="list-style-type: none"> • Criteria for selecting sampling procedure • Steps in sampling design • Characteristics of good sample design • Different types of sample design 											3	-				
4	Methods of data collection <ul style="list-style-type: none"> • Collection of primary data • collection data through questionnaires & schedules • Difference between questionnaires & schedules. 											3	-				
5	Testing of hypothesis <ul style="list-style-type: none"> • 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	-				

BIOSTATISTICS

1.	Introduction <ul style="list-style-type: none">• Meaning, definition of statistics• Importance of the study of statistics• Branches of statistics• Statistics and health science including physiotherapy,	3	-
2.	Tabulation of Data <ul style="list-style-type: none">• 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 <ul style="list-style-type: none">• Definition and calculation of mean, median, mode.• Comparison of mean, median and mode	2	-
4.	Probability and Standard Distributions <ul style="list-style-type: none">• Meaning of probability of standard distribution• The binominal distribution• The normal distribution• Divergence from normality – skewness, kurtosis.	3	-
5.	Sampling techniques <ul style="list-style-type: none">• Need for sampling - Criteria for good samples• Procedures of sampling and sampling designs errors• Sampling variation and tests of significance.	3	-
6.	Statistical Significance <ul style="list-style-type: none">• Parametric tests:- t test,• Non parametric tests :- chi square test, Mannwhitney U test, Z test, Wilcoxons matched pair test• Correlations	3	-
7.	Analysis of variance & covariance <ul style="list-style-type: none">• Basic principle of Analysis of Variance ANOVA and Analysis of Co variance (ANCOVA)	3	-
8.	DESIRABLE TO KNOW Demographic & vital statistics. Measurement & scaling techniques <ul style="list-style-type: none">• Measurement in research- Measurement scales• Sources of error in measurement• Meaning of scaling, its classification.• Important scaling techniques.• Variables and their types	2 5	-
9.	NICE TO KNOW Computer technology <ul style="list-style-type: none">• Introduction to Computers• Computers & researcher.• Statistical packages• Technique of developing measurement tools• Motivation in research	1 1 1 1 1	

Text Books

Sr.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 6 th 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

Periodical Examination:

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

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	MCQ (5 Research Methodology + 5 Biostatistics) 10 minutes	10x1=10
Sec B	1. Very Short answer questions-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 = 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	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	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																		
At the end of the course the candidate should be able to -																		
<ol style="list-style-type: none"> 1. Describe the human development & maturation; with special emphasis to sensory, motor, psychological & social aspects and alteration during aging process. 2. Acquire the skill to asses and to train for Neurological, Musculoskeletal, dysfunctions such as Pain, altered muscle power mobility, endurance, limb length, posture, gait, hand function & ADLs in adult as per International Classification of Functioning. 3. Describe the physiology of nerve conduction & motor units, interpretation of Normal & Abnormal EMG, Nerve Conduction studies & Late responses. 4. Acquire the skills of mobilization of the extremities 5. Acquire the Neuro therapeutics skills 																		
Course Content																		
Topic Serial No.	MUST TO KNOW 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 – Cephalo – caudal, Proximo – distal, Centro- lateral, Mass to specific pattern, Gross to fine motor development, Reflex maturation tests ➤ Development , Assessment & treatment for - Oromotor development - Sensory development ➤ Neurodevelopment of hand function												15	-				
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 & Prempplier, Types of Electrodes.												7					
														1				
														1				
														1				
														1				
														4				4

	<ul style="list-style-type: none"> ➤ Interpretation of EMG, NCV studies ➤ Normal & Abnormal EMG pattern <ul style="list-style-type: none"> a) At rest b) On minimal contraction c) On maximal contraction • Nerve Conduction Studies- Principles & Technique 		
3.	BASICS IN MANUAL THERAPY & APPLICATIONS WITH CLINICAL REASONING Basic principles, Indications & Contra-Indications of schools of thoughts of Manual Therapy <ul style="list-style-type: none"> • Maitland • Kaltenborn • Mulligan • Mckenzie • Neuro Dynamics (including Butler, Schacklock) • Muscle Energy Technique • Myofascial stretching • Cyriax : Pain-Original and Referred 	25	34
		4	5
		4	3
		4	6
		4	5
		2	4
		3	4
		4	4
			3
4.	BASICS IN NEURO THERAPEUTICS SKILLS & APPLICATIONS WITH CLINICAL REASONING. <ul style="list-style-type: none"> • 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 Technique • Principles and Indications of application of Brunnstrom Technique 	13	20
		2	3
		2	3
		2	3
		2	3
		5	8
5.	DESIRABLE TO KNOW <ul style="list-style-type: none"> • 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 • Technique and application of Brunnstrom on Models • Neurodevelopment of hand function 	12	3
			8
			8
6.	NICE TO KNOW Demonstration of EMG & NCV Technique	1	-
	Introduction to Vojta, SI, MRP, CIMT, and TOA	5	
	Physiology of muscle contraction	1	
	Physiology of resting membrane potential & action potential, Propagation of Action Potential, Volume conduction	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] Therapeutics skills of SI, ORO motor training, MRF , CIMT	-	5
			5
			9

Text Books

S.NO	Title
1	Peripheral manipulation- G.D Maitland
2	Physical Rehabilitation- Susan O' Sullivan
3	Cerebral palsy – Sophie levitt
4	Normal child - Illingworth
5	Palpation of Spine & Extremities- Hoppenfield
6	Cash's Textbook of Neurological Diseases
7	Manipulation of spine- GD Maitland
8	Neurodynamics shack lock

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 (Simulated cases, OSCE, OSPE, Mini CEX)

Preliminary Examination / University (Final) Examination

- Written Examination (80 marks)

SCHEME OF EXAMINATION

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

PRACTICAL

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

- **SUPERVISED CLINICAL TRAINING: (Journal=Case Records/Case Presentations) 05 MARKS (Ortho-5, Neuro-2, Paediatric-3)**

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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:																	
At the end of the course the student should be able to -																	
1. Acquire knowledge about biomechanical principles, of application of variety of aids & appliances used for ambulation, protection & prevention.																	
2. Acquire knowledge about various material used for splints / Orthosis & prosthesis--selection criteria.																	
3. Acquire the skill of fabrication of simple splints made out of low cost material																	
4. Understand ethical importance of principles and professional planning.																	
Course Content – section A Bioengineering																	
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.	Methods of donning & doffing											1	-				
7.	Decision making for prosthetic fitting											1	-				
8	Project- To fabricate one Temporary splint in each by using P.O.P, aluminum strips, sheets, wires, rubber bands, rexin, orfit etc. <ul style="list-style-type: none"> • 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				
	Desirable to know – Care of prosthesis & orthosis.											1					
	Designing and construction of adaptive devices											2					
	Nice to know – Psychological aspect of orthotic and prosthetic application (practical analysis with patient discussion)											1					

SECTION - B 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.	Time management - career development in Physiotherapy.	1	-
7.	Administration - principles-based on the Goal & functions - at large hospital set up/domiciliary services/private clinic /academic.	1	2
8.	Methods of maintaining records	1	2
9.	<p>Privacy and confidentiality, equality & Non discrimination.</p> <ul style="list-style-type: none"> • Privacy and confidentiality (2 hrs) <ul style="list-style-type: none"> ○ Definitions of ‘privacy’ and ‘confidentiality’ with reason in physiotherapy ○ Justified breaches of confidentiality- <ul style="list-style-type: none"> ▪ 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) <ul style="list-style-type: none"> ○ Definitions of ‘equality’, ‘justice’ and ‘equity’ ○ The right to health care & Physiotherapy ○ Disparities in health status <ul style="list-style-type: none"> ▪ Local disparities ▪ 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) <ul style="list-style-type: none"> ○ What is discrimination and stigmatization? • Respect for cultural diversity and pluralism (1 hr) <ul style="list-style-type: none"> ○ Definition of culture and cultural diversity ○ Definition and value of pluralism ○ Limits to the consideration for cultural specificities <p>Human dignity, human rights and fundamental freedoms</p>	5	

10.	DESIRABLE TO KNOW: Performance analysis--physical structure /reporting system [man power / status/functions /quantity &quality of services/turn over- Management studies related to--local health care organization management & structure- planning delivery with quality assurance & funding of service delivery information technology	1 1	2
11.	NICE TO KNOW: -cost benefit- revenue contribution -Budget-planning.	1 1	1 1

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
5	Professional ethics for physiotherapist- Kavita Raja

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
10	40	50

Periodical Examination:

- Written Examination:-120 MCQ for 10 marks, 20 minutes.

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	MCQ (5 Bioengineering & 5 Professional Ethics)	10x1=10 marks
Sec B	1. Very Short answer questions - 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 CLINICAL TRAINING:**

All the SCT 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 (Physiotherapy in 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

ICourse Title :- Physiotherapy in Musculoskeletal Sciences																	
Course Code:- PT 701																	
Course Credit for Physiotherapy in Musculoskeletal Sciences																	
Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SCT	Tot	Lec	Pr	SC T	Tot	Lec	Pr	SCT	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:																	
<p>This course is formulated on the “Problem based” method. At the end of the course, the candidate should be able to-</p> <ol style="list-style-type: none"> 1 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 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	
	Must Know																
1	Fractures and dislocation of the spine, extremities – classification, management & complications.														08 hrs	15 hrs	
	<ul style="list-style-type: none"> • 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	3 hrs	10 hrs
	<ul style="list-style-type: none"> • 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	3 hrs	-
	<ul style="list-style-type: none"> • Osteomyelitis – acute and chronic • Septic arthritis and Pyogenic arthritis • TB spine and major joints - knee and hip 		
4.	Degenerative and Inflammatory conditions	3 hrs	-
	<ul style="list-style-type: none"> • Osteoarthritis - emphasis mainly on knee, hip and hand • Rheumatoid Arthritis • Ankylosing spondylitis • Gout • Perthes disease 		
5.	Management of Peripheral Nerve Injury	2 hrs	5 hrs
6.	Amputation	2 hrs	5 hrs
	<ul style="list-style-type: none"> • 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 		
7.	Traction	2 hr	2 hrs
	<ul style="list-style-type: none"> • Effect, Types, Modes, Indications, Contraindications, Dosage 	2 hrs	
8.	Spinal conditions	2 hr	11 hrs
	<p>PT assessment, aims, and conservative & surgical management and home program of the following conditions -</p> <ul style="list-style-type: none"> • Cervical spondylosis • Lumbar spondylosis • Intervertebral disc prolapse • Spinal canal stenosis • Spondylolisthesis • Spondylolysis • Coccydynia 		
9.	Shoulder joint	4 hrs	10 hrs
	<ul style="list-style-type: none"> • 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. 		
10.	Elbow and forearm	1 hr	5 hrs
	Tennis and Golfer's elbow		

11.	Wrist and Hand	3 hrs	5 hrs
	<ul style="list-style-type: none"> • 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 		
12.	Hip	2 hrs	5 hrs
	<ul style="list-style-type: none"> • Joint surgeries - hemi and total hip replacement- Post operative PT management 		
13.	Knee	4 hrs	10 hrs
	<ul style="list-style-type: none"> • 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. 	1 hr	
14.	Ankle and foot	3hrs	5 hrs
	<ul style="list-style-type: none"> • Ankle instability: Lateral ligament sprain of ankle • Ligamentous tears- Post operative management. • TA rupture. • Plantar fasciitis, metatarsalgia, hammer toe, turf toe, OA ankle 		
15.	PT Management for	2 hr	
	<ul style="list-style-type: none"> • Sacro-iliac joint dysfunction • Sacralisation • Lumbarisation, 		
16.	Orthopedic surgeries	1 hr	1 hr
	Pre and post operative PT assessment, goals, precautions and PT management of following surgeries such as:		
	<ul style="list-style-type: none"> • Arthrodesis • Osteotomy 		
17.	<ul style="list-style-type: none"> • Desirable to Know • Total shoulder replacement and Hemi replacement: Post operative PT management • Excision of radial head - Post operative PT management • Biomechanics of Internal fixators & implants. • Physiotherapy Management for Tumours of the bone. 	2hr	
	<ul style="list-style-type: none"> • SLAP lesion, GIRD, Reverse replacement,(desirable to know) 	1 hr 1 hr 1 hr	
	Physiotherapy following re-constructive surgeries in Cerebral Palsy, Poliomyelitis and Leprosy.	2hr	5hr

18	<ul style="list-style-type: none"> • Nice to know • Radiological positions, angle calculations for Orthopaedic problems by X ray 	2 hr	
	<ul style="list-style-type: none"> • Arthroscopic repairs of knee & Management 	1hr	
	<ul style="list-style-type: none"> • Metabolic & hormonal disorders of the bone tissue - Osteoporosis. 	2hr	
	<ul style="list-style-type: none"> • Hamstring strains & Quadriceps contusion 	1hr	1hr
19	SCT		96

• **Supervised Clinical Training :Journal (05 marks)**

All the SCT 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.

- Evaluation & treatment planning: its presentation & documentation of Minimum **ten** cases in the following heads –
 1. Upper Limb Fractures (Including hand injury),
 2. Lower limb Fractures.
 3. Soft tissue lesion (any),
 4. Spine Fractures with/without Neurological condition
 5. Degenerative arthritis of skeletal joint
 6. Musculo – skeletal condition of Hand & foot.

TEXT BOOKS

Sr.No.	Title
1	Clinical Orthopedic Rehabilitation – Brotzman
2	Cash 's Textbook of Orthopedics & Rheumatology for Physio Therapists- Jaypee
3	Therapeutic exercise – by Kolby & Kisner
4	Fracture Rehabilitation- Stanley Hoppenfield
5	Orthopaedics for physiotherapist – Ebenezer
6	Essentials of Applied Physiotherapy – by Joshi / Kotwal
7	Essential Orthopaedics – By J. Maheshwari

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

• **Practical Examination (80 marks)**

	Marks
1. Long Case: based on the History 10 marks, Evaluation 10 marks, Treatment Plan on Patient 20 marks	40 Marks
2. Short Case: Simulated	
3. Five spots: spots based on, X – ray (limb, spine), Orthosis, Prosthesis, Metal implants etc 3 minutes each spot and 3marks per spot (3x5)	20 Marks 15 Marks
4. Journal	5 Marks

Internal Assessment Marks: Theory /Practical

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

The total shall be Converted to 20 marks for final Internal Assessment 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	SC T	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SC T	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 should be able to -

1. The general concepts about health, disease and physical fitness.
2. Physiology of aging process and its influence on physical fitness.
3. National policies for the rehabilitation of disabled – role of PT.
4. 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.
5. The evaluation of disability and planning for prevention and rehabilitation.
6. Community Based Rehabilitation in urban and rural set up.
7. Identify with clinical reasoning the prevailing contextual (e.g. environmental and psychosocial 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.

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1.	Women's Health	11	25 hrs
	<ul style="list-style-type: none"> • Must Know • 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. 	1 1 3 3 1 1 1	
2.	Geriatrics	12	25 hrs
	<ul style="list-style-type: none"> • Must Know • Theories of Aging. • Anatomical and Physiological changes of aging in - <ul style="list-style-type: none"> ➤ Musculoskeletal system. ➤ CNS 	1	

5.	Community Health	6	
	<ul style="list-style-type: none"> • Must Know • WHO definition of health & disease, Health care delivery system – 3 tier System --- <ul style="list-style-type: none"> *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 <ul style="list-style-type: none"> ➤ 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 barrier for disabled and their modification. 	1 1 1 1 1 1 1	
6	Solidarity and cooperation (2hrs) <ul style="list-style-type: none"> • Solidarity in health care & Physiotherapy • Ethical perspective <ul style="list-style-type: none"> ○ Solidarity as instrumental value ○ Solidarity as moral value • Threats to solidarity in present-day societies 	2	
7.	Social responsibility and health, Sharing of benefits <ul style="list-style-type: none"> • Highest attainable standard of health as a fundamental human right <ul style="list-style-type: none"> ○ Universal Declaration of Human Rights ○ WHO Constitution ○ Duty, obligation and responsibility physiotherapists for Highest attainable standard of health as a fundamental human right ○ Responsibilities for governments and various sectors of society ○ Health and contemporary challenges to global justice <ul style="list-style-type: none"> ▪ Access to essential health services ▪ The protection of vulnerable populations ▪ Providing health care services across national boundaries • Sharing of benefits <ul style="list-style-type: none"> ○ Models of benefit-sharing agreements <ul style="list-style-type: none"> ▪ Fair and equitable options for research subjects ▪ Biopiracy and fair sharing of benefits of genetic resources 	4	

	<ul style="list-style-type: none"> ▪ Patents and intellectual property ▪ Valid options for promoting fair and equitable access to new diagnostic and therapeutic modalities or to products stemming from them ○ Integration of capacity-building components to externally funded research and other initiative 		
8	Desirable to know	10	
	Role of NGO in Community Based Rehabilitation	1	
	Yogasanas in specific health conditions – Diabetes, Preganacy, Hypertension	2	
	Vocational Training and Rehabilitation	2	
	Ethics, Legal Rights and benefits for geriatric Rehabilitation	1	
	Social issues having impact on Physical function	1	
	Role of P.T. in industrial set up & Stress management with relaxation mode.	2	
	Biological Hazards	1	
9	Nice to Know	6	
	Architectural barriers for disabled and their modification	1	
	Nutrition and Diet for fitness	1	
	Industrial Laws: Legal Right and benefits	1	
	Communication with Elderly	1	
	Legal rights & benefits for women.	1	
	Common Problems in adolescents and management Infertility	1	

Text Books

S.NO	Title
1	Physiotherapy in Obstetrics and Gynaecology 1 st edition by M. Poldon and Jill Mantle
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
8	Physiotherapy in Obstetrics and Gynaecology 2 nd Edition by Jill Mental (Elsevier)
9	Textbook of Rehabilitation - Sundar

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.
8	Handbook of Physical Medicine & Rehabilitation:- by Braddom
9	Women & the Law, Vol. I & II from Chorine C & M Desai, C Gonsalves, 1999, Socio – legal Information Centre Mumbai
10	Geriatric Rehabilitation Manual, by Timothy L. Kauffman.

- **SUPERVISED CLINICAL TRAINING:**

- All the SCT 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
- Case Presentation & Documentation: = 5 marks (For Journal)
Evaluation and treatment planning, presentation and documentation of minimum **TEN** cases in
 - Obstetrics :- 2 cases
 - Gynaecology :- 2 cases
 - Geriatrics :- 2 cases
 - Industrial health :- 2 cases
 - Fitness :- 1 case
 - Disability evaluation :- 1 Case

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 (Spots, OSCE, OSPE, Mini CEX, Simulated cases).

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

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

- **Practical Examination (80 marks)**

S.No.	Description	Marks
1	1.Long Case: Women's health/Geriatric/Industrial health/health promotion 2.Short Case: Simulated 3. Spots (5 SPOTS for 3 marks each, based on scales, National health programmes, fitness protocols) + 4. Journal	40 Marks 20 Marks 15 Marks 5 Marks

Internal Assessment Marks: Theory/ Practical

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

The total shall be Converted to 20 marks for final Internal Assessment Marks (100/5=20)

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

Course Credit for Physiotherapy in Paediatric Conditions

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SC T	Tot	Lec	Pr	SCT	Tot	Le c	Pr	SC T	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 candidate should be able to -

- 1.Acquire the knowledge of normal neurodevelopment, with specific reference to Locomotion
2. Acquire the knowledge of assessment and management of Developmental deformities & congenital anomalies, Deformities of vertebral column, deformities of chest wall

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
	Must Know	32	32
1.	Cerebral palsy -assessment & management with approaches, Roods, Vojta, Sensory integration, N.D.T	2 hrs	9 hrs
2.	Congenital dislocation of hip ,CTEV, vertical talus, Blount disease, Perthe's disease, slipped capital femoral epiphysis, limb length discrepancies and Osteogenesis Imperfecta.	2 hrs	2 hrs
3.	Traumatic injuries in child – fractures, dislocations, epiphyseal injuries	2 hrs	2 hrs
5.	Attention deficit Hyperactive disorder, Autism	1 hr	1 hr
6.	Epilepsy	1 hrs	1 hrs
7.	Genetic disorder – Down's syndrome, Marfan's syndrome	1 hr	
8.	Assessment and Management of Movement disorder – Chorea, Athetosis, Dystonia, Choreoathetosis, Ataxia	1 hr	2 hrs
9..	Disorder of muscle – Muscular dystrophy (Duchenne's, Becker's, Limb girdle, Facio-scapulohumeral, Spinal muscular atrophy)	2 hrs	2 hrs
10.	Developmental anomalies – Spina bifida, hydrocephalus, cranio-vertebral junction anomalies	2 hrs	3 hrs
11.	Traumatic head injury	1 hrs	1 hr
12.	Congenital dislocation of hip, CTEV, vertical talus, Blount disease, Perthe's disease, slipped capital femoral epiphysis, limb length discrepancies and Osteogenesis Imperfecta.	3 hrs	2 hrs
13.	Traumatic injuries in child – fractures, dislocations, epiphyseal injuries	1 hrs	1 hrs
14.	Neonatal ICU, Paediatric ICU, Complications of low birth Weight	2 hrs	2 hrs
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, pertussis, CROUP, epiglottitis, chronic lung disease, primary ciliary dyskinesia, fatigue, sleep apnoea, hyperventilation syndrome	2 hrs	1 hr

17.	Desirable to Know		
	Role of Orthotics in Paediatric conditions.	2 hr	
	Anatomical & physiological differences of cardio-vascular & respiratory system in neonates, childhood & adults	2hr	
18.	Nice to Know		
	Paediatric Sports Injuries and Rehabilitation	2 hr.	
	Assessment of Reflex & Reactions	1hr	2hr
19.	SCT		96

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
5	Baby Treatment Based on NDT Principles- Lois Bly. M.A., PT
6	Cardiopulmonary Physical therapy- Scot Irwin

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 (Simulated Case/ OSCE/ OSPE/ Mini CEX)

Preliminary Examination / University (Final) Examination

(10 marks internals & 40 marks University exam)

- **Written Examination (40 marks)**

Sec A	MCQ (10 Minutes)	10x1=10 marks
Sec B	1.Very Short answer questions - 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 3. Journal	25 Marks 10 Marks 5 Marks

➤ **SUPERVISED CLINICAL TRAINING:** Journal=5 marks

All the SCT works should be properly documented with 10 Cases, 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 - MANUAL THERAPY

Course Code:- PT 703 B

Course Credit for Manual Therapy

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	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 should be able to –

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

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
	Must Know		
1.	Introduction to Manual Therapy, different school of thoughts	1 hr	
2.	History of Manual Therapy	1 hr	
3.	Subjective and Objective Assessment of Pain	3 hr	4 hrs
4.	Principles, Indications & Contra-Indications of Maitland's Technique	2 hrs	2 hrs
5.	Principles, Indications & Contra-Indications of Kaltenborn's Technique	3 hrs	3 hrs
6.	Principles, Indications & Contra-Indications of Mulligan's concept	3 hrs	3 hrs
7.	Principles, Indications & Contra-Indications of Mckenzie's Mechanica Diagnosis and Treatment (MDT)	4 hrs	4 hrs
8.	Principles, Indications & Contra-Indications of Butler's neural mobilization	1hrs	3 hrs
9.	Principles, Indications & Contra-Indications of Neurodynamic Testing	2 hrs	3 hrs
10.	Principles, Indications & Contra-Indications of Muscle Energy Technique	3 hrs	3 hrs
11.	Principles, Indications & Contra-Indications of Myofascial Release Technique	1 hr	3 hrs
12.	Desirable to Know		
	Introduction to osteopathy	1 hr	
	Subjective and Objective Assessment of Pain	4hr	2hr
13.	Nice to know		
	Principles, Indications & Contra-Indications of Cranio-sacral Therapy	1 hr	2 hrs
	Introduction to Clinical Decision Making	1 hr	
	Introduction to Chiropractics	1hr	
14.	SCT		96

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 10marks, 20 minutes.
- Practical Examination:- 10 marks (Simulated Case/ OSCE/ OSPE/ Mini CEX)

Preliminary Examination / University (Final) Examination

(10 marks internals & 40 marks University exam)

- **Written Examination (40 marks)**

Sec A	MCQ (10 Minutes)	10x1=10 marks
Sec B	1.Very Short answer questions - 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	4. Long Case: based on the History 5 marks, Evaluation 5 marks, Treatment Plan on Patient 15 marks 5. Short Case: Simulated 6. Journal	25 Marks 10 Marks 5 Marks

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

All the SCT works should be properly documented with 10 Cases, 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 Rehabilitation)	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	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	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 should be able to –

1. Acquire the knowledge of normal neurodevelopment, with specific reference to locomotion
2. Be able to assess, identify & analyze Neuro-motor & psychosomatic dysfunction in terms of alteration in the muscle tone, power, coordination, involuntary movements Sensations/perception etc, E.M.G./ N.C. Studies & arrive at functional diagnosis with clinical reasoning.
3. Acquire the skills of application of different neuro-therapeutics technique on patients.
4. 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 Advice, & parents education in Neuro-pediatric care.
5. Prescribe appropriate Orthosis / splints

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1	Structure and function of Nervous System	2	-
2	Theories of motor control & motor learning	1	-
3	Neurological Assessment <ul style="list-style-type: none"> • Assessment of Higher mental functions, Cranial Nerves, • Sensory system, Motor system, Reflexes, Co-ordination, • Balance, functional abilities, neuropathic pain and investigation. 	5	3 3 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: <ul style="list-style-type: none"> • Hemiplegia, • Disorders of cerebral circulation • Space occupying lesions 	2	5
	ii. Disorders of spinal cord <ul style="list-style-type: none"> • Spinal Cord Injury • Syringomyelia, • Transverse myelitis • Sub-acute combined degeneration of spinal cord 	2	5
	iii. Traumatic Head Injury	2	2
	iv. Infections of Nervous System <ul style="list-style-type: none"> • Meningitis • Encephalitis • Neurosyphilis • Tabes dorsalis • Poliomyelitis and Post Polio Residual Paralysis • Leprosy 	2	3
	v. Demyelinating diseases of the nervous system Multiple sclerosis	1	2
	vi. Lesions of Extra-pyramidal system & Basal ganglia Parkinson's Disease <ul style="list-style-type: none"> • Spasmodic torticollis • Athetosis, • Chorea & Dystonia 	2	4
	vii. Degenerative disorders <ul style="list-style-type: none"> • Motor Neuron Diseases • Hereditary Ataxia • Peroneal muscle atrophy, S.M.A 	2	2
	viii. Disorders of Peripheral nerves <ul style="list-style-type: none"> • Traumatic Nerve Injury, Tumors, • Infective & Metabolic lesions of nerves 	2	3
ix. Disorders of muscles and neuromuscular junction <ul style="list-style-type: none"> • Muscular Dystrophies • Myasthenia Gravis & myasthenia syndrome 	2	2	

	x. Polyneuropathy <ul style="list-style-type: none"> • Classification of Polyneuropathies • GBS, Diabetic and Alcoholic Neuropathy 	2	4
	xi.Cerebellar & Co-ordination disorders , Congenital Ataxia, Friedrich Ataxia	3	4
	Paediatric Neurology		
	a) Developmental milestones and Developmental reflexes,	3	4
	b) Neuro developmental screening tests	2	6
	c) Evaluation & Management : <ul style="list-style-type: none"> • 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 	2	4
	d) Use of various Neurophysiological approaches & Modalities in <ul style="list-style-type: none"> • High Risk babies • Minimum brain damage • Developmental disorders • Cerebral palsy • Autism • Down's Syndrome • Hydrocephalus • Spina bifida and spinal dysraphism 	8	12
	Protecting future generations, Protection of the environment <ul style="list-style-type: none"> • 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 <ol style="list-style-type: none"> environmental justice intergenerational justice 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	
	SCT		96

➤ **SUPERVISED CLINICAL TRAINING:** Journal=5 marks

All the SCT 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

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 Basmajjian-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

Periodical Examination:

- Written Examination:-20 MCQ for 20 marks, 20 minutes.
- Practical Examination:- 20 marks (Simulated Case/ OSCE/ OSPE/ Mini CEX)

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

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

Internal Assessment Marks: Theory/Practical

Periodical exam = 20 marks

Prelim exam = 80 marks

Total = 100 marks

The total shall be Converted to 20 marks for final Internal Assessment 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	SC T	Tot	Lec	Pr	SCT	Tot	Le c	Pr	SC T	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 should be able to-

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. 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. 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. Execute the effective Physio therapeutic measures with appropriate clinical reasoning to improve general surgical & medical condition.

Course Content

Topic Serial No.	Title of content	Hours of teaching/learning	
		Theory	Practical
	Must Know		
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, ABI)	3	3
5	Physiotherapy techniques to increase lung volume <ul style="list-style-type: none"> • Positioning and Mobilization • Breathing exercises • Neurophysiological Facilitation of Respiration • Mechanical aids –Incentive Spirometry, CPAP, IPPB 	3	3
6	Physiotherapy techniques to decrease work of breathing <ul style="list-style-type: none"> • Energy Conservation • Positioning • Breathing re-education – Breathing control techniques • Mechanical aids – IPPB, CPAP, BiPAP 	2	3

7	Physiotherapy techniques to clear secretions <ul style="list-style-type: none"> • Hydration, Humidification & Nebulisation, • Mobilization 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 <ol style="list-style-type: none"> a. Assessment of the critically ill patients b. Monitoring in the ICU c. Physiotherapy in the ICU – Common conditions in the ICU – Head Injury, Pulmonary Oedema, Multiple Organ Failure, Neuromuscular Disease, Poisoning, Aspiration, ARDS, Shock etc d. Dealing with Emergency situations in ICU e. 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	AssessmentPT Management following Peripheral vascular diseases.	2	4
22	Management of wounds and ulcers, Diabetes and its complications <ul style="list-style-type: none"> • 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 	2	4
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 <ul style="list-style-type: none"> • U.V.R therapy in various skin conditions; Vitiligo; Hair loss; Pigmentation; Infected wounds ulcers. • Faradic foot bath for Hyperhidrosis. • 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 <ul style="list-style-type: none"> 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	SCT		96

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 (Simulated Case/ OSCE/ OSPE/ Mini CEX)

Preliminary Examination / University (Final) Examination

• Written Examination (80 marks)

Sec A	MCQ (20 Minutes)	20x1=20 marks
Sec B	1.Very Short answer questions - Answer any 5 out of 6	5x3=15 marks
	2.Short answer questions - Answer any 3 out of 4	3x5=15 marks
Sec C	1. Long Answer Questions (compulsory)	1X15=15marks
	2. Long Answer Questions –any 1 out of 2	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 (Simulated)	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 CLINICAL TRAINING:** Journal=5 marks

All the SCT 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

Evaluation & treatment planning, presentation & documentation of **TEN** cases in the following conditions:-

- Medical Respiratory condition
- Paediatric respiratory condition
- Thoracic Surgical condition,
- Cardiac Medical condition
- Cardiac Surgical condition
- Peripheral vascular disorders
- Abdominal surgical condition
- Mastectomy / Amputation

Internal Assessment Marks: Theory/Practical

Periodical exam = 20 marks

Prelim exam = 80 marks

Total = 100 marks

The total shall be Converted to 20 marks for final Internal Assessment Marks (100/5=20)

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

Course Credit for CHOICE BASED COURSE- SPORTS PHYSIOTHERAPY

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SC T	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SC T	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 should be able to -

1. 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. 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 <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> ➤ Shoulder girdle, Shoulder, Arm, Elbow, Forearm, Wrist & hand ➤ Pelvis, hip, thigh, knee, leg, ankle & foot ➤ Spine ➤ Head ➤ Thoracic cage and abdomen ➤ Peripheral nerve injuries, injuries to muscles, ligament, tendon, bone, synovial joint structure(with physiological response to injury) 	2 2 6	- - -

6	Cardiopulmonary section	6	-
	<ul style="list-style-type: none"> • 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. 		
	Desirable to know		
9	Electrotherapy in sports injuries	2	-
	Body composition <ul style="list-style-type: none"> • Different Body composition Various methods to estimate body composition : water displacement method, under water weighing method, skinfold method, surface anthropometry, bioelectrical impedance analysis, ultrasound assessment of fat, arm X-ray assessment of fat, CT assessment of fat	3	
	Nice to know		
	Various Body measurements: Gross size and mass, length and height measurement, circumference of body parts, Skinfold thickness measurements	3	
	PRACTICALS		
1	Taping		2
2	On field Assessment		2
3	Evaluation of Physical Fitness:Assesment 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
6	SCT		96

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 (3rd 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

Periodical 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 (10 minutes)	1x10=10 marks
Sec B	1. Very Short answer questions-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)

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 CLINICAL TRAINING:** Journal=5 marks

All the SCT works should be properly documented with 10 cases, 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- HAND REHABILITATION
Course Code:- PT 803B

Course Credit for CHOICE BASED COURSE- HAND REHABILITATION

Hours				Hrs/Wk				Credits				Evaluation Pattern					
Th	Pr	SC T	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SC T	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 should be able to -

1. 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. Assess 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, outcome measures and assess the progression.
10. Use recent Technique/ approaches to treat & train patients with hand dysfunction in children, adults & geriatrics.

Course Content

S. No.	Title of content	Hours of teaching/learning	
		Theory	Practical
	Must Know		
1	General upper extremity examination	1	1
4	Functional Evaluation of hand	2	1
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 tunnel, carpal tunnel, supinator tunnel, pronator teres syndrome	2	2
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	Taping for wrist and hand conditions	1	2
18	Desirable to know		
	Prosthesis of upper extremity	1	1
	Sensory examination of hand	2	1
	Motor Examination of hand	2	1
19	Nice to know		
	Preparation of splints using POP, Orthoplast, thermoplastic	1	1
	Outcome measures of hand	2	2
20	SCT		96

Reference Books

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

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sr.No.		Marks
1	MCQ (10 Minutes)	1x10=10 marks
2	1. Very Short answer questions-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	10marks
	Journal	5 Marks)

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

All the SCT works should be properly documented with 10 cases, 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						
Th	Pr	Clinic	Tot	Lec	Pr	Clinics	Tot	Lec	Pr	Clinics	Tot	Written		Total	Practical		Total	
													IA	Final exam	Final exam	IA	Final exam	Final College 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						
Th	Pr	Clinic	Tot	Lec	Pr	Clinics	Tot	Lec	Pr	Clinics	Tot	Written		Total	Practical		Total	
													IA	Final exam	Final exam	IA	Final exam	Final College exam
-	-	234	234	-	-	9	9	-	-	3	3	-	-	-	-	20	30	50

Distribution of internal marks for Compulsory Rotatory Internship (PT-901)

Sr.no	Particulars	Internal marks
1	Case Presentation (5x4=20 cases) i. Musculoskeletal PT ii. Neurophysiotherapy iii. PT in Cardiorespi iv. CBR	20
2	Two Journal clubs (2x5=10)	10
3	Summative evaluation (5x4=20) i. Attitude towards patients and Colleagues/ Character ii. Urge for learning/Initiative iii. Accountability/ Responsibility/ Punctuality iv. Administrative Ability (Records/ Maintenance of equipments)	20
	Total	50

Distribution of internal marks for Internship Project (PT-902)

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

It is mandatory to get 50% marks separately in the course PT -901 & PT -902, for the successful completion of Compulsory Rotatory Internship.