Dr. D. Y. PATIL VIDYAPEETH

(Deemed to be University)

Faculty of Allied Medical Sciences

SYLLABUS FOR BACHELOR OF PHYSIOTHERAPY (BPT)

2019-2020

Dr.D.Y. PATIL COLLEGE OF PHYSIOTHERAPY

PIMPRI, PUNE-411018

Tel. (020) 27120077 Fax.:- (020)27420439

Email:- info.physio@dpu.edu.in

www.dpu.edu.in

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

BACHELOR OF PHYSIOTHERAPY (BPT)

PREAMBLE:

The Bachelor of Physiotherapy (BPT) undergraduate degree is a 4 years 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 student's interest. The program focuses on overall development of the student including language and soft skills, emergency care and professional ethics. Psychosomatic aspects of training are a component through all the areas.

NOMENCLATURE:

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

GRADUATE ATTRIBUTES:

No.	Attribute
1	Physiotherapy Expert
2	Communicator
3	Researcher
4	Lifelong Learner
5	Collaborator and team member
6	Leader and Promoter of the Profession
7	Manager and Entrepreneur
8	Professionalism, Employability and Accountability
9	ICT competence
10	Social Responsibility

PROGRAM OUTCOME:

Program Outcome (PO) Number	Program Outcomes for BPT Graduate
PO 1	Knowledge and Skills
PO 2	Planning and Problem-Solving Abilities
PO 3	Communication
PO 4	Research Aptitude
PO 5	Professionalism and Ethics
PO 6	Leadership
PO 7	Societal Responsibilities
PO 8	Environment and Sustainability
PO 9	Lifelong Learner

ELIGIBILITY FOR ADMISSION:

Eligibility of a candidate for admission to Bachelor of Physiotherapy program 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) program 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 (subjects) duration (672 clock hours) excluding the time scheduled for examination and evaluation process of the university and college. It includes a 6 months (24 weeks) internship leading to degree that equips the student with analytical and hands-on skills. Each academic year shall comprise of two semester viz. Odd and Even semesters. Odd semesters shall be from July/August to December and Even Semesters shall be from January to June.

MEDIUM OF INSTRUCTION:

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

FACULTY/STUDENT RATIO:

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

CLINICAL TRAINING OUTLINE OF THE PROGRAM :

Clinical training comprises of 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 training 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 each course, 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 course. The SPT/SCT shall carry 5 marks and submitted to the Head of the Institution for including in the University practical examination.
4. Student should pass in the Internal Assessment exams with 35 % to appear for the University examinations. Continuous clinical assessment will be carried out though out the semester.

CRITERIA FOR PASSING UNIVERSITY EXAMINATION:

To pass the University Examination:

1. A candidate must pass in two heads of passing i.e. theory and practical separately at the same time.
2. In the theory exam, the candidate must obtain 50 % of the total marks to pass theory exam irrespective of the parts.
3. In practical exam, the 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 course [subject].

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 course in the current semester of study. However, he/she must pass in these courses within six months. To appear for subsequent examinations, he/she must pass in all courses of the previous semester (i.e. a candidate shall be promoted from semester I to semester II even if he/she has failed in two course or less, the candidate shall be permitted to appear for both semester I & II 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 course will not be permitted to proceed to next class. It is mandatory for the candidate to pass in all course of the previous odd semester to be eligible for the next odd semester, and to pass in all course 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 course. 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.PatilVidyapeeth, Pune.)

SCORING – THE CBCS SYSTEM:

All courses 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:

Bioethics is the study of controversial ethical issues emerging from new situations and possibilities brought about by advances in biology and medicine. It is also a 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 common place questions of values ("the ethics of the ordinary") which arise in primary care and other branches of medicine. The curriculum does not have a 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 Bioethics 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 program over an extended period of time
- Standardization and comparability of educational programs across the country

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 & 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 or without having to repeat all the courses in a given semester if they fail in one or more course.
- 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 programs.
- Beneficial for achieving more transparency and compatibility between different educational structures.
- A credit system can facilitate recognition procedures as well as access to Higher Education for non-traditional learners.

GRADING:

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

Letter Grades and Grade Points:

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

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

COMPUTATION OF SGPA AND CGPA:

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

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

Illustration of Computation of SGPA and CGPA and Format for Transcripts

i. Illustration for computation of SGPA for I semester

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

Thus, ***SGPA =205/26 =7.88***

ii. Illustration for CGPA

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

Thus, ***CGPA =*** $\frac{(26 \times 7.05)+(26 \times 7.8)+(28 \times 5.6)+(27 \times 6.0)+(26 \times 6.3)+(25 \times 8.0)+(23 \times 6.0)+(23 \times 6.0)}{204}$

= ***6.58***

INTERNSHIP:

There shall be six months (26 weeks) of Internship after successfully completing the VIII semester examination for candidates and have been declared to have passed the examination in all course. 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 will 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 through Head of the program to be considered as having successfully completed the internship program. The student has to do the project in the internship as a part of the curriculum of BPT program and submit it for the fulfilment of the degree.

AWARD OF DEGREE:

Every student of the program 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 & 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 BPT program.

AWARD OF CLASS:

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

Distinction: CGPA ≥ 7.50
First class: CGPA of 6.50– 7.49
Second Class: CGPA of 5.00 to 6.49
Pass Class: CGPA of 4.00 to 4.99

TRANSCRIPT:

The transcript issued to the student at the time of leaving the University will contain a consolidated record of all the courses taken and credits earned.

CLASSIFICATION OF COURSE IN UG DEGREE PROGRAM:

Sem.	Foundation courses	Core courses	Allied courses	Enhancement courses
I	• Human Anatomy - I • Human Physiology - I • Electro Therapy- I			• English & Communication Skills*
II	• Human Anatomy - II • Human Physiology-II • Exercise Therapy - I*		• Biochemistry	• Computer Science
III	• Exercise Therapy- II* • Biomechanics		• Pathology & Microbiology	• Psychology • First Aid & Emergency care
IV	• Electro Therapy- II*	• Gen. Medicine (including Gerontology & Dermatology)	• Pharmacology, • Community Medicine, Sociology & Environmental. Sciences	
V	• Physical & Functional Diagnostic skills*	• Orthopaedics & Traumatology • Neurology (including Paediatrics & Psychiatry) • Obstetrics and Gynaecology		
VI	• Physiotherapeutic Skills	• General Surgery (including Plastic Surgery)	• Research Methodology and Biostatistics	• Bioengineering & Professional Ethics*
VII		• Physiotherapy in Musculoskeletal Sciences • Physiotherapy in Community Based Rehabilitation.*		• Choice Based Course (Physiotherapy in Paediatric conditions/ Manual Therapy)
VIII		• Physiotherapy in Neurosciences* • Physiotherapy in Cardio-Respiratory & General Conditions		• Choice Based Course (Sports Physiotherapy /Hand Rehabilitation)

***The course curriculum of bioethics has been segregated as per the applicability.**

COURSE STRUCTURE FOR BACHELOR OF PHYSIOTHERAPY

Calculation of course credit:-

16 Hours of Theory = 1 credit, 32 Hours of Practicals =1 credit, 48 Hours of Supervised Practical Training / Supervised Clinical Training = 1 Credit earned by the student during his/her course of study.

SEMESTER-I

Course Code	Course (Subject)	Hours				Hrs/Wk				Credits				Evaluation Pattern					
														Written		Total	Practical		Total
		Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
PT-101	Human Anatomy-I	64	64	48	176	4	4	3	11	4	2	1	7	10	40	50	10	40	50
PT-102	Human Physiology-I	64	32	48	144	4	2	3	9	4	1	1	6	10	40	50	10	40	50
PT-103	English and Communication Skills	32	0	48	80	2	0	3	5	2	0	1	3	10	40	50	--	-	-
PT-104	Electrotherapy- I	80	96	96	272	5	6	6	17	5	3	2	10	20	80	100	20	80	100
	Total	**240**	**192**	**240**	**672**	**15**	**12**	**15**	**42**	**15**	**6**	**5**	**26**	**50**	**200**	**250**	**40**	**160**	**200**

SEMESTER-II

Course Code	Course (Subject)	Hours				Hrs/Wk				Credits				Evaluation Pattern					
														Written		Total	Practical		Total
		Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
PT-201	Human Anatomy- II	48	64	48	160	3	4	3	10	3	2	1	6	10	40	50	10	40	50
PT-202	Human Physiology-II	48	32	48	128	3	2	3	8	3	1	1	5	10	40	50	10	40	50
PT-203	Biochemistry	48	-	-	48	3	-	-	3	3	-	-	3	10	40	50	-	-	-
PT-204	Exercise Therapy- I	64	96	96	256	4	6	6	16	4	3	2	9	20	80	100	20	80	100
PT-205	Computer Science	32	-	48	80	2	-	3	5	2	-	1	3	10	40	50	-	-	-
	Total	**240**	**192**	**240**	**672**	**15**	**12**	**15**	**42**	**15**	**6**	**5**	**26**	**60**	**240**	**300**	**40**	**160**	**200**

SEMESTER-III

Course Code	Course (Subject)	Hours				Hrs/Wk				Credits				Evaluation Pattern					
														Written		Total	Practical		Total
		Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
PT-301	Pathology & Microbiology	80	--	--	80	5	--	--	5	5	--	--	5	20	80	100	--	-- -	--
PT-302	Exercise Therapy-II	64	128	96	288	4	8	6	18	4	4	2	10	20	80	100	20	80	100
PT-303	Psychology	48	--	--	48	3	--	--	3	3	--	--	3	10	40	50	--	--	--
PT-304	Biomechanics	64	32	48	144	4	2	3	9	4	1	1	6	20	80	100	--	--	--
PT-305	First Aid & Emergency care	32	32	48	112	2	2	3	7	2	1	1	4	10	40	50	--	--	--
	Total	**288**	**192**	**192**	**672**	**18**	**12**	**12**	**42**	**18**	**6**	**4**	**28**	**80**	**320**	**400**	**20**	**80**	**100**

SEMESTER-IV

Course Code	Course (Subject)	Hours				Hrs/Wk				Credits				Evaluation Pattern					
														Written		Total	Practical		Total
		Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
PT-401	Pharmacology	48	-	-	48	3	-	-	3	3	-	-	3	10	40	50	-	-	-
PT-402	Electrotherapy- II	64	96	96	256	4	6	6	16	4	3	2	9	20	80	100	20	80	100
PT-403	Gen.Medicine (Including Gerontology & Dermatology)	80	32	96	208	5	2	6	13	5	1	2	8	20	80	100	--	--	--
PT-404	Community Medicine, Sociology & Environmental Sciences	80	32	48	160	5	2	3	10	5	1	1	7	20	80	100	--	--	--
	Total	**272**	**160**	**240**	**672**	**17**	**10**	**15**	**42**	**17**	**5**	**5**	**27**	**70**	**280**	**350**	**20**	**80**	**100**

SEMESTER-V

Course Code	Course (Subject)	Hours				Hrs/Wk				Credits				Evaluation Pattern					
														Written		Total	Practical		Total
		Th	Pr	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
PT-501	Orthopaedic & Traumatology	64	32	48	144	4	2	3	9	4	1	1	6	20	80	100	--	--	--
PT-502	Neurology (Including Paediatrics, Psychiatry)	64	32	48	144	4	2	3	9	4	1	1	6	20	80	100	--	--	--
PT-503	Physical and Functional Diagnostics Skills	80	96	96	272	5	6	6	17	5	3	2	10	20	80	100	20	80	100
PT-504	Obstetrics and Gynaecology	32	32	48	112	2	2	3	7	2	1	1	4	10	40	50	--	--	--
	Total	**240**	**192**	**240**	**672**	**15**	**12**	**15**	**42**	**15**	**6**	**5**	**26**	**70**	**280**	**350**	**20**	**80**	**100**

SEMESTER-VI

Course Code	Course (Subject)	Hours				Hrs/Wk				Credits				Evaluation Pattern					
														Written		Total	Practical		Total
		Th	Pr	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
PT-601	General Surgery (Including Plastic Surgery)	64	32	96	192	4	2	6	12	4	1	2	7	20	80	100	-	-	-
PT-602	Research Methodology and Biostatistics	48	-	-	48	3	-	-	3	3	-	-	3	10	40	50	-	-	-
PT-603	Physiotherapeutic Skills	80	96	96	272	5	6	6	17	5	3	2	10	20	80	100	20	80	100
PT-604	Bio-engineering & Professional Ethics	32	32	96	160	2	2	6	10	2	1	2	5	10	40	50	-	-	-
	Total	**224**	**160**	**288**	**672**	**14**	**10**	**18**	**42**	**14**	**5**	**6**	**25**	**60**	**240**	**300**	**20**	**80**	**100**

SEMESTER-VII (Course 701, 702 is compulsory. Students can choose any one course - 703A or 703B as a Choice Based Course)

Course Code	Course (Subject)	Hours				Hrs/Wk				Credits				Evaluation Pattern					
														Written		Total	Practical		Total
		Th	Pr	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
PT-701	Physiotherapy in Musculoskeletal Sciences	64	96	96	256	4	6	6	16	4	3	2	9	20	80	100	20	80	100
PT-702	Physiotherapy in Community Based Rehabilitation	64	96	96	256	4	6	6	16	4	3	2	9	20	80	100	20	80	100
PT-703A	Choice Based - Physiotherapy in Paediatric Conditions	32	32	96	160	2	2	6	10	2	1	2	5	10	40	50	10	40	50
	or																		
PT-703B	Choice Based – Physiotherapy in Manual Therapy																		
		160	**224**	**288**	**672**	**10**	**14**	**18**	**42**	**10**	**7**	**6**	**23**	**50**	**200**	**250**	**50**	**200**	**250**

SEMESTER-VIII (Course 801, 802 is compulsory. Students can choose any one course - 803A or 803B as a Choice Based Course)

Course Code	Course (Subject)	Hours				Hrs/Wk				Credits				Evaluation Pattern					
														Written		Total	Practical		Total
		Th	Pr	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
PT-801	Physiotherapy in Neurosciences	64	96	96	256	4	6	6	16	4	3	2	9	20	80	100	20	80	100
PT-802	Physiotherapy in Cardiorespiratory and General Conditions	64	96	96	256	4	6	6	16	4	3	2	9	20	80	100	20	80	100
PT-803A	Choice Based - Physiotherapy in Sports	32	32	96	160	2	2	6	10	2	1	2	5	10	40	50	10	40	50
	or																		
PT-803B	Choice Based - Physiotherapy in Hand Conditions																		
	Total	**160**	**224**	**288**	**672**	**10**	**14**	**18**	**42**	**10**	**7**	**6**	**23**	**50**	**200**	**250**	**50**	**200**	**250**

COMPULSORY ROTATORY INTERNSHIP (1092 Hrs across 26 WEEKS)

Course Code	Course (Subject)	Hours				Hrs/Wk				Credits				Evaluation Pattern					
														Written		Total	Practical		Total
		Th	Pr	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	Tot	IA	Final exam	Final exam	IA	Final College exam	Final College exam
PT-901	Compulsory Rotatory Internship	-	-	858	858	-	-	33	33	-	-	11	11	-	-	-	50	-	50
PT-902	Internship Project	-	-	234	234	-	-	9	9	-	-	3	3	-	-	-	20	30	50
	Total	**0**	**0**	**1092**	**1092**	**0**	**0**	**42**	**42**	**0**	**0**	**14**	**14**	**0**	**0**	**0**	**70**	**30**	**100**

COURSE CONTENT

SEMESTER – I

Course Code	Course (Subject)	Hours				Hrs/Wk				Credits				Evaluation Pattern					
														Written		Total	Practical		Total
		Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
PT-101	Human Anatomy-I	64	64	48	176	4	4	3	11	4	2	1	7	10	40	50	10	40	50
PT-102	Human Physiology-I	64	32	48	144	4	2	3	9	4	1	1	6	10	40	50	10	40	50
PT-103	English and Communication Skills	32	0	48	80	2	0	3	5	2	0	1	3	10	40	50	--	-	-
PT-104	Electrotherapy- I	80	96	96	272	5	6	6	17	5	3	2	10	20	80	100	20	80	100
	Total	**240**	**192**	**240**	**672**	**15**	**12**	**15**	**42**	**15**	**6**	**5**	**26**	**50**	**200**	**250**	**40**	**160**	**200**

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

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

Course Credit for Human Anatomy –I

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

Course outcomes

CO No.	At the end of the course, the learner should be able to:	Mapped Program Outcomes
101.1	Describe the basic terminologies of osteology, histology, general embryology and other basic terms specific to human body.	PO1
101.2	Identify and describe anatomical aspects of muscle, bones & joints and analyze movements of upper extremity, Thorax, Head, Neck & Face.	PO1
101.3	Know the anatomical basis of various clinical conditions e.g. Trauma, deformities pertaining to upper limbs, Thorax, Head, Neck , Face & its vertebrae.	PO1
101.4	Localize various surface landmarks.	PO1
101.5	Identify and describe various components and contents of the Thorax- with special emphasis to tracheo-bronchial tree& cardio- pulmonary system.	PO1
101.6	Demonstrate the movements of various joints.	PO1
101.7	Identify and describe the source, course of major arterial, venous and lymphatic system, with special emphasis to upper extremities, thorax Head, Neck, Face & its vertebrae.	PO1
101.8	Distinguish major arteries, veins and Lymphatic with special emphases to extremities and Head, Neck , Face & its vertebrae.	PO1

opic	Course Content	Hours of

Sr.No.		teaching/learning	
		Theory	Practical
1	**General Introduction**	**6**	**-**
	Must Know • 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	-
	Nice to Know • General Embryology-Ovum, spermatozoa, fertilization, differentiation, development of various systems and foetal circulation	2	-
2	**Systems of Human body (a brief Outline)**	**20**	**12**
	Must Know • Cardiovascular System - Arteries, capillaries, veins, heart, lymphatic system	4	2
	• Respiratory System - Anatomy of upper and lower respiratory tract including nose, larynx, trachea, bronchi, pleura and lungs	4	2
	• Axial skeleton	3	2
	• Sensory Organs	3	2
	Desirable to Know • Urogenital System –Anatomy of Urinary system, male and female reproductive system (special emphasis to female system)	4	2
	Nice to Know • Digestive System –Anatomy of the gastro-intestinal tract	2	2
3	**UPPER EXTREMITY- Must Know**	**15**	**25**
	Osteology Outline the anatomical features, attachments, ossification and side determination of the bones of U/L : Clavicle, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, Phalanges	5	15
	Muscles, Nerves & Joints of upper limb • 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 • Muscles of hand: origin, insertion, nerve supply and action • Joints of upper limb: shoulder girdle, Shoulder joint, Elbow, Wrist and joints of hand • Nerves of upper Extremity and their position course, relations & distribution • Blood vessels of upper Extremity and their position course, relations, distribution and main branches. Lymphatic drainage of upper Extremity • Surface & Bony landmarks of upper extremity • Demonstration of muscles and movements of Upper extremity joints. • Palpation of peripheral arteries & nerves of upper extremity • Applied anatomy of all structures of Upper Extremity • Radiographic appearance of Musculoskeletal system of Upper Extremity	10	10
4	**THORAX-** Must Know	**8**	**5**
	• Ribs: Parts & main features of typical rib & define true, false and floating ribs • Sternum: parts and anatomical features • Thoracic vertebrae: parts and anatomical features	3	2

	• Intercostal muscles & Diaphragm: Origin, insertion, nerve supply & action. • Layers of anterior Abdominal wall and mention its origin, insertion, nerv supply and action of these muscles.		
	• Joints of Thorax- Identify & explain in detail various joints: ➢ Manubrio-sternal joint, Costo-Chondral joints, Chondro- sternal joints ➢ Costo-vertebral joints, Costo-transverse joints ➢ Intervertebral joints • Movements of vertebral column & Rib cage. • Intercostal space and its content • Diaphragm-structures passing through it. • Mention the course and branches of nerves, blood vessels and lymphatic drainage of thorax. • Surface and applied Anatomy , radiographical appearance of structures of thorax	5	3
5	**HEAD, NECK AND FACE (HNF)** (special emphasis on myology and osteology)	**15**	**22**
	Must Know • Muscles & Vessels of neck • Facial muscles & orbit • Temporo-Mandibular (TM) joint, Cervical vertebrae & Skull. • Movement of TM joint & Cervical spine • Cranial nerves • Surface and applied Anatomy , radiographical appearance Head, Neck and Face	8	15
	Desirable to know • Triangles of neck • Larynx, Pharynx • Endocrine glands	5	5
	Nice to Know • Salivary glands • Lateral wall of nose	2	2
6.	SPT		48

Text Books

Sr.No.	Title
1	B.D. Chaurasia's, 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 by regions -Lippincott.
4	Mcminn's Last's Anatomy-Regional and applied, Churchill Livingstone.
5	Cunningham Manual of Practical Anatomy Vol. I, II, III, Churchill Livingstone.

Reference Books

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

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 MCQs for 10 marks, 20 minutes
- Practical Examination: - 10 marks

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	Q. 1:- MCQs (10 Minutes)	10x1=10 marks
Sec B	Q.2:- Very Short answer questions - Answer any 5 out of 6 Q.3:-Short answer questions - Answer any 2 out of 3 Q.4:- Long Answer Questions - Answer any 1 out of 2	5x2=10 marks 2x5=10 marks 1x10=10 marks

- **Practical Examination (40 marks)**

Sr.No.		Marks
1	**Spots (2 Marks each)** • 3 Spots based on Special senses/Cardiovascular /Respiratory system • 2 Spots based on Soft part of Thorax/neck • 5 Spots based on upper extremity	**10x2=20 marks**
2.	**Viva** • Soft Parts & Osteology	15 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 journal and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the journal 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**					
												Written		Total	Practical		Total
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
64	32	48	144	4	2	3	9	4	1	1	6	10	40	50	10	40	50

Course Outcomes		
CO No.	**At the end of the course, the learner should be able to:**	**Mapped Program Outcomes**
102.1	Describe cell structure and function.	PO1
102.2	Explain the structure and function of muscles	PO1
102.3	Acquire the knowledge of the relative contribution of each organ system in maintenance of the milieu interior [Homeostasis].	PO1
102.4	Explain the physiology and functions of circulatory, cardiovascular, respiratory and digestive systems, and changes occurring due to ageing process	PO1
102.5	Demonstrate the skills of recognizing normal cardiogram, ECG, spirometry, haematology.	PO1

Topic Sr.No	**Course Content**	**Hours of teaching/learning**	
		Theory	**Practical**
1	**General Physiology**	4	-
	Must know • Cells & its organelles – structure & functions • Homeostasis, biofeedback mechanisms • Transport across cell membrane • Outline of membrane potential & action potential		
2	**Nerve muscle**	**7**	-
	Must know • Muscle- classification, structure, sarcomere & its 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	5	-
	Desirable to know • Applied aspects – Myasthenia gravis, Rigor mortis • Reaction of degeneration • Muscle disorders	2	
3	**Haematology**	**9**	-
	Must know • Composition and functions of blood • Red blood cell – morphology, formation, normal count, functions, physiological and pathological variation. • White blood cell- morphology, classification, properties, functions, physiological & pathological variation • Haemoglobin – basic chemistry, fate and functions. • Immunity- definition, classification, concept of antigen & antibody	5	-

	• Haemostasis – steps, role of platelets • Blood groups – A, B,O,AB and Rh system • Anaemia, ESR & PCV		
	Desirable to know • Plasma proteins • Anticoagulants • Blood transfusion	3	-
	Nice to know • Haemophilia • Thrombocytopenia	1	-
4	**Cardiovascular system**	**20**	-
	Must know • General organization and properties of cardiac muscle • Origin and conduction of cardiac impulse • Cardiac cycle and heart sounds • Normal heart rate, bradycardia, tachycardia, normal ECG • Cardiac output- normal values, physiological variations, factors affecting cardiac output and regulation • Blood pressure- normal values, measurement, determinants, short term and long term regulation • Pressure and volume changes during cardiac cycle • Regional circulation- Coronary, Muscular, Cerebral • Functions of Lymph	16	
	Desirable to know • Patho-physiology of circulatory shock and oedema • Hypertension, hypotension	3	
	Nice to know • Hemodynamics	1	
5	**Respiratory system**	**16**	-
	Must know • General organization of respiratory system • Mechanics of respiration- inspiratory & expiratory muscles, intrapleural pressure, lung & thoracic compliance, surfactant, lung volumes & capacities • Diffusion of gases • Transport of respiratory gases • Regulation of respiration • Outline of hypoxia- types & physiological changes • Acclimatization to high altitude. • Dead space, Ventilation/ perfusion ratio • Maximum breathing capacity & breathing reserve • Pulmonary function tests.	12	-
	Desirable to know • Artificial respiration	2	
	Nice to know Asphyxia, cyanosis (types and physiological changes)	2	
6	**Digestive System**	**8**	-
	Must know • General organization • Mastication and deglutition • Saliva – composition, functions & regulation of salivary secretion • Gastric secretion – composition, mechanism, phases of secretion,	6	-

	regulation and functions. • Outline of gastric emptying and peristalsis • Pancreatic secretion - composition, regulation & functions • Liver and Gall bladder – composition and functions of bile • Movements and functions of small and large intestine • Defecation reflex		
	Nice to know • Jaundice • Peptic ulcer • Constipation, diarrhoea	2	-
7	**HUMAN PHYSIOLOGY PRACTICAL**		**32**
	Haematology - Hb, RBC, WBC ,Blood groups, BT & CT	-	10
	Properties of muscles	-	
	• **Skeletal muscle.** Skeletal Muscle Contraction, effect of temperature, velocity of nerve conduction, fatigue, tetanus, All or none law & effect of load.	-	5
	• **Cardiac muscle.** Normal cardiogram, effect of speed, temperature, Stannius ligature, All or none law & incomplete tetanus, Nervous regulation of heart, vagal escape. Effect of drugs (adrenaline & acetylcholine)	-	5
	Other L. Ds	-	12
	• Physical fitness- Cardiopulmonary efficiency tests • Stethography, Spirometry • Ergography, Perimetry, ECG		
8	SPT		48

Text Books

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

Reference Books

Sr.No.	Title
1	Samson & Wright's 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 MCQs for 10 marks, 20 minutes.
- Practical Examination: - 10 marks

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	Q.1:- MCQs (10 minutes)	10x1=10 marks
Sec B	Q.2:- Very Short answer questions (Answer any 5 out of 6) Q.3:- Short answer questions (Answer any 2 out of 3) Q.4:- Long Answer Questions (Answer any 1 out of 2)	5x2=10 marks 2x5=10 marks 1x10=10 marks

- **Practical Examination (40 marks)**

Sr.No.		Marks
1	**Spots** • Haematology- 1 • Graphs-2 • Physical fitness-1 • BP/ ECG/HR-3 • 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 journal and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the journal 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**					
												Written		Total	Practical		Total
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
32	0	48	80	2	0	3	5	2	0	1	3	10	40	50	--	-	-

Course Outcomes		
CO No.	**At the end of the course, the learner should be able to:**	**Mapped Program Outcomes**
103.1	Develop good vocabulary and writing skills.	PO3, PO6
103.2	Effectively communicate with teachers, patients, peers and public.	PO3, PO5, PO6, PO7
103.3	Achieve entrepreneurship and leadership skills	PO3, PO5, PO6, PO9
103.4	Describe the importance of critical thinking and teamwork, Entrepreneurship, Professional Ethics and Leadership skills.	PO5, PO6, PO7, PO9

Topic Sr.No.	**Course Content**	**Hours of teaching/learning**	
		Theory	**Practical**
ENGLISH		**20**	
1	**Grammar and Vocabulary**	**12**	-
	Must Know • Reading Comprehension • Verb Forms, Tenses • Right Words (Synonyms, Antonyms, Homonyms and One-Word Substitutes) • Detection of Errors • Reported Speech • Precise writing, Essay **Nice to know** • Phrases and Idioms • Transformation • Punctuation	7 5	
2	**Composition**	8	-
	Must Know • Resume Writing • Letter writing and e-Correspondence • Note-Making • Report Writing • Expansion of Proverbs and Ideas • Description of Pictures.		
COMMUNICATION SKILLS		**12**	
3	**Must Know** • Ability to present ideas clearly, effectively and confidently, in both oral and written form. • Ability to practice active listening skills & provide feedback. • Ability to present clearly with confidence and appropriate to the level of the listener. • Ability to use technology in presentation	2	-

	• Ability to negotiate and reach an agreement • Ability to communicate with others from different cultures • Ability to develop interpersonal communication skills • Ability to use non-verbal skills. • Clinical application, Role Play		
4	**Critical Thinking and problem solving skills**	**4**	-
	Desirable to know • Ability to identify and analyse problems in complex and vague situations as well as to make justified evaluations. • Ability to develop and improve thinking skills such as to explain, analyse and evaluate discussions. • Ability to find ideas and alternative solutions. • Ability to think out of the box. • Ability to make decisions based on concrete evidence. • Clinical application, Role Play **Team work** • Ability to build to good relation interacts with others and work effectively with them to achieve the same objectives. • Ability to understand and interchange roles between that of a team leader and a team member. • Ability to contribute towards the planning and coordination of the team's efforts is responsible for the group's decisions. **Nice to know** • Ability to persevere as well as to fully concentrate on given task. • Ability to understand and to fit in with the culture of the community and new work environment. • Ability to recognize and respect the attitude, behaviour and beliefs of others. • Clinical application, Role Play	3 1	
5	**Lifelong learning and information management**	1	
	Desirable to Know • Ability to search and manage relevant information from different sources. • Ability to accept new ideas & capability for autonomous learning. • Ability to develop a curious mind & thirst for knowledge. • Clinical application. Role Play		
6	**Entrepreneurial skills**	1	
	Nice to know • The ability to identify business opportunities • The ability to outline business frameworks, • The ability to build explores and seizes business and work. • The ability to work independently. • Clinical application, Role Play		
7	**Professional ethics and morals**	1	
	Must Know • Ability to recognize the effects on the economy, environmental and socio-culture in professional practice. • Ability to analyse & make decisions in solving problems related to ethics. • Ability to practice ethically apart from being responsible towards the society, have the knowledge of basic leadership theory. • Clinical application, Role Play		

8	**Leadership skills**	1	
	Must Know • Ability to lead a project. • Ability to understand and interchange roles between that of a team leader and a team member. • Clinical application. Role Play • Ability to supervise team members.		
9	**Introduction to ethics & bioethics**	2	
	Must Know • Meaning, nature of ethics, ethical statements • Meaning of bioethics • Health & disease as values and facts • Principles of bioethics • Medical ethics- goals, committees		
10	SPT		48

Textbooks

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

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
10	40	50

Periodical Examination:

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

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	Q.1:- MCQs (5 English+5 Communication skills) (10 Minutes)	10x1=10
Sec B	**English** Q.2.Very Short answer questions (Answer any 5 out of 6)	5x3=15
Sec C	**Communication skills** Q.3 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 :- ELECTROTHERAPY- I Course Code:- PT 104																	
Course Credit for ELECTROTHERAPY- I																	
Hours				**Hrs/Wk**				**Credits**				**Evaluation Pattern**					
												Written		Total	Practical		Total
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
80	96	96	272	5	6	6	17	5	3	2	10	20	80	100	20	80	100

Course Outcomes

CO No.	At the end of the course, the learner should be able to:	Mapped Program Outcomes
104.1	Understand basic principles of physics, Laws of Electricity, Electro-magnetic spectrum and ultra –sound	PO1
104.2	Describe effects electro- magnetic fields at cellular level & risk factors on prolonged exposure	PO1
104.3	Describe working of common electrical components such as transistors, valves, capacitors, transformers and instruments used to test /calibrate these components	PO1
104.4	Describe various superficial thermal agents, their physiological and therapeutic effects, merits / demerits; and acquire the skill of application.	PO1
104.5	Acquire knowledge of high frequency modalities, their basic physics, working, physiological and therapeutic effects	PO1

Topic Sr.No.	Course Content	Hours of teaching/learning	
		Theory	Practical
1	**BIOELECTRONICS**	**29**	**16**
	Must Know		
	• Electron theory, static and current electricity • Conductors, Insulators, Potential difference, Resistance & Intensity • Ohm's Law – Its application to AC & DC currents	5	4
	• Rectifying Devices – Thermionic Valves, Semiconductors, Transistors • Amplifiers, Transducers, Oscillator circuits • Capacitance, condensers in DC and AC Circuits • Display devices & indicators – analogue & digital	5	4
	• Effects of Current Electricity • Chemical effects - ions and electrolytes, ionization, Production of a E.M.F. by chemical actions • Magnetic effects, Molecular theory of Magnetism, Magnetic fields, Electromagnetic Induction, Eddy currents, • Milli-ammeter and Voltmeter, Transformers & Choke Coil	6	4
	• Thermal Effects – Joule's Law and Heat production • Electromagnetic spectrum – biophysical application • Laws of Transmission-Reflection, Refraction, Absorption, Attenuation	5	4
	Desirable to know • Structure and properties of matter – solids, liquids and gases • Adhesion, surface tension, viscosity, density and elasticity • Physics of sound including characteristics and propagation	5	-
	Nice to know 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**	**5**	**-**
	Desirable to know • 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 & ACTINO THERAPY**	**23**	**32**
	Must Know		
	• Physiological responses to heat gain/ loss on various tissues of body • Physical principles of Electro-magnetic radiations • Therapeutic effects of heat and cold • Home remedies of heat and cold	3 3 3 3	8
	Therapeutic cold (Cryotherapy): Sources, biophysical effects, types, therapeutic effects, indications, contraindications, precautions, application techniques and patient preparation	4	8
	Thermotherapy modalities: Paraffin wax bath, contrast bath, whirl pool bath, moist heat therapy: Principles of application, mode of application, therapeutic uses, indications and contraindications	5	8
	Infrared rays: • Wavelength, frequency, types & sources of IRR generation, techniques of irradiation, physiological & therapeutic effects, indications, contraindications, precautions. • Operational skills of equipment & patient preparation	2	8
4	**HIGH FREQUENCY CURRENTS AND WAVES**	**15**	**35**
	High frequency currents (S.W.D.)	8	17
	• Production, biophysical effects, types • Therapeutic effects, techniques of application • Indications, contraindications, precautions • Operational skills and patient preparation		
	High frequency sound waves (Ultrasound)	7	18
	• Physics of sound including characteristics and propogation • Production, biophysical effects, types • Therapeutic effects, techniques of application • Indications, contraindications, precautions • Operational skills and patient preparation		
5	**TRACTION**	**5**	**13**
	• Principles of traction, classification, types • Physiological & therapeutic effects • Indications, contraindications • Techniques of application • Operational skills & precautions		
6	**Nice to know** • Open equipment demonstration of various equipments • Calibration techniques of equipments	**3**	
7	SPT		96

Text Books

Sr.No.	Title
1	Clayton's Electro therapy Theory and Practive- 9th & 10th ed

2	Electro therapy explained Principles and practice –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 MCQs for 20 marks, 20 minutes.
- Practical Examination: -20 marks (Spots/ Simulated presentation of technique & demonstration/ OSPE)

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

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

- **Practical Examination (80 marks)**

Sr.No.		Marks
1.	**One Long Case:** SWD, US, Contrast Bath, Whirl pool Bath, Traction.	35
2.	**One Short Case:** Superficial thermal agents/IR, Cold packs, Hot pack, wax bath	20
3	**Spots** 5 Spots - (5 Minutes per Spot and four marks per spots) spots based on identification of electronic equipments & panel diagram of equipment	20 (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 journal and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the journal 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 (Subject)	Hours				Hrs/Wk				Credits				Evaluation Pattern					
														Written		Total	Practical		Total
		Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
PT-201	Human Anatomy- II	48	64	48	160	3	4	3	10	3	2	1	6	10	40	50	10	40	50
PT-202	Human Physiology-II	48	32	48	128	3	2	3	8	3	1	1	5	10	40	50	10	40	50
PT-203	Biochemistry	48	-	-	48	3	-	-	3	3	-	-	3	10	40	50	-	-	-
PT-204	Exercise Therapy- I	64	96	96	256	4	6	6	16	4	3	2	9	20	80	100	20	80	100
PT-205	Computer Science	32	-	48	80	2	-	3	5	2	-	1	3	10	40	50	-	-	-
	Total	**240**	**192**	**240**	**672**	**15**	**12**	**15**	**42**	**15**	**6**	**5**	**26**	**60**	**240**	**300**	**40**	**160**	**200**

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

Course Title :- Human Anatomy-II
Course Code:- PT 201

Course Credit for Human Anatomy II

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

Course Outcomes

CO No.	At the end of the course, the learner should be able to:	Mapped Program Outcomes
201.1	Describe anatomical aspects of Muscles, Bones, Joints, major arteries, Veins and Lymphatics especially of Lower extremities and Pelvis	PO1
201.2	Analyze movements and surface landmarks of Lower extremity.	PO1, PO2
201.3	Understand common clinical conditions and correlate them on anatomical basis.	PO1, PO2
201.4	Identify and describe various parts of Central Nervous System and Correlate clinical lesions on anatomical basis.	PO1, PO2
201.5	Describe origin and course of different Spinal Tracts, and identify the components of various Trans- sections.	PO1, PO2
201.6	Describe circulation of CNS and spine.	PO1

Topic Sr.No.	Course Content	Hours of teaching/learning	
		Theory	Practical
1	**SECTION I- NEUROANATOMY**	**18**	**15**
	Must Know • Peripheral Nerves • Neuromuscular Junction • Sensory End Organs • Spinal Cord Segments & Areas • Brainstem • Cerebellum	15	

	• Inferior colliculi & Superior colliculi • Diencephalon • Hypothalamus ,Thalamus • Corpus striatum • Cerebral hemispheres • Internal Capsule • Thalamo-cortical radiations • Pyramidal systems & Extra-pyramidal systems • Sympathetic & Para-sympathetic system • Ventricles system • Meninges • Blood supply of the brain • Cranial nerves		
	Desirable to know • Epithalamus • Rhinencephalon • Visual radiation • Auditory radiation	3	
2	**SECTION II - TRUNK & ABDOMEN**	**5**	**6**
	Must Know **Osteology** • Vertebral columns: Identify parts of typical vertebra and state the main features, attachments and ossification. • Intervertebral disc and mention its part. **Myology** • Fascia and muscles of back • Fascia and muscles of post Abdominal Wall: origin, insertion, nerve supply and action. • Fascia and muscles connecting U/L with vertebral column: origin, insertion, nerve supply, action. • Applied Anatomy of structures of trunk & abdomen.	3	
	Desirable to know • Mention the course and branches of nerves, blood vessels and also lymphatic drainage of trunk & abdomen. • Lumbar Plexus: Position, formation and branches. • Rectus sheath: formation and contents. • Contents of vertebral canal and abdomen	2	
3	**SECTION III - PELVIS**	**6**	**12**
	Must Know • Features of pubic symphysis and sacroiliac joints. • Muscles of pelvic floor, their attachments, action & nerve supply • Nerve supply ,Lymphatic drainage and Blood vessels of the region with course, variations, distribution and main branches • Anatomy of uroginital and reproductive organs	2 2	
	Desirable to know • Sacral Plexus • Main features of subdivision, boundaries, walls & floor of pelvis. • Difference between male and female pelvis. • Urogenital diaphragm (outlines only) • Applied anatomy of lumbar plexus	2	

4	**SECTION IV- LOWER EXTREMITY**	**15**	**19**
	Must Know **Osteology** • Hip bone, femur, Tibia, Fibula, Patella, and bones of the foot • Myology- Origin, Insertion, Nerve Supply, Action of the following: ➢Fascia and muscles in anterior of thigh ➢Fascia and muscles of medial side of thigh ➢Fascia and muscles of posterior of thigh ➢Fascia and muscles of gluteal region ➢Fascia and muscles of lateral side of leg ➢Fascia and muscles of back of leg and sole of foot • Detailed explanation of joints of Lower extremity: Hip, joint, Knee joint, Ankle joint, joints of foot. • Identify the nerves of Lower extremity and mention their position course, relations and distribution • Indicate the blood vessels of Lower extremity and mention their position, course, relation, distribution and main branches • Explain femoral triangle and subsartorial canal • Poptileal fossa • Applied Anatomy of structures of Lower extremity	14	
	Nice to know • Lymphatic drainage of Lower extremity	1	
5	**SECTION V- REGIONAL ANATOMY**	**4**	**12**
	Must Know • Surface Anatomy &Bony landmarks of lower extremity, and its regional vertebrae • Demonstration of muscles –Lower extremity, trunk • Demonstration of movements of joints of lower extremity and pelvis **Nice to know** • Palpation of peripheral arteries & nerves • Radiographic appearance of Musculo-skeletal system of Lower extremity, and its regional vertebrae	2 2	
6	SPT		48

Text Books

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

Reference Books

Sr.No.	Title
1	Williams & Warwick, Gray's Anatomy- Churchill Livingstone.
2	Extremities by Quining Wasb
3	Basic 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 MCQs for 10 marks, 20 minutes.
- Practical Examination: - 10 marks

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	Q.1:- MCQs (10 Minutes)	10x1=10 marks
Sec B	Q.2:- Very Short answer questions - Answer any 5 out of 6 Q.3:- Short answer questions - Answer any 2 out of 3 Q.4:- Long Answer Questions - Answer any 1 out of 2	5x2=10 marks 2x5=10 marks 1x10=10 marks

- **Practical Examination (40 marks)**

Sr.No.		**Marks**
1	**Spots** 1. 2 Spots based on Urogenital/Reproductive/special senses 2. 3 Spots based on Soft part of Brain, 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 journal and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the journal 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**					
												Written		Total	Practical		Total
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
48	32	48	128	3	2	3	8	3	1	1	5	10	40	50	10	40	50

Course Outcomes		
CO No.	**At the end of the course, the learner should be able to:**	**Mapped Program Outcomes**
202.1	Differentiate between Normal physiology of a healthy individual and variations in body systems during process of maturation till ageing.	PO1
202.2	Describe Renal Physiology with emphasis on functions of kidney, micutaration reflex and different types of bladder.	PO1
202.3	Describe endocrine system with respect to hormones releasing from hypothalamus and conditions related to hormone secretions.	PO1
202.4	Describe reproductive system with emphasis on functional anatomy of reproductive system, puberty, spermatogenesis, menstrual cycle, pregnancy and pregnancy tests.	PO1
202.5	Give a detailed classification of spinal tracts and give functions of ascending and descending tracts and associated lesions of the tracts.	PO1, PO2
202.6	Elucidate the special sense and pathologies associated with the special senses.	PO1, PO2
202.7	Demonstrate skill of basic clinical examination, with special emphasis to Peripheral and Central Nervous system, CVS & Respiratory system.	PO1, PO2, PO3

Topic Sr.No.	**Course Content**	**Hours of teaching/learning**	
		Theory	**Practical**
1	**RENAL PHYSIOLOGY**	**4**	-
	Must know • General introduction, structure and functions of kidney • Formation of urine- filtration, re-absorption and secretion • Physiology of micturition • Neurogenic bladder	3	
	Desirable to know • Renal circulation • Plasma clearance test	1	
2	**BODY TEMPERATURE REGULATION**	**4**	-
	Must know • Normal body temperature & its regulation • Skin-structure and functions	3	
	Desirable to know • Hypothermia, hyperthermia	1	
3	**ENDOCRINE SYSTEM**	**8**	-
	Must know • Introduction - General organization of endocrine glands • Mechanism of hormone action • Releasing hormones from hypothalamus • Physiological actions, regulation & disorders of: ➢ Anterior & Posterior pituitary hormones ➢ Thyroid & Parathyroid Hormones		

	➢ Adrenal cortex & medulla ➢ Pancreatic hormones		
4	**REPRODUCTIVE SYSTEM**	**6**	-
	Must know • Functional anatomy of reproductive system • Puberty, changes in males and females, menarche, menopause • Spermatogenesis - stages and regulation, Physiological actions of testosterone • Menstrual cycle & Ovarian cycles – phases & hormonal regulation, ovulation • Physiology of pregnancy • Lactation – initiation, maintenance and control, • Functions of placenta	4	
	Desirable to know • Pregnancy tests	1	
	Nice to know • Sex chromosomes • Precocious and delayed puberty	1	
5	**CENTRAL NERVOUS SYSTEM**	**20**	-
	Must know • General organization of nervous system • Receptors – definition, classification and functions • Synapse-definition, physiological anatomy & synaptic transmission • Reflexes – classification, properties and functions • Spinal cord- ascending & descending tract and functions • Ascending tracts-sensations carried, pathways & functions • Descending tract - Origin, course & termination & functions • Pain sensation – types of pain, pathways for pain, referred pain, central analgesia system • Posture & equilibrium, Vestibular apparatus • Thalamus & Hypothalamus – its functions • Cerebellum – functions, effects of lesion • Basal ganglia – functions, effects of lesion, Parkinsonism • Muscle tone • Cerebral cortex – Gross anatomy, division & functions of each lobe • Autonomic nervous system – Organization & functions of parasympathetic & sympathetic system and functions • CSF – Composition, formation, circulation, functions & Blood brain barrier, Applied aspects • Differences between Upper Motor Neuron and Lower Motor Neuron lesions	16	
	Desirable to know • Synthesis of neurotransmitters • Limbic system and its functions	2	
	Nice to know • Effects of spinal transection • Decerebrate and decorticate rigidity • Thalamic syndrome • Ascending and descending reticular activating system • Speech, memory and learning	2	

6	**SPECIAL SENSES**	**6**	-
	Vision **Must Know** • Vision – Structure of Eye ball, retina, refractory errors • Accommodation, visual pathway, Pupillary reflexes **Desirable to know** • Light and dark adaptation • Photochemistry of vision	1 1	
	Ear **Must Know** • Functional anatomy of Ear, Cochlea • Functions of middle & inner ear	1	
	Desirable to know • Auditory pathway • Audiometry **Nice to know** • Physics of sound • Theories of hearing	1 1	
	Taste & smell **Must Know** • Functional anatomy • Factors affecting taste and smell	1	
7	**Practical & Lecture demonstrations (L.Ds)**	-	**32**
	a) Clinical examination of arterial pulse. b) Determination of arterial blood pressure. c) Clinical examination of cardiovascular system. d) Clinical examination of respiratory system. e) Clinical examination of higher mental functions. f) Clinical examination of sensory system. g) Clinical examination of motor system –I. h) Clinical examination of motor system –II i) Clinical examination of all cranial nerves.		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– Prof. A. K Jain
3	Concise Medical Physiology – Sujit K. Choudhari
4	Essential of Medical Physiology- K. Sembuilingam

Reference Books

Sr.No.	Title
1	Samson & Wright's 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 MCQs for 10 marks, 20 minutes.
- Practical Examination: - 10 marks

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	Q.1:- MCQs (10 Minutes)	10x1=10 marks
Sec B	Q.2:- Very Short answer questions (Answer any 5 out of 6) Q.3:- Short answer questions (Answer any 2 out of 3) Q.4:- 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	**Clinical physiology** • Clinical examination of respiratory system • Clinical examination of CVS • Cranial Nerve Examination • Reflex Testing • Motor and Sensory system Examination	20
2.	**Viva-** Based on Theory portion	15
3	**Journal**	5

SUPERVISED PRACTICAL TRAINING:

Journal 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 journal and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the journal 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 Course code :- PT 203 Biochemistry																	
Course Credit for Biochemistry																	
Hours				**Hrs/Wk**				**Credits**				**Evaluation Pattern**					
												Written		Total	Practical		Total
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
48	-	-	48	3	-	-	3	3	-	-	3	10	40	50	-	-	-

Course Outcomes

CO No.	At the end of the course, the learner should be able to:	Mapped Program Outcomes
203.1	Describe structures & functions of cell.	PO1
203.2	Describe normal functions of different components of food, enzymes, and factors affecting enzymatic action.	PO1
203.3	Define Basal Metabolic Rate & factors affecting the same, and deviation from normal especially in obesity.	PO1
203.4	Explain sources and nutritional aspects of metabolism of carbohydrates, lipids, proteins & vitamins.	PO1
203.5	Describe in detail biochemical aspects of muscle contraction.	PO1
203.6	Describe the Normal and abnormal findings related to Clinical biochemistry, with special reference to Liver & renal function tests, Lipid profile, fat metabolism, Carbohydrates, proteins, bone minerals, and electrolyte balance.	PO1, PO2

Topic Sr.No.	Course Content	Hours of teaching/learning	
		Theory	Practical
1	**CELL BIOLOGY**	1	-
	Must Know • Membrane, structure & function • Junction of intracellular organelle in brief (no structural details)		
2	**CARBOHYDRATES** **Must Know** • Metabolism-Digestion and absorption of carbohydrates, Glycolysis- aerobic, anaerobic & its regulation • Kreb`s cycle &its regulation • Glycogenesis, Glycogenolysis& their regulation, role of liver in muscle glycogen • Gluconeogenesis, significance of H.M.P. shunt • Hormonal regulation of blood sugar levels, important metabolic disorders of glycogen, lactose intolerance, Diabetes mellitus. • Clinical biochemistry: Relevance of blood levels of glucose, Glycosuria	6	-
3	**PROTEINS** **Must Know** • Chemistry, definition, function, classification of Amino acids, protein structure, effect of temperature on proteins- denaturation, coagulation, isoelectric pH & its importance • Metabolism, digestion and absorption,Decarboxylation, De-aminatio Transmethylation, transamination & their importance, Detoxification ammonia including urea cycle. • Clinical biochemistry: Relevance of blood levels of urea & uric acid, Protein in urine	6	-

4	**LIPIDS**	**6**	-
	Must Know • Chemistry, definition, classification(including fatty acids with e.g.), function • Metabolism, digestion and absorption of lipids, β oxidation of saturated fatty acids &its energetics and regulation of fat metabolism in adipose tissue, Ketone bodies formation & utilization • Cholesterol and its importance [no biosynthesis needed]- classification, sources & function of lipoproteins- lipoproteinemia • Clinical Biochemistry- Lipid profile: Triglyceride, cholesterol / HDL/LDL/VLDL etc.	4	
	Nice to Know • Phospholipid synthesis • Atherosclerosis • Liver function test & Renal function test	2	
5	**NUCLEIC ACIDS**	**2**	-
	Must Know • D.N.A. /R.N.A.-definition, structure and function, types, Genetic code **Desirable to Know** • Catabolism of Purine –gout	1 1	
6	**ENZYMES**	**3**	-
	Must Know • Definition, Co-Enzymes, modern classification, factors affecting enzymes action • Clinical and therapeutic use of enzymes • Clinical relevance: Enzymes-Amylase, CPK, LDH	2	
	Desirable to Know • Inhibition and types of inhibitors • Iso-enzymes	1	
7	**VITAMINS**	**7**	-
	Must Know • Water and fat soluble-definition, classification • Individual Vitamins-sources- function • RDA, deficiency and toxicity	5	
	Nice to Know • Vitamin - absorption and transport • Co-enzyme forms	2	
8	**BIOLOGICAL OXIDATION**	2	-
	Desirable to Know • Oxidative phosphorylation & ETC in brief		
9	**MINERALS**	**4**	-
	Must Know • Phosphate, calcium and iron [in detail] • Sources, absorption, transport, excretion, functions and deficiency of Magnesium, Fluoride, Zinc, Copper, Selenium, Molybdenum, Iodine	3	
	Desirable to Know Clinical Biochemistry-Relevance of blood levels of Ca, phosphate & Iron	1	

10	**ACID BASE BALANCE, WATER & ELECTROLYTE**	4	-
	Must Know • Body water, PH, osmolarity Extra and Intra cellular fluid • Buffers, PH, buffer system in blood • Role of kidneys & lungs in acid-base balance. • Water electrolyte balance, imbalance, dehydration.		
11	**MUSCLE CONTRACTION**	2	-
	Must Know • Contractile elements • Biochemical events during contraction • Energy metabolism in skeletal & cardiac muscle		
12	**CONNECTIVE TISSUE**	2	-
	Must Know • Biochemistry of connective tissue-collagen, Glyco-protein, proteoglycans		
13	**NUTRITION**	**3**	-
	Must Know • Importance of nutrition • Basal metabolic rate- definition, normal values, factors affecting • Energy requirement with age, sex, thermogenesis, specific dynamic action of food, energy expenditure for various activities • Composition of food, balanced Diet, dietary recommendations, nutritional supplementation, nutritional value of carbohydrates, proteins, fats &Fibers	2	
	Desirable to Know • Nitrogen balance & its significance, Protein energy malnutrition – Kwashiorkor & Marasmus	1	

Text Books

Sr.no	Title
1	Biochemistry-by-Dr. Satyanarayan
2	Text book of Biochemistry for Medical students by-Dr Vasudevan/ Shrikumar

Reference Books

Sr.no	Title
1	Review of Biochemistry [26th edn] by Harper.

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
10	40	50

Periodical Examination:

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

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	Q.1:- MCQs (10 Minutes)	10x1=10 marks
Sec B	Q.2: - Very Short answer questions (Answer any 5 out of 6) Q.3: - Short answer questions (Answer any 2 out of 3) Q.4:- Long Answer Questions (Answer any 1 out of 2)	5x2=10 marks 2x5=10 marks 1x10=10 marks

Internal Assessment Marks: -Theory: -

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

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

Course Title:- Exercise Therapy- I Course Code:- PT 204																	
Course Credit for Exercise therapy- I																	
Hours				**Hrs/Wk**				**Credits**				**Evaluation Pattern**					
												Written		Total	Practical		Total
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
64	96	96	256	4	6	6	16	4	3	2	9	20	80	100	20	80	100

Course Outcomes

CO No.	At the end of the course, the learner should be able to:	Mapped Program Outcomes
204.1	Define and describe various terms used in mechanics, Biomechanics and Kinesiology	PO1
204.2	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.	PO1, PO2
204.3	Demonstrate all active and passive movements for all joints according to anatomical planes.	PO1
204.4	Demonstrate starting positions and identify various derived positions, Describe joint positions, muscle work and use of each position.	PO1, PO2
204.5	Describe types of Goniometer, merits and demerits of goniometry and demonstrate skills of measuring ROM with goniometer.	PO1
204.6	Demonstrate skill of various techniques of massage manipulations and describe the Physiological effects, therapeutic use, merits /demerits of the same	PO1, PO3, PO5
204.7	Demonstrate skills of using various tools of therapeutic gym.	PO1
204.8	Demonstrate relaxation techniques on models.	PO1, PO3, PO5, PO6
204.9	Demonstrate group and recreational activities, group and individual general fitness exercises used in Physical Training.	PO1, PO3, PO5, PO6
204.10	Demonstrate various yogasanas in different positions and describe their physiological and psychosomatic effects.	PO1

Topic Sr.No.	Course Content	Hours of teaching/learning	
		Theory	Practical
1	**Basic Biomechanics-**	**12**	-
	Must Know • Axis/planes, Newton's law of motion, mechanics of Forces, levers, pendulum, equilibrium, torque, stability, base of support, COG, law of gravity • Types of muscle work, angle of pull, Mechanical advantage	10	
	Nice to know • Applied mechanics in the Therapeutic Gymnasium	2	
2	**Must Know-**Starting and derived positions	**3**	**10**
3	**Classification of Movements** **Must Know-**Active, Passive, Assisted, Resisted	**5**	**20**
4	**Goniometry** **Must Know-** - principles, techniques, uses, types	**5**	**14**
5	**Relaxation**	**4**	**5**
	Must Know • Describe relaxation, its effects, uses & clinical application • Indication & contraindication	3	

	• Techniques of relaxation (local and general)		
	Nice to know • Muscle fatigue, muscle spasm and tension (mental & physical) • Factors contributing to fatigue & tension	1	
6	**Massage manipulations**	**5**	**10**
	Must Know • Principles, effects, merits & demerits, skills on extremities, scalp, spine, abdomen, face • Physiological effects of soft tissue manipulation on the following systems of the body: - Circulatory, Nervous, Musculoskeletal, Excretory, Respiratory, Integumentary system and Metabolism • Classify, define and describe: - effleurage, stroking, kneading, petrissage, deep friction, percussions, vibration and shaking etc. • Effects, uses, indications and contraindications of the above manipulation • Preparation of patient	4	
	Nice to know • History, various types of soft tissue manipulation techniques.	1	
7	**Therapeutic Gymnasium-**	**4**	**5**
	Must Know • Various equipment in the gymnasium • Operational skills, effects & uses of each equipment (shoulder wheel, finger ladder, therapeutic balls, parallel bars etc.)	2	3
	Desirable to know • Setup of a gymnasium & its importance • Group therapy & recreational activities	2	2
8	**Suspension therapy-** **Must Know** • Definition, Type, Effects Uses, Parts and Operational skills • Use of accessories such as pulleys, springs, Slings, Ropes	**4**	**4**
9	**Walking aids** **Must Know-** Introduction, types, parts, measurement	**2**	**2**
10	**Must Know** **Yoga**: Principles & basic yogic postures & their physiological effects. *Yogic postures in: -* <u>Supine Position</u>: • Shavasana, Halasana • Sarvangasana, Setubandhasana • Pavanmuktasana <u>Prone Position:</u> • Dhanurasana, Salabhasana • Bhujangasana, Naukasana <u>Standing Position:</u> • Padahastasana, Utkatasana <u>Sitting Position:</u> • Padmasana, Siddhasana • Vajrasana, Gomukhasana • Paschimottanasan, Yogamudrasana • ,Matsyndrasana, Ardha Matsyndrasana	**4**	**10**

11	**Hydrotherapy**	**6**	4
	Must Know • Physics, application, effects, merits and demerits, Basic principles of fluid mechanics, as they relate to hydrotherapy • Physiological & therapeutic effects of hydrotherapy, including joint mobility muscle Strengthening & wound care etc. • Types of Hydrotherapy equipment, indications, contraindications, operation skills & patient preparation	5	
	Nice to know Room based hydrotherapy-Aquasiser etc.	1	
12	**Desirable to know**	**8**	**12**
	• Limb length (only lower limb - apparent, true, supratrochantric) and girth measurements	4	4
	• Assessment of Sensations, Reflex testing	2	4
	• Assessment of Blood pressure, Pulse rate, Chest expansion and Respiratory rate	2	4
13	**Human dignity and human rights** • Human dignity as an intrinsic value • Respect , care and Equality in dignity of all human beings • human dignity in different cultural and moral traditions • Ethical aspects of physiotherapists in patients relation in regard to human dignity in handling children, women, elderly, mental & Physically challenged.	**2**	-
14	**SPT**		**96**

Text Books

Sr.No.	Title
1	The Principles of Exercise Therapy – Dena Gardiner
2	Therapeutic Exercise-Foundation and techniques Colby and Kisner
3	Massage for Therapists- M. Hollis
4	Suspension Therapy in Rehabilitation-Margaret Hollis
5	Joint Structure and Funstion- Cynthia Norkins
6	Hydrotherapy - Duffield
7	Measurement of joint motion - Cynthia Norkins

Reference Books

Sr.No.	Title
1	Massage, manipulation & traction- Sydney Litch

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 MCQs for 20 marks, 20 minutes.
- Practical Examination: -20 marks (Spots/OSPE)

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

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

- **Practical Examination (80 Marks)**

Sr.No.		**Marks**
1.	**Long Case**:Massage/ Goniometry / Suspension therapy	35
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/Blood pressure/Pulse rate/ Respiratory Rate/ Chest Expansion	20
3	**Spots:** Five spots based on therapeutics gymnasium. 4 marks per spot, 5 minutes per spot.	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 journal and should be submitted before the preliminary examination of the semester. It is the responsibility of the student to submit the journal 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**					
												Written		Total	Practical		Total
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
32	-	48	80	2	-	3	5	2	-	1	3	10	40	50	-	-	-

Course Outcomes		
CO No.	**At the end of the course, the learner should be able to:**	**Mapped Program Outcomes**
205.1	Effectively use Microsoft Word, Excel and Power point.	PO1, PO2
205.2	Compute basic statistics using excel.	PO1, PO2
205.3	Use Internet services for Research and Documentation.	PO1, PO4, PO9

Topic Sr.No.	**Course 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	-
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

Periodical Examination:

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

Preliminary Examination / University (Final) Examination

- Written Examination (40 marks)

Sec A	Q.1:- MCQs	10x1=10 marks
Sec B	Q.2:- Very Short answer questions - Answer any 5 out of 6	5x2=10 marks
	Q.3:- Short answer questions - Answer any 2 out of 3	2x5=10 marks
	Q.4:- 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)

SEMESTER – III

Course Code	Course (Subject)	Hours				Hrs/Wk				Credits				Evaluation Pattern					
														Written		Total	Practical		Total
		Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
PT-301	Pathology & Microbiology	80	--	--	80	5	--	--	5	5	--	--	5	20	80	100	--	-- -	--
PT-302	Exercise Therapy-II	64	128	96	288	4	8	6	18	4	4	2	10	20	80	100	20	80	100
PT-303	Psychology	48	--	--	48	3	--	--	3	3	--	--	3	10	40	50	--	--	--
PT-304	Biomechanics	64	32	48	144	4	2	3	9	4	1	1	6	20	80	100	--	--	--
PT-305	First Aid & Emergency care	32	32	48	112	2	2	3	7	2	1	1	4	10	40	50	--	--	--
	Total	**288**	**192**	**192**	**672**	**18**	**12**	**12**	**42**	**18**	**6**	**4**	**28**	**80**	**320**	**400**	**20**	**80**	**100**

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					
												Written		Total	Practical		Total
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
80	--	--	80	5	--	--	5	5	--	--	5	20	80	100	--	-- -	--

Course Outcomes

CO No.	At the end of the course, the learner should be able to:	Mapped Program Outcomes
301.1	Describe the process of cell injury and changes it induces in various organs and tissues.	PO1
301.2	Describe neoplasia with reference to aetiology, clinical features, diagnosis and prognosis.	PO1
301.3	Describe etiopathogenesis of common infections & non-infectious diseases.	PO1
301.4	Describe common immunological and hematological disorders and its prognosis.	PO1
301.5	Correlate normal & altered morphology of different organ systems in different diseases for understanding disease process & their clinical significance (with special emphasis to Neuro- Musculo-skeletal & cardio-respiratory systems).	PO1, PO2

Course Content

Topic Sr.No.	A) Pathology	Hours of teaching/learning	
		Theory	Practical
1	**Cell injury** • Causes, mechanism & toxic injuries with special reference to Physical, Chemical & ionizing radiation • Reversible injury (degeneration), types, morphology, hydropic swelling, hyaline, fatty changes • Intra-cellular accumulation, hyaline mucin & pigment disorders • Irreversible cell injury- Necrosis-Apoptosis • Extra-cellular accumulation, amyloidosis, calcification, metastasis & dystrophic – Pathogenesis, morphology	4	-

2	**Inflammation & Repair** • Acute inflammation – features, causes, vascular & cellular events, transudates and exudates Morphologic variations, Inflammatory cells & mediators • Chronic inflammation – causes, types, non- specific & granulomatous – with examples • Healing Regeneration and Repair Wound healing by primary & secondary intension factors influencing process , pathological aspects • Healing at various sites including bones, nerve & muscle	3	-
3	**Immunopathology (basic concepts)** • Immune system - organization, cells, antibodies, regulation of immune responses • Hypersensitivity reactions • Secondary immunodeficiency conditions including HIV • Auto immune diseases ,Organ transplantation	2	-
4	**Circulatory disturbances** • Oedema – Patho-physiologic categories and morphology • Hyperemia and congestion– lung, liver, spleen • Thrombosis – Pathology • Embolism – types, clinical effects • Infarction – types, common sites • Gangrenes – Classification, etio-pathogenesis and morphology • Shock – Pathogenesis, types, morphologic changes	3	-
5	**Growth Disturbance** • Atrophy, malformation, agenesis, dysplasia • Neoplasia– classification, histogenesis, biologic behaviour, difference between benign & malignant tumor • Malignant neoplasms– grades, stages, local & distal spread • Precancerous lesions & carcinoma 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** • Atherosclerosis, Peripheral vascular diseases • Ischemic heart diseases, myocardial infarction – Pathogenesis and morphology • Hypertensive heart disease • Congestive Heart Failure, Pericarditis, Cardiomyopathy • Rheumatic fever and Heart Disease, Infective endocarditis and other types of endocarditis • Peripheral vascular diseases	3	-
7	**Respiratory system** • COPD • Pneumonia (lobar, broncho),viral • T.B. - Primary and secondary, morphologic types • Pleuritis - complications • Lung collapse – Atelectasis	3	-
8	**Neuropathology** • Reaction of nervous tissue to injury – infection & ischemia • Pyogenic meningitis, TBM, Viral • Cerebrovascular disease, atherosclerosis, Thrombosis, embolism, aneurysm, hypoxia, infarction & hemorrhage. • Effects of Hypotension on CNS, Coma	3	

	• Poliomyelitis, Leprosy, Demyelinating diseases, Parkinsonism, Cerebral palsy, Metachromatic leucodystrophy, Dementia, Hemiplegia, Paraplegia, Wilson's disease • Space Occupying Lesions (SOL) in brief • Peripheral nerve injury		
9	**Diseases of muscle** • Muscular dystrophy, hypertrophy, Pseudo hypertrophy, Atrophy, Myositis ossificans, Necrosis, regeneration, Myotonia • Muscle biopsy	1	
10	**Neuromuscular junction** • Myasthenia gravis, Myasthenic syndrome • Nerve biopsy	1	
11	**Bone & Joints** • Fracture healing • Rickets, Osteomalacia, Osteoporosis, Gout • Spondylosis, Prolapse Intervertebral Disc, Scoliosis • Haemarthrosis, Osteomyelitis, T.B. • Arthritis - degenerative, inflammatory (RA, Ankylosing spondylitis, Tenosynovitis)	2	
12	**Clinical pathology – (including Demonstrations)** Lab investigation in liver & renal failure	2	
13	**Haematology** • T.C./D.C./PBS, Eosinophilia, E.S.R., Anaemia • Bleeding and coagulation disorders **Desirable to Know: -** • Disorders of Haemoglobin- structure and synthesis • Lymphoid and myeloid neoplasmas	**3** 2 1	
14	**Must Know** • Growth Disturbance - Carcinogenesis, Environmental carcinogens • Endocrine – Hyperthyroidism & Diabetes	2	
	Desirable to Know: - • Hepatic diseases -Cirrhosis (emphasis to systemic effects of portal Hypertension) • Deficiency disorders – Vitamins A, B, C, D. • Growth Disturbance - Chemical, Occupational, heredity, viral	4	
15	**Nice to Know: -** • Medical Genetics – (In Brief) • Urinary dysfunction –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, Tinea versicolor, Psoriasis, Bacterial & fungal infections, cutaneous TB, Scleroderma, SLE, Leprosy, Alopecia • Skin Biopsy.	2	
Topic No.	**B) Microbiology**	**Hours of teaching/learning**	
		Theory	**Practical**
1	General Microbiology - Introduction & scope	2	
2	Classification of Micro-organisms & morphology of Bacteria, Bacterial cell, its organelles, Gram and Ziehl – Neelsen stain and its importance in lab diagnosis	2	
3	**Sterilization & disinfection [basic concepts]**	**6**	

	Must know - Definition of Sterilization, Disinfection, Enumeration of physical methods of sterilization including principles and their applications, commonly used Disinfectants.	2	
	Desirable to know - Central sterile department (CSD) concept only. **Hospital Acquired Infection-** Definition, factor influencing infection, mode of transmission & prevention of MAI, Infection control committee **Universal safety precautions-** Definition, classification , segregation, transport & disposal of Waste	4	
4	**Immunology**	**5**	
	Must Know • Immunity - definition, Types, local Immunity vaccines • Antigen antibody-definition, reaction, types, property & application for diagnosis. • Immune response – Type of cells involved in Antigen processing, presentation, Primary & secondary immune response. • CMI – Definition, role of T. cells and macrophages. **Hypersensitivity & auto-immunity** • Anaphylaxis - definition, classification, mechanism, manifestations & tests • Autoimmunity – definitions, classification & mechanism.	**4**	
	Desirable to know – Principles & uses of monoclonal Abs.	1	-
5	**Laboratory diagnosis of Infection**	**4**	
	Must Know • Host parasite relationship & bacterial infections-Different sources, modes of transmission of infection and microbial factors leading to establishment of infection.	2	
	Nice to know • Methods of identification of bacteria- Principle of laboratory diagnosis of infectious diseases & General procedure for collection. • Diagnosis of infectious diseases - Transport & processing of specimen for microbial diagnosis.	2	
6	**Bacteriology**	**8**	
	Must Know **Morphology, pathogenicity & lab diagnosis of :** • *Infection caused by GM + ve & GM – Vecocci-* Staphylococci, Streptococci & Neisseria. • *Infection caused by GM + ve bacillus* - Coryne bacterium diphtheria, Clostridium Perfringens & Clostridium tetani. • *Infection caused by Gram –ve bacilli-* E.coli, Klebsiella, Pseudomonas, Shigella, Salmonella, V. Cholera. • Mycobacteria- M.tuberculosis, M leprae & atypical Mycobacteria.	4	
	Nice to know – • Spirochaetes – Morphology, pathogenicity & lab diagnosis of Treponema Pallidum (VDRL test & TPHA), • Role of Staphylococci & Pseudomonas in hospital acquired infection, Leptospira Borrelia	4	
7	**Viruses** **Must Know** • 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, Lab diagnosis & Prevention	4	

	• Hepatitis –List of viruses causing Hepatitis, pathogenicity, Laboratory diagnosis & Prevention • Clinical syndrome & Laboratory diagnosis of Polio, measles, congenital, Viral infection, Rubella, CMV, Herpes		
8	**Mycology** **Must Know** • Morphological classification & general lab Diagnosis • Definition, causative Agents & lab Diagnosis of Mycetoma • Pathogenicity & lab diagnosis of Aspergillosis & Candidiasis	2	
9	**Parasites affecting CNS** **Must Know** List of parasites affecting CNS and lab diagnosis of Malaria, Filarial, Toxoplasma, Cysticercosis, Echinococcus	2	
10	**Applied Microbiology** **Must Know** • ***Diseases affecting bones, joints & muscles*:** Osteomyelitis – etiology, lab diagnosis, Arthritis • ***Disease involving brain & nerves:***Meningitis, brain abscess, Infective neuritis - etiology & clinical manifestations & lab diagnosis • ***Diseases involving cardiopulmonary system, skin & burns:*** Infective Carditis, PUO, URTI, LRTI, Skin & burn Infections- etiology & laboratory diagnosis.	4	

Text Books

Sr.No.	Title
1	Text book of Pathology -by Harsh Mohan
2	Robbins and Cotran Pathologic basis of disease by, Vinay Kumar, Abdul Abbas
3	A Hand book of medical laboratory technology – V. H. Talib
4	Y.M. Bhende General Pathology and pathology of systems – by S.G Devdhare
5	Textbooks of Microbiology – by R. Ananthnarayan& C. K. JayramPanikar

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
20	80	100

Periodical Examination:

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

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

Sec A	Q.1. MCQs (10 Pathology & 10 Microbiology)	20x1=20 marks
Sec B **Pathology**	Q.2. Very Short answer question (Answer any 5 out of 6) Q.3. Short answers question(Answer any 3 out of 4)	5x3=15 marks 3x5=15 marks
Sec C **Microbiology**	Q.4. Very Short answer question (Answer any 5 out of 6) Q.5. Short answer question (Answer any 3 out of 4)	5x3=15 marks 3x5=15 marks

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					
												Written		Total	Practical		Total
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
64	128	96	288	4	8	6	18	4	4	2	10	20	80	100	20	80	100

Course Outcomes

CO No.	At the end of the course, the learner should be able to:	Mapped Program Outcomes
302.1	Describe the physiological & therapeutic uses, merits/ demerits of various exercise modes.	PO1
302.2	Describe the properties of connective tissue, effect of mechanical loading, factors influencing the muscle strength, mobility of articular and periarticular soft tissues.	PO1, PO2
302.3	Demonstrate various therapeutic exercises on self and on models.	PO1, PO3, PO5
302.4	Analyze human posture (static & dynamic) & various normal Musculo skeletal movements during Gait & activities of daily living both in normal & abnormal conditions.	PO1, PO2, PO3, PO5, PO6
302.5	Implement techniques of airway clearance & breathing exercises to improve respiratory function.	PO1, PO6
302.6	Subjectively and objectively assess isolated & group muscle strength & range of motion of the joints.	PO1, PO2, PO3

Topic Sr.No	Course Content	Hours of teaching/learning	
		Theory	Practical
1	Principle, Classification, Techniques, Physiological & Therapeutic effects, Indications & Contraindications of therapeutic exercises	**2**	**-**
2	**Muscle Strength**	**10**	**20**
	Must Know • 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 • Methods of Resistance training	8	
	Nice to Know Physiological adaptations to training	2	
3	**Joint & connective tissues (Must Know)** • Open Kinetic Chain and Closed Kinetic Chain exercises • Stretching of muscles • Joint Mobilization – Methods, Traction [cervical & lumbar] rhythmic movements/oscillations	**8**	**13**
4	**Posture**	**7**	**8**
	Must Know • Normal Posture – Overview of mechanism of normal posture. • Methods of Assessment of the Posture – Sitting /standing • Methods of assessment – Sagittal & frontal plane with plumbline &	**5**	**6**

	postural frame, Spondylometer. • Abnormal Posture – Assessment, Types, etiogenesis • Mobility evaluation of joint / muscles & its implication on posture. Static and Dynamic postural balance – Assessment		
	Nice to know • Management of abnormal posture &postural balance including therapeutic exercises.	2	2
5	**Gait**	**5**	**15**
	Must Know • Overview of normal gait & its components. • Methods of assessment of normal gait • Gait deviations - Assessment, Types & etiogenesis • 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.	3	12
	Desirable to know Training for different conditions (Paraplegia, Hemiparesis, Amputation etc)	1	2
	Nice to know • Management of gait deviations including therapeutic exercises	1	1
6	**Co-ordination & Balance**	**4**	**10**
	Must Know • Principles, Technique, Neural control • Methods of co-ordination exercises - Frenkel's exercises • Differentiate types of co-ordination loss & balance loss. • Physiology of in-coordination, Balance loss	3	8
	Nice to know Training for different conditions (Ataxia, Parkinsonism, Stroke]	1	2
7	**Desirable to know - Principles of P.N.F** Theory, Principles ,Patterns & Techniques of P.N.F.	**3**	**8**
8	**Breathing exercises**	**5**	**12**
	Must Know • Goals, Types of breathing exercises- Inspiratory, Expiratory, Segmental, Forced Expiratory- coughing & huffing, Modified Inspiratory, Active cycle of breathing. • Physiology of the above mentioned technique • Indication, contraindication & its importance for patient	4	10
	Nice to know Application for different conditions using different equipments	1	2
9	**Bronchial Hygiene** **Must Know** • Postural drainage- Positions, Autogenic drainage • Humidification	**5**	**15**
10	**Desirable to know-** Principles of Home program& Ergonomic advice	**2**	**3**
11	**Functional Re-education**	10	18
	Must Know • Functional motor skills • Mobility- Bed mobility, Wheel chair mobility, ambulation training • Application of mat exercises [to practice on self & on models]	7	15
	Desirable to know Practical application on – Hemiplegia, Paraplegia, General Weakness.	3	3

12	**Must Know** **6 Minute walk test – on models (with interpretations)** • Procedure,Data recording & Interpretation, Indications &Contraindication • Practical execution, Risk factors & care taken during the test • Other tests (3min walk test, 12 min walk test)	1	6
13	**Benefit and harm of patient's right & dignity in Health care settings by physiotherapy** • 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**	-
14	**SPT**		**96**

Text Books

Sr.No.	Title
1	**Practical Exercise Therapy** – by Margaret Hollis and Phyllis Fletcher Cook
2	Therapeutic Exercise: Foundations and Techniques by Carolyn Kisner, Lyn Allen Colby
3	Muscle: Testing and Function, with Posture and Pain by Florence Peterson Kendall, Elizabeth Kendall McCreary, Patricia Geise Provance, Mary Rodgers, William Romani
4	The Principles of Exercise therapy –Gardiner, M. Dena
5	Joint structure and function: A Comprehensive Analysis by Cynthia C. Norkins & Pamela K. Lavengie

Reference Books

Sr.No.	Title
1	Therapeutic exercise by John V. Basmijjan& Steven L.Wolf
2	Proprioceptive Neuromuscular Facilitation –Dorothy E. Voss, Marjorie K. Ionta, Beverly J. Myers
3	Clinical evaluation of Muscle Function (for isolated assessment of abdominal muscles) – M. Lacote
4	**Auto stretching: The Complete Manual of Specific Stretching** – Olaf Evjenth
5	Orthopaedic Physical Assessment (only for assessment of posture) – David J. Magee
6	Physical rehabilitation by Susan O'Sullivan, Thomas J. Schmitz, George D. Fulk

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 MCQs for 20 marks, 20 minutes.
- Practical exam – 20 Marks (Spots/OSPE)

Preliminary Examination / University (Final) Examination

- Written Examination (80 marks)

Sec A	Q.1 MCQs	20x1=20 marks
Sec B	Q.2. Short Notes - Answer any 5 out of 6 Q.3. Short answer questions - Answer any 3 out of 4	5x3=15 marks 3x5=15 marks
Sec C	Q.4. Long answer Question -[Compulsory] Based on Muscle strength/ mobility Q.5. Long answer Question.(Answer Any 1 out of 2) Therapeutic application for Posture / Gait **OR** Therapeutic application for Pulmonary function	1x15=15 marks 1x15=15 marks

- **Practical Examination (80 marks): demonstration on models**

S.No.		Marks
1	**Long case (any one)** • Muscle training (Testing & strengthening) • Mobility (Passive, Active, Active Assisted, Mobilization of Peripheral joints, stretching) • Pulmonary function training : Breathing exercises & Bronchial hygiene technique	35
2.	**Two Short Cases: -** • M.M.T. (Individual & group) • Posture Assessment& Re-training • Normal Gait, Abnormal Gait, Gait Re-training • Functional re-education • 6-minute walk test. • Co-ordination training • Crutch training & assisted ambulatory training	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 journal& should be submitted before preliminary examination of the semester. It is the responsibility of the student to submit journal 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**					
												Written		Total	Practical		Total
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
48	--	--	48	3	--	--	3	3	--	--	03	10	40	50	--	--	--

Course Outcomes		
CO No.	**At the end of the course, the learner should be able to:**	**Mapped Program Outcomes**
303.1	Explain the different schools of thoughts of psychology.	PO1
303.2	Describe the importance of psychological status of the person in Health &disease, as well as environmental & emotional influence on the mind & personality.	PO1
303.3	Describe changes in human psychology during different stages of life.	PO1
303.4	Describe how stress, socioeconomic and cultural issues affect patient treatment.	PO1, PO2

Topic Sr.No.	**Section – I - General Psychology**	**Hours of teaching/learning**	
		Theory	**Practical**
Must Know			
1	**Introduction to Psychology** • Definition and nature of Psychology, Fields & subfieldsof psychology • Schools of thoughts- Structuralism, functionalism, Behaviorism, Gestalt, Psycho-analytic Theory	**3**	-
2	**Developmental Psychology** • Definition & its Theories • Physiological & 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 - James Lange theory, Schachter Singer theory, Cannan 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			
6	Attention & perception, Nature of attention & perception, Principle of grouping	**2**	-
7	Memory- Definition and nature, types of memory and forgetting cause Learning	**3**	-
8	Abnormal Psychology - Difference between normal & Abnormal, Causes of abnormality	**2**	-
Topic Sr.No.	**Section – II-Health Psychology**	**Hours of teaching/learning**	
		Theory	**Practical**
Must Know			
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,	**4**	-

	confusion, disorientation, hallucinations, delusions, illusions, anger, hostility, loss of hope		
2	**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	**Personality Styles**: 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	Introduction to Psychology by Morgan C.T. & King R. A.
2	Developmental Psychology- A life span Approach by Hurlock, E.B
3	Understanding Psychology by Feldman, R.S.

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 MCQs for 10 marks, 20 minutes.

Preliminary Examination / University (Final) Examination

- Written Examination (40 marks)

Sec A	Q.1. MCQs	10x1=10 marks
Sec B	Q.2. Very short answer questions (Answer any 5 out of 6) Q.3. Short answer questions (Answer any 2 out of 3) Q.4. 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**					
												Written		Total	Practical		Total
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
64	32	48	144	4	2	3	9	4	1	1	6	20	80	100	--	--	--

Course Outcomes		
CO No.	**At the end of the course, the learner should be able to:**	**Mapped Program Outcomes**
304.1	Explain the concept of kinetics and kinematics.	PO1
304.2	Describe, analyze and demonstrate biomechanics of various joints of thebody.	PO1, PO2
304.3	Identify biomechanical abnormalities occurring at joints.	PO1, PO2

Course Contents			
Topic Sr.No	**Biomechanics**	**Hours of teaching/learning**	
		Theory	**Practical**
1	**Section – I - Mechanics**	**5**	**1**
	Must Know • Review to mechanics including motion, forces, force systems, composition of forces, muscle forces & action line • Introduction to Biomechanics and terminology	2	
	Desirable to know • Axis & planes with movements occurring at each joint	1	
	Nice to know • Newton's law of motion • Centre of Gravity, Line of gravity, Stability and Equilibrium	2	
2	**Section – II - Muscle Structure and function**	**4**	**2**
	Must Know • Composition, unit, structure, architecture of muscle • Classification of Muscles • Functions of muscles & factors affecting it • Group action of muscle	3	
	Desirable to know- Effect of immobilization, injury & aging on muscle.	1	
3	**Section – III - Joint structure**	**6**	**7**
	Must Know • Basic principles of Joint design and a human joint • Tissues present in human joint including fibrous tissue, bone cartilage and connective tissue • Bio-physical properties of connective tissue [contractile & non-contractile], Elasticity /Plasticity- response to sudden/slow/ sustained loading- Stress strain Curve, Creep, Hysteresis • Classification of joints	4	3
	Desirable to Know • Effect of immobilization, injury & aging on joint	2	4
4	**Section – IV Anatomy and Biomechanics of the joints**	**38**	**10**
	Must 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	12 15 9 2	

	Sacroiliac spine. • Temporomandibular joint		
5	**Section V- Kinematics & Kinetics in ADLs**	**7**	**10**
	Must Know • Kinetics & Kinematics of various activities of daily living like supine to sitting, sitting to standing, walking and climbing up & down	3	
	Desirable to know– Kinetics &Kinematics of lifting, overhead activities, squatting	2	
	Nice to Know- Kinetics &Kinematics of running, jogging, pulling, pushing	2	
6	**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**
7	SPT		**48**

Textbooks

Sr.No.	Title
1	Joint structure and function: A Comprehensive Analysis by Cynthia C. Norkins & Pamela K. Lavengie
2	Fundamentals of Biomechanics: **Equilibrium, Motion, and Deformation by** Nihat Özkaya, Margareta Nordin

Reference books

Sr.No.	Title
1	Biomechanics basis of human movement by Joseph Hamill, Kathleen Knutzen, Timothy Derrick
2	Fundamentals of Biomechanics by Knudson, Duane
3	Clinical Kinesiology by Signe Brunnstrom

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
20	80	100

Periodical Examination:

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

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

Sec A	Q.1. MCQs	20x1=20 marks
Sec B	Q.2.Short Notes (Answer any 5 out of 6) Q.3.Short answer questions(Answer any 3 out of 4)	5x3=15 marks 3x5=15 marks
Sec C	Q.4.Long answer question (compulsory) Q.5.Long answer questions (Answer any 1 out of 2)	1x15=15 marks 1x15=15 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 journal & should be submitted before preliminary examination of the semester. It is the responsibility of the student to submit journal 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**					
												Written		Total	Practical		Total
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
32	32	48	112	2	2	3	7	2	1	1	4	10	40	50	--	--	--

Course Outcomes		
CO No.	**At the end of the course, the learner should be able to:**	**Mapped Program Outcomes**
305.1	Describe what is First aid & instruments used in first aid kit.	PO1
305.2	Describe first aid to be given for common emergencies.	PO1, PO2
305.3	Demonstrate bandaging techniques on models.	PO1, PO2, PO3, PO5, PO6, PO7
305.4	Do proper first aid assessment for victims.	PO1, PO2
305.5	Demonstrate cardiopulmonary resuscitation on models.	PO1
305.6	Deliver first aid treatment in common emergency conditions.	PO1, PO2, PO3, PO5, PO6, PO7

Topic Sr. No	**Course content**	**Hours of teaching/learning**	
		Theory	**Practical**
1	**SECTION l-** **Must Know** Introduction to First Aid – • Assessment, immediate actions and the priorities. • Bandages – Types, binders, splints & slings. • Promoting safety consciousness. • Instruments used in First Aid (First Aid kit). First Aid in- • RTA including fractures and spinal cord injuries • Cardiac arrest, Respiratory failure, Burns • Shock- Electric, Hypovolemic and control of Bleeding • Poisoning	10 10	12 8
	Desirable to know • Examination of Vital Signs.	5	5
	Nice to know • Snake Bite, Drowning, • Hypothermia and Hyperthermia	3	2
2	**SECTION II** **Must Know** Medical Triage- concept of Emergency: • 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 MCQs for 10 marks, 20 minutes.

Preliminary Examination / University (Final) Examination

- Written Examination (40 marks)

Sec A	Q.1. MCQs	10x1=10 marks
Sec B	Q.2. Very Short answer questions - Answer any 5 out of 6	5x2=10 marks
	Q.3. Short answer questions - Answer any 2 out of 3	2x5=10 marks
	Q.4. 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 journal & should be submitted before preliminary examination of the semester. It is the responsibility of the student to submit journal 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

Course Code	Course (Subject)	Hours				Hrs/Wk				Credits				Evaluation Pattern					
														Written		Total	Practical		Total
		Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
PT-401	Pharmacology	48	-	-	48	3	-	-	3	3	-	-	3	10	40	50	-	-	-
PT-402	Electrotherapy- II	64	96	96	256	4	6	6	16	4	3	2	9	20	80	100	20	80	100
PT-403	Gen.Medicine (Including Gerontology & Dermatology)	80	32	96	208	5	2	6	13	5	1	2	8	20	80	100	--	--	--
PT-404	Community Medicine, Sociology & Environmental Sciences	80	32	48	160	5	2	3	10	5	1	1	7	20	80	100	--	--	--
	Total	**272**	**160**	**240**	**672**	**17**	**10**	**15**	**42**	**17**	**5**	**5**	**27**	**70**	**280**	**350**	**20**	**80**	**100**

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

Course Title :- Pharmacology
Course Code:- PT 401

Course Credit for Pharmacology

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

Course Outcomes

CO No.	At the end of the course, the learner should be able to:	Mapped Program Outcomes
401.1	Describe Pharmacological effects of commonly used drugs on various systems, list their adverse reactions, precautions & contraindications, Formulation & route of administration.	PO1, PO2
401.2	Identify whether the pharmacological effect of the drug interferes with the Therapeutic response of Physiotherapy & vice-versa.	PO1, PO2
401.3	Indicate the use of analgesics & anti-inflammatory agents with movement disorders, efficiency & safety for individual needs.	PO1, PO2
401.4	Get the awareness of other essential &commonly used drugs, need for their use & common as well as serious adverse reactions.	PO1

Topic Sr.No.	Title of content	Hours of teaching/learning	
		Theory	Practical
1	**General Pharmacology** **Must Know** • Introduction to pharmacology, drug development. • Routes of administration. • Pharmaco-kinetics - Absorption and distribution of drugs. • Pharmaco-kinetics - Drug Biotransformation & drug Excretion. • Pharmaco-dynamics – Dose response relationship. • Adverse drug reactions. • Factors modifying drug action.	**7**	-

2	**Drugs acting on Central Nervous System** **Must Know** • General Anaesthetics • Alcohol • Antipyretics • Opioid Analgesics & NSAIDS • Sedatives and Hypnotics • Anti-Epileptic drugs • Anti-Psychotics, Antidepressants • Drug Therapy in Parkinsonism	**7**	-
3	**Drugs acting on Peripheral Nervous System** **Must Know** • Skeletal muscle relaxants. • Local Anaesthetics.	**2**	-
4	**Drugs acting on CVS and blood** **Must Know** • 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** **Must Know** • For upper respiratory tract infections, Sinusitis, cough, laryngitis, Pharyngitis. • Drugs for treatment of bronchial asthma, COPD	**2**	-
6	**Drugs acting on Autonomic Nervous System** **Must Know** • Introduction to ANS • Cholinergic agonists – I & II • Cholinergic antagonists • Adrenergic agonists – I & II • Adrenergic antagonists	**4**	-
7	**Endocrinology** **Must Know** • Introduction to Endocrinology, • Thyroid hormones and Anti-thyroid drugs. • Treatments of diabetes mellitus. • Corticosteroids • Oestrogen and Progesterone	**4**	-
8	**Must Know** **Drugs acting on Kidney** –Diuretics	**2**	-
9	**Chemotherapy**	**7**	-
	Desirable to know • General principles of chemotherapy. • Sulfonamides &Fluoroquinolones. • Beta – Lactam antibiotics – I (Penicillins) • Beta – Lactam antibiotics – II (Cephalosporins) • Macrolides &aminoglycides • Tetracyclines& chloramphenicol (Broad spectrum antibiotics)	**4**	

	Must Know • Anti-Tuberculosis drugs • Anti –Leprosy drugs	**3**	
10	**Desirable to know** **Drugs in poisoning**	**3**	
11	**Drugs used in Gastrointestinal Disorders**		
	Nice to Know • Peptic Ulcer • Anti-emetics • Laxatives • Anti-diarrhoeal drugs	**2**	
12	**Miscellaneous Topics**	2	
	Nice to Know • Vaccines & Sera • Dermatological – Scabies – Psoriasis – Local Antifungals • Vitamins & Calcium Metabolism, Phosphorus, magnesium		

Text Books

Sr.No.	Title
1	Essentials of Medical Pharmacology – K. D. Tripathi
2	Pharmacology and Pharmacotherapeutics – R.S. Satoskar
3	Gaddum's Pharmacology - W.R. Wilson

Reference Books

Sr.No.	Title
1	Drill Pharmacology in Medicine – by L.F. Prescott
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 MCQs for 10 marks, 20 minutes.

Preliminary Examination / University (Final) Examination

- Written Examination (40 marks)

Sec A	Q.1. MCQs	10x1=10 marks
Sec B	Q.2. Very Short answer questions (Answer any 5 out of 6) Q.3. Short answer questions (Answer any 2 out of 3) Q.4. 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 :- ELECTROTHERAPY- II Course Code:- PT 402																	
Course Credit for ELECTROTHERAPY- II																	
Hours				**Hrs/Wk**				**Credits**				**Evaluation Pattern**					
												Written		Total	Practical		Total
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
64	96	96	256	4	6	6	16	4	3	2	9	20	80	100	20	80	100

Course Outcomes		
CO No.	**At the end of the course, the learner should be able to:**	**Mapped Program Outcomes**
402.1	Describe the Production &Physiological effects, Therapeutic uses, merits, demerits indication & contraindications of various low/medium Frequency Currents modes.	PO1, PO2
402.2	Describe the Physiological effects &therapeutic uses of various therapeutic ions & Topical Pharmaco-therapeutic agents to be used for the application of Iontophoresis & sonophoresis / phonophoresis.	PO1, PO2
402.3	Acquire the skill of Application of the Electro therapy modes like UVR and LASER on models, for the purpose of Assessment &Treatment.	PO1, PO2, PO3, PO5, PO6
402.4	Select the appropriate application mode as per the tissue specific & area specific application for various modalities.	PO1, PO2

Topic Sr.No.	**Course Content**	**Hours of teaching/learning**	
		Theory	**Practical**
1	**Low frequency currents –**	**40**	**64**
	Must know • Physiological effects, therapeutic uses, indications and contraindications and dangers of faradic type current, intermittent galvanic current and galvanic current	8	15
	• Cathodal & Anodal Galvanism, Iontophoresis with various ions & Pharmaco therapeutic drugs. • Faradic current under pressure /elevation, Faradic Foot Bath	3 2	4 4
	• Electrical stimulation for re-education–short /long pulse motor points	8	10
	Electrical Reactions and Electrodiagnostic tests: • Electrical Stimuli & normal behavior of Nerve & muscle • Types of lesion & development of reaction of degeneration. • Faradic – Intermittent direct current test. • S.D. Curve and its application and characteristics • Chronaxie, Rheobase & Pulse ratio • High voltage pulsed galvanic current	10	22
	TENS: Define,Principles of production, types, dosage,electrode placement, Physiological and therapeutic effects, indication & contraindications.	4	5
	Desirable to know • Micro –currents • Didynamic currents	2	3
	Nice to know • Functional electrical stimulation • Long wave diathermy • NEMS, Matrix Rhythm Therapy	3	1

2	**Medium frequency currents**	**6**	**10**
	Must Know • **Interferential therapy**: Define, Principles of production, static Interferential system, dynamic interference system, dosage, electrode placement, Physiological and therapeutic effects, indication and contraindications.	**4**	
	Desirable to know - • Russian currents • Rebox type currents	2	
3	**Desirable to know** **Biofeedback method:** • Instrumentation, principles, therapeutic effects, • Indications, contraindications, limitations, precautions, • Operational skills and patient preparation	3	2
4	**Must Know** **Ultraviolet rays (UVR):** • Wavelength, frequency, types & sources of UVR generation, • Techniques of irradiation, physiological & therapeutic effects • Indications, Contraindications, precautions, operational skills of equipment & patient preparation. • Dosimetry of UVR.	4	6
5	**Must Know** **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.	4	5
6	**Must Know** **Care of wound** –application of Therapeutic currents, Ultrasound, U.V.R. & LASER	2	3
7	**Nice to know- Combination Therapy**	2	2
8	**Desirable to Know** **Intermittent Therapy** unit, its operation and different methods of application region wise. **Interferential Pneumatic Therapy** unit, its operation and different methods of application – region wise.	2	4
9	**Respect for human vulnerability and personal integrity** • Different aspects of vulnerability - biological , social , cultural • Success and failures in physiotherapy treatments • Problems with the basic assumption that vulnerability should be eliminated • Care ethics- New approaches in bioethics, Solidarity, duty to care • Relation between vulnerability and personal integrity	1	
10	SPT		96

Text Books

Sr.No.	Title
1	Clayton's Electrotherapy – by Forster & Palastanga
2	Electrotherapy Explained – by Low &Reed
3	Clinical Electrotherapy – by Nelson & Currier
4	Basic of Electrotherapy – Subhash Khatri

Reference Books

Sr.No.	Title
1	Principle &Practice of Electrotherapy – by Joseph Kahn
2	Therapeutic Electricity & UVR – by Sydney Licht

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 MCQs for 20 marks, 20 minutes.
- Practical Examination: - 20 marks (Spots/OSPE/ Demonstration)

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

Sec A	Q.1. MCQs	20x1=20 marks
Sec B	Q.2. Short Notes (Answer any 5 out of 6) Q.3. Short answer questions (Answer any 3 out of 4)	5x3=15 marks 3x5=15 marks
Sec C	Q.4.Long Answer Questions (compulsory) Based on Low frequency modes Q.5. Long Answer Questions 1. Based on Medium frequency currents **OR** 2. Based on U.V.R./LASER	15 marks 15 marks

- **Practical Examination (80 marks)** -demonstration on models

Sr.no		Marks
1.	**Long Case:** Based on Motor points /U.V.R. Test Dose/Faradism under Pressure	35
2.	**Short Case-1:** Based on TENS/LASER	20
3.	**Short Case-2:** Based on medium Frequency current/ low frequency current	20
4	Journal	5

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 journal & should be submitted before preliminary examination of the semester. It is the responsibility of the student to submit journal 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, GERONTOLOGY, DERMATOLOGY) Course Code:- PT 403																	
Course Credit for GENERAL MEDICINE (INCLUDING CARDIO-RESPIRATORY, GERONTOLOGY, DERMATOLOGY)																	
Hours				**Hrs/Wk**				**Credits**				**Evaluation Pattern**					
												Written		Total	Practical		Total
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
80	32	96	208	5	2	6	13	5	1	2	8	20	80	100	--	--	--

Course Outcomes		
CO No.	**At the end of the course, the learner should be able to:**	**Mapped Program Outcomes**
403.1	Describe Etiology, Pathophysiology, Signs &Symptoms &Management of the various Endocrinal, Metabolic, Geriatric& Nutrition Deficiency conditions.	PO1
403.2	Describe Etiology, Pathophysiology, Signs & Symptoms, Clinical, Evaluation& Management of the various Rheumatological, Cardiovascular and Respiratory Conditions.	PO1
403.3	Interpret Chest X-ray, Blood gas analysis, P.F.T. findings, Blood investigations done for various medical and Rheumatological conditions.	PO1, PO2
403.4	Describe the principles of Management at the Medical Intensive Care Unit.	PO1, PO2, PO6
403.5	Describe the Pathophysiology, Signs & Symptoms, Clinical Features, Examination & Management of Common Skin Conditions	PO1, PO2

Topic Sr.No	**A) CARDIO-VASCULAR & RESPIRATORY MEDICINE**	**Hours of teaching/learning**	
		Theory	**Practical**
1	**DISEASES OF THE CARDIO-VASULAR SYSTEM**	**16**	
	Must Know • Examination of Cardiovascular System • ECG – Normal & Variations due to ischemia &infarction • Stress Test	 3 2 1	
	• Definition, Etiology, Clinical Features, Complications, Management of the following Cardio-vascular diseases: ➢ Ischemic Heart Disease, Myocardial infarction ➢ Valvular Heart Disease – Congenital & Acquired ➢ Rheumatic Fever & Rheumatic Heart Disease ➢ Infective Endocarditis ➢ Congenital Heart Diseases ➢ Unstable Angina	 2 2 2 1 2 1	
2	**DISEASES OF THE RESPIRATORY SYSTEM**	**23**	
	Must Know • Clinical Examination of Respiratory System • 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	 2 1 5 5 2 1	

	➢ Respiratory Failure: Definition, Types, Causes, Clinical Features, Diagnosis and Management • Investigation in respiratory system- Chest X ray, ABG, PFT	1 2 1	
	Desirable to Know • Arrhythmia – classification • Occupational lung diseases like Silicosis Asbestosis, Pneumoconiosis, Brucellosis, Farmer's Lung • Intensive Medical Unit – Infrastructure & Treatment	3	
B) **GENERAL MEDICINE, RHEUMATOLOGY & GERONTOLOGY**		**21**	
3	**GENERAL MEDICINE**	**8**	
	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 hemorrhages, complications due to therapy	3 2	
	Desirable to Know **Disorders of Endocrine system** • Thyroid • Pituitary & Adrenal conditions • Calcium Metabolism	3	
4	**RHEUMATOLOGICAL CONDITIONS**	**5**	
	Must Know • Introduction to Rheumatology and Classification • Rheumatoid Arthritis, Juvenile RA • Chicken Gunia, Psoriatic, Gouty Arthritis • Seronegative Spondyloarthropathy (SSA)		
5	**GERIATRIC CONDITIONS**	**7**	
	Must Know • Osteoporosis: Causes, Clinical features, Complications, Management- medical and surgical • Hypertension: Definition, causes, classification, types, assessment, investigations and management.	**4**	
	Desirable to Know • Aging Process • General Health Care, Wellness Clinic • Nutrition Deficiency Disease & Drug Abuse / Intoxication	**3**	
C) DERMATOLOGY		**20**	
6	**Must Know** • Structure, function and lesions of skin • Pigmentary disorders: Localized& Gen. Pigmentary • Papula-Squamous disorders- Psoriasis, PR, Lichen planus, PRP • Acne • Topical therapy in Dermatology& Hair disorders - Alopecia , Hirsutism • Leprosy • Sexually Transmitted skin lesions - HIV , Syphillis , Chaneroid LGV, G. inguinale	12	

	Nice to know • Bacterial (impetigo, carbuncle, Staphylococcal Scalded Skin Syndrome) • Viral infections (Warts, Molluscum, Herpes, HZ, HSV) • Fungal infections: • a) Superficial- TC, TV b) Deep fungal - Candidiasis • Scabies, Pediculosis • Eczema – Exogenous & Endogenous • Hair deformity	8	
7	**CLINICAL**		**32**
	Medicine Dermatology		20 12
8	SPT		96

Text Books

Sr.No	Title
1	API - Text book of Medicine – S.A. Kamath
2	Golwalla's Medicine for Students- A.F. Golwalla & S.A. Golwalla
3	Principles & Practice of Medicine by Davidson
4	Clinical Medicine – P. J. Mehta

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
20	80	100

Periodical Examination:

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

Preliminary Examination / University (Final) Examination

- Written Examination (80 marks)

Sec A	Q.1) MCQs (**15 MCQs -** Gen. Medicine, RS, CVS, Rheumatology, Gerontology & **5 MCQs** -Dermatology)	20x1=20 marks
Sec B	*Q.2 & Q.3 from Gen. Medicine, Rheumatology, RS & CVS* Q.2) Short Notes (answer any 5 out of 6) Q.3) Short answer questions. (Answer any 3 out of 4)	 5x3=15 3x5=15
Sec C	Q.4) Short Notes. (Answer any 5 out of 6) (Gerontology) Q.5) Short answer questions. (Answer any 3 out of 4) (Dermatology)	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 journal & should be submitted before preliminary examination of the semester. It is the responsibility of the student to submit journal 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 ENVIRONMENT SCIENCE																	
Hours				**Hrs/Wk**				**Credits**				**Evaluation Pattern**					
												Written		Total	Practical		Total
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
80	32	48	160	5	2	3	10	5	1	1	7	20	80	100	--	--	--

Course Outcomes		
CO No.	**At the end of the course, the learner should be able to:**	**Mapped Program Outcomes**
404.1	Understand the concept of Health and disease, epidemiological effects, socio economic& cultural issues.	PO1
404.2	Understand the importance of family planning and immunization.	PO1
404.3	Describe the importance of occupation hazards, health education, disaster management and hospital waste management.	PO1, PO2, PO5, PO6, PO7
404.4	Understand the concept of society, socialization & social problems in different communities.	PO1, PO5, PO6, PO7, PO8, PO9
404.5	Know about natural resources, ecosystems, biodiversity and its conservation.	PO1, PO5, PO6, PO7, PO8
404.6	Explain various environment protection acts. Know and understand the environment &the effect on it due to social issue, population & pollution.	PO1, PO5, PO6, PO7, PO8, PO9

Course Content			
Topic Sr.No	**A. COMMUNITY MEDICINE**	**Hours of teaching/learning**	
		Theory	**Practical**
Must Know			
1	**Health & Disease** • Definitions: National & International, Concepts, Dimensions and Indicators of Health, Concept of well-being, Spectrum & Determinants of Health • Concept and natural history of Disease, Concepts of disease control and prevention, Modes of Intervention • Population Medicine • Role of socio-economic and cultural environment in health & disease	6	-
2	**Epidemiology** • Definition, scope & principles of Epidemiology • Epidemiological methods & its uses	3	-
3	**Socio-Economical &Cultural Issues related to Morbidity** owing to the Physical Disability &Handicaps of Structural /Neuro-motor & Psycho-somatic origin: • Health problem in vulnerable groups • Pregnant & lactating women, Pelvic floor Dysfunction, Urinary incontinence • Pre-term babies with high risk, Infants &Pre-School Children-Brain Damage, during birth injury	7	-

4	**Demography and Family Planning** • Family planning-objectives of national family planning program • Family planning methods: A general idea of advantage and disadvantages of the methods.	2	-
5	**Immunization programs –** children & hospital staff.	1	-
6	**Occupational Health:** • Occupational hazards & Occupational diseases • Prevention of occupational diseases. • Social security and other measures for the protection from occupational hazard accidents and diseases, • Compensation acts.	4	2
7	**Hospital waste management** Sources of hospital waste, Health hazards, Waste management	2	2
8	**Disaster Management** • Natural and man-made disasters • Disaster impact and response • Relief phase • Epidemiologic surveillance and disease control, Nutrition, Rehabilitation, Disaster preparedness	3	2
9	**Health Education** • Concepts, aims and objectives • Approaches to health education • Models & Contents of health education • Principles & Practice of health education	3	2
10	**Addiction** – Alcholism, Neuromotor, Psychosomatic disorders &Smoking	1	2
Desirable to Know			
11	• 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 Program. Brief role of WHO.	2	2
12	**Mental Health** • Characteristics of a mentally healthy person • Types & Causes of mental illness • Preventive aspects • Mental health services • Alcohol and drug dependence	2	-
13	**Nutrition and Health** • Nutritional problems in public health • Community nutrition programs	1	1
14	**Nice to Know**	3	3
	Health programs in India • Vector borne disease control program • National leprosy eradication program • National tuberculosis program, • National AIDS control program, • National program for control of blindness • Iodine deficiency disorders (IDD) program, • Universal Immunization Program • Reproductive and child health program • National cancer control program • National mental health program		

	• National diabetes control program • National family welfare program • National sanitation and water supply program • Minimum needs program		
Topic Sr.No	**B. SOCIOLOGY**	**Hours of teaching/learning**	
		Theory	**Practical**
Must Know			
1	Introduction – Definition & Relevance with Physiotherapy.	1	-
2	Sociology & Health –Social factors affecting Health Status, Social Consci-ousness & 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- in Rural & Urban communities in Public Health, in determining Beliefs, Practices & Home Remedies in Treatment.	2	-
6	Social problems of the Disabled-Consequences of the following social problems in relation to sickness disability, remedies to prevent these problems • Population Explosion • Poverty & Unemployment	1	-
7	Social Security & Social Legislation in relation to the Disabled	1	-
Desirable to Know			
8	Role of Primary & Secondary Groups in the Hospital & Rehabilitation Setting.	2	-
9	Family-Influence on human personality, Individual Health, Family & Nutrition, Effects of Sickness on Family Psychosomatic Diseases &Family	1	-
10	Culture-Components Impact on Human Behaviour Cultural Meaning of Sickness, Response to Sickness & Choice of Treatment	2	-
11	Caste Systems-Features of Modern Cast Systems & its Trends, Social chang factors–Human Adaptation, Stress, Deviance, Health Program, Role of Soci Planning in the improvement of Health & in Rehabilitation	1	-
12	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	-
13	Prostitution, Alcoholism, Beggary, Problems of Women in Employment, Role of a Social Worker.	2	-
Nice to Know			
14	Role of Culture as Social consciousness in moulding the Perception of Reality, Culture induced Symptoms & Diseases, Sub-Culture of Medical Workers	1	-
15	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 Sr.No.	**C. ENVIRNOMENTAL SCIENCES**	**Hours of teaching/learning**	
		Theory	**Practical**
1	**Must Know:** **Multidisciplinary nature of environmental studies** Definition, scope and importance, Need for public awareness. III	1	-
2	**Natural Resources**		
	Must Know:	1	-

	• **Water resources**: Use & over-utilization of surface & ground water, Floods, drought, conflicts over water, dams-benefits and problems. • **Mineral resources**: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. • **Energy resources**: Growing energy needs, renewable &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 • Renewable and non-renewable resources • Natural resources and associated problems. • **Forest resources**: Use and over-exploitation, deforestation, case studies.Timber extraction, mining, dams & their effects on forest & tribal people • **Food resources**: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water Logging, salinity, case studies. • **Land resources**: Land as a resource, land degradation, man induced Landslides, soil erosion and desertification.	1	-
3	**Ecosystems**		
	Must Know • Introduction, types, characteristic features, structure and function of the following ecosystem :- ➢ Forest ecosystem, Grassland ecosystem, Desert ecosystem ➢ Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) • Food chains, food webs and ecological pyramids.	1	-
	Nice to know • Concept of an ecosystem. IV • Structure and function of an ecosystem. • Producers, consumers and decomposers. • Energy flow in the ecosystem. • Ecological succession.	1	-
4	**Biodiversity and its conservation**		
	Must Know • Introduction – Definition: genetic, species and ecosystem diversity. • Biodiversity at global, National and local levels. • India as a mega-diversity nation V • Hot-sports of biodiversity. • Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. • Endangered and endemic species of India • Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.	2	2
	Nice to know • Biogeographically classification of India • Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic and option values	1	1
5	**Environmental Pollution**	**3**	**3**
	Must Know • Definition, Cause, effects and control measures of: - ➢ Air pollution, Water pollution ➢ Soil pollution, Marine pollution		

	➢ Noise pollution, Thermal pollution, Nuclear hazards • Solid waste Management: Causes, effects and control measures of urban and industrial wastes. • Role of an individual in prevention of pollution. • Pollution case studies. Disaster management: floods, earthquake, cyclone and landslides.		
6	**Social Issues and the Environment**		
	Must Know • Environmental ethics: Issues and possible solutions. • Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies. • Wasteland reclamation. • Consumerism and waste products. • Environment Protection Act. • Air (Prevention and Control of Pollution) Act. • Water (Prevention and control of Pollution) Act • Public awareness.	2	
	Nice to know • Water conservation, rain water harvesting, watershed management • From Unsustainable to Sustainable development • Urban problems related to energy • Resettlement and rehabilitation of people; its problems and concerns, Case Studies • Wildlife Protection Act • Forest Conservation Act • Issues involved in enforcement of environmental legislation.	1	2
7	**Human Population and the Environment** **Must Know** • Population growth, variation among nations. • Population explosion – Family Welfare Program. VII • Environment and human health. • Human Rights,Value Education. • HIV/AIDS. • Women and Child Welfare. • Role of Information Technology in Environment and human health. • Case Studies.	6	8
8	SPT	-	48

Text books:

Sr.No.	Title
1	Park 's Textbook of Preventive & Social Medicine – K Park
2	Textbook of Preventive & Social Medicine – P. K. Mahajan & M. C. Gupta
3	Textbook for environment studies for UGC – Erach Bharucha

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
20	80	100

Periodical Examination:

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

Preliminary Examination / University (Final) Examination

- Written Examination (80 marks)

Sec A	Q.1. MCQs(10 community+5 Sociology+ 5 Env.Sci)	20x1=20 marks
Sec B **Community Medicine**	Q.2. Short answer questions (any 5 out of 6) Q.3.Short answer questions (any 3 out of 4)	5x3=15 marks 3x5=15 marks
Sec C **Sociology & Env.Sci.**	Q.4.Short answer questions (any 5 out of 6) (Sociology) Q.5.Short answer questions (any 3 out of 4) (Env.Sci.)	5x3=15 marks 3x5=15 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 & should be submitted before the preliminary examination of the semester. It is the responsibility of 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 (Subject)	Hours				Hrs/Wk				Credits				Evaluation Pattern					
														Written		Total	Practical		Total
		Th	Pr	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
PT-501	Orthopaedic & Traumatology	64	32	48	144	4	2	3	9	4	1	1	6	20	80	100	--	--	--
PT-502	Neurology (Including Paediatrics, Psychiatry)	64	32	48	144	4	2	3	9	4	1	1	6	20	80	100	--	--	--
PT-503	Physical and Functional Diagnostics Skills	80	96	96	272	5	6	6	17	5	3	2	10	20	80	100	20	80	100
PT-504	Obstetrics and Gynaecology	32	32	48	112	2	2	3	7	2	1	1	4	10	40	50	--	--	--
	Total	**240**	**192**	**240**	**672**	**15**	**12**	**15**	**42**	**15**	**6**	**5**	**26**	**70**	**280**	**350**	**20**	**80**	**100**

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

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

Course Credit for Orthopaedics and Traumatology

Hours				Hrs/Wk				Credits				Evaluation Pattern					
												Written		Total	Practical		Total
Th	Pr	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	Tot	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	--	--	--

Course Outcomes

CO No.	At the end of the course, the learner should be able to:	Mapped Program Outcomes
501.1	Discuss the Patho-physiology, clinical manifestations & conservative/Surgical management of various traumatic & cold cases of the Musculo-skeletal Conditions.	PO1, PO2
501.2	Discuss the clinical manifestations, complications & management of congenital and acquired deformities.	PO1, PO2
501.3	Perform a clinical examination & interpret findings of preoperative cold cases & post- operative cases.	PO1, PO2, PO3, PO5, PO6, PO7, PO9
501.4	Read & interpret salient features of X-ray of the spine & extremities and Correlate with the clinical findings and also pathological/ biochemical studies pertaining to Orthopaedic Conditions.	PO1, PO2, PO3, PO5, PO6, PO9

Topic Sr.No	Course Content	Hours of teaching/learning	
		Theory	Practical
Must Know			
1.	**Introduction** • Introduction to orthopaedics. • Clinical examination in an Orthopaedic patient. • Common investigative procedures. • Radiological and Imaging techniques in Orthopaedics.	3	-
2.	**Traumatology**	3	-

	• 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 & symptoms, management (conservative and operative).		
3.	**Fractures and Dislocations of Upper Limb** Fractures of Upper Limb - causes, clinical features, mechanism of injury, complications, conservative & surgical management of the following: • Fractures of clavicle and scapula. • Fractures of greater tuberosity and neck of humerus, shaft of humerus. • Supracondylar fracture of humerus. • Fractures of capitulum, radial head, olecranon, coronoid & epicondyles. • Both bone fractures of ulna and radius. • Fracture of forearm – Monteggia, Galaezzi fracture- dislocation. • Chauffer's fracture, Colle's fracture. • Smith's fracture, Scaphoid fracture, Bennett's fracture • Fracture of the metacarpals& phalanges (Proximal &middle) **Dislocations of Upper Limb :** • Mechanism of injury, clinical feature, complications, conservative management, surgical management of following dislocation: ➢ Anterior dislocation of shoulder ➢ Recurrent dislocation of shoulder ➢ Posterior dislocation of shoulder ➢ Posterior dislocation of elbow	4	-
4.	**Fracture of Spine** • Fracture of Cervical Spine – ➢ Mechanism of injury, clinical feature, complications (quadriplegia) ➢ Management- immobilization (collar, cast, brace, traction), Management for stabilization, management of complication (bladder and bowel, quadriplegia) ➢ Clay shoveller's fracture, Hangman's fracture ➢ Fracture odontoid & 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	4	
5.	**Fractures and Dislocations of Lower Limb** Causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures: • Fracture of pelvis. • Fracture of femur- neck, trochanters, shaft, Supracondylar fracture and fractures condyles of femur. • Fracture of patella. • Fractures of tibial condyles • Both bones fracture of tibia and fibula. • Maisonneuve's fracture. • Bimalleolar fracture , Trimalleolar fracture, Pott's fracture (Dupuytren's fracture) • Fracture calcaneum, Fracture of talus. • Fracture of metatarsals- stress fractures, Jones fracture.	4	

	• Fracture of phalanges. **Dislocations of Lower Limb** Mechanism of injury, clinical features, complications, management of the following dislocations of lower limb. • Dislocation of hip – Anterior, Posterior and Central • Dislocation of patella. • Recurrent dislocation of patella.		
6.	**Diseases of Bones and Joints** Causes, Clinical features, Complications, Management- medical and surgical of the following conditions : • Infective: Osteomyelitis, TB Spine and other major joints • Perthes, Slipped Capital Femoral Epiphysis , Avascular Necrosis • Metabolic: Osteoporosis, Osteopenia Osteomalacia, Rickets	4	
7.	**Peripheral nerve injuries** Mechanism, Clinical Features, Management and Complications	3	
8.	**Deformities** Clinical Features, Complications, Medical and Surgical Management of the Following Congenital and Acquired Deformities. <u>Congenital Deformities</u> • CTEV • CDH. • Torticollis, Scoliosis. • Flat foot, Vertical talus. • Hand anomalies- syndactyly, polydactyly and ectrodactly. • Cervical rib. **<u>Acquired Deformities</u>** • Acquired Torticollis. • Scoliosis, Kyphosis, Lordosis. • Genu varum, Genu valgum, Genu recurvatum • Coxa vara. • Pes cavus, Pes Planus • Hallux rigidus. Hallux valgus. Hammer toe	2	
9.	**Inflammatory and Degenerative Conditions** Causes, clinical feature, complications, deformities, radiological features, management- conservative and surgical for the following conditions : • Osteoarthritis • Rheumatoid arthritis • Ankylosing spondylitis • Gouty arthritis • Psoriatic arthritis • Hemophilic arthritis • Juvenile Rheumatoid Arthritis (Still's disease) • Charcot's joints	3	
10.	**Soft Tissue Injuries** • Define terms such as sprains, strains, contusion, tendinitis, rupture, tenosynovitis, tendinosis, bursitis. • Mechanism of injury, clinical features, managements- conservative and surgical of the following soft tissue injuries: ➢ Meniscal injuries of knee. ➢ Ligamentous injuries of knee. ➢ Ankle Sprain ➢ Wrist sprain ➢ Strains- quadriceps, hamstrings, calf, biceps, triceps etc.	5	

	➢ Contusions- quadriceps, gluteal, calf, deltoid etc. ➢ Tendon ruptures-Achilles, rotator cuff muscles, biceps, pectorals etc		
11.	**Regional Conditions** Definition, Clinical features and Management of the following regional conditions: • Shoulder: Periarthritic shoulder (adhesive capsulitis), Rotator cuff tendinitis, Subacromial Bursitis • Elbow: Tennis Elbow, Golfer's Elbow, Olecranon Bursitis (student's elbow), Triceps Tendinitis • Wrist and Hand: De Quervain's Tenosynovitis, Ganglion, Trigger Finger/ Thumb, Mallet Finger, Carpal Tunnel Syndrome, Dupuytren's Contracture. • Pelvis and Hip:IT Band Syndrome,Piriformis Syndrome,Trochanteric Bursitis • Knee: Osteochondritis Dissecans, Prepatellar and Suprapatellar Bursitis, Popliteal Tendinitis, Patellar Tendinitis, Chondromalacia Patella, Plica Syndrome, Fat Pad Syndrome (Hoffa's syndrome), Osgood Schlatter's disease • Ankle and Foot: Ankle Sprains, Plantar Fascitis, Calcaneal Spur, Tarsal Tunnel Syndrome, Achilles Tendinitis, Morton's Neuroma,Metatarsalgia	4	
12.	**Amputations** • Definition • Levels of amputation of both lower and upper limbs • Indications, Complications, Management	3	
13.	**Hand Injuries** Mechanism of injury, clinical features, and management of the following: • Crush injuries. • Flexor and extensor injuries. • Burn injuries of hand.	2	
14.	**Cervical and Lumbar Pathology** Causes, clinical feature, patho-physiology, investigations, management-Medical and surgical for the following : • Prolapsed interverbral disc (PIVD) • Spinal Canal Stenosis • Spondylosis (cervical and lumbar), Spondylolysis • Spondylolisthesis • Lumbago/ Lumbosacral strain • Sacralisation, Lumbarisation, Hemivertebra • Coccydynia	3	
15	**Orthopedic Surgeries** Indications, Classification, Types, Principles of Management of the following Surgeries: • Arthrodesis • Arthroplasty (partial and total replacement) • Osteotomy • External fixators • Spinal stabilization surgeries (H-rod, Luque rod, Steffi plating) etc.	2	
16	**Desirable to Know** • Bone tumors: classification, clinical features, management • Re-constructive surgeries in Polio & cerebral palsy (bone & soft tissues) • Syndromes-Causes, Clinical features, complications, management-conservative and surgical of the following: • Cervico brachial syndrome, Costo clavicular syndrome	1 3 3	

	• Thoracic outlet syndrome • Vertebro- basilar syndrome • Scalenus syndrome • Levator scapulae syndrome • Piriformis syndrome. **Connective Tissue Disorders** • Systemic Lupus Erythematosis • Scleroderma, Dermatomyositis • Mixed connective tissue Disease (MCTD)	2	
17.	**Nice to Know** • Arthrogryposis multiplex congenita (amyoplasia congenita). • Limb deficiencies- Amelia and Phocomelia. • Osteogenesis imperfecta (fragile ossium) • Klippel feil syndrome. • Clay shoveller's fracture • Arthrodesis	6	
18	**CLINICAL** Independent Clinical Orthopaedic evaluation, presentation & recording of: • 1 case of acute soft tissue injury [including nerve injury], • 2 cases of infections of bones and joints • 2 cases of degenerative arthritis of extremity joints, • 2 cases of degenerative arthritis of spine, chronic backaches • 1 case of acute P.I.D • 1 post operative cases of fractures of extremities • 1 case of traumatic paraplegia/quadriplegia **Observation**: At least 2 surgeries of fracture internal fixation, one knee/hip replacement & Re-constructive surgery of the tendons		32
19	SCT		48

Text Books

Sr.No.	Title
1	Apley`s System of Orthopaedics by Louis Soloman
2	Outline of Fractures - John Crawford Adams.
3	Outline of Orthopaedics - John Crawford Adams.
4	Essentials of Orthopaedics- Maheshwari.
5	Textbook of Orthopaedics and Traumatology— M.N.Natarajan
6	Essentials of Orthopedic for physiotherapist – John Ebnezar

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
20	80	100

Periodical Examination:

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

Preliminary Examination / University (Final) Examination

- Written Examination (80 marks)

Sec A	Q.1.MCQs	20x1=20
Sec B	Q.2. Short notes (answer any 5 out of 6) Q.3. Short answer questions (answer any 3 out of 4)	5x3=15 3x5=15
Sec C	Q.4. Long Answer Questions(compulsory) Q.5. Long Answer Questions (answer any 1 out of 2)	1x15=15 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 & should be submitted before the preliminary examination of the semester. It is the responsibility of student to submit the file(s) to the teacher before the examination.

Internal Assessment Marks: Theory: -

Periodical exam = 20 marks

Prelim exam = 80 marks

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

Course Title :- Neurology(Including Paediatrics and Psychiatry) Course Code:- PT 502																	
Course Credit for Neurology(Including Paediatrics and Psychiatry)																	
Hours				**Hrs/Wk**				**Credits**				**Evaluation Pattern**					
												Written		Total	Practical		Total
Th	Pr	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	Tot	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	--	--	--

Course Outcomes		
CO No.	**At the end of the course, the learner should be able to:**	**Mapped Program Outcomes**
	Neurology	
502.1	Describe etiology and pathophysioplogy, clinical features, signs and symptoms of different adult neurological conditions, such as Cerebro-Vascular Accidents, Movement disorder, polyneuropathy, Motor Neuron Disease, muscle diseases, Multiple sclerosis, Infections of brain and spinal cord, spinal cord disorder etc.	PO1, PO2
502.2	Demonstrate skills of taking history, evaluation, presentation, and documentation.	PO1, PO2, PO3, PO5, PO6, PO7, PO9
502.3	Interpret X ray, MRI, Evoked Potentials, LP, CSF, EMG, NCV etc	PO1, PO2, PO3, PO6, PO7, PO9
502.4	Understand adult conditions with conservative and surgical treatment approaches.	PO1, PO2
	Paediatrics	
502.5	Describe intra-uterine development of the foetus.	PO1
502.6	Describe normal development & growth of a child, importance of Immunization & breast-feeding & psychological aspect of development.	PO1
502.7	Identify the etiology, pathophysiology, clinical features, signs and symptoms, of various neurological, orthopedic, cardio respiratory conditions.	PO1, PO2
502.8	Manage pediatric population with proper care and precautions.	PO1, PO2, PO3, PO5
502.9	Acquire skill of clinical examination of a neonate /child with respect to neurological, Musculoskeletal, Respiratory & Cardiovascular, Nutritional conditions.	PO1, PO2, PO3, PO5, PO6
502.10	Describe different approaches of conservative and surgical management of various Musculoskeletal, Neurological, cardio respiratory pediatric conditions.	PO1, PO2
	Psychiatry	
502.11	Describe various mental disorders	PO1
502.12	Describe Psychopharmacological treatment	PO1

Course Content			
Topic Sr.No.	**A. Neurology**	**Hours of teaching/learning**	
		Theory	**Practical**
1	**Cerebro –vascular accidents** Define: Stroke, TIA, RIA and 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	2	-

	following disorders : • Parkinson's disease • Dystonia, Chorea • Ballismus,Athetosis • Tics, Myoclonus • Wilson's disease		
3	**Polyneuropathy** • Classification of Polyneuropathies • Causes, clinical features, management of GBS, Diabetic and Alcoholic Neuropathy	2	-
4	**Disorders & Diseases of muscle** Classification, etiology, signs & symptoms, investigations, imaging methods, Muscle biopsy, genetic counselling &management of muscle diseases emphasis on : • 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: • 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: • Meningitis, Encephalitis • Neurosyphilis, HIV infection • Herpes, Leprosy, Tetanus • Poliomyelitis and Post-polio syndrome	3	-
8	**Higher cortical, neuro psychological and neurobehavioral disorders** • Epilepsy, Physiology, classification, clinical features, investigations, medical& surgical management of following disorders – Non-epileptic attacks of childhood, Epilepsy in childhood, Seizures and Epilepsy syndromes in adult. • Classification & clinical features of Dementia, Alzheimer's disease. • Causes & investigations of Coma, criteria for diagnosis of Brain death.	2	-
9	**Cerebellar & Co-ordination disorders** • 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 • Trigeminal neuralgia • Lesions in facial nerve: Facial palsy, Bell's palsy, Hemi facial spasm • Glossopharyngeal neuralgia	2	-

	• Lesions of Vagus, Spinal accessory, Hypoglossal nerve • Disorders of special senses		
11	**Disorders of Myoneural Junction** Etiology, classification, signs & symptoms, investigations, management, of following Disorders: • Myasthenia gravis • Eaton-Lambert syndrome • Botulism	1	-
12	**Spinal cord Disorders** Functions of tracts, Definition of Spinal cord disorders, etiology, risk factors, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders: • Spinal Cord Injury • Epidural abscess • Transverse myelitis • Spina bifida • Conus medullaris syndrome • Bowel & Bladder Dysfunction	2	-
13	**Head injury** Etiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications.	2	-
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	
18	Cerebrospinal Fluid, its Formation, Absorption &Status in Various Disorders	2	
19	**Nice to Know** Circulation of the brain & spinal cord	1	
20	**CLINICAL** History, Evaluation, presentation and recording of cases in Central nervous system – 3 cases Peripheral nervous system- 2 cases		20
21	SCT		23
Topic Sr.No.	**B. Paediatrics**	**Hours of teaching/learning**	
		Theory	**Practical**
Must Know			
1	Normal development & growth	1	-
2	Breast feeding and immunization	1	-
3	**Perinatal, Postnatal problems and management (**Birth injuries) Neck, shoulder dystocia, Brachial plexus injury, Fractures	2	-
4	Congenital abnormalities and its management	1	-
5	Problems and management of LBW infants	1	-
6	**Developmental Delay:** Etiology, pathophysiology, classification, clinical signs & symptoms,	2	-

	investigations, differential diagnosis, medical management, surgical management and complications		
7	**Respiratory conditions of childhood:** Pneumonia – Bacterial & Tubercular, Empyema, Asthma,	1	-
8	**Orthopedic and Neurological disorders in childhood, Clinical features and management;** • Cerebral palsy • Meningitis, Encephalitis • Hydrocephalus • Ataxia • Arnold-Chiari malformation, Dandy walker syndrome • Basilar impression & Cerebral malformations • Down's syndrome • Floppy infant • GBS • Poliomyelitis • Epilepsy • Neural tube defects • Muscular dystrophies • Neuropathy	2	-
9	**Nutritional disorders of childhood** Rickets and scurvy, PEM (Kwashiorkar and Marasmus)	1	-
10	Infections – Congenital & Neonatal, Mental retardation	1	-
11	Coma in Paediatrics and Acute rheumatic fever	1	-
12	**Desirable to know :** • Normal intra-uterine development of foetus • Sensory disorders – problems due to loss of vision and hearing • Learning and behavioural problems - Attention Deficit Hyperactivity Disorder & Autism • Bronchiolitis & Wheezy baby	4	
13	**Nice to know** : • Educational delay • Clumsy Child • Challenging behaviour of child	2	-
14	**Clinical** • Normal & abnormal reflexes in neonate & child • Examination of the nervous system • Examination of respiratory system • Examination of cardiovascular system		**12**
15	SCT		15

Topic Sr.No.	**C. Psychiatry**	**Hours of teaching/learning**	
		Theory	**Practical**
Must Know			
1.	Psychiatric History, classification and mental status examination	1	-
2.	Organic mental disorders (delirium, dementia, organic amnestic syndrome and other organic mental disorders)	1	-
3.	Mood disorders (manic, 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 & eating disorders	1	-
7.	Child psychiatry (mental retardation, developmental disorders, attention deficit, hyperkinetic disorder, enuresis, conduct disorders)	1	-
8.	Disorders of adult personality and behavior (specific personality disorders, habit and impulse disorders, gender identity disorders)	1	-
9.	Stress, psychosomatic disorders, suicide, **DESIRABLE TO KNOW**: psychiatric emergencies and their management	1	-
10.	Psychopharmacological management, Psychiatric History, classification and mental status examination **NICE TO KNOW:** Electroconvulsive therapy and other biological methods of treatment.	1	-
13.	**SCT**		**10**

Text Books for Neurology

Sr.No.	Title
1	Davidson's Principles and Practice of Medicine
2	API Textbook of Medicine
3	Neurology & Neurosurgery Illustrated: Lindsay
4	Practical medicine – P J Mehta

Reference Books for Neurology

Sr.No.	Title
1	Brain and Bannister's Clinical Neurology
2	Adams and victors –Principles of neurology
3	Brains Diseases of Nervous System

Text Books for Paediatrics

Sr.No.	Title
1	Essentials of Paediatrics – by O. P. Ghai - Inter Print publications

Text Books for Psychiatry

Sr.No.	Title
1	A short book of Psychiatry – 3rd edtn by Ahuja – Jaypee brother medical publishers
2	. Handbook of Psychiatry Shah L.P

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
20	80	100

Periodical Examination:

- Written Examination: -20 MCQs (10 Neurology+5 Paediatric+ 5Psychiatry)for 20 marks, 20mins.

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

Sec A	Q.1. MCQs (10 Neurology+5 Paediatric+ 5Psychiatry)	20x1=20
Sec B **Neurology**	Q.2. Short Notes (Answer any 5 out of 6) Q.3. Short answer questions (Answer any 3 out of 4)	5x3=15 3x5=15
Sec C	Q.4. Short Notes (any 5 out of 6) – on **Paediatric** Q.5. Short Notes (any 5 out of 6) – on **Psychiatry**	5x3=15 5x3=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 & should be submitted before the preliminary examination of the semester. It is the responsibility of 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**					
												Written		Total	Practical		Total
Th	Pr	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	Tot	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

Course Outcomes

CO No.	At the end of the course, the learner should be able to:	Mapped Program Outcomes
503.1	Describe normal human development & maturation; with special emphasis to sensory, motor, psychological, social aspects and changes happening due to aging process.	PO1, PO2
503.2	Identify and document common Neurological, Musculoskeletal, cardiovascular, and Pulmonary dysfunctions.	PO1, PO2
503.3	Assess pain, altered muscle power mobility, measure limb length and hand functions.	PO1, PO2, PO3, PO5, PO7
503.4	Analyse and demonstrate various postures and gaits in adult and paediatric conditions.	PO1, PO2, PO3, PO5, PO6
503.5	Assess patients according to their ADLs.	PO1, PO2, PO3
503.6	Demonstrate exercise tolerance tests.	PO1, PO2, PO3, PO5, PO6, PO7
503.7	Do functional diagnosis as per International Classification of Function.	PO1, PO2
503.8	Demonstrate skills of using Electro diagnostic currents for sensory and motor dysfunction.	PO1, PO2, PO3
503.9	Interpret Normal and Abnormal EMG, Nerve Conduction studies, Late responses.	PO1, PO2
503.10	Demonstrate mobilization of joints on human models.	PO1, PO2, PO3
503.11	Demonstrate Neuro-therapeutics skills like sensory, motor, coordination, balance on human models.	PO1, PO2, PO3
503.12	Interpret investigation like X-ray, EMG, NCV, ABG, ECG etc. used for functional diagnosis.	PO1, PO2

Topic Sr.No	Course Content	Hours of teaching/learning	
		Theory	Practical
1	**ASSESSMENT OF MUSCULOSKELETAL FUNCTION**	15	34

	• SOAP Format of Assessment
	• Chief Complaint
	• History Taking
	• Assessment of Pain: Intensity & quality of pain
	• Assessment of Posture
	• Assessment of Gait
	• Limb Length and Girth measurement
	• Tightness Testing
	• Selective Tissue Tension Testing (Contractile & Non contractile tissues) & Examination of joint integrity:
	  ➢ Active movement
	  ➢ Passive movement:
	  ➢ Assessment of accessory movement & End feel
	  ➢ Resisted isometric contraction
	  ➢ Assessment of Muscle Strength (Group and Individual)
	• Special Tests		

	• Myofascial assessment • Acute & Chronic muscle strain • Outcome Measures • Functional Diagnosis using ICF • Interpretation of X-ray of Extremities & Spine		
2	**ASSESSMENT OF HAND**	5	5
	• Sensations • Mobility of joints • Strength • Special Tests for hand • Hand Function – Precision and Power grips		
3	**ASSESSMENT OF NEUROMUSCULAR FUNCTION** • Higher functions • Cranial nerves	**15**	30
	• Sensations & sensory organization (Dermatome, Myotome & Sclerotome) • Joint mobility • Tone • Voluntary control, Muscle Strength • Trick movements • Reflexes-Superficial & Deep • Co-ordination, Balance • Endurance • Posture • Gait • Scales-Berg 's Balance, Ashworth, Glasgow Coma, MMSE, Barthel index • Functional Diagnosis using ICF		
4	**ASSESSMENT OF CARDIO VASCULAR & PULMONARY DYSFUNCTION**	15	20
	• Demographic Data • Chief complaint • HOPI, History of Symptoms • Past Relevant History • Vital Parameters, Grades of Dyspnoea • Examination & Palpation: Head, Neck, Chest and Extremities • Measurements: Chest Expansion, symmetry of chest movement • Auscultation: Normal and Abnormal Breath Sounds • Special tests: Breath Holding Test etc. • **Outcome Measures & Investigations:** ➢ BORG scale for Rating of Perceived Exertion (RPE) ➢ Exercise Tolerance- six minutes' walk test, Bruce's protocol. ➢ X-ray Chest, ABG, PFT, ECG (Normal & variations in common pathologic conditions) ➢ Tests for Peripheral Arterial & Venous circulation		
5	**ASSESSMENT OF OBESITY**	5	5
	• Pathophysiology • Assessment of obesity – BMI, Waist Hip Ratio, Skin fold measurement, Anthropometric measurements, Newer Methods • Assessment of Fitness-Flexibility, Endurance and Agility		
6	**Autonomy and individual responsibility, Consent**	**5**	
	Autonomy and individual responsibility	2	

	• 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 • Purpose of the principle of consent • Prior, free & informed consent in patient treatment & handling • What is express consent? • Withdrawal of consent • 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	2	
	Persons without the capacity to consent • Criteria for capacity to consent • Categories of persons without the capacity to consent • Obtaining consent for special categories in health care practice	1	
7	**Documentation of following investigations** • Cardio Vascular & Pulmonary – ABG, PFT, ECG, X-ray Chest, Exercise Tolerance Test-1 each • Neurological – Scales like Modified Ashworth, Berg 's Balance, 2Dynamic Gait Index, Glasgow Coma, Barthel Index, STREAM Format – Any 3		2
	Desirable to Know • Assessment of swelling • Observational Movement analysis & Analysis of Muscle Work on patients • Objective assessment & documentation of pain – VAS, Mc Gill's questionnaire, NPRS, Body Diagram • Dyspnoea assessment • Scales: FIM, ASIA, Fugel Meyer, RLA, STREAM, BOT, GMFC,DGI • Electrotherapeutic current for Pain assessment • Introduction of Electro diagnostic findings	12	
	Nice to Know • Demographic Data Collection • Routine biochemical investigation • Ankle Brachial Index • Tinnels sign • Shuttle walk /run test • COPD questionnaire • Peak Flow Meter • Quality of life questionnaire	8	
8	SCT (includes documentation, interpretation, collection of materials for the below listed topics of all the patients including musculoskeletal, neurological. cardiovascular and pulmonary system dysfunctions)		**96**

	• 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 minute walk test and bruce protocol • Interpretation of reports- ABG,PFT,chest X-Rays, Spine and limb X-rays • Neurological scales including Modified Asthworth Scale,Bergs Balance, Dynamic Gait index ,GCS, Barthel index, Stream Format, Pain Assessment, Tone Assessment. (Students should maintain the record/ journal including the above listed assessment procedures in their case presentation. Case presentation with functional diagnosis of 3 cases each specialities as mentioned above should be completed and duly signed by concerned incharge)		

Text Books

Sr.No.	Title
1	Orthopaedic physical assessment- David Maggie
2	Physical Rehabilitation by Susan B O 's Sullivan
3	Practical Medicine - P J Mehta
4	Wilkin's Clinical assessment in respiratory care
5	Tidy's Physiotherapy by Porter
6	Electrotherapy-explained :Principles and Practice – Low and Reed

Reference Books

Sr.No.	Title
1	Clinical Neurophysiology – Kalita & Misra
2	Orthopaedic Physical therapy – Donnatelli
3	Exercise Physiology – William D Mc 'Ardle
4	Physiotherapy for Respiratory & Cardiac Problems- Jennifer Pryor & Barbara Webber
5	Cash's Textbook for Heart, Lungs & Valvular Diseases-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 MCQs for 20 marks, 20 minutes.
- Practical Examination: - 20 marks (Spots/OSCE/ OSPE//Mini CEX/ simulated cases/clinical cases)

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

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

- **Practical Examination (80 marks)**

1	**Long Case (**Case Based Evaluation)	35 Marks
2	**One Short Case (**Technique/Skill Based Evaluation/Simulated cases)	20 Marks
3	**5 Spots** - X Ray of extremities/spine, chest x ray, ABG, PFT,Outcome measures 4 mark, 4 minutes each,20 mins.	5x4=20 Marks
4	**Journal**	5 Marks

SUPERVISED CLINICAL TRAINING

Journals = 5 marks

(Total 10 cases, 3- Orthopaedics, 3- Neurosciences, 3-Cardiorespiratory, 1- CBR)

All the SCT works should be properly documented, signed by the respective teacher in-charge of the subject, indexed in a separate file & should be submitted before the preliminary examination of the semester. It is the responsibility of 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 Gynaecology Course Code:- PT 504																	
Course Credit for Obstetrics and Gynaecology																	
Hours				**Hrs/Wk**				**Credits**				**Evaluation Pattern**					
												Written		Total	Practical		Total
Th	Pr	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	Tot	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	--	--	--

Course Outcomes

CO No.	At the end of the course, the learner should be able to:	Mapped Program Outcomes
504.1	Describe normal anatomy of female genital system and pelvic floor, menstrual cycle and its disorder.	PO1
504.2	Differentiate between various normal abnormal physiological events such as pregnancy, menopause, urogenital dysfunction etc.	PO1
504.3	Describe various surgical approaches for procedures like hysterectomy, salphigectomy, oopherectomy, removal of neoplasms etc.	PO1
504.4	Acquire the skills of the clinical examination of obstetrics & gynaecological condition.	PO1, PO2, PO3, PO5, PO6

Topic Sr.No.	Course Content	Hours of teaching/learning	
		Theory	Practical
1.	Anatomy of female genital system and pelvic floor	2	-
2.	**Pregnancy** • Normal Gestations • Maternal Physiology in Pregnancy • Musculoskeletal disorders in Pregnancy • Antenatal Care • Prenatal and Perinatal Complications • Labour- Stages, Normal & Complications • Pain relief in Labour • Post Natal – Puerperium, Lactation	7	-
3.	**Menopause** • Physiology and physiological effects on Various systems • Complications, Management	4	-
4.	**Uro-genital dysfunction** • Uterine prolapse – classification & management (Conservative /Surgical) • Cystocoele, Rectocoele, Enterocoele • Urinary Incontinence: Types, Causes, Assessment & Management • Pelvic Inflammatory Diseases • Polycystic Ovarian Disease (PCOD)	4	-
5.	**Surgical Procedures involving child birth** • Caesarian Section • Episiotomy	3	-
6.	**Definition, Indications and Management of the following surgical procedures** • Dilatation and Curettage • Hysterectomy-Total Abdominal, Vaginal Salphigectomy & oophorectomy	4	-

7.	**Desirable to know** :	**5**	
	• Neoplasm of Female reproductive organs – surgical management	1	
	• Menstrual cycle and its Disorders • Methods of family planning	2 2	
8.	**Nice to know** • Sterility – management • Multiple gestations	 2 1	
9.	**CLINICAL** Evaluation & presentation of **TWO** cases each in the following: • Uro-genital dysfunction • Antenatal care • Postnatal care following normal Labour &Caesarean section • Pelvic Inflammatory Diseases **Observation of the following:**– • One Normal &One Caesarian delivery, • One case of Tubectomy • One Hysterectomy /Repair of the Uro-genital Prolapse.		**32**
10.	SCT		**48**

Text Books

Sr.No.	Title
1	Text book of Gynaecology – 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 MCQs for 10 marks, 20 minutes.

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	Q.1.MCQs	10x1=10 marks
Sec B	Q.2. Very Short answer questions (Answer any 5 out of 6) Q.3. Short answer questions (Answer any 2 out of 3) Q.4. 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 & should be submitted before the preliminary examination of the semester. It is the responsibility of 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 (Subject)	Hours				Hrs/Wk				Credits				Evaluation Pattern					
														Written		Total	Practical		Total
		Th	Pr	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
PT-601	General Surgery (Including Plastic Surgery)	64	32	96	192	4	2	6	12	4	1	2	7	20	80	100	-	-	-
PT-602	Research Methodology and Biostatistics	48	-	-	48	3	-	-	3	3	-	-	3	10	40	50	-	-	-
PT-603	Physiotherapeutic Skills	80	96	96	272	5	6	6	17	5	3	2	10	20	80	100	20	80	100
PT-604	Bio-engineering & Professional Ethics	32	32	96	160	2	2	6	10	2	1	2	5	10	40	50	-	-	-
	Total	**224**	**160**	**288**	**672**	**14**	**10**	**18**	**42**	**14**	**5**	**6**	**25**	**60**	**240**	**300**	**20**	**80**	**100**

Th: Theory, Pr: Practical, Tot: Total, Lec: Lecture Demonstration/Tutorial/Discussion, SCT: Supervised Clinical Training, 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					
												Written		Total	Practical		Total
Th	Pr	SPT	Tot	Lec	Pr	SPT	Tot	Lec	Pr	SPT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
64	32	96	192	4	2	6	12	4	1	2	7	20	80	100	-	-	-

Course Outcomes

CO No.	At the end of the course, the learner should be able to:	Mapped Program Outcomes
601.1	Describe pre-operative evaluation of various surgical indications in abdominal, thoracic, neurosurgical & peripheral vascular conditions.	PO1, PO2
601.2	Describe the surgical steps & approaches in short & describe components of soft tissues cut to reach target tissue, along with its complications.	PO1
601.3	Assess post-operative complications & its implications in ward treatment, prognosis, morbidity & mortality.	PO1, PO2, PO3, PO5, PO6
601.4	Describe effects of surgical trauma & anaesthesia in post-operative course.	PO1
601.5	Understand, classify, clinically assess, evaluate & describe surgical management in brief of Wounds and Ulcers, Burns, Head Injuries, Cancer, common ENT problems.	PO1, PO2, PO3
601.6	Read & interpret finding of X-ray chest & Abdomen, CT Scan, USG.	PO1, PO2

Topic Sr.No	Course Content	Hours of teaching/learning	
		Theory	Practical
Must Know			
1	**Infection and inflammation** Acute & chronic signs, symptoms, complications & management	3	-
2	**Wounds and ulcers** – classification, healing, management	**3**	-
3	**Abdominal Surgeries:** • Surgical anatomy of Anterior Abdominal wall	**5**	-

	• Surgical approaches • Common abdominal surgeries like Cholecystectomy, Colostomy, Ileostomy, Gastrectomy, Hernias, Appendectomy, Nephrectomy, Prostatectomy		
4	**Thoracic surgeries** • Thoracotomy - Definition, Types of Incisions with emphasis to the site of incision, muscles cut and complications **A) Lung surgeries:** Indications, Physiological changes and Complications: • Pneumonectomy,Lobectomy • Segmentectomy, Pleurectomy • Thoracoplasty • Pleurodesis and Decortication • Intercostal Drainage System **B) Cardiac surgeries:** • An overview of the Cardio-Pulmonary Bypass Machine • Extra-cardiac Operations: Closed & Open Heart surgery • Transplant Surgery of Heart, Lung & Kidney- Indications, Physiological changes and Complications • Chest Injuries - evaluation, management	4 4 4	-
5	**Peripheral Vascular Diseases** Definition, Etiology, Clinical features, Signs and Symptoms, Complications and Management of following diseases: • Atherosclerosis • Arteriosclerosis • Buerger's & Raynaud's diseases • Varicose veins & DVT	4	-
6.	**Burns and Plastic Surgery** • Burns- causes, classification, management, post burn contractures, various reconstructive & plastic surgeries • Skin & Muscle 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 • Principles of tendon transfers-with special emphasis to hand, foot & facial paralysis	6	-
7.	**Emergency Surgical Procedures** Tracheostomy- Indications, steps, post-operative care	4	-
8.	**Introduction, Indications & Complications of following Neurosurgeries** • Burr-hole, Craniotomy, Cranioplasty • Deep brain stimulation, Neural implantation • Laminectomy, Hemi laminectomy • Microvascular decompression surgery • Shunting, Embolization • Ablative surgery - Thalamotomy and Pallidotomy • Coiling of aneurysm and Clipping of aneurysm	5	-
9.	**Surgical trauma:** • Response of body • Effect of Anaesthesia • Shock & its types • Fluid & electrolyte balance • Total Parenteral Nutrition	4	-

10.	**Clinical Radiology** X-ray- Chest, abdominal (normal/abnormal), USG, CT scan	4	-
11	**Desirable to Know** • **Oncology** – definition, types, clinical manifestations, stages of cancer, surgical procedures in the management of cancer. • **Common ENT problems-** ENT conditions & its management: Otitis Media, Surgical treatments in VII (facial) & VIII nerve palsy	 4 4	-
12	**Nice to Know** • Various Eye problems- surgeries for III, IV nerve palsy, cataract Intra-ocular lens • Surgeries on arteries, veins (Vascular surgery) • Bariatric Surgeries	 2 2 2	-
13.	**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] Post Renal Surgery **Desirable to Know** • Auscultation & its interpretation with special emphasis to Pulmonary Function, Reading & Interpretation of the X-ray chest, P.F.T., Blood-Gas analysis		**32**
14	SCT		**96**

Text Books

Sr.No.	Title
1	Under-graduate Surgery by Nan
2	Textbook of Surgery by S. Das
3	Bailey & Love's short practice of Surgery-21st edn.
4	Manipal's Manual of surgery. Rajagopal Shenoy.
5	Clinical & Operative surgery by chary's

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
20	80	100

Periodical Examination:

- Written Examination: -20 MCQ sfor 20 marks, 20 minutes

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

Sec A	Q.1. MCQs (**15 Marks** General Surgery & **5 Marks** Plastic Surgery)	20x1=20 marks
Sec B	Q.2. Short Notes (Answer any 5 out of 6) Q.3. Short answer questions (Answer any 3 out of 4) (Plastic Surgery)	5x3=15 marks 3x5=15 marks
Sec C	Q.4. Long Answer Questions (compulsory) Q.5. Long Answer Questions (Answer any 1 out of 2)	1x15=15 marks 1x15=15 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 & should be submitted before the preliminary examination of the semester. It is the responsibility of 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**					
												Written		Total	Practical		Total
Th	Pr	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
48	-	-	48	3	-	-	3	3	-	-	3	10	40	50	-	-	-

Course Outcomes		
CO No.	**At the end of the course, the learner should be able to:**	**Mapped Program Outcomes**
602.1	Describe the basic concepts of Research Methodology and Biostatistics & its importance.	PO1, PO4, PO9
602.2	Describe different study designs, testing of hypothesis, sampling, methods of data collection, use of computer technology in research.	PO1, PO4, PO9
602.3	Describe tabulation of data with graphical representation, measures of central tendency, Probability and standard distributions, sampling techniques, statistical significance and other basic terminologies like ANOVA and ANCOVA.	PO1, PO4, PO9

Topic Sr.No	**Course Content**	**Hours of teaching/learning**	
		Theory	**Practical**
Must Know			
1.	**Introduction to Research Methodology** • Meaning of research • Objectives of research • Types of research & research approaches • Criteria for good research • Problems encountered by researchers in India. • Ethics in research	**3**	-
2.	**Research Design** • Meaning of research design • Need for research design • Features for good design • Different research designs	**3**	-
3.	**Sampling Design** • 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** • Collection of primary data • collection data through questionnaires & schedules • Difference between questionnaires & schedules.	**3**	-
5	**Testing of hypothesis** • What is hypothesis • Basic concepts concerning testing of hypothesis • Procedure of hypothesis testing • Measuring the power of hypothesis test, • Tests of hypothesis • Limitations of the tests of hypothesis	**3**	-

BIOSTATISTICS			
1.	**Introduction** • Meaning, definition of statistics • Importance of the study of statistics • Branches of statistics • Statistics and health science including physiotherapy	**3**	-
2.	**Tabulation of Data** • Basic principles of graphical representation • Types of diagrams – histograms, frequency polygons, smooth frequency polygon, cumulative frequency curve • Normal probability curve.	**4**	-
3.	**Measure of Central Tendency** • Definition and calculation of mean, median, mode. • Comparison of mean, median and mode	**2**	-
4.	**Probability and Standard Distributions** • Meaning of probability of standard distribution • The binominal distribution • The normal distribution • Divergence from normality – skewness, kurtosis.	**3**	-
5.	**Sampling techniques** • Need for sampling - Criteria for good samples • Procedures of sampling and sampling designs errors • Sampling variation and tests of significance.	**3**	-
6.	**Statistical Significance** • Parametric tests:- t test, • Non parametric tests :- chi square test, Mann-whitney U test, Z test, Wilcoxons matched pair test • Correlations	**3**	-
7.	**Analysis of variance & covariance** • Basic principle of Analysis of Variance ANOVA and Analysis of Co variance (ANCOVA)	**3**	-
8.	**DESIRABLE TO KNOW** • Demographic & vital statistics • Measurement in research- Measurement scales • Sources of error in measurement • Meaning of scaling, its classification • Important scaling techniques • Variables and their types	**7**	-
9.	**NICE TO KNOW** • Introduction to Computers • Computers & researcher • Statistical packages • Technique of developing measurement tools • Motivation in research	**5**	

Text Books

Sr.No	Title
1	Methods in Biostatistics - B. K. Mahajan
2	An Introduction to Biostatistics and research methods: Sunder Rao, P.S.S.
3	Biostatistics : A manual of Statistics Methods: K. Visweshwar Rao

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
10	40	50

Periodical Examination:

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

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	Q.1. MCQs (5 Research Methodology + 5 Biostatistics) - 10 minutes	10x1=10 Marks
Sec B	Q.2. Very Short Answer Questions (Answer any 5 out of 6) Q.3. Short Answer Questions (Answer any 3 out of 4)	5x3=15 Marks 3x5=15 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 :- PHYSIOTHERAPEUTIC SKILLS Course Code:- PT 603																	
Course Credit for PHYSIOTHERAPEUTIC SKILLS																	
Hours				**Hrs/Wk**				**Credits**				**Evaluation Pattern**					
												Written		Total	Practical		Total
Th	Pr	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	Tot	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

Course Outcomes		
CO No.	**At the end of the course, the learner should be able to:**	**Mapped Program Outcomes**
603.1	Describe human development & maturation; with special emphasis to sensory, motor, psychological & social aspects and alteration during aging process.	PO1, PO2
603.2	Describe and demonstrate use of Electro diagnostic currents for sensory and motor dysfunction.	PO1, PO3, PO5, PO6
603.3	Interpret Normal & Abnormal EMG, Nerve Conduction studies & Late responses.	PO1, PO2
603.4	Describe and differentiate between different schools of thought in Manual Therapy.	PO1, PO2
603.5	Demonstrate joint mobilizations on models as per different schools of thought.	PO1, PO2, PO3, PO5
603.6	Demonstrate Neuro therapeutics skills for sensory and motor coordination, balance on models.	PO1, PO2, PO3, PO5
603.7	Interpret investigation like X-ray, EMG, NCV, ABG, ECG etc. used for functional diagnosis.	PO1, PO2

Topic Sr.No	**Course Content**	**Hours of teaching/learning**	
		Theory	**Practical**
Must Know			
1.	**GENERAL PRINCIPLES OF HUMAN DEVELOPMENT & MATURATION**	**15**	-
	• Aspects- i) Physical ii) Motor iii) Sensory iv) Cognitive v) Emotional vi) Cultural vii) Social	5	
	• Factors influencing human development &growth- i) Biological ii) Environmental iii) Inherited.	3	
	• Principles of maturation ➢ in general ➢ In anatomical directional pattern -Cephelocaudal, Proximo – distal, Centero- lateral, Mass to specific pattern, Gross to fine motor development ➢ Reflex maturation tests	7	
	• Development & Assessment of Oromotor &Sensory systems		
2.	**ELECTRO DIAGNOSIS**	**7**	**4**
	• Motor unit &Recruitment pattern of motor unit – Size principle	2	
	• **Electromyography** ➢Principles & Instrumentation – Basic components like CRO, Filter, Amplifier & Preamplifier and Types of Electrodes. ➢Normal & Abnormal EMG pattern a) At rest b) on minimal contraction c) on maximal contraction	3	2
	• **Nerve Conduction Studies**- Principles & Technique	2	2

3.	**MANUAL THERAPY & APPLICATIONS WITH CLINICAL REASONING**	**25**	**34**
	Basic principles, Indications & Contra-Indications of schools of thoughts of Manual Therapy: • Maitland • Kaltenborn • Mulligan • Mckenzie • Neuro Dynamics (including Butler, Shacklock) • Muscle Energy Technique • Myofascial stretching • Cyriax : Pain-Original and Referred	 4 2 4 3 3 2 3 4	 5 3 6 5 4 4 4 3
4.	**BASICS IN NEURO THERAPEUTICS SKILLS & APPLICATIONS WITH CLINICAL REASONING.**	**13**	**20**
	• 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	2 2 2 3 4	3 3 3 3 8
	Desirable to Know	**12**	**16**
	• 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		
	Nice to Know	**8**	**3**
	• Demonstration of EMG & NCV Technique • Introduction to Vojta, SI, MRP,CIMT, and TOA • Physiology of muscle contraction • Physiology of resting membrane potential & action potential, Propagation of Action Potential, Volume conduction		
5.	**CLINICALS** 1] Practice of Manual Therapy in Kaltenborn, Maitland, Mulligan & Cyriax on extremities only & only on models 2] Practice to Neuro Therapeutic Skills of NDT, PNF, Rood's Technique & Brunnstrom on models only. 3] Exercise tolerance testing – 6 minutes walk test & Bruce 's protocol on models only	-	 **5** **5** **9**
6	SCT		**96**

Text Books

S.No	Title
1	Orthopaedic Physiotherapy Assessment- David J Magee
2	Physical Rehabilitation- Susan O' Sullivan
3	Clinical Assessment in Respiratory Care- Wilkins
4	Physiotherapy for Respiratory and Cardiac Problems- J. Pryor & Prasad
5	Cash's Textbook of Chest ,Heart, Lungs & Vascular Disease for Physiotherapists- Patricia Downnie
6	Physical examination of Spine & Extremities- Hoppenfield
7	Cash's Textbook of Neurology for Physiotherapists - 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 MCQs for 20 marks, 20 minutes.
- Practical Examination:- 20 marks (Spots, OSCE, OSPE, Mini CEX, Simulated cases/clinical cases)
-

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

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

- **Practical Examination (80 marks)**

1	One Long Case (Manual Therapy , Neuro Techniques) on models	40 Marks
2	One Short Case – simulated case	20 Marks
3	5 Spots (EMG,NCV, Manual and Neuro Techniques) 3 minutes each	5x3=15 Marks
4	Journal-	5 Marks

SUPERVISED CLINICAL TRAINING:
Journal= 05 MARKS (Case Records/ Case Presentations)
(Ortho 4, Neuro 3, Paediatrics 3)

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

Internal Assessment Marks: Theory /Practical-
Periodical exam = 20 marks
Prelim exam = 80 marks
Total = 100 marks
The total shall be Converted to 20 marks (100/5=20)

Course Title:- BIO-ENGINEERING & PROFESSIONAL ETHICS Course Code:- PT 604																	
Course Credit for BIO-ENGINEERING & PROFESSIONAL ETHICS																	
Hours				**Hrs/Wk**				**Credits**				**Evaluation Pattern**					
												Written		Total	Practical		Total
Th	Pr	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	Tot	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	-	-	-

Course Outcomes		
CO No.	**At the end of the course, the learner should be able to:**	**Mapped Program Outcomes**
Bio-engineering		
604.1	Describe the biomechanical principles of application of variety of aids & appliances used for ambulation, protection & prevention.	PO1
604.2	Select appropriate materials used for splints / Orthosis & prosthesis.	PO1, PO3
604.3	Take appropriate measurements on patient for making orthosis or prosthesis.	PO1, PO2
604.4	Prepare simple cost-effective splints for patients having orthopaedic or neurological deformities.	PO1, PO3, PO8, PO9
604.5	Demonstrate skills to repair and make adjustment in orthosis or prosthesis and plan proper rehab according to need of patient.	PO1, PO2, PO5, PO8, PO9
Professional Ethics		
604.6	Describe the principles and codes of ethics.	PO1
604.7	Describe the constitution and functioning of IAP and WCPT.	PO1
604.8	Describe the principles of evidence based practice, scope and opportunities in physiotherapy.	PO1, PO3, PO9
604.9	Demonstrate skills of administration, documentation , budget planning and performance analysis.	PO1, PO2, PO5, PO6, PO7, PO8, PO9

Course Content			
Topic Sr.No.	**A. BIO-ENGINEERING**	**Hours of teaching/learning**	
		Theory	**Practical**
Must Know			
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	**3**	-
4.	Prescription and designing of footwear and modifications	**1**	-
5.	Assessment of Gait, Post Prosthetic /Orthotic (Lower Limb) fitting.	**2**	-
6.	Designing and Construction of adaptive devices **Desirable to know** • Care of prosthesis & orthosis. • Methods of donning & doffing • Decision making for prosthetic fitting **Nice to Know** Psychological aspect of orthotic and prosthetic application (practical analysis with patient discussion)	**2** **2** **1**	

7	**Project: -** To fabricate one Temporary splint in each by using P.O.P, aluminium strips, sheets, wires, rubber bands, resin, orfit etc. • Cock up [dorsal / volar], Outrigger. • Opponence splint, C bar for 1st web space of hand • Mallet Finger Splint, Foot drop splint, Facial splint. • Anterior and posterior guard splints for gait training	-	**24**
B. PROFESSIONAL PRACTICE (Including Ethics, Evidence Based Practice, Administration, Management & Marketing)			
Must Know			
1.	Concepts of morality, Ethics & Legality-rules of professional conduct & their Medico-legal & moral implications- need of Council Act for Physiotherapy	**2**	-
2.	Constitution & Functions of the Indian Association of Physiotherapists	**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.	Evidence Based Practice: Introduction, 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.	**Privacy and confidentiality, Equality & Non discrimination.**	**6**	
	Privacy and confidentiality • Definitions of privacy & confidentiality with reason in physiotherapy • Justified breaches of confidentiality- ➢ Sharing information for patient care ➢ Using interpreters ➢ Teaching medical students ➢ Mandatory reporting Serious danger to others ➢ Patient or guardian consent	2	
	Equality, justice and equity • Definitions of equality, justice and equity • The right to health care & Physiotherapy • Disparities in health status ➢ 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	2	
	Non-discrimination and non-stigmatization • What is discrimination and stigmatization?	1	
	Respect for cultural diversity and pluralism • Definition of culture and cultural diversity • Definition and value of pluralism • Limits to the consideration for cultural specificities human dignity, human rights and fundamental freedoms	1	
10.	**Desirable to Know:**	**1**	**2**
	• Performance analysis--physical structure /reporting system [man power / status/functions /quantity & quality of services/turn over, cost benefit-revenue contribution • Management studies related to–local health care organization management & structure- planning delivery with quality assurance &		

	funding of service delivery information technology		
11.	**Nice to Know:** Budget-planning.	**1**	**2**
12.	SCT		**96**

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	Textbook of Rehabilitation – S Sunder , Jaypee Publication
5	Physical rehabilitation- Susan. B.O` Sullivan
6	Ethical Issues perspective for Physical Therapists- Kavitha Raja

SCHEME OF EXAMINATION

Written		Total
IA	Final exam	Final exam
10	40	50

Periodical Examination:

- Written Examination: -20 MCQs for 10 marks, 20 minutes. (10 Bioengineering, 10 professional practice)

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	Q.1. MCQs (10 Minutes) (5 Bioengineering, 5 professional practice)	10x1=10 marks
Sec B	Q.2. Very short answer questions (Answer any 5 out of 6) Q.3. Short answer questions (Answer any 2 out of 3) Q.4. 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 & should be submitted before the preliminary examination of the semester. It is the responsibility of 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 (Subject)	Hours				Hrs/Wk				Credits				Evaluation Pattern					
														Written		Total	Practical		Total
		Th	Pr	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
PT-701	Physiotherapy in Musculoskeletal Sciences	64	96	96	256	4	6	6	16	4	3	2	9	20	80	100	20	80	100
PT-702	Physiotherapy in Community Based Rehabilitation	64	96	96	256	4	6	6	16	4	3	2	9	20	80	100	20	80	100
PT-703A	Choice Based - Physiotherapy in Paediatric Conditions	32	32	96	160	2	2	6	10	2	1	2	5	10	40	50	10	40	50
or																			
PT-703B	Choice Based – Physiotherapy in Manual Therapy																		
		160	**224**	**288**	**672**	**10**	**14**	**18**	**42**	**10**	**7**	**6**	**23**	**50**	**200**	**250**	**50**	**200**	**250**

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

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

Course Credit for Physiotherapy in Musculoskeletal Sciences

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

Course Outcomes

CO No.	At the end of the course, the learner should be able to:	Mapped Program Outcomes
701.1	Assess, identify and provisionally diagnose common musculoskeletal dysfunctions in terms of Biomechanical, Kinesiology & Biophysical basis.	PO1, PO2
701.2	Interpret routine radiological and electrophysiological investigations.	PO1, PO2
701.3	Plan and prescribe a treatment protocol by selecting appropriate modes of electrotherapy, exercise therapy, and manual therapy techniques.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9
701.4	Demonstrate skills of physiotherapy interventions in fractures, orthopedic surgeries, amputation, sports injuries.	PO1, PO2, PO3, PO4, PO5
701.5	Assess and physiotherapeutically treat paediatric, orthopaedic congenital and acquired deformities.	PO1, PO2, PO3, PO4, PO5
701.6	Advice about ergonomics, home exercise programs, functional independence in activities of daily living, to improve quality of life of a patient.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9

Topic Sr.No.	Course Content	Hours of teaching/learning	
		Theory	Practical
Must Know			
1.	**Fractures and dislocation of the Spine & Extremities – classification, complications, PT assessment &management of following:** • Upper limb fractures & dislocations. • Lower limb fractures and dislocations including pelvis. • Spinal fractures • Principles of PT management in fractures - Guidelines for fracture treatment during period of immobilization and guidelines for treatment after immobilization period. • PT management in complications - early & late - shock, compartment syndrome, VIC, fat embolism, delayed and mal-union, RSD, myositis ossificans, AVN, pressure sores etc.	**8**	**10**
2.	**Physiotherapy assessment & management of Deformities:-** • **Congenital**: CTEV, CDH, Torticollis, pes planus, pes cavus and other common deformities. • **Acquired**: scoliosis, kyphosis, coxa vara, genu varum, valgum and recurvatum.	**3**	**8**
3.	**Physiotherapy assessment & management of Infectious diseases of the bone & joints:-** • Osteomyelitis – acute and chronic • Septic arthritis and Pyogenic arthritis • TB spine and major joints - knee and hip	**3**	**3**
4.	**Physiotherapy assessment & management of Degenerative & Inflammatory conditions :-** • Osteoarthritis - emphasis on knee, hip and hand • Rheumatoid Arthritis, Ankylosing spondylitis • Gout, Perthes disease	**3**	**3**
5.	**Physiotherapy assessment & management of Peripheral Nerve Injury**	**2**	**5**
6.	**Physiotherapy assessment & management of Amputation:-** • 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	**2**	**5**
7.	**Traction-** Effect, Types, Modes, Indications, Contraindications, Dosage	**2**	**2**
8.	**Physiotherapy assessment, conservative, surgical & management of Spinal conditions:-** • Cervical & Lumbar spondylosis • Intervertebral disc prolapses • Spinal canal stenosis • Spondylolysis, Spondylolisthesis • Coccydynia	**4**	**11**
9.	**Physiotherapy assessment & management of Shoulder joint conditions:-** • TOS, RSD • Shoulder instabilities, AC joint injuries • Periarthritis Shoulder, Rotator cuff Tears	**4**	**10**

	• Impingement syndrome (Supraspinatus and Bicipital tendonitis) (sub-acromial decompression)		
10.	**Physiotherapy assessment & management of Elbow and forearm**:- Tennis and Golfer's elbow	**1**	**5**
11.	**Physiotherapy assessment & management of Wrist and Hand conditions:** • Wrist sprains • Dequervain's Tenosynovitis, Trigger and Mallet finger • Repair of ruptured Flexor and Extensor tendons • Carpal tunnel syndrome. • Hand injury- types and their management	**3**	**5**
12.	**Physiotherapy assessment & management of Hip Joint surgeries** - Hemi and total hip replacement	**2**	**5**
13.	**Physiotherapy assessment & management of Knee conditions:-** • 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	**6**	**10**
14.	**Physiotherapy assessment & management of Ankle and foot conditions:-** • Ankle instability: Lateral ligament sprain of ankle • Ligamentous tears- Post operative management • TA rupture • Plantar fasciitis, Metatarsalgia, hammer toe, turf toe, OA ankle	**3**	**4**
15.	**Physiotherapy assessment & management of**:- • Sacro-iliac joint dysfunction • Sacralisation, Lumbarisation	**2**	**1**
16.	**Orthopedic surgeries**- Pre and post-operative PT assessment, goals, precautions, PT management of following surgeries: Arthrodesis & Osteotomy	**1**	**1**
Desirable to Know			
17.	• Total shoulder replacement and Hemi replacement: Post operative PT management • SLAP lesion, GIRD, Reverse replacement • Excision of radial head - Post operative PT management • Biomechanics of Internal fixators & implants. • Physiotherapy Management for Tumours of the bone.	**7**	**2**
	Physiotherapy following re-constructive surgeries in: - Cerebral Palsy, Poliomyelitis and Leprosy.	**2**	**5**
Nice to know			
18	• Radiological positions, angle calculations for Orthopaedic problems by X ray • Arthroscopic repairs of knee & Management	**3**	
	Physiotherapy assessment & management of Metabolic & hormonal disorders of the bone tissue:-Osteoporosis, Rickets	**2**	-
	Hamstring strains & Quadriceps contusion	**1**	**1**
19	SCT		**96**

Text Books

Sr.No.	Title
1	Clinical Orthopaedic Rehabilitation – Brotzman
2	Cash 's Textbook of Orthopaedics& Rheumatology for Physiotherapists- Patricia Downie
3	Therapeutic exercise – Colby & Kisner
4	Tidy's Physiotherapy – Stuart Porter
5	Essentials of Orthopaedics and Applied Physiotherapy – Joshi and Kotwal
6	Essentials of Orthopedics for Physiotherapists – Ebenezer
7	Essential Orthopaedics – J. Maheshwari

Reference Books

Sr.No.	Title
1	Orthopedic Physical therapy – Donatelli.
2	Manual Mobilization of the Joints: Joint Examination and Basic Treatment: The Extremities, Volume 1 – Freddy Kaltenborn
3	Manual Mobilization of the Extremity Joints: Advanced treatment techniques, Volume 2 – Freddy Kaltenborn
4	Mobilisation of the Nervous System - David Butler
5	Clinical Neurodynamics: A New System of Neuromusculoskeletal Treatment – Michael Shacklock
6	Textbook of Orthopaedic Medicine – James Cyriax.
7	Outline of orthopedics – Adams Hamblen
8	Taping Techniques: Principles and Practice – Rose Mac Donald.
9	Physical Rehabilitation :Assessment and Treatment – O'Sullivan Schmitz
10	Treatment and Rehabilitation of Fractures – Stanley Hoppenfield

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 MCQs for 20 marks, 20 minutes.
- Practical Examination:- 20 marks (Spots, OSCE, OSPE, Mini CEX, Simulated cases/clinical cases)

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

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

- **Practical Examination (80 marks)**

1	**One Long Case**: based on History-10marks, Evaluation-10 marks, Treatment Plan on Patient-20marks	40 Marks
2	**One Short Case**: Simulated	20 Marks
3	**Five spots**: based on X-ray of limb & spine, Orthosis, Prosthesis, Metal implants 3 minutes each spot for 3marks each spot	3x5=15 Marks
4	**Journal**	5 Marks

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 & should be submitted before the preliminary examination of the semester. It is the responsibility of 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.

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					
												Written		Total	Practical		Total
Th	Pr	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
64	96	96	256	4	6	6	16	4	3	2	9	20	80	100	20	80	100

Course Outcomes

CO No.	At the end of the course, the learner should be able to:	Mapped Program Outcomes
702.1	Describe the principles and components of primary health care and the national health policies to achieve the goal of 'Health for All'.	PO1, PO4, PO9, PO7
702.2	Understand, identify, evaluate disability in patients with partial or total disability (temporary or permanent) and formulate appropriate goals (long & short term) in treatment & rehabilitation.	PO1, PO2, PO3, PO5, PO6, PO7
702.3	Describe the anatomical and physiological changes occurring in various conditions in Women's Health relevant to Physiotherapy, and plan physiotherapy management for fitness.	PO1, PO2, PO3, PO5
702.4	Identify environmental stress factors in industries, plan injury prevention program, physiological restoration, and rehabilitation for effective return to work management.	PO1, PO2, PO3, PO5, PO6, PO7, PO9
702.5	Describe physiological changes in geriatrics with multisystem review to evaluate and plan rehabilitation program.	PO1, PO2, PO3, PO6, PO7
702.6	Conduct small survey, collect data for planning and implementation of appropriate Physio-Therapeutic modes	PO1, PO4, PO9
702.7	Advise with clinical reasoning at urban, rural and community level for achieve physical fitness.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9

Topic Sr.No.	Course Content	Hours of teaching/learning	
		Theory	Practical
1.	**Women's Health: -**	**15**	**25**
	Must Know		
	• Introduction to Woman's Health & Anatomy of pelvic floor.	1	
	• Anatomical & physiological variations associated with pregnancy & menopause.	1	
	• Antenatal, Perinatal & postnatal physiotherapy, PT advice on labour positions, pain relief & PT Management of various problems during this period	3	
	• Uro-genital dysfunctions: Infections, Prolapse, Polycystic Ovarian Disease, incontinence and their therapeutic interventions.	3	
	• Common Gynaecological surgeries and role of physiotherapy	1	
	• Physical fitness in women during pregnancy & menopause.	2	
	• Radical mastectomy and therapeutic intervention.	1	
	Desirable to Know	1	
	• Social issues having impact on Physical function.		
	Nice to know		
	• Legal rights & benefits for women.	1	
	• Common Problems in adolescents and management Infertility	1	

2.	**Geriatrics: -**	**12**	**25**
	Must Know • Theories of Aging. • Anatomical and Physiological changes of aging in- ➢ Musculoskeletal system, CNS, CVS, RS. ➢ Metabolic, Endocrine, Immune System • Assessment in geriatrics. • Role of physiotherapy: in geriatrics fitness (Institutionalized & Community dwelling elders), Half-way homes, Residential Homes, Meals on wheels, Home for the aged, etc. • Falls and its prevention in Geriatrics. • Rehabilitation for Parkinson's disease, Alzheimer, Incontinence, stroke etc. **Desirable to Know** • Ethics, Legal Rights and benefits for geriatric Rehabilitation	2 2 2 1 1 2 1	
	Nice to Know Communication with Elderly	1	
3.	**Industrial Health**	**11**	**25**
	Must Know :- I – <u>Ability Assessment</u> • Job description • Job demand analysis • Task analysis • Ergonomic evaluation • Injury prevention • Employee fitness program	1	
	II – <u>Disability management</u> • Acute case • Concept of functional capacity assessment • Work conditioning &Work hardening	2	
	III – <u>Environmental stress in the industrial area</u> A) Occupational Hazards: • Physical agents- Heat, cold, light, noise, Vibration, U.V. radiation, Ionizing radiation, • Chemical agents-Inhalation, local action & ingestion, • Mechanical hazards- overuse, fatigue. • Psychological hazards – monotonic, dissatisfaction in job, anxiety of work completion with quality, mechanical stress in various occupations for eg. ➢ Sedentary table work- eg. in executives, clerk, ➢ Inappropriate seating arrangement- eg. vehicle drivers ➢ Constant standing- eg. watchman, Defense forces, surgeons ➢ Overwork- eg. Exertion in labourers.	4	
	Desirable to Know:- • Biological Hazards • Role of P.T. in industrial set up & Stress management with relaxation • Vocational Training and Rehabilitation	1 2 2	
	Nice to Know Industrial Laws: Legal Right and benefits	1	

4.	**Fitness & Health Promotion**	**8**	**21**
	Must Know:- • Physiological effects of aerobic and anaerobic exercise • Assessment of Fitness • Fitness training and clinical reasoning for advocating aerobic exercise as preventive measures in special population: ➢ Elderly, Women, Children ➢ Obesity, Diabetes Mellitus, Renal Failure, Hypertension • De-conditioning effects of prolonged bed rest. • Exercise Testing & Prescription	 1 1 2 1 1	
	Desirable to Know: Yogasanas in specific health conditions – Diabetes, Pregnancy, Hypertension	1	
	Nice to Know Nutrition and Diet for fitness	1	
5.	**Community Health**	**12**	
	Must Know • WHO definition of health & disease, Health care delivery system – 3 tier System • Rehabilitation: definition, types and Team • Community: Definition, Community approach & entry strategies, Community initiated v/s Community oriented program • Introduction to CBR: Definition, Historical review, Concept, Need, Objectives, Scope, Members, Models • CBR strategies in Health Promotion in different areas:- ➢ Urban Health centre – Community centre, clubs, mahila mandals, social centre, Schools, Industries, Sport centres. ➢ 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 program • Disaster management and role of PT • Disability: Evaluation, types & prevention & role of physiotherapy • National policies for rehabilitation of disabled	1 1 1 1 1 1 1 1	
	Desirable to Know:- • Role of NGO in Community Based Rehabilitation • Role of Physiotherapy in CBR: Rehabilitation program for various neuro-musculoskeletal and cardiothoracic disabilities	 1 1	
	Nice to Know Architectural barriers for disabled and their modification	1	
6	**Solidarity and cooperation** • Solidarity in health care & Physiotherapy • Ethical perspective ➢ Solidarity as instrumental value ➢ Solidarity as moral value • Threats to solidarity in present-day societies	**2**	
7	**Social responsibility and health, Sharing of benefits** Highest attainable standard of health as a fundamental human right • Universal Declaration of Human Rights • WHO Constitution, Duty, obligation and responsibility physiotherapists for Highest attainable standard of health as a fundamental human right	**2**	

	• Responsibilities for governments and various sectors of society • Health and contemporary challenges to global justice ➢ Access to essential health services ➢ Protection of vulnerable populations ➢ Providing health care services across national boundaries Sharing of benefits • Models of benefit-sharing agreements ➢ Fair and equitable options for research subjects ➢ Biopiracy and fair sharing of benefits of genetic resources ➢ Patents and intellectual property ➢ Valid options for promoting fair & equitable access to new diagnostic & therapeutic modalities or to products stemming from them ➢ Integration of capacity-building components to externally funded research and other initiative		
8	SCT		**96**

Text Books

Sr.No	Title
1	Physiotherapy in Obstetrics and Gynaecology – Poldon and Mantle
2	Textbook of Work Physiology: Physiological Bases of Exercise – Per-Olof Åstrand, Kaare Rodahl, Hans A. Dahl, Sigmund B. Strømme
3	Therapeutic exercise – Colby & Kisner
4	Text book of community medicine – Bhaskar Rao
5	Geriatric Physical Therapy – Andrew Guccione
6	Industrial Therapy – Glenda Key
7	Park's Textbook of Preventive and Social Medicine – Park
8	Textbook of Rehabilitation – Sundar

Reference Books

Sr.No	Title
1	Ergonomics: Man in His Working Environment – K. Murrell
2	Exercise Physiology – McArdle
3	Musculoskeletal Disorders in Workplace: Principle and Practice – Nordin, Pope and Andersson
4	Indian Social Problems (Vol-2): Social Disorganization and Reconstruction – G R Madan.
5	Status of Disability in India-2000 – Rehabilitation Council of India
6	International Classification of Functioning, Disability and Health: ICF – World Health Organization
7	Handbook of Physical Medicine and Rehabilitation – Braddom
8	Geriatric Rehabilitation Manual – Timothy L. Kauffman

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 MCQs for 20 marks, 20 minutes.
- Practical Examination:- 20 marks, (Spots/OSCE/ OSPE//Mini CEX/ simulated cases/clinical cases)

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

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

- **Practical Examination (80 marks)**

1.	**One long Case**: based on- Women's health/Geriatric/Industrial health/health promotion History-10marks, Evaluation-10 marks, Treatment Plan on Patient-20marks	40 marks
2.	**One Short Case**: Simulated	20 marks
3.	**5 Spots** based on scales, National health programmes, fitness protocols 3 marks, 3 minutes for each spots	15 marks
4.	**Journal**	5 marks

SUPERVISED CLINICAL TRAINING:

Journal – 5marks

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

Case Presentation & Documentation: Evaluation and treatment planning, case presentation & documentation of minimum **TEN CASES** in:

- 2 Obstetrics & 2 Gynaecology cases- 4 cases
- Geriatrics :- 2 cases
- Industrial health :- 2 cases
- Fitness :- 1 case
- Disability evaluation:- 1 Case

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 - Physiotherapy in Paediatric Conditions Course Code:- PT 703 A																	
Course Credit for "Choice Based - Physiotherapy in Paediatric Conditions"																	
Hours				**Hrs/Wk**				**Credits**				**Evaluation Pattern**					
												Written		Total	Practical		Total
Th	Pr	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	Tot	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

Course Outcomes

CO No.	At the end of the course, the learner should be able to:	Mapped Program Outcomes
703A.1	Describe normal development in Paediatrics	PO1
703A.2	Demonstrate skills of assessment like developmental milestone, primitive, reflexes, Motor development stages, sensory profile and gait impairments.	PO1, PO2
703A.3	Assess, identify and analyze neurologic, orthopaedic and cardio-respiratory disorders in childhood.	PO1, PO2, PO3, PO5, PO6, PO7
703A.4	Execute effective physio-therapeutic measures with special emphasis to N.D.T, sensory integration, play therapy and intervention in intensive care area.	PO1, PO2, PO3, PO5, PO6, PO7
703A.5	Perform techniques of breathing retraining, nebulization, positioning for bronchial hygiene technique in paediatric cardio-pulmonary disorders.	PO1, PO2, PO3, PO5, PO6, PO7
703A.6	Advice and counsel neuro-paediatric care.	PO2, PO3, PO5, PO7
703A.7	Explain the importance and prescribe appropriate orthotics in paediatric conditions.	PO1, PO2, PO3, PO5, PO6, PO7

Topic Sr.No.	Course Content	Hours of teaching/learning	
		Theory	Practical
Must Know			
1.	Cerebral palsy -assessment & management with approaches, Roods, Vojta, Sensory integration, N.D.T	3	10
2.	Attention deficit Hyperactive disorder, Autism	1	1
3.	Epilepsy	1	1
4.	Genetic disorder – Down's syndrome, Marfan's syndrome	1	1
5.	Assessment and Management of movement disorder – Chorea, Athetosis, Dystonia, Choreoathetosis, Ataxia	1	2
6.	Disorder of muscle – Muscular dystrophy (Duchenne's, Becker's, Limb girdle, Facio-scapulohumeral, Spinal muscular atrophy)	2	2
7.	Developmental anomalies – Spina bifida, hydrocephalus, cranio-vertebral junction anomalies	2	3
8.	Traumatic head injury	2	2
9.	Congenital dislocation of hip, CTEV, vertical talus, Blount disease, Perthe's disease, slipped capital femoral epiphysis, limb length discrepancies and Osteogenesis Imperfecta.	~~4~~	2
10.	Traumatic injuries in child – fractures, dislocations, epiphyseal injuries	2	2
11.	Neonatal ICU, Paediatric ICU, Complications of low birth Weight	2	2
12.	Fetal circulation, Congenital heart disease – pathodynamics, clinical presentation, investigation, medico-surgical & physiotherapy management of cyanotic & acyanotic heart disease , Rheumatic heart disease	2	1

13.	Respiratory disorder in childhood – IRDS, Bronchopulmonary dysplasia, pneumonia, lung abscess, asthma, cystic fibrosis, bronchitis, bronchiectasis, bronchiolitis, pertusis, CROUP, epiglotitis, chronic lung disease, primary ciliary dyskinesia, fatigue, sleep apnoea, hyperventilation syndrome	2	1
	Desirable to Know		
14	Role of Orthotics in Paediatric conditions.	2	-
15.	Anatomical & physiological differences of cardio-vascular & respiratory system in neonates, childhood & adults	2	
	Nice to Know		
16.	Paediatric Sports Injuries and Rehabilitation	2	
17.	Assessment of Reflex & Reactions	1	2
18.	SCT		**96**

Text Books

Sr.No	Title
1	Pediatric physical Therapy – Stephen Tecklin
2	Campbell's Physical Therapy for Children – Campbell
3	Nelson Textbook of Paediatrics – Kliegman and St.Geme
4	Handbook of Pediatric Physical Therapy – Long and Toscano
5	Baby Treatment Based on NDT Principles – Lois Bly.
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 MCQs for 10marks, 20 minutes.
- Practical Examination: - 10 marks (Simulated Case/ OSCE/ OSPE/ Mini CEX)

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	Q.1. MCQs (10 Minutes)	10x1=10 marks
Sec B	Q.2. Very Short answer questions (Answer any 5 out of 6) Q.3. Short answer questions (Answer any 2 out of 3) Q.4.Long Answer Question(Answer any 1 out of 2)	5x2=10 marks 2x5=10 marks 1x10=10 marks

- **Practical Examination (40 marks)**

Sr.No.		Marks
1	**Long Cas**e: based on History-5 marks, Evaluation-5 marks, Treatment Plan on Patient -15marks	25
2	**Short Case:** Simulated	10
3	**Journal**	5

SUPERVISED CLINICAL TRAINING:

Journal=5 marks

All the SCT works should be properly documented with **5 CASES** signed by the respective teacher in-charge of course/ subject, indexed in a separate file &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 – Physiotherapy in Manual Therapy Course Code:- PT 703 B																	
Course Credit for "Choice Based - Physiotherapy in Manual Therapy"																	
Hours				**Hrs/Wk**				**Credits**				**Evaluation Pattern**					
												Written		Total	Practical		Total
Th	Pr	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	Tot	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

Course Outcomes

CO No.	At the end of the course, the learner should be able to:	Mapped Program Outcomes
703B.1	Differentiate between different schools of thought in manual therapy, focusing on musculoskeletal, musculofascial and neuromuscular pathologies.	PO1, PO2
703B.2	Identify the indications and contra indications for specific manual therapy approaches related to limbs/Spine.	PO1, PO2, PO3, PO5, PO7
703B.3	Perform a complete clinical assessment of a patient based on manual therapy approaches.	PO1, PO2, PO3, PO5, PO6, PO7
703B.4	Deliver effective manual therapy treatment plan for Limbs/Spine pathologies that are within the scope of Physiotherapy practice.	PO1, PO2, PO3, PO4, PO5, PO6, PO7

Topic Sr.No	Course Content	Hours of teaching/learning	
		Theory	Practical
Must Know			
1.	Introduction to Manual Therapy, different school of thoughts	1	-
2.	History of Manual Therapy	1	-
3.	Techniques/concepts/mobilization	**27**	**32**
	Assessment and management with clinical reasoning of various neuro-musculoskeletal conditions using following techniques/concepts/ mobilization:		
	➢ Maitland's Technique	2	3
	➢ Kaltenborn's Technique	2	3
	➢ Mulligan's concept	3	4
	➢ Mckenzie's Mechanical Diagnosis &Treatment (MDT)	3	4
	➢ Butler's neural mobilization	3	3
	➢ Neurodynamic	2	3
	➢ Muscle Energy Technique	2	3
	➢ Myofascial Release Technique	3	3
	➢ Cyriax's mobilization	2	3
	Desirable to Know		
	Introduction to Osteopathy	1	
	Subjective and Objective Assessment of Pain	4	3
4	**Nice to know**		
	Introduction to Chiropractics	1	-
	Introduction to Clinical Decision Making	1	-
	Principle, Indication & Contra indication of Cranio-sacral Therapy	1	-
5.	SCT		**96**

Text Books

Sr.No.	Title
1	Maitland's Vertebral Manipulation – Hengeveld, Banks and English
2	Maitland's Peripheral Manipulation – Hengeveld and Banks
3	Orthopaedic Physical Assessment – Magee
4	Manual Mobilization of the Joints: Joint Examination and Basic Treatment: The Extremities, Volume 1 – Kaltenborn, Evjenth, Kaltenborn, Morgan and Vollowitz
5	Manual Mobilization of the Joints: The Spine, Volume 2 – Kaltenborn
6	Deep Massage and Manipulation Illustrated – Cyriax
7	Mobilisation of the Nervous System – David Butler
8	The Human Extremities -Mechanical diagnosis and Therapy - Robin Mc'kenzie
9	The Lumbar Spine Mechanical Diagnosis & Therapy, Volume 2 – Mc'kenzie and May

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 MCQs for 10marks, 20 minutes.
- Practical Examination: - 10 marks (Spots/OSCE/ OSPE//Mini CEX/ simulated cases/clinical cases)

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

Sec A	Q.1 MCQs (10 Minutes)	1x10=10 marks
Sec B	Q.2 Very Short answer questions (Answer any 5 out of 6) Q.3 Short answer questions (Answer any 2 out of 3) Q.4 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	Long Case: based on the History 5 marks, Evaluation 5 marks, Treatment Plan on Patient; 15 marks	25
2	Short Case: Simulated	10
3	Journal	5

SUPERVISED CLINICAL TRAINING:

Journal=5 marks

All the SCT works should be properly documented with **5 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 (Subject)	Hours				Hrs/Wk				Credits				Evaluation Pattern					
														Written		Total	Practical		Total
		Th	Pr	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	Tot	IA	Final exam	Final exam	IA	Final exam	Final exam
PT-801	Physiotherapy in Neurosciences	64	96	96	256	4	6	6	16	4	3	2	9	20	80	100	20	80	100
PT-802	Physiotherapy in Cardiorespiratory and General Conditions	64	96	96	256	4	6	6	16	4	3	2	9	20	80	100	20	80	100
PT-803A	Choice Based - Physiotherapy in Sports	32	32	96	160	2	2	6	10	2	1	2	5	10	40	50	10	40	50
	or																		
PT-803B	Choice Based - Physiotherapy in Hand Conditions																		
	Total	**160**	**224**	**288**	**672**	**10**	**14**	**18**	**42**	**10**	**7**	**6**	**23**	**50**	**200**	**250**	**50**	**200**	**250**

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

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

Course Credit for Physiotherapy in Neurosciences

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

Course Outcomes

CO No.	At the end of the course, the learner should be able to:	Mapped Program Outcomes
801.1	Describe normal neurodevelopment milestones	PO1
801.2	Describe different neuro-therapeutic approaches	PO1, PO2, PO3
801.3	Assess, identify & analyze Neuro-motor & psychosomatic dysfunction	PO1, PO2, PO3, PO5, PO9
801.4	Plan ,execute and document appropriate treatment	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9

Topic Sr.No	Course Content	Hours of teaching/learning	
		Theory	Practical
	NEOROLOGY		
1	Structure and function of Nervous System	2	-
2	Theories of motor control & motor learning	1	-
3	Neurological Assessment • Higher mental functions, Cranial Nerves, • Sensory system, Motor system, Reflexes, Co-ordination, • Balance, functional abilities, neuropathic pain and investigation.	5	9
4	Understanding sensory system & Organization of sensory strategies	1	1

	for efficient motor output.		
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, SI, Brunnstrom, Bobath, Temple Fay, Vojta & 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. **Lesion in Brain** • Cerebrovascular Accidents • Disorders of cerebral circulation • Space occupying lesions • Traumatic Head Injury	4	7
	ii. **Disorders of spinal cord** • Spinal Cord Injury • Syringomyelia • Transverse myelitis • Sub-acute combined degeneration of spinal cord	2	5
	iii. **Infections of Nervous System** • Meningitis, Encephalitis • Neurosyphilis, Tabes dorsalis • Poliomyelitis and Post Polio Residual Paralysis • Leprosy	2	3
	iv. **Demyelinating diseases** of the nervous system • Multiple sclerosis	2	2
	v. **Lesions of Extra-pyramidal system & Basal ganglia** • Spasmodic torticollis • Parkinson's Disease • Athetosis, Chorea & Dystonia	2	4
	vi. **Degenerative disorders** • Motor Neuron Diseases • Hereditary Ataxia • Peroneal muscle atrophy, Spinal Muscular Atrophy	2	2
	vii. **Disorders of Peripheral nerves** • Traumatic Nerve Injury, Tumors, • Infective & Metabolic lesions of nerves	2	3
	viii. **Disorders of muscles and neuromuscular junction** • Muscular Dystrophies • Myasthenia Gravis & myasthenia syndrome	2	2
	ix. **Polyneuropathy** • Classification of Polyneuropathies • GBS, Diabetic and Alcoholic Neuropathy	2	4
	x. **Cerebellar & Co-ordination disorders** Congenital Ataxia, Friedrich Ataxia	2	4
11	**PAEDIATRIC NEUROLOGY**		
	• Developmental milestones and Developmental reflexes • Neuro developmental screening tests	3 2	4 6

	Assessment & Evaluation: • Observation, Palpation, • Higher mental function, Cranial nerve examination • Motor & Sensory examination, Reflex testing • Balance & Coordination examination • Gait analysis, Functional analysis • Differential Diagnosis • List of Problems & Complications, Short & Long Term goals	2	4
	Management & use of various Neurophysiological approaches in: • High Risk babies • Minimum brain damage • Developmental disorders, Cerebral palsy, Autism • Down's Syndrome • Hydrocephalus • Spina bifida and spinal dysraphism	8	12
12	**Protecting future generations & Protection of Environment** • Why care about the future? Contexts of concern • 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 • Relation of bioethics and environmental issues • Basic principles of environmental ethics i. environmental justice ii. intergenerational justice respect for nature	2	
13	**Desirable to Know**	**5**	**4**
	• Parent / care takers education about handling of a paralytic patient • Lifting techniques, Wheel chair modifications & adaptive devices • Disorders of autonomic nervous system		
14	**Nice to Know**	**5**	**2**
	• Embryology of nervous system • Psycho-somatic Pain & Paralysis. • Fabrication of temporary splints during urgent requirement with clinical reasoning • Developing a philosophy for caring.		
15	SCT		**96**

Text Books

Sr.No.	Title
1	Cash's Textbook of Neurology for Physiotherapists - Patricia Downie
2	Physical Rehabilitation - Susan. B.O`Sullivan
3	Tidy's Physiotherapy - Stuart Porter
4	Neurological Rehabilitation - Darcy Umphred
5	Practical Exercise Therapy - Margaret Hollis
6	Therapeutic exercise – Colby & Kisner
7	Treatment of Cerebral Palsy and Motor Delay – Levitt and Addison
8	Pedretti's Occupational Therapy: Practice Skills for Physical Dysfunction – McHugh, Pendleton and Winifred Schultz-Krohn

Reference Books

Sr.No.	Title
1	Therapeutic Exercise - Basmajian
2	Right in the Middle: Selective Trunk Activity in the Treatment of Adult Hemiplegia - Patricia M. Davies
3	Krusen's Handbook of Physical Medicine and Rehabilitation – Kottke and Lehmann
4	Brain`s Disorders of Nervous System - Michael Donaghy

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 MCQs for 20 marks, 20 minutes.
- Practical Examination:- 20 marks(Spots/OSCE/ OSPE//Mini CEX/ simulated cases/clinical cases)

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

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

- **Practical Examination (80 marks)**

S.No.		Marks
1.	**Long case**: History-10marks, Evaluation-10 marks, Treatment Plan on Patient-20marks	40
2.	**Short case** (simulated)	20
3.	**Five Spots**: - Spots based on EMG, NCV Studies, Orthosis, Prosthesis, Neuro-assessment scale 3 minute & 3 Marks each spot	3x5=15
4.	**Journal**	5

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** on following:

- U.M.N. lesion -4
- L.M.N. lesion- 4
- Paediatric Neurological condition-2

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

Course Outcomes		
CO No.	**At the end of the course, the learner should be able to:**	**Mapped Program Outcomes**
802.1	Identify, discuss & analyze cardiovascular & pulmonary dysfunction, based on Patho-physiological principles & arrive at the appropriate functional diagnosis.	PO1, PO2
802.2	Assess Cardiovascular and Respiratory system	PO1, PO2, PO3, PO5, PO7
802.3	Interpret radiological and biochemical investigations	PO2
802.4	Perform exercise tolerance tests like 6MWD, and other symptom limited tests.	PO1, PO2, PO3, PO5, PO7
802.5	Demonstrate techniques for increasing lung volume, decreasing work of breathing, and clearing secretions, maintain bronchial hygiene,	PO1, PO2, PO3
802.6	Demonstrate the skill of basic Cardiopulmonary resuscitation.	PO1, PO2, PO3, PO5, PO7
802.7	Demonstrate appropriate patient care in the Intensive care area, describe and maintain appropriate artificial ventilation, suctioning, positioning for bronchial hygiene, & continuous monitoring of the patient at the Intensive care area.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9
802.8	Demonstrate physiotherapeutic measures with appropriate clinical reasoning to improve general surgical & medical condition including physiotherapy for burns.	PO1, PO2, PO5, PO7
802.9	Select strategies for cure, care & prevention; adopt restorative & rehabilitative measures for maximum possible functional independence of a patient at home, work place & in community.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9

Topic Sr.No.	**Course Content**	**Hours of teaching/learning**	
		Theory	**Practical**
Must Know			
1	Assessment of Cardiovascular 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	Diagnosis of cardio respiratory dysfunction (ECG, PFT, serum enzymes, ABG,ABI)	3	3
5	Physiotherapy techniques to increase lung volume • 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 • Energy Conservation • Positioning • Breathing re-education – Breathing control techniques • Mechanical aids – IPPB, CPAP, BiPAP	2	3
7	Physiotherapy techniques to clear secretions • Hydration, Humidification & Nebulisation • 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	Obstructive, Restrictive & Mixed 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** • Assessment of the critically ill patients • Monitoring in the ICU • Physiotherapy in the ICU – Common conditions in the ICU – Head Injury, Pulmonary Edema, Multiple Organ Failure, Neuromuscular Disease, Poisoning, Aspiration, ARDS, Shock etc. • Dealing with Emergency situations in ICU • NICU / PICU treatment & rehabilitation	5	15
13	O_2 therapy and Mechanical Ventilation	3	3
14	Physiotherapy management for cardiac disorders	3	5
15	Physiotherapy for Cardiac Surgeries (including Critical Cardiac Care)	3	5
16	Cardiac Rehabilitation	1	3
17	Cardio-pulmonary resuscitation.	2	2
18	Physiotherapy intervention in the management of Medical and Surgical Oncology Cases	3	3
19	PT Management of Abdominal Surgeries	2	4
20	Prescription of home program & ergonomic advice & parent's education in case of paediatric cases with reference to energy cost	1	2
21	Assessment &PT Management following Peripheral vascular diseases.	2	4
22	Management of wounds and ulcers, Diabetes and its complications • Care of wounds, ulcers & scars -U.V.R and other electro therapeutics measures for healing of wounds, prevention of Hyper granulated Scars, Keloids • Electrotherapeutics measures for relief of pain during mobilization of scars tissues	2	4
23	**Burns:** PT management of burns, Post grafted management, Mobilization & Musculoskeletal restorative exercises following burns	2	2
24	Treatment of Lymphoedema	1	-
25	Physiotherapy in dermatology • U.V.R therapy in various skin conditions; Vitiligo; Hair loss; Pigmentation; Infected wounds ulcers.	2	4

	• Faradic foot bath for Hyperhydrosis • Care of anaesthetic hand and foot		
26	**Desirable to Know** • Cardiorespiratory changes associated with ageing & fitness program. • Familiarization with concept of Quality of life • Precautions with HIV	3	3
27	**Nice to Know** Outcome Measures in Cardiovascular & Pulmonary Conditions	1	1
28	**SCT / CLINICAL**		**96**
	Skill to palpate all pulses- rate, rhythm, volume & its discrepancy		
	Skill to assess B.P. at various sites & its Physiological variation, & to assess Ankle- Brachial Index		
	Skill of exercise testing- 6,12 min walk &symptom limited		
	Interpretation of : ➢ treadmill & Ergo-cycle test findings ➢ ECG- I.H.D. & Blocks ➢ 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, A.B.G ➢ Chest X-ray ➢ P.F.T.-obstructive/ restrictive/reversibility ➢ R.P.E.-Borg`s scale ➢ Quality of life questionnaires		

Text Books

Sr.No.	Title
1	Cash's Textbook of Chest, Heart, and Vascular Disorders for Physiotherapists – Downie and Cash
2	Cash`s text book in General Medical & Surgical conditions for Physiotherapists - Cash
3	Principles and Practice of Cardiopulmonary Physical Therapy - Donna Frownfelter
4	The Brompton Hospital guide to chest physiotherapy - Gaskell, Webber and Brompton Hospital
5	Physical Rehabilitation – Susan B O'Sullivan

Reference Books

Sr.No.	Title
1	Physiotherapy for Respiratory and Cardiac Problems – Pryor and Webber
2	Exercise & the Heart – Wenger
3	Understanding ECG – P.J. Mehta
4	The ECG Made Easy - J. Hampton
5	Cardiopulmonary Physical Therapy – Scot Irwin
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 MCQs for 20marks, 20 minutes.
- Practical Examination: - 20 marks (Spots/OSCE/ OSPE//Mini CEX/ simulated cases/clinical cases)

Preliminary Examination / University (Final) Examination

- **Written Examination (80 marks)**

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

- **Practical Examination (80 marks)**

Sr.No.		**Marks**
1.	Long case : History-10marks, Evaluation-10 marks, Treatment Plan on Patient-20marks	40
2.	Short case (Simulated)	20
3.	Five spots: 5 Spots based on X –ray, ABG, ECG, PFT, RPE/Bruce protocol 3 minutes, 3 marks for each spot	3x5=15
4.	Journal	5

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 - Physiotherapy in Sports Course Code:- PT 803A																	
Course Credit for "Choice Based - Physiotherapy in Sports"																	
Hours				**Hrs/Wk**				**Credits**				**Evaluation Pattern**					
												Written		Total	Practical		Total
Th	Pr	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	Tot	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

Course Outcomes		
CO No.	**At the end of the course, the learner should be able to:**	**Mapped Program Outcomes**
803A.1	Describe aerobic and anaerobic energy system and various adaptations the body experiences post exercise and detraining effects on body's various systems when exercises are stopped.	PO1
803A.2	Describe various Sports specific and Cross training.	PO1
803A.3	Conduct pre-participation examination, assessment, diagnosis and management of various musculoskeletal sports injuries.	PO1, PO2, PO3, PO5, PO6
803A.4	Describe common sports emergencies, their assessment and management.	PO1, PO2, PO4, PO5, PO6, PO9
803A.5	Assess Body composition using various tools.	PO1, PO2, PO3
803A.6	Demonstrate skill in applying therapeutic taping.	PO1, PO2, PO3
803A.7	Conduct on-field assessment and fitness testing on Athletes.	PO1, PO2, PO3, PO5, PO6, PO9
803A.8	Appropriately refer the subjects for further treatment.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9

Topic Sr.No.	**Course Content**	**Hours of teaching/learning**	
		Theory	**Practical**
Must Know			
1	Training the aerobic and anaerobic energy system	**2**	-
2	Physiological responses, changes & adaptations to various exercises - aerobic exercises & anaerobic exercises in Pulmonary, Cardiovascular, Neuromuscular system, Hormones	**2**	-
3	Detraining effects of cardiovascular, musculoskeletal and nervous system	**2**	-
4	Sports specific training and cross training.	**2**	-
5	**Musculoskeletal injuries** • Pre–participation examination • Causes & Mechanism of Sports Injuries, prevention of sports injuries to various structures. • Common acute, chronic and overuse injuries in various sports at: ➢ Shoulder girdle, Shoulder, Arm, Elbow, Forearm, Wrist & hand ➢ Pelvis, hip, thigh, knee, leg, ankle & foot ➢ Spine, Head ➢ Thoracic cage and abdomen	**10** 2 2 4	 - - -

	• Peripheral nerve injuries, injuries to muscles, ligament, tendon, bone, synovial joint structure(with physiological response to injury)	2	
6	**Cardiopulmonary section** • 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.	**6**	-
7	**Desirable to know**	**5**	-
	Body composition • Different Body composition • Various methods to estimate body composition : water displacement method, under water weighing method, skinfold method, surface anthropometry, bioelectrical impedence analysis, ultrasound assessment of fat, arm X-ray assessment of fat, CT assessment of fat • Electrotherapy in sports injuries	3 2	
8	**Nice to know** **Various Body measurements**- Gross size and mass, length and height measurement, circumference of body parts, Skinfold thickness measurements	3	-
9	**PRACTICALS**		**32**
	a. On field Assessment		2
	b. Evaluation of Physical Fitness: Assessment of strength, power, endurance (muscular & cardiac),VO2max, flexibility, reaction time and pulmonary function.		8
	c. Assessment of lower limb complex: Pelvis, hip, thigh, knee, leg, ankle and foot		10
	d. Assessment of upper limb complex: Shoulder girdle, shoulder, arm, elbow, forearm, wrist and hand		10
	e. Taping		2
10	SCT		**96**

Text Books

Sr.No.	Title
1	Clinical Sports Medicine – Brukner and Khan
2	Pocketbook of Taping Techniques – Rose mc Donald
3	Textbook of Applied Measurement, Evaluation & Sports Selection – Devander K Kansal
4	Essentials of Exercise Physiology – Mc Ardle, Katch and Katch

Reference Books

Sr.No.	Title
1	Sport Physical Therapy – Bernhardt Donna
2	Sports Injuries: Causes, Diagnosis, Treatment and Prevention – Bird, Black and Newton
3	Functional Movement in Orthopaedic and Sports Physical Therapy: Evaluation, Treatment and Outcomes – Brownstein and Bronner
4	Rehabilitation Techniques in Sports Medicine – William Prentice

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 MCQs for 10 marks, 20 minutes.
- Practical Examination: - 10 marks (Spots/OSCE/ OSPE//Mini CEX/ simulated cases/clinical cases)

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

1	Q.1. MCQs (10 Minutes)	1x10=10 marks
2	Q.2. Very Short answer questions (Answer any 5 out of 6) Q.3. Short answer questions (Answer any 2 out of 3) Q.4. 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	25
2.	**Short Case**: Simulated	10
3	**Journal**	5

SUPERVISED CLINICAL TRAINING:

Journal=5 marks

All the SCT works should be properly documented with **5 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 - Physiotherapy in Hand Conditions Course Code:- PT 803B																	
Course Credit for "Choice Based - Physiotherapy in Hand Conditions"																	
Hours				**Hrs/Wk**				**Credits**				**Evaluation Pattern**					
												Written		Total	Practical		Total
Th	Pr	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	Tot	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

Course Outcomes		
CO No.	**At the end of the course, the learner should be able to:**	**Mapped Program Outcomes**
803B.1	Identify key assessment and treatment tenets of hand therapy practice with particular focus on clinical reasoning, case discussion and evidence-based practice.	PO1, PO2, PO3, PO4, PO5, PO9
803B.2	Differentiate between biomechanical aspects of normal and abnormal motion as influenced by the musculoskeletal system of the upper extremity.	PO1, PO2
803B.3	Describe the psychosocial factors, environmental factors & individual factors affecting the performance.	PO1, PO2, PO3, PO5
803B.4	Identify appropriate plans of care for a variety of diagnoses including but not limited to fractures, tendon injuries, arthritic conditions, peripheral nerve injuries and complex multi system injuries within the upper extremity.	PO1, PO2, PO3, PO5, PO6
803B.5	Identify and make cost-effective appropriate orthosis for a variety of diagnoses within the upper extremity.	PO1, PO2, PO3, PO4, PO5, PO6
803B.6	Design exercise protocols for patients in local language.	PO2, PO3, PO5, PO6

Topic Sr.No.	**Course Content**	**Hours of teaching/learning**	
		Theory	**Practical**
Must Know			
1	General upper extremity examination	1	1
2	Functional Evaluation of hand	2	1
3	PT Management of Flexor tendon injuries	2	2
4	PT Management of Extensor tendon injuries	2	2
5	PT Management of Burnt hand & its deformities	2	2
6	PT Management of Arthritic hand & its deformities	2	2
7	PT Management of Crush injuries	2	2
8	PT Management of Peripheral Nerve Injuries-median, radial, ulnar	2	2
9	PT Management of Entrapment neuropathies- Cubital tunnel, carpal tunnel, supinator tunnel, pronator teres syndrome	2	2
10	PT Management of Brachial Plexus injury	2	2
11	PT Management of Fractures of phalanges	1	2
12	PT Management of Complex Regional Pain Syndrome	1	2
13	PT Management of Upper limb Orthosis and training	2	2
14	Taping for wrist and hand conditions	1	2
Desirable to know			
15	Sensory & Motor examination of hand	2	2
16	Prosthesis of upper extremity	2	-
Nice to know			
17	Outcome measures for hand	2	2
18	Preparation of splints using POP, Orthoplast, thermoplastic	2	2
SCT			96

Text Books

Sr.No	Title
1	The Hand: Fundamental of Therapy – Judith Boscheinen Morrin & W. Bruce Conolly
2	Hand Pain and Impairment – Rene Cailliet.

Reference Books

Sr.No	Title
1	Rehabilitation of the Hand - James Hunter
2	Hand and Upper Extremity Rehabilitation : A Practical guide – Burke, Higgins, Saunders, McClinton and Valdata
3	Concepts of hand rehabilitation – Stanley and Tribuzi

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 MCQs for 10 marks, 20 minutes.
- Practical Examination: - 10 marks (Spots/OSCE/ OSPE//Mini CEX/ simulated cases/clinical cases)
-

Preliminary Examination / University (Final) Examination

- **Written Examination (40 marks)**

1	Q.1. MCQs (10 Minutes)	1x10=10 marks
2	Q.2. Very Short answer questions (Answer any 5 out of 6) Q.3. Short answer questions (Answer any 2 out of 3) Q.4. 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	25
2.	**Short Case**: Simulated	10
3	**Journal**	5

SUPERVISED CLINICAL TRAINING:

Journal=5 marks

All the SCT works should be properly documented with **5 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 (1092 Hrs across 26 WEEKS)

Course Code	Course (Subject)	Hours				Hrs/Wk				Credits				Evaluation Pattern					
														Written		Total	Practical		Total
		Th	Pr	SCT	Tot	Lec	Pr	SCT	Tot	Lec	Pr	SCT	Tot	IA	Final exam	Final exam	IA	Final College exam	Final College exam
PT-901	Compulsory Rotatory Internship	-	-	858	858	-	-	33	33	-	-	11	11	-	-	-	50	-	50
PT-902	Internship Project	-	-	234	234	-	-	9	9	-	-	3	3	-	-	-	20	30	50
	Total	**0**	**0**	**1092**	**1092**	**0**	**0**	**42**	**42**	**0**	**0**	**14**	**14**	**0**	**0**	**0**	**70**	**30**	**100**

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

Course Credit for Compulsory Rotatory Internship

Hours				Hrs/Wk				Credits				Evaluation Pattern					
												Written		Total	Practical		Total
Th	Pr	Clinic	Tot	Lec	Pr	Clinics	Tot	Lec	Pr	Clinics	Tot	IA	Final exam	Final exam	IA	Final exam	Final 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					
												Written		Total	Practical		Total
Th	Pr	Clinic	Tot	Lec	Pr	Clinics	Tot	Lec	Pr	Clinics	Tot	IA	Final exam	Final exam	IA	Final College 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** (5 cases each) i. Musculoskeletal sciences ii. Neurosciences iii. Cardiorespiratory& general conditions iv. Community Based Rehabilitation	5X4=20
2	**Journal clubs** (2)	5X2=10
3	**Summative evaluation** i. Attitude towards patients and Colleagues/ Character ii. Urge for learning/Initiative iii. Accountability/ Responsibility/ Punctuality iv. Administrative Ability (Records/ Maintenance of equipments)	5x4=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.