DAYANANDA SAGAR UNIVERSITY

Shavige Malleshwara Hills, Kumaraswamy Layout,
Bengaluru - 560078, Karnataka.

SCHOOL OF HEALTH SCIENCES

COLLEGE OF PHYSIOTHERAPY

REGULATIONS
FOR
BACHELOR OF PHYSIOTHERAPY (BPT) – 2017
(ANNUAL SCHEME)

(With Effect from 2017-18)

GOVERNING REGULATIONS FOR
BACHELOR OF PHYSIOTHERAPY PROGRAM (B.P.T) - 2017

PREAMBLE

School of Health Sciences under Dayananda Sagar University provides Science and Technology based Education leading to develop highly skilled Physiotherapists suitable for Hospitals, Specialists Clinics, Academics Institutions, and Medical Research Organizations. The curriculum focuses on course work integrated with skill development as a part of training. It equally helps in inculcating the scientific temper for the lifelong processes of learning.

At the Under Graduate level, a candidate goes through the foundation courses in Basic Medical Sciences, Humanities, Medical, Surgical, Super speciality, Research and Physiotherapy foundation courses viz., Electro Therapy, Exercise Therapy and Movement Sciences.

DEFINATIONS OF KEY WORDS

(i) **Academic Year:** Each academic year consists of Forty Eight weeks duration.
(ii) **Course:** Usually referred to as a subject. A course may consist of any of Lecture/Tutorials/Laboratory/Practical/Seminar/CasePresentations/Clinical Teaching and Training/Project.
(iii) **Main Course:** A Course for which university examination is conducted.
(iv) **Subsidiary Course:** A course for which university exam is not conducted but the candidates' performance is assessed by continuous and internal evaluation.
(v) **First Attempt:** If a candidate has completed all formalities of academic requirement in a term and become eligible to attend the examinations and attend the entire end year examinations, such attempt shall be considered as first attempt.
(vi) **Programme:** An educational activity leading to award of a Degree or Certificate.
(vii) **Transcript:** Based on the marks secured, a marks sheet shall be issued after every year to the candidate registered. A transcript comprises of the consolidation of marks sheet of all the four years along with relevant program details.
(viii) **Regular batch & odd batch** Candidates who fulfil the eligibility criteria for the promotion to the next higher year shall continue in the regular batch whereas those who do not fulfil the eligibility criteria for promotion to the next higher year shall lose a period of six months and will fall into the odd batch.
(ix) **Detention –** withholding of Candidates to take up the University year end Examinations for lack of attendance/internal assessment marks**.**

RULES & REGULATIONS

UG1 The BPT programme offered by the DSU shall be governed by the BPT Rules and Regulations.

UG2 The BPT Rules and Regulations shall be applicable to any new discipline(s) that may be introduced in future.

UG3 A candidate becomes eligible for the award of the BPT degree after fulfilling all the academic requirements as prescribed by the BPT Rules and Regulations.

UG4 ELIGIBILITY FOR ADMISSION

UG4.1 Admission to First Year Bachelor of Physiotherapy shall be open to candidates who have passed the second year pre-University or XII standard or equivalent examination recognised by the University.

UG4.2 The candidate shall have studied and passed English as one of the courses and secured not less than forty percent (40%) aggregate marks in optional subjects Physics, Chemistry and Biology. Eligibility shall be 35% in case of candidates belonging to SC/ST and OBC candidates from Karnataka.

UG4.3 Candidates who have completed two year Vocational Physiotherapy with English as one of the courses and secured not less than forty percent (40%) aggregate marks in optional subjects Physics, Chemistry and Biology.

UG4.4 A candidate seeking admission to First year Bachelor of Physiotherapy course should have completed 17 years of age, as on 31st December of the year of admission.

UG4.5 Admission to III year Bachelor of Physiotherapy under Lateral entry shall be open to the candidates who have passed diploma in Physiotherapy or equivalent qualification as recognised by the University and secured not less than 40% marks in aggregate.

UG4.6 Every candidate shall furnish a certificate of Medical Fitness that the Candidate is physically fit to undergo Physiotherapy course.

UG5 ACADEMIC SESSION

UG5.1 Each academic year consists of Forty Eight weeks duration. The course shall commence from the month of October of that academic year.

UG5.2 The Board of Management approved schedule of academic activities for a year, inclusive of dates for registration, examinations, vacation breaks etc, shall be laid down in the Academic Calendar for the session.

UG6 COURSE STRUCTURE

UG6.1 Medium of instruction, examination and project reports will be in English except in in case of any language subsidiary courses.

UG6.2 In order to qualify for a BPT degree of the DSU, a candidate is required to complete the requirements as prescribed in the scheme/curriculum for a particular programme.

UG6.3 The course work requirements may be broadly divided into following four main groups of subjects:

(i) Humanities and Social Sciences
(ii) Basic Sciences
(iii) Clinical subjects
(iv) Physiotherapy subjects

UG6.4 The B.P.T Programme will have a curriculum and syllabi for the courses approved by the Board of Management. Board of Studies will discuss and recommend the syllabi of all the under graduate courses offered by the department from time to time before sending the same to the Academic Council. Academic Council will consider the proposals from the Board of Studies and make recommendations to the Board of Management for consideration and approval. For all approved courses, the copyright will be with DSU.

UG6.5 Faculty Advisor/Mentor : To help the candidates in planning their courses of study and getting general advice on the academic programme, the concerned department will assign a Faculty Advisor/Mentor for each candidate.

UG7 REGISTRATION

UG7.1 Every candidate is required to register for approved courses through the assigned Faculty Advisor/mentor at the commencement of each year on the day fixed for such registration and notified in the Academic Calendar. The Dean/Principal may cancel the registration of one or more courses if they are found to violate some rules or if there are restrictions imposed due to disciplinary reasons.

UG7.2 Only those candidates shall be permitted to register who have:

(a) The academic eligibility to move to higher years
(b) Cleared all University, Hostel and Library dues and fines (if any) of the previous years
(c) Paid all required advance payments of University and Hostel dues for the current year
(d) Not been debarred from registering on any specific ground.

UG8 EXAMINATION: ASSESSMENT CRITERIA & ELIGIBILITY

Every student is assessed for eligibility to higher year through Continuous Internal Assessment (CIA) , Internal Assessment Tests (IA) , Viva Voce (VV) and Annual Examination (AE) as prescribed.

UG8.1 The Continuous Internal Assessment (CIA) and Internal Assessment Tests (IA) to be normally conducted all through the academic year in both Theory and Practical courses individually.

UG8.2 The Viva Voce (VV) for the Theory with associated Practical will be conducted during Practical examination , at the end of the year.

UG8.3 The Annual Examination (AE), to be conducted at the end of the academic year. This shall include a written examination for theory courses and practical examination with built-in oral part for practical courses.

UG8.4 The weightage of marks for CIA , IA , VV and AE is as given in Table 1.

Table 1: Weightage of Marks

SL.No	Courses with Maximum Marks	CIA Maximum Marks	IA Maximum Marks	VV Maximum Marks	AE Maximum Marks
1	150	10	10	30	100
2	100	10	10	--	80
3	50	5	5	--	40

UG8.4.1 A student's performance in a course shall be judged by taking into account the results of CIA , IA, VV and AE together.

UG 8.5 . ATTENDANCE ELIGIBILITY

UG8.5.1 Candidates are required to attend all the classes (Lectures, Tutorials, Practical, etc.) for which they have been registered.

UG8.5.2 The candidate shall not be allowed to appear for the Annual Examination if his/her attendance falls below 85% in each course and shall be considered as detained and will not be allowed to appear for Annual Examination for that course.

UG8.5.3 A provision for condonation of 10% of the attendance by the Vice- Chancellor on the specific recommendation of the Principal and Dean, showing reasonable cause such as:

(a) Any medical emergencies / illness where the candidate requires rest for the specified number of days certified by a Government Doctor only / any death in the family (near and dear ones).

(b) If the student represents the University in Sports/ Cultural activities/extra-curricular activities/Co-curricular activities.

(c) If a student presents a Paper in National/ International Conferences or attends any recognized Workshops/Seminars.

UG8.5.4. If the period of leave is for a short duration (less than two weeks), prior application for leave shall have to be submitted to the Principal of the college stating fully the reasons for the leave requested for along with supporting document(s). Such leave will be granted by the Principal of the college. However the student shall comply with 8.5.2 and 8.5.3. of regulations .

UG8.5.5 If the period of absence is likely to exceed two weeks, a prior application for grant of leave will have to be submitted through the Principal of the college to the Dean with supporting documents in each case. The decision to grant leave shall be taken by the Dean on the recommendation of the Principal of the college.However the student shall comply with 8.5.2 and 8.5.3. of regulations .

UG8.5.6. It shall be the responsibility of the candidate to intimate the concerned course instructor(s) regarding his/her absence before availing the leave.

UG8.5.7. In exceptional circumstances, on the recommendations of the Principal of the college and Dean with supporting documents, the Vice Chancellor may condone/relax any of the above requirements to an extent of 10%.

UG8.6 CONTINOUS INTERNAL ASSESSMENT (CIA),INTERNAL ASSESSMENT (IA) & VIVA VOCE (VV)

UG8.6.1 Candidate shall secure minimum of 50% of marks in aggregate in Continuous Internal Assessment (CIA) and Internal Assessment (IA) put together to be eligible to appear for the Annual examination or else considered as detained and should re register for the course to get eligibility.

UG8.6.2 There shall be a provision for improvement if the candidate wishes to improve his , aggregate in CIA and IA put together ,in a particular course with necessary approval from the authorities concerned. This provision is subjected to satisfying the Promotional Criteria as stated regulation clause UG 10. By opting for improvement in a particular course , all his/her previous credentials pertaining to the particular course will become null and void.

UG8.6.3 The Continuous Internal Assessment (CIA) will be carried out through Self-study Presentation/survey reports/quiz/surprise test/assignments/practical training/presentation in seminar and work shop.

UG8.6.4 Internal Assessment (IA) will be carried out throughout the academic year for a particular course as prescribed in the Scheme of the BPT Program.

UG8.6.4.1 Three tests will be conducted both in Theory and Practical Courses.

UG 8.6.4.2 The average of best Two, out of three tests conducted for each course shall be the Internal Assessment marks in that course.

UG8.6.4.3 Theory and Practical's of a particular course are considered as individual course for the purpose of Internal Assessment.

UG8.6.4.4 Candidates who have missed the Internal Assessment Test on valid reasons can take-up Internal Assessment Test with prior approval of the Principal.

UG8.6.4.5 Permission to take an Internal Assessment Test will be given under exceptional circumstances such as participating in the University activity, admission to a hospital due to illness and a calamity in the family at the time of Internal Assessment Test.

UG8.6.5 The Viva Voce (VV) for the Theory with associated Practical will be conducted during Practical examination, at the end of the year

UG9 EVALUATION OF PERFORMANCE

UG9.1 Theory and Practical of a particular course are considered as individual courses for the purpose of pass criteria.

UG9.2 If the candidate fails either in Theory or its Associated Practical, the candidate shall take the re-examination in both Theory and Practical.

UG9.3 A student's performance in a course shall be judged by taking into account the results of CIA , IA, VV and AE together

UG9.3.1 A student has to obtain and satisfy the following conditions to be declared as pass in Theory course:

(i) Minimum 50% of marks in CIA and IA put together
(ii) Minimum 40% of marks in AE
(iii) Minimum 50% of marks in aggregate considering CIA, IA,VV(if applicable) and AE put together

UG9.3.2 A student has to obtain and satisfy the following conditions to be declared as pass in Practical/Clinical Examination in a course:

(i) Minimum 50% of marks in CIA and IA put together
(ii) Minimum 40% of marks in AE
(iii) Minimum 50% of marks in aggregate considering CIA, IA and AE put together

UG 9.4 The results of performance of the candidates in the end examination shall be announced by the Controller of Examinations.

UG9.5 INTERNSHIP

UG9.5.1 The candidate should have to be declared passed in the university examinations in all courses from 1st to 4th year to commence internship.

UG9.5.2 The duration of internship shall be 6 months (26 weeks) inclusive of posting in rural setup/community based rehabilitation/clinic/hospital setup in a teaching hospital.

UG9.5.3 During internship the candidate will have to work in shifts (including night shifts), on holidays, Sundays or as per requirements.

UG9.5.4 During the internship candidate shall have to work a minimum of 8 hours per day.

UG9.5.5 The Internship shall be on rotation basis for one month duration in each posting and shall cover clinical branches concerned with Physiotherapy such as Orthopedics, Cardiovascular and Respiratory including ICU, Neurology and Neurosurgery, Community centres , Paediatrics, General Medicine, Surgery, Obstetrics and Gynaecology both inpatient and outpatient services. There shall be a provision for externship for not more than three months in exceptional circumstances with prior approval of the Principal/ Head of the Program. In such cases, the candidates shall pursue their externship only in MCI recognised teaching hospitals/ DNB recognised teaching hospitals subjected to receiving no objection certificate from the university as well as the hospital.

UG9.5.6 Successful completing – the student must maintain a logbook. On completion of each posting, the same will have to be certified by the faculty in change of the posting for both attendance as well as work done. On completion of all six postings, the duty complete book will be submitted to the Dean/Head of program to be considered as having successfully completed the internship program

UG9.6 Declaration of Class

UG9.6.1 A candidate shall be awarded the class based upon his/her performance in the final year.

UG9.6.2 A candidate shall be awarded the class based on the marks obtained in the first attempt.

UG9.6.3 A candidate securing 75% of marks or more of grand total marks prescribed will be declared to have passed the examination in First Class with Distinction.

UG9.6.4 A candidate securing 65% of marks or more but less than 75% of grand total marks prescribed will be declared to have passed the examination in First Class.

UG9.6.5 A candidate securing 50% of marks or more but less than 65% of grand total marks prescribed will be declared to have passed the examination in Second Class.

UG10PROMOTION CRITERIA AND ENROLLMENTS TO HIGHER YEARS

UG10.1 During registration for the higher Years , the following promotional Criteria/conditions should be satisfied.

UG10.1.1 A candidate who is detained either due to shortage of attendance or not obtained minimum 50% marks putting CIA and IA together or failed in AE in the I Year can

carry any two of the main five courses and shall have to pass these courses before appearing to the II Year examinations.

UG10.1.2 A candidate who is detained either due to shortage of attendance or not obtained minimum 50% marks putting CIA and IA together or failed in AE in the II Year can carry any one of the main four courses and shall have to pass the course before appearing to the III Year examination.

UG10.1.3 A candidate who is detained either due to shortage of attendance or not obtained minimum 50% marks putting CIA and IA together or failed in AE in the III Year can carry any two of the main five courses and shall have to pass these courses before appearing to the final Year examination.

UG10.2 A candidate should clear all courses to be eligible for internship.

UG10.3 Candidates obtaining less than 50% of the total marks in any course in any Year may clear it in the subsequent examination when it is offered.

UG10.4 Candidates who have been detained because of shortage of attendance/ not obtained minimum 50% marks putting CIA and IA together shall have to make up by re registering for the courses as and when offered to be eligible to appear for the subsequent university examination.

UG10.5 Candidates who have either failed or detained and have not attained eligibility for admission to the subsequent year shall appear for the supplementary examination whenever it is offered with prior approval of the chairman of the department, after fulfilling the required criteria. Such candidates who gets a pass in the supplementary examination and attains eligibility shall be admitted in the subsequent year under the 'Odd Batch.'

UG11 DURATION OF THE PROGRAMME

UG11.1 Normally a candidate should complete all the requirements for undergraduate programme in Four and a half years. However, academically weaker candidates who do not fulfil some of the requirements in their first attempt and have to repeat them in subsequent years may be permitted up to Nine consecutive years (from the first year of registration) to complete all the requirements of the degree.

UG11.2 Normally a candidate admitted under Lateral Entry should complete all the requirements for undergraduate programme in Two years Six months. However, academically weaker candidates who do not fulfil some of the requirements in their first attempt and have to repeat them in subsequent examinations and may be permitted up to Five consecutive years (from the time of registration to BPT programme) to complete all the requirements of the degree

UG12 TERMINATION FROM THE PROGRAMME

UG12.1 A candidate may also be compelled to leave the Program in the University on disciplinary grounds.

UG12.2 On having been found to have produced false documents or having made false declaration at the time of seeking admission.

UG12.3 On having been found to be pursuing regular studies and/or correspondence courses (leading to degree or diploma) in any other college, university or an educational institution simultaneously.

UG12.4 On having been found to be concurrently employed and performing duty or carrying out business in contravention to academic schedules of the University and without seeking approval from the University.

UG13 TEMPORARY WITHDRAWAL FROM THE UNIVERSITY

UG13.1 Candidate who has been admitted to BPT programme of the University may be permitted to withdraw temporarily from the University on the grounds of prolonged illness or grave calamity in the family for a period of one academic Year, provided:

UG13.1.1 He/she applies to the University within at least 6 weeks of the commencement of the Term or from the date he last attended his/her classes whichever is later, stating fully the reasons for such withdrawal together with supporting documents and endorsement of his/her guardian.

UG13.1.2 The University is satisfied that, counting the period of withdrawal, the Candidate is likely to complete his/her requirements of the BPT Degree within the time limits specified in Clause UG11.1 and UG11.2

UG13.1.3 There are no outstanding dues or demands in the University/Hostel/ Department/ Library.

UG13.1.4 Normally, a candidate will be permitted only one such temporary withdrawal during his/her tenure as a candidate of the undergraduate programme.

UG14 TRANSFER OF CANDIDATES

UG14.1 Transfer of candidates from higher education institutions outside University shall be considered at the beginning of academic year but subject to confirmation of equivalence.

UG14.2 The candidates shall apply for equivalence with the No-objection for admission to DSU from the University where they are perusing their study.

UG14.3 The candidates must have passed in all courses in the earlier years prior to transfer.

UG15 ELIGIBILITY FOR THE AWARD OF BPT DEGREE

A candidate shall be declared to be eligible for the award of BPT degree if he/she has:

UG15.1 Completed all the requirements for the degree at the end of the programme.

UG15.2 Satisfactorily completed all the mandatory audit courses.

UG15.3 No dues to the University, Department or Hostels.

UG15.4 No disciplinary action pending against him/her.

UG15.5 Should have completed six months of compulsory rotating internship

UG 16 AWARD OF DEGREE

The award of BPT degree must be recommended by the Academic Council and approved by the Board of Management and Board of Governors of the DSU.

UG17 CONDUCT AND DISCIPLINE

UG17.1 Candidates shall conduct themselves within and outside the precincts of the University in a manner befitting the candidates of an institution of national importance. The University has a separate ordinance Code and Conduct of Candidates which is applicable to all candidates of the University.

UG18 REPEAL AND SAVINGS

Notwithstanding anything contained in these Regulations, the provisions of any guidelines, orders, rules or regulations in force at the University shall be inapplicable to the extent of their inconsistency with these Regulations. The Academic Council , Board of Management and Board of Governors of the DSU of University may revise, amend or change the regulations from time to time.

UG19 INTERPRETATION

Any questions as to the interpretation of these Regulations shall be decided by the University, whose decision shall be final. The University shall have the powers to issue clarifications to remove any doubt, difficulty or anomaly which may arise during the implementation of the provisions of these Regulations.

DAYANANDA SAGAR UNIVERSITY

Shavige Malleshwara Hills, Kumaraswamy Layout,

Bengaluru - 560078, Karnataka.

SCHOOL OF HEALTH

SCIENCES COLLEGE OF

PHYSIOTHERAPY

SCHEME &
SYLLABUS FOR
BACHELOR OF PHYSIOTHERAPY (BPT) – 2017 (ANNUAL SCHEME)

(1st to 4th Year) (With

Effect from 2017-18)

YEAR – I

SL.	COURSE CODE	COURSE TITLE	M / S	NO. OF TEACHING HOURS			SCHEME OF EVALUATION							TOTAL
							THEORY				PRACTICAL			
				D	CL	P	W	VV	CA	IA	P	CA	IA	
1	17PT101	HUMAN ANATOMY	M	04	--	--	100	30	10	10	--	--	--	150
2	17PT102	HUMAN PHYSIOLOGY	M	05	--	--	100	30	10	10	--	--	--	150
3	17PT103	BIOCHEMISTRY	M	02	--	--	80	--	10	10	--	--	--	100
4	17PT104	KINESIOLOGY	M	04	--	--	100	30	10	10	--	--	--	150
5	17PT105	PSYCHOLOGY (SEC- A)	M	02	--	--	40	--	05	05	--	--	--	50
	17PT106	SOCIOLOGY (SEC – B)	M	02	--	--	40	--	05	05	--	--	--	50
6	17PT171	HUMAN ANATOMY	M	--	--	4	--	--	--	--	40	05	05	50
7	17PT172	HUMAN PHYSIOLOGY	M	--	--	2	--	--	--	--	40	05	05	50
8	17PT173	KINESIOLOGY	M	--	--	2	--	--	--	--	40	05	05	50
GRAND TOTAL				**19**	--	**8**	**460**	**90**	**50**	**50**	**120**	**15**	**15**	**800**
9	17PT191	BASIC NURSING / FIRST AID & CPR	S	02	--	--	40	--	10	--	--	--	--	50
10	17PT192	ENGLISH	S	02	--	--	40	--	10	--	--	--	--	50
11	17PT193	KANNADA	S	01	--	--	40	--	10	--	--	--	--	50
12	17PT194	ORIENTATION TO PHYSIOTHERAPY	S	01	--	--	40	--	10	--	--	--	--	50
13	17PT195	INDIAN CULTURE & HERITAGE	S	01	--	--	40	--	10	--	--	--	--	50
GRAND TOTAL				**07**	--	--	--	--	--	--	--	--	--	--
TOTAL NUMBER OF HOURS/WEEK				**34**	--	--	--	--	--	--	--	--	--	--

Note: M- Main Course, S – Subsidiary Course , D – Didactic, CL – Clinical, P – Practical, W – Written, VV – Viva Voce, CA – Continuous Assessment, IA – Internal Assessment

YEAR – II

SL. NO	COURSE CODE	COURSE TITLE	M / S	NO. OF TEACHING HOURS			SCHEME OF EVALUATION							TOTAL
							THEORY				PRACTICAL			
				D	CL	P	W	VV	CA	IA	P	CA	IA	
1	17PT201	PATHOLOGY (SECTION A)	M	02	--	--	40	--	05	05	--	--	--	50
	17PT202	MICROBIOLOGY (SECTION B)	M	02	--	--	40	--	05	05	--	--	--	50
2	17PT203	PHARMACOLOGY	M	02	--	--	80	--	10	10	--	--	--	100
3	17PT204	EXERCISE THERAPY	M	04	--	--	100	30	10	10	--	--	--	150
4	17PT205	ELECTRO THERAPY	M	04	--	--	100	30	10	10	--	--	--	150
5	17PT271	EXERCISE THERAPY	M	--	--	06	--	--	--	--	40	05	05	50
6	17PT272	ELECTRO THERAPY	M	--	--	06	--	--	--	--	40	05	05	50
GRAND TOTAL				**14**	--	**12**	**360**	**60**	**40**	**40**	**80**	**10**	**10**	**600**
7	17PT291	PERSONALITY DEVELOPMENT & SOFT SKILLS & COMMUNICATION	S	02	--	--	40	--	10	--	--	--	--	50
8	17PT292	COMPUTER APPLICATION & ANIMATION	S	02	--	--	40	--	10	--	--	--	--	50
9	17PT293	PROFESSIONAL CONDUCT & ETHICS/CLINICAL OBSERVATION POSTING	S	02	--	--	40	--	10	--	--	--	--	50
10	17PT294	CONSTITUTION OF INDIA	S	01	--	--	40	--	10	--	--	--	--	50
11	17PT295	ENVIRONMENTAL SCIENCE	S	01	--	--	40	--	10	--	--	--	--	50
GRAND TOTAL				**08**	--	--	--	--	--	--	--	--	--	--
TOTAL NUMBER OF HOURS/WEEK				**34**	--	--	--	--	--	--	--	--	--	--

Note: M- Main Course, S – Subsidiary Course , D – Didactic, CL – Clinical, P – Practical, W – Written, VV – Viva Voce, CA – Continuous Assessment, IA – Internal Assessment

YEAR – III

SL.	COURSE CODE	COURSE TITLE	M/S	NO. OF TEACHING HOURS			SCHEME OF EVALUATION							TOTAL
							THEORY				PRACTICAL			
				D	CL	P	W	VV	CA	IA	P	CA	IA	
1	17PT301	GENERAL MEDICINE	M	02	--	--	80	--	10	10	--	--	--	100
2	17PT302	GENERAL SURGERY	M	02	--	--	80	--	10	10	--	--	--	100
3	17PT303	ORTHOPEDIC & TRAUMATOLOGY	M	02	--	--	80	--	10	10	--	--	--	100
4	17PT304	ORTHOPEDICS & SPORTS PHYSIOTHERAPY	M	02	--	--	100	30	10	10	--	--	--	150
5	17PT305	CARDIO RESPIRATORY & GENERAL PHYSIOTHERAPY	M	02	--	--	100	30	10	10	--	--	--	150
6	17PT371	ORTHOPEDICS & SPORTS PHYSIOTHERAPY	M	--	--	02	--	--	--	--	40	05	05	50
7	17PT372	CARDIO RESPIRATORY & GENERAL PHYSIOTHERAPY	M	--	--	02	--	--	--	--	40	05	05	50
8	17PT373	SUPERVISED CLINICAL TEACHING	M	--	20	--	--	--	--	--	--	--	--	--
GRAND TOTAL				**10**	**20**	**04**	**440**	**60**	**50**	**50**	**80**	**10**	**10**	**700**
TOTAL NUMBER OF HOURS/WEEK				**34**	--	--	--	--	--	--	--	--	--	--

Note: M- Main Course, S – Subsidiary Course , D – Didactic, CL – Clinical, P – Practical, W – Written, VV – Viva Voce, CA – Continuous Assessment, IA – Internal Assessment

YEAR – IV (BPT)

SL	COURSE CODE	COURSE TITLE	M/S	NO. OF TEACHING HOURS			SCHEME OF EVALUATION							TOTAL
							THEORY				PRACTICAL			
				D	CL	P	W	VV	CA	IA	P	CA	IA	
1	17PT401	NEUROLOGY & NEUROSURGERY	M	02	--	--	80	--	10	10	--	--	--	100
2	17PT402	COMMUNITY MEDICINE	M	02	--	--	80	--	10	10	--	--	--	100
3	17PT403	NEURO – PHYSIOTHERAPY	M	02	01	--	100	30	10	10	--	--	--	150
4	17PT404	COMMUNITY BASED REHABILITATION	M	02	01	--	100	30	10	10	--	--	--	150
5	17PT405	RESEARCH METHODOLOGY & BIOSTATISTICS	M	02	--	--	80	--	10	10	--	--	--	100
6	17PT471	NEURO PHYSIOTHERAPY	M	--	--	02	--	--	--	--	40	05	05	50
7	17PT472	COMMUNITY BASED PHYSIOTHERAPY	M	--	--	02	--	--	--	--	40	05	05	50
8	17PT473	SUPERVISED CLINICAL TRAINING	M	--	18	--	--	--	--	--	--	--	--	--
9	17PT491	PROJECT	S	01	--	--	--	--	--	--	--	--	--	--
GRAND TOTAL				**11**	**20**	**04**	**440**	**60**	**50**	**50**	**80**	**10**	**10**	**700**
TOTAL NUMBER OF HOURS/WEEK				**35**	--	--	--	--	--	--	--	--	--	--

YEAR : I YEAR
COURSE CODE : 17PT101
TITLE OF THE COURSE : HUMAN ANATOMY

COURSE OBJECTIVES

THE STUDY OF ANATOMY WILL INCLUDE IDENTIFICATION OF ALL GROSS ANATOMICAL STRUCTURES. PARTICULAR EMPHASIS WILL BE PLACED ON DESCRIPTION OF BONES, JOINTS, MUSCLES, BRAIN, CARDIO-PULMONARY AND NERVOUS SYSTEMS AS THESE ARE RELATED TO THE APPLICATION OF PHYSIOTHERAPY PATIENTS.

COURSE OUTCOMES

THE EXPECTED OUTCOMES OF THIS COURSE IS THAT AFTER THE PRESCRIBED HOURS OF LECTURES, DEMONSTRATIONS AND PRACTICALS THE STUDENT WILL HAVE IN DEPTH KNOWLEDGE OF HUMAN ANATOMY AND WILL BE ABLE TO IDENTIFY BONES, JOINTS, MUSCLES, BRAIN, CARDIO-PULMONARY AND NERVOUS SYSTEMS AS NEEDED FOR THE STUDY AND PRACTICE IN PHYSIOTHERAPY.

UNIT -1 (36 hours)

1. **Musculoskeletal Anatomy - (All the topics to be taught in detail) 06HRS**

a) Anatomical positions of body, axes, planes, common anatomical terminologies (Groove, tuberosity, trochanters etc.)
b) Connective tissue classification.
c) Bones- Composition & functions, classification and types according to morphology and development.
d) Joints-definition-classification, structure of fibrous, cartilaginous joints, blood supply and nerve supply of joints.
e) Muscles – origin, insertion, nerve supply and actions

2. **Upper Extremity: 15HRS**

a) Osteology: Clavicles, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, Phalanges.
b) Soft parts: Breast, pectoral region, axilla, front of arm, back of arm, cubital fossa, front of fore arm, back of fore arm, palm, dorsum of hand, muscles, nerves, blood vessels and lymphatic drainage of upper extremity.

c) Joints: Shoulder girdle, shoulder joint, elbow joints, radio ulnar joint, wrist joint and joints of the hand.
d) Arches of hand, skin of the palm and dorsum of hand.

3. Histology: **05HRS**

General Histology, study of the basic tissues of the body; Microscope, Cell, Epithelium, Connective Tissue, Cartilage, Bone, Muscular tissue, Nerve Tissue – TS & LS, Circulatory system – large sized artery, medium sized artery, large sized vein, lymphoid tissue, Skin and its appendages.

4. Thorax:

a) Cardio – Vascular System **10HRS**

Mediastinum: Divisions and contents

Pericardium: Thoracic Wall: position, shape and parts of the heart; conducting System; blood Supply and nerve supply of the heart; names of the blood vessels and their distribution in the body – region wise.

b) Respiratory system:10HRS

Outline of respiratory passages

Pleura and lungs: position, parts, relations, blood supply and nerve supply; Lungs – emphasize on bronchopulmonary segments

Diaphragm: Origin, insertion, nerve supply and action, openings in the diaphragm.

Intercostal muscles and Accessory muscles of respiration: Origin, insertion, nerve supply and action.

UNIT II: **(54 hours)**

5. Lower Extremity: **20HRS**

a) Osteology: Hip bone, femur, tibia, fibula, patella, tarsals, metartarsals and phalanges.
b) Soft parts: Gluteal region, front and back of the thigh (Femoral triangle, femoral canal and inguinal canal), medial side of the thigh (Adductor canal), lateral side of the thigh, popliteal fossa, anterior and posterior compartment of leg, sole of the foot, lymphatic drainage of lower limb, venous drainage of the lower limb, arterial supply of the lower limb, arches of foot, skin of foot.
c) Joints: Hip Joint, Knee joint, Ankle joint, joints of the foot.

6. Trunk & Pelvis: 14HRS

a) Osteology: Cervical, thoracic, lumbar, sacral and coccygeal vertebrae and ribs.
b) Soft tissue: Pre and Para vertebral muscles, intercostal muscles, anterior abdominal wall muscles, Inter-vertebral disc.
c) Pelvic girdle and muscles of the pelvic floor

7. .Abdomen: 10HRS

Peritoneum: Parietal peritoneum, visceral peritoneum, folds of peritoneum, functions of peritoneum.

Large blood vessels of the gut: Location, size, shape, features, blood supply, nerve supply and functions of the following: Stomach, liver spleen, pancreas, kidney, urinary bladder, intestines, gall bladder.

8. Pelvis: 10HRS

Position, shape, size, features, blood supply and nerve supply of the male and female reproductive system.

UNIT III: 60HRS

9. Head and Neck: 13HRS

a) Osteology: Mandible and bones of the skull.
b) Soft parts: Muscles of the face and neck and their nerve and blood supply-extra ocular muscles, triangles of the neck, Gross anatomy of eyeball, nose, ears and tongue.

10. Neuro Anatomy: 30HRS

a) Organization of Central Nervous system - Spinal nerves and autonomic nervous system mainly pertaining to cardiovascular, respiratory and urogenital system
b) Cranial nerves
c) Peripheral nervous system
    i. Peripheral nerve
    ii. Neuromuscular junction
    iii. Sensory end organs
d) Central Nervous System
    a. Spinal segments and areas
    b. Brain Stem
    c. Cerebellum
    d. Inferior colliculi

e. Superior Colliculi
f. Thalamus
g. Hypothalamus
h. Corpus striatum
i. Cerebral hemisphere
j. Lateral ventricles
k. Blood supply to brain
l. Basal Ganglia
m. The pyramidal system
n. Pons, medulla, extra pyramidal systems
o. Anatomical integration

11. Embryology: 07HRS

a) Ovum, Spermatozoa, fertilization and formation of the Germ layers and their derivations.
b) Development of skin, Fascia, blood vessels, lymphatic.
c) Development of bones, axial and appendicular skeleton and muscles, Neural tube, brain vessels and spinal cord.
d) Development of brain and brain stem structures

12. Endocrine glands: 10HRS

Position, shape, size, function, blood supply and nerve supply of the following glands: Hypothalamus and pituitary gland, thyroid glands, parathyroid glands, Adrenal glands, pancreatic islets, ovaries and testes, pineal glands, thymus.

Recommended Text books:

1. B.D Chaurasia's Human Anatomy – Regional And Applied; Volume I, Volume II And Volume III.
2. SINGH [Inderbir], Text book of Anatomy with colour atlas: Introduction, Osteology, UpperExtremity, Lower Extremity. Vol I. P Brothers, New Delhi 1996.
3. SINGH [Inderbir], Text book of Anatomy with colour Atlas: Thorax and Abdomen. Vol II. JP Brothers, New Delhi 1996
4. SINGH [Inderbir], Text book of Anatomy with colour Atlas: Head and Neck Central Nervous System. Vol III. JP Brothers, New Delhi 1996
5. SINGH [Inderbir],Human Osteology. JP Brothers, New Delhi 1990,p191

Reference Books

1. SNELL [Richard S], Clinical Anatomy for Medical students : Ed. 5. Little Brown andCompany Boston. 1995, p898

2. MOORIE [Kieth L], Clinically Oriented Anatomy. Ed.3., Williams and Wilkins, Baltimore, 1992, p917
3. DATTA [A.K], Essentials of human Anatomy: Thorax and Abdomen Ed 2. Vol. I Current Book International, Culcutta 1994, p433,
4. DATTA [A.K], Essentials of human Anatomy: Head and Neck Ed 2. Vol. II, Current Book International, Culcutta 1995, p363,

YEAR : I YEAR
COURSE CODE : 17PT102
TITLE OF THE COURSE : HUMAN PHYSIOLOGY

COURSE OBJECTIVES

THIS COURSE HELPS THE STUDENT TO UNDERSTAND THE BASIS OF NORMAL HUMAN PHYSIOLOGY WITH SPECIAL EMPHASIS ON THE FUNCTIONING OF THE CARDIOVASCULAR, MUSCULOSKELETAL, NERVOUS SYSTEM AND RESPIRATORY SYSTEM.

COURSE OUTCOMES

THE EXPECTED OUTCOMES OF THIS COURSE IS THAT AFTER THE PRESCRIBED HOURS OF LECTURES, DEMONSTRATIONS, AND LAB AND PRACTICAL THE STUDENT WILL BE ABLE TO DEMONSTRATE AN UNDERSTANDING OF ELEMENTARY HUMAN PHYSIOLOGY.

UNIT I:

1. General Physiology [2 Hours]

Cell: Morphology. Organelles: their structure and functions

Transport Mechanisms across the cell membrane

Body fluids: Distribution, composition. Tissue fluid – formation.

2. Blood [10 Hours]

Introduction: Composition and functions of blood.

Plasma: Composition, formation, functions. Plasma proteins.

RBC: count and its variations. Erythropoiesis- stages, factors regulating. Reticulo-endothelial system (in brief) Hemoglobin - Anemia (in detail), types of Jaundice. Blood indices, PCV, ESR.

WBC: Classification. Morphology, functions, count, its variation of each. Immunity

Platelets: Morphology, functions, count, its variations

Hemostatic mechanisms: Blood coagulation–factors, mechanisms. Their disorders. Anticoagulants.

Blood Groups: Landsteiner's law. Types, significance, determination, Erythroblastosis foetalis.

Blood Transfusion: Cross matching. Indications and complications. Lymph: Composition, formation, circulation and functions. edema

3. Nerve Muscle Physiology [15 Hours]

Introduction: Resting membrane potential. Action potential – ionic basis and properties. Nerve: Structure and functions of neurons. Classification, Properties

and impulse transmission of nerve fibres. Nerve injury – degeneration and regeneration.
Neuroglia: Types and functions.
Muscle: Classification.
Skeletal muscle: Structure, mechanism of contraction.
Neuromuscular junction: Structure.
Neuromuscular transmission, myasthenia gravis, Excitation-Contraction coupling, Rigor mortis. Motor unit. Properties of skeletal muscles, Strength- Duration curve, Length-tension relationship, fatigue, load.
Smooth muscle: Structure, types, mechanism of contraction. Plasticity.

4. Cardiovascular System[20 Hours]

Introduction: Physiological anatomy and nerve supply of the heart and blood vessels. Organization of CVS.
Cardiac muscles: Structure. Ionic basis of action potential and pacemaker potential. Properties. Conducting system: Components. Impulse conduction
Cardiac Cycle: Definition. Phases of cardiac cycle. Pressure and volume curves.
Heart sounds – causes, character.
ECG: Definition. Different types of leads. Waves and their causes. P-R interval. Heart block.
Cardiac Output: Definition. Normal value. Determinants. Stroke volume and its regulation. Heart rate and its regulation.
Arterial Blood Pressure: Definition. Normal values and its variations. Determinants. Peripheral resistance. Regulation of BP. Arterial pulse.
Shock – Definition. Classification–causes and features
Regional Circulation: Coronary, Cerebral and Cutaneous circulation.
Cardiovascular changes during exercise.

UNIT II:

1. Respiratory System [15 Hours]

Introduction: Physiological anatomy – Pleura, tracheo-bronchial tree, alveolus, respiratory membrane and their nerve supply. Functions of respiratory system.
Respiratory muscles. Mechanics of breathing: Intrapleural and Intrapulmonary pressure changes during respiration. Chest expansion.
Lung compliance: Normal value, pressure-volume curve, factors affecting compliance and its variations. Surfactant – Composition, production, functions. RDS
Spirometry: Lung volumes and capacities. Timed vital capacity and its clinical significance. Maximum ventilation volume. Respiratory minute volume.
Dead Space: Types and their definition.

Pulmonary Circulation. Ventilation-perfusion ratio and its importance.
Transport of respiratory gases: Diffusion across the respiratory membrane.
Oxygen transport – Different forms, oxygen-hemoglobin dissociation curve. Factors affecting it. P50, Haldane and Bohr Effect. Carbon dioxide transport: Different forms, chloride shift.
Regulation of Respiration: Neural Regulation. Hering-breuer's reflex. Voluntary control. Chemical Regulation.
Hypoxia: Effects of hypoxia. Types of hypoxia. Hyperbaric oxygen therapy. Acclimatization
Hypercapnia. Asphyxia. Cyanosis – types and features. Dysbarism
Disorders of Respiration: Dyspnea. Orthopnea. Hyperpnoea, hyperventilation, apnea, tachypnea. Periodic breathing – types
Artificial respiration
Respiratory changes during exercise.

2. Digestive System [5 Hours]

Introduction: Physiological anatomy and nerve supply of alimentary canal.
Enteric nervous system
Salivary Secretion: Saliva: Composition. Functions. Regulation.
Mastication (in brief) swallowing: Definition. Different stages. Functions.
Stomach: Functions. Gastric juice: Gland, composition, function, regulation. Gastrin: Production, function and regulation. Peptic ulcer. Gastric motility. Gastric emptying. Vomiting.
Pancreatic Secretion: Composition, production, function. Regulation.
Liver: Functions of liver. Bile secretion: Composition, functions and regulation.
Gall bladder: Functions.
Intestine: Succus entericus: Composition, function and regulation of secretion. Intestinal motility and its function and regulation. Mechanism of Defecation.

3. Excretory system [8 Hours]

Introduction: Physiological anatomy. Nephrons – cortical and juxtamedullary. Juxta- glomerular apparatus. Glomerular membrane. Renal blood flow and its regulation. Functions of kidneys.
Mechanism of Urine Formation: Glomerular Filtration: Mechanism of glomerular filtration. GFR – normal value and factors affecting. Renal clearance. Inulin clearance. Creatinine clearance.
Tubular Reabsorption: Reabsorption of Na^+, glucose, HCO_3^-, urea and water. Filtered load.
Renal tubular transport maximum. Glucose clearance: TmG. Renal threshold for glucose.

Tubular Secretion: Secretion of H^+ and K^+. PAH clearance.
Mechanism of concentrating and diluting the Urine: Counter-current mechanism.
Regulation of water excretion. Diuresis. Diuretics.
Micturition: Mechanism of micturition. Cystometrogram. Atonic bladder, automatic bladder.
Acid-Base balance (very brief)
Artificial Kidney: Principle of hemodialysis. Skin and temperature regulation.
Functions of skin

4. Endocrine System [10 Hours]

Introduction: Major endocrine glands. Hormone: classification, mechanism of action. Functions of hormones
Pituitary Gland: Anterior Pituitary and Posterior Pituitary hormones: Secretory cells, action on target cells, regulation of secretion of each hormone. Disorders: Gigantism, Acromegaly, Dwarfism, Diabetes insipidus. Physiology of growth and development: hormonal and other influences.
Pituitary-Hypothalamic Relationship.
Thyroid Gland: Thyroid hormone and calcitonin: secretory cells, synthesis, storage, action and regulation of secretion. Disorders: Myxedema, Cretinism, Grave's disease.
Parathyroid hormones: secretory cell, action, regulation of secretion.
Disorders: Hypoparathyroidism. Hyperthyroidism. Calcium metabolism and its regulation.
Adrenal Gland: Adrenal Cortex: Secretory cells, synthesis, action, regulation of secretion of Aldosterone, Cortisol, Androgens. Disorders: Addison's disease, Cushing's syndrome, Conn's syndrome, Adrenogenital syndrome. Adrenal Medulla: Secretory cells, action, regulation of secretion of adrenaline and noradrenaline. Disorders: Phoechromocytoma.
Endocrine Pancreas: Secretory cells, action, regulation of secretion of insulin and glucagon.
Glucose metabolism and its regulation. Disorder: Diabetes mellitus.
Calcitriol, Thymus and Pineal gland (very brief). Local Hormones. (Briefly).

5. Reproductive System [5 Hours]

Introduction: Physiological anatomy reproductive organs. Sex determination. Sex differentiation.
Male Reproductive System: Functions of testes. Pubertal changes in males. Spermatogenesis. Testosterone: action, Regulation of secretion. Semen.

Female Reproductive System: Functions of ovaries and uterus. Pubertal changes in females. Oogenesis. Hormones: estrogen and progesterone-action. Regulation of secretion. Menstrual Cycle: Phases. Ovarian cycle. Uterine cycle. Hormonal basis. Menarche. Menopause. Pregnancy: Pregnancy tests. Physiological changes during pregnancy. Functions of placenta. Lactation. Contraception methods

6. Special Senses [10 Hours]

Vision: Introduction: Functional anatomy of eye ball. Functions of cornea, iris, pupil, aqueous humor – glaucoma, lens – cataract, vitreous humor, rods and cones. Photopic vision. Scotopic vision.
Visual Pathway and the effects of lesions.
Refractive Errors: myopia, hypermetropia, presbyopia and astigmatism.
Visual Reflexes: Accommodation, Pupillary and Light. Visual acuity and Visual field. Light adaptation. Dark adaptation. Color vision – color blindness. Nyctalopia.
Audition: Physiological anatomy of the ear. Functions of external ear, middle ear and inner ear. Structure of Cochlea and organ of corti. Auditory pathway. Types of Deafness. Tests for hearing. Audiometry.
Taste: Taste buds. Primary tastes. Gustatory pathway.
Smell: Olfactory membrane. Olfactory pathway.
Vestibular Apparatus: Crista ampullaris and macula. Functions. Disorders

UNIT III:

1. Nervous System [20 Hours]

Introduction: Organization of CNS – central and peripheral nervous system. Functions of nervous system. Synapse: Functional anatomy, classification, Synaptic transmission. Properties.

Sensory Mechanism: Sensory receptors: function, classification and properties. Sensory pathway: The ascending tracts – Posterior column tracts, lateral spinothalamic tract and the anterior spinothalamic tract – their origin, course, termination and functions. The trigeminal pathway. Sensory cortex. Somatic sensations: crude touch, fine touch, tactile localization, tactile discrimination, stereo gnosis, vibration sense, kinesthetic sensations. Pain sensation: mechanism of pain. Cutaneous pain –slow and fast pain, hyperalgesia. Deep pain. Visceral pain – referred pain. Gate control theory of pain. tabes dorsalis, sensory ataxia.

Motor Mechanism: Motor Cortex. Motor pathway: The descending tracts – pyramidal tracts, extrapyramidal tracts – origin, course, termination and

functions. Upper motor neuron and lower motor neuron. Paralysis, monoplegia, paraplegia, hemiplegia and quadriplegia.

Reflex Action: components, Bell-Magendie law, classification and Properties. Monosynaptic and polysynaptic reflexes, superficial reflexes, deep reflexes. Stretch reflex– structure of muscle spindle, pathway, higher control and functions. Inverse stretch reflex. Muscle tone – definition, and properties hypotonia, atonia and hypertonia. UMNL and LMNL Spinal cord Lesions: Complete transection and Hemi section of the spinal cord. Cerebellum: Functions. Cerebellar ataxia.

Posture and Equilibrium: Postural reflexes – spinal, medullary, midbrain and cerebral reflexes.

Thalamus and Hypothalamus: Nuclei. Functions. Thalamic syndrome
Reticular Formation and Limbic System: Components and Functions.

Basal Ganglia: Structures included and functions. Parkinson's disease.

Cerebral Cortex: Lobes. Brodmann's areas and their functions. Higher functions of cerebral cortex – learning, memory and speech.

EEG: Waves and features. Sleep: REM and NREM sleep.
CSF: Formation, composition, circulation and functions. Lumbar puncture and its significance.

Blood brain barrier. Hydrocephalus.

ANS: Features and actions of parasympathetic and sympathetic nervous system.

2. Physiology of Exercise [15 Hours]

A. Effects of acute and chronic exercise on **[10 Hours]**

1) O_2 transport
2) Muscle strength/power/endurance
3) B.M.R. /R.Q.
4) Hormonal and metabolic effect
5) Cardiovascular system
6) Respiratory system
7) Body fluids and electrolyte

B. Effect of gravity / altitude /acceleration / pressure on physical parameters **[05 Hours]**

3. Applied Physiology [15Hours]

More detailed study of the physiology and practical applications of the following selected topics with emphasis on aspects, which should help in understanding the nature and treatment of common clinical situations of interest in Physiotherapy.

a. Pulmonary Functions [03 Hrs]

1. Properties of gases, Mechanics of respiration, Diffusion capacity, special features of pulmonary circulation and their application.
2. Respiratory adjustments in exercises.
3. Artificial respiration
4. Breath sounds.

b. Cardio vascular Functions [04 Hrs]

1. Blood flow through arteries, arterioles, capillaries, veins and venuoles.
2. Circulatory adjustment in exercise and in postural and gravitational changes,
3. Pathophysiology of fainting and heart failure.

c. Muscles and Nervous System Functions [05 Hrs]

1. Peripheral nervous system, Types of nerve fibres.
2. EMG, VEP, NCV
3. Degeneration and regeneration of nerve, Reactions of denervations.
4. Voluntary motor action, clonus, Rigidity, Dyscoordination,

d. Blood functions [01 Hrs]

1. Thalassemia Syndrome, Hemophilia, VWF
2. Leukocytosis
3. Bone marrow transplant

e. Metabolic Functions [02 Hrs]

Physiological basis of Peptic Ulcer, Jaundice, GIT disorders, Vitamins deficiency

Recommended Text books:

1. Text book of medical physiology – Guyton Arthur
2. Concise medical physiology – Chaudhuri Sujit K.
3. Human Physiology – Chatterjee C.C.

4. Text book of practical Physiology – Ranade.
5. Text of Physiology – A.K.Jain.
6. Basics of Medical physiology- Venkatesh D &Sudhakar H H
7. Manipal Manual of Physiology – Prof. C N Chandrashekar

Reference Books

1. Review of Medical Physiology – Ganong William F.
2. Physiological basis of Medical practice – Best & Taylor

YEAR : I YEAR
COURSE CODE : 17PT103
TITLE OF THE COURSE : BIOCHEMISTRY

COURSE OBJECTIVES

THIS COURSE PROVIDES THE KNOWLEDGE AND SKILLS IN FUNDAMENTAL ORGANIC CHEMISTRY AND INTRODUCTORY BIOCHEMISTRY THAT ARE ESSENTIAL FOR FURTHER STUDIES. IT COVERS BASIC BIOCHEMICAL, CELLULAR, BIOLOGICAL AND MICROBIOLOGICAL PROCESSES, BASIC CHEMICAL REACTIONS IN THE PROKARYOTIC AND EUKARYOTIC CELLS, THE STRUCTURE OF BIOLOGICAL MOLECULES, INTRODUCTION TO THE NUTRIENTS I.E. CARBOHYDRATES, FATS, ENZYMES, NUCLEIC ACIDS AND AMINO ACIDS.

COURSE OUTCOMES

THE STUDENT WOULD KNOW:

1. VARIOUS BIOMOLECULES WHICH ARE PRESENT IN THE BODY AND FUNCTIONS
2. THE FORMATION AND FATE OF THESE BIOMOLECULES
3. THEIR NORMAL LEVELS IN BODY FLUIDS REQUIRED FOR FUNCTIONING AND THEIR ABNORMAL LEVELS TO UNDERSTAND THE DISEASE PROCESS.

UNIT I:

1. Nutrition [7 Hours]

Introduction, Importance of nutrition Calorific values, Respiratory quotient – Definition, and its significance
Energy requirement of a person -
Basal metabolic rate: Definition, Normal values, factor affecting BMR
Special dynamic action of food
Physical activities - Energy expenditure for various activities.
Calculation of energy requirement of a person
Balanced diet
Recommended dietary allowances
Role of carbohydrates in diet: Digestible carbohydrates and dietary fibers Role of lipids in diet
Role of proteins in diet: Quality of proteins - Biological value, net protein utilization, Nutritional aspects of proteins-essential and non-essential amino acids. Nitrogen balance
Nutritional disorders

2. Carbohydrate Chemistry [3 Hours]

Definition, general classification with examples, Glycosidic bond
Structures, composition, sources, properties and functions of Monosaccharides, Disaccharides, Oligosaccharides and Polysaccharides.

Glycosaminoglycans (mucopolysaccharides)

3. Lipid Chemistry [3 Hours]

Definition, general classification

Definition, classification, properties and functions of Fatty acids, Triacylglycerol, Phospholipids, Cholesterol

Essential fatty acids and their importance

Lipoproteins: Definition, classification, properties, Sources and function

Ketone bodies

4. Amino-acid Chemistry 3 Hours

Amino acid chemistry: Definition, Classification, Peptide bonds

Peptides: Definition, Biologically important peptides

Protein chemistry: Definition, Classification, Functions of proteins,

5. Enzymes [3 Hours]

Definition, Active site, Cofactor (Coenzyme, Activator), Proenzyme. Classification with examples, Factors effecting enzyme activity, Enzyme inhibition and significance, Isoenzymes, Diagnostic enzymology (clinical significance of enzymes)

UNIT II:

6 Nucleotide and Nucleic acid Chemistry [2 Hours]

Nucleotide chemistry: Nucleotide composition, functions of free nucleotides in body.

Nucleic acid (DNA and RNA) chemistry: Difference between DNA and RNA, Structure of DNA (Watson and Crick model), Functions of DNA. Structure and functions of tRNA, rRNA, mRNA.

7 Digestion and Absorption [3 Hours]

General characteristics of digestion and absorption, Digestion and absorption of carbohydrates, proteins and lipids. Disorders of digestion and absorption – Lactose intolerance,

8 Carbohydrate Metabolism [5 Hours]

Introduction, Glycolysis – Aerobic, Anaerobic

Citric acid cycle, Substrate level phosphorylation

Glycogen metabolism – Glycogenesis, Glycogenolysis, Metabolic disorders glycogen, Gluconeogenesis, Cori cycle

Hormonal regulation of glucose, Glycosuria, Diabetes mellitus,

9 Lipid Metabolism [5 Hours]

Introduction to lipid metabolism, Lipolysis, Oxidation of fatty acids -oxidation of fatty acids, Lipogenesis - Denovo synthesis of fatty acids, chain elongation, desaturation, triacylglycerol synthesis, fat metabolism in adipose tissues

Ketone body metabolism: Ketone body formation (ketogenesis), utilization (ketolysis), ketosis, Rothera's test

Cholesterol metabolism: synthesis, degradation, cholesterol transport

Hypercholesterolemia and its effects (atherosclerosis and coronary heart diseases)

Hypocholesterolemic agents, Common hyperlipoproteinemia, Fatty liver

10 Amino acid and Protein Metabolism [3 Hours]

Catabolism of amino acids - Introduction, transamination, deamination, Fate of ammonia, transport of ammonia, Urea cycle

Specialized products formed from amino acids - from glycine, arginine, methionine, phenylalanine and tyrosine.

11 Vitamins [7 Hours]

Definition, classification according to solubility,

Individual vitamins - Sources, Coenzyme forms, functions, RDA, digestion, absorption and transport, deficiency and toxicity

UNIT III:

12 Mineral Metabolism [2 Hours]

Definition, Sources, RDA, Digestion, absorption, transport, excretion, functions, disorder of Individual minerals - Calcium, phosphate, iron, Magnesium, fluoride, selenium, molybdenum, copper. Phosphate, calcium and iron in detail

13 Cell Biology [2 Hours]

Introduction, Cell structure, Cell membrane structure and function, various types of absorption.

Intracellular organelles and their functions, briefly on cytoskeleton

14 Muscle Contraction [2 Hours]

Contractile elements in muscle, briefly on the process of muscle contraction, Energy for muscle contraction.

15 Biochemistry of Connective tissue [2 Hours]

Introduction, various connective tissue proteins: Collagen, elastin - Structure and associated disorders. Glycoproteins, Proteoglycans

16 Hormone Action [2 Hours]

Definition, classification, Mechanism of hormone action. Receptors, signal transduction, second messengers and cell function

17 Acid-Base balance [2 Hours]

Acids, bases and buffers, pH. Buffer systems of the body, bicarbonate buffer system Role of lungs and kidneys in acid base balance, Acid base imbalance

18 Water balance [1 Hour]

Water distribution in the body, Body water, water turnover, Regulation of water balance: role of ADH and thirst centre

19 Electrolyte balance [1 Hour]

Osmolarity. Distribution of electrolytes

Electrolyte balance: Role of aldosterone, rennin angiotensin system and ANF

20 Clinical Biochemistry [2 Hours]

Normal levels of blood and urine constituents, Relevance of blood and urine levels of Glucose, Urea, Uric acid, Creatinine, Calcium, Phosphates, pH and Bicarbonate. Liver function tests, Renal function tests

Recommended Text books

1. MURRAY [ROBERT KK], Harper's Bio Chemistry Ed 24, Prentice Hall. 1996, p925, R
2. RAMAKRISHNA [S], PRASANNA [KG], RAJAN [R], Text Book of Medical Biochemistry, Ed1, orient Langman, Bombay 1980, p717.
3. VASUDEVAN [DM] and SREE KUMARI [S], Text Book of Bio Chemistry for Medical students, Ed 1, Jaypee Brothers, New Delhi, 1995, p637,
4. DAS [Debajyothi], Biochemistry, Ed. 7, Academic Publishers Calcutta, 1992, p648, R
5. PRASAD RM, RM's Physiotherapy Textbook Series, Text book of Biochemistry for Bachelor of Physiotherapy First Edition, RM Publications, Mangalore.

Reference

1. LEHININGER [Albert] et. al., Principles of Biochemistry, Ed. 3, LBS Publishers, Delhi, 1993, p1143
2. ORTEN [James M] and NEUHAUS [OHO.W]. Human Biochemistry, Ed. 9, Mosby, St.Louis,1975 p994.

3. Strayer [LUBERT], Biochemistry, Ed. 4, WH, Freeman & Co., Ny.1995, p1064,
4. DEVLIN [Thomas M], Biochemistry with Clinical Correalation, Ed. 4, Willey Libs, Ny 1997, p1186

YEAR : I YEAR
COURSE CODE : 17PT104
TITLE OF THE COURSE : KINESIOLOGY

COURSE OBJECTIVES

THIS COURSE SUPPLEMENTS THE KNOWLEDGE OF ANATOMY AND ENABLES THE STUDENTS TO HAVE A BETTER UNDERSTANDING OF THE PRINCIPLES OF BIOMECHANICS AND THEIR APPLICATIONS IN MUSCULOSKELETAL FUNCTION AND DYSFUNCTION.

COURSE OUTCOMES

THE EXPECTED OUTCOMES OF THIS COURSE IS THAT AFTER THE PRESCRIBED HOURS OF LECTURES AND DEMONSTRATIONS IN ADDITION TO CLINICAL THE STUDENT WILL BE ABLE TO DEMONSTRATE AN UNDERSTANDING OF THE PRINCIPLES OFBIO-MECHANICS AND KINESIOLOGY AND THEIR APPLICATION IN HEALTH AND DISEASE.

UNIT I:

1. **Basic Concepts in Biomechanics: Kinematics and Kinetics [3 Hours]**

a) Types of Motion
b) Location of Motion
c) Direction of Motion
d) Magnitude of Motion
e) Definition of Forces
f) Force of Gravity
g) Reaction forces
h) Equilibrium
i) Objects in Motion
j) Force of friction
k) Concurrent force systems
l) Parallel force systems
m) Levers
n) Pulleys
o) Work
p) Moment arm of force
q) Force components
r) Equilibrium of levers

2. Joint structure and Function [3 Hours]

a) Joint design
b) Materials used in human joints
c) General properties of connective tissues
d) Joint function
e) Joint motion

3. Muscle structure and function [3 Hours]

a) Mobility and stability functions of muscles
b) Elements of muscle structure
c) Muscle function

4. Biomechanics of the peripheral joints (to include kinetics and kinematics) [52Hours]

a) The shoulder complex: Structure and components of the shoulder complex and their integrated function
b) The elbow complex: Structure and function of the elbow joint – humeroulnar and humeroradial articulations, superior and inferior radioulnar joints; mobility and stability of the elbow complex.
c) The wrist and hand complex: Structural components and functions of the wrist complex; structure of the hand complex; prehension; functional position of the the wrist and hand.

UNIT II:

5.

a) The hip complex: structure and function of the hip joint.
b) The knee complex: structure and function of the knee joint – tibiofemoral joint and patellofemoral joint.
c) The ankle and foot complex.: structure and function of the ankle joint, subtalar joint, talocalcaneonavicular joint, transverse tarsal joint, tarsometatarsal joints, metatarsophalangeal joints, interphalangeal joints, structure and function of the plantar arches, muscles of the ankle and foot.

6. **Goniometry[2 hours]:** Parts, types, principles and uses of a goniometry. Techniques for measurement of ROM of all peripheral joints.

7. Biomechanics of the Thorax and Chest wall [3 Hours]

General structure and function Rib cage movements and the muscles associated with the rib cage

8. Biomechanics of the vertebral column [10 Hours]

a) General structure and function
b) Regional structure and function – Cervical region, thoracic region, lumbar region, sacral region
c) Muscles of the vertebral column
d) Ligaments of Vertebral Column

UNIT III:

9. The Tempero-mandibular Joint [2 Hours]

a) General features, structure and function

10. Analysis of Posture and Gait [9 Hours] :

a) Static and dynamic posture, postural control, kinetics and kinematics of posture, ideal posture analysis of posture,
b) General features of gait, gait initiation, kinematics and kinetics of gait, energy requirements, kinematics and kinetics of the trunk and upper extremities in relation to gait, stair case climbing and running.

11. **Movement Analysis [2 hours]** : ADL activities like sitting – to standing, lifting, various grips , pinches.

12. **Walking Aids [1 hour]:** Parallel bars, crutches, canes, walkers – types, parts and uses.

The following topics are part of applied Biomechanics and are required to be taught but not for examination.

a General effects of disease, injury and immobilization.
b Effects of immobilization, injury and aging
c Changes in normal structure and function I relation to pregnancy, scoliosis and COPD
d Effects of posture on age, pregnancy, occupation and recreation;

Recommended Text books :

1. Joint Structure and Function – A comprehensive Analysis, JP Bros Medical Publishers, NewDelhi.
2. Brunnstrom, Clinical Kinesiology, JP Bros Medical Publishers, Bangalore, 5th Ed 1996,1stIndian Ed 1998,
3. Clinical Kinesiology for Physical Therapist Assistants, JP Bros Medical Publishers, Bangalore, 1st Indian Ed 1997

YEAR : I YEAR
COURSE CODE : 17PT105
TITLE OF THE COURSE : PSYCHOLOGY

COURSE OBJECTIVES

THIS COURSE WILL ENABLE THE STUDENT TO UNDERSTAND SPECIFIC PSYCHOLOGICAL FACTORS AND EFFECTS IN PHYSICAL ILLNESS AND THUS HELP THEM TO HAVE A HOLISTIC APPROACH IN THEIR DEALINGS WITH PATIENTS DURING ADMISSION, REHABILITATION AND DISCHARGE.

COURSE OUTCOMES

THE EXPECTED OUTCOMES OF THIS COURSE IS THAT AFTER COMPLETION OF LECTURES AND DEMONSTRATIONS THE STUDENTS WILL BE ABLE TO RECOGNIZE AND HELP WITH THE PSYCHOLOGICAL FACTORS INVOLVED IN DISABILITY, PAIN, DISFIGUREMENT, UNCONSCIOUS PATIENTS, CHRONIC ILLNESS, DEATH, BEREAVEMENT AND MEDICAL – SURGICAL PATIENT / CONDITION.

UNIT I:

1. **Introduction to Psychology (6 Hours)**

a. Schools: Structuralism, functionalism, behaviorism, Psychoanalysis.
b. Methods: Introspection, observation, inventory and experimental method.
c. Branches: pure psychology and applied psychology
d. Psychology and physiotherapy

2. **Growth and Development (6 Hours)**

a. Life span: different stages of development (Infancy, childhood, adolescence, adulthood, middle age, old age).
b. Heredity and environment: role of heredity and environment in physical and psychological development, —Nature v/s Nurture controversy‖

3. **Sensation, attention and perception (6 Hours)**

a. Sensation: Vision, Hearing, Olfactory, Gustatory and Cutaneous sensation, movement, equilibrium and visceral sense.
b. Attention: Types of attention, Determinants of attention (subjective determinants and objective determinants)

c. Perception: Gestalt principles of organization of perception (principle of figure ground and principles of grouping), factors influencing perception (past experience and context)
d. Illusion and hallucination: different types

UNIT II:

4. Motivation (4 Hours)

a. Motivation cycle (need, drive, incentive, reward).
b. Classification of motives.

c. Abraham Maslow's theory of need hierarchy

5. Frustration and conflict (2 Hours)

a. Frustration: sources of frustration.
b. Conflict: types of conflict.
c. Management of frustration and conflict

6. Emotions (6 Hours)

a. Three levels of analysis of emotion (physiological level, subjective state, and overt behavior)
b. Theories of emotion
c. Stress and management of stress.

7. Intelligence (6 Hours)

a. Theories of intelligence.
b. Distribution of intelligence.
c. Assessment of intelligence

8. Thinking (4 Hours)

a. Reasoning : deductive and inductive reasoning
b. Problem solving: rules in problem solving (algorithm and heuristic)
c. Creative thinking: steps in creative thinking, traits of creative people

UNIT III:

9. Learning (8 Hours)

a. Factors effecting learning.
b. Theories of learning: trial and error learning, classical conditioning, Operant conditioning, insight learning, social learning theory.

c. The effective ways to learn: Massed/Spaced, Whole/Part, Recitation/Reading, Serial/Free recall, Incidental/Intentional learning, Knowledge of results, association, organization, and mnemonic methods.

10. Personality (8 Hours)

a. Approaches to personality: type & trait, behavioristic, psychoanalytic and humanistic approach.
b. Personality assessment: observation, situational test, questionnaire, rating scale, interview, and projective techniques.
c. Defense Mechanisms: denial of reality, rationalization, projection, reaction formation, identification, repression, regression, intellectualization, undoing, introjection, acting out.

11. Social psychology (4 Hours)

a. Leadership: Different types of leaders. Different theoretical approaches to leadership.
b. Attitude: development of attitude. Change of attitude

Recommended text books:

1. Feldman.R.H(1996). Understanding Psychology. New Delhi: Tata McGraw hill.
2. Morgan et al(2003). Introduction to Psychology. New Delhi: Tata McGraw hill.
3. Lefton( ). Psychology. Boston: Alwin&Bacot Company.
4. Mangal, S.K (2002). Advanced Educational Psychology. New Delhi: prentice hall.

Atkinson(1996). Dictionary of Psychology.

YEAR : I YEAR
COURSE CODE : 17PT192
TITLE OF THE COURSE :
ENGLISH

COURSE OBJECTIVES

THE COURSE IS DESIGNED TO ENABLE STUDENTS TO ENHANCE ABILITY TO COMPREHEND SPOKEN AND WRITTEN ENGLISH, REQUIRED FOR EFFECTIVE COMMUNICATION IN THEIR PROFESSIONAL WORK.

COURSE OUTCOMES

THE EXPECTED OUTCOMES OF THIS COURSE IS TO SPEAK AND WRITE GRAMMATICALLY CORRECT ENGLISH, TO DEVELOP WRITING SKILLS, TO UNDERSTAND AND EXPRESS MEANINGFULLY THE PRESCRIBED TENT, TODEVELOP SPOKEN ENGLISH.

Unit –I :

Introduction:
Study Techniques
Organisation of effective note taking and logical processes of analysis and synthesis
The use of the dictionary
Enlargement of vocabulary
Effective diction

Unit - II:

Applied Grammer:
Correct usage
The structure of sentences
The structure of paragraphs
Enlargements of Vocabulary

Unit - III:

Written Composition:
Precise writing and summarising
Writing of bibliography
Enlargement of Vocabulary

Unit - IV

Reading and comprehension
Review of selected materials and express oneself in one's words.
Enlargement of Vocabulary..

Unit - V

The Study of Various Forms of Composition Paragraph, Essay, Letter, Summary, Practice in writing

Unit - VI

Verbal Communication:

Discussions and Summarization, Debates, Oral reports, use in teaching

YEAR : I YEAR
COURSE CODE : 17PT171
TITLE OF THE COURSE : HUMAN ANATOMY PRACTICALS

PRACTICAL : 90HRS

List of Practical / Demonstrations *

Topics

1. Upper extremity including surface Anatomy[15Hrs]
2. Lower extremity including surface Anatomy[15Hrs]
3. Head & Neck, Spinal cord and Brain including surface Anatomy[15Hrs]
4. Thorax & abdominal organs including surface anatomy, [10Hrs]
5. Histology-Elementary tissue [10Hrs]
6. Embryology-models, charts & X-rays[05Hrs)
7. Demonstration of the muscles of the whole body and organs in thorax and abdomen in a cadaver[05Hrs]
8. Demonstration of movements in important joints. [05Hrs]
9. Surface making of the lung, pleura, fissures and lobes of lungs, heart, liver, spleen, Kidney, cranial nerves, spinal nerves and important blood vessels [05Hrs]
10. Identification of body prominences on inspection and by palpation especially of extremities. Points of palpation of nerves and arteries [05Hrs]

Recommended Text books:

1. ROMANES [G J], Cunningham manual of practical anatomy: upper and lower limb ed 15Vol 1 Oxford Medical Publication, Oxford 1996, P263
2. ROMANES [G J], Cunningham manual of practical anatomy : Thorax and abdomen ed15 Vol II Oxford Medical Publication, Oxford 1996, P298
3. ROMANES [G J], Cunningham manual of practical anatomy : Head and Neck andBrained 15 Vol II Oxford Medical Publication, Oxford 1996, P346

YEAR : I YEAR
COURSE CODE : 17PT172
TITLE OF THE COURSE : HUMAN PHYSIOLOGY PRACTICALS

PRACTICAL

I. Hematology [20 Hours]

To be done by the students

1. Study of Microscope and its uses
2. Determination of RBC count
3. Determination of WBC count
4. Differential leukocyte count 5. Estimation of hemoglobin
6. Calculation of blood indices
7. Determination of blood groups
8. Determination of bleeding time
9. Determination of clotting time

Demonstrations only

1. Determination of ESR
2. Determination of PCV

II. Clinical Examination [20 Hours]

1. Examination of Radial pulse.
2. Recording of blood pressure
3. Examination of CVS
4. Examination of Respiratory system
5. Examination of Sensory system
6. Examination of Motor System
7. Examination of reflexes
8. Examination of cranial nerves

III. Amphibian Experiments – Demonstration and Dry charts Explanation. [15 Hrs]

1. Instruments used for frog experiments. Kymograph, heart liver, Muscle trough, stimulator.
2. Simple muscle curve.
3. Effect of increasing the strength of the stimuli
4. Effect of temperature on muscle contraction.

5. Effect of two successive stimuli.
6. Effect of Fatigue.
7. Effect of load on muscle contraction
8. Genesis of tetanus and clonus.
9. Velocity of impulse transmission.
10. Normal cardiogram of amphibian heart.
11. Properties of Cardiac muscle
12. Effect of temperature on cardiogram.

IV. Recommended Demonstrations [5 Hours]

1. Spirometry
2. Artificial Respiration
3. ECG
4. Perimeter
5. Mosso's Ergometer

Recommended Text books:

1. Text book of practical physiology – G k Pal
2. Text book of practical Physiology – Ranade.
3. Text book of practical Physiology – A.K.Jain.
4. Text book of practical Physiology – Ghai C L

YEAR : I YEAR
COURSE CODE : 17PT173
TITLE OF THE COURSE : KINESIOLOGY PRACTICALS

PRACTICAL

PRACTICAL: [90 Hours] shall be conducted for various joint movements and analysis of the same. Demonstration may also be given as how to analyze posture and gait. The demonstrations may be done on models or skeleton.

The student shall be taught and demonstrated to analysis for activities of daily living – ADL – (like sitting to standing, throwing, lifting etc.) The student should be able to explain and demonstrate the movements occurring at the joints, the muscles involved, the movements or muscle action produced, and mention the axis and planes through which the movements occur.

Measurement of Joint ROM using goniometer.

Identification of walking aids.

YEAR : II YEAR
COURSE CODE : 17PT201
TITLE OF THE COURSE : PATHOLOGY

COURSE OBJECTIVES

THE COURSE WILL ENABLE STUDENTS TO UNDERSTAND THE CONDITIONS IN MICROBIOLOGY AND PATHOLOGY AND ITS APPLICATION IN RELATION WITH PHYSIOTHERAPY. STUDENTS WILL LEARN THE PATHOLOGICAL CHANGES IN VARIOUS CONDITIONS, DISEASES AND DISORDERS, WHICH ARE COMMONLY TREATED BY PHYSIOTHERAPY.

COURSE OUTCOMES

THE EXPECTED OUTCOMES OF THIS COURSE IS THAT AFTER THE PRESCRIBED HOURS OF LECTURES AND DEMONSTRATIONS IN ADDITION TO CLINICAL APPLICATIONS THE STUDENT WILL BE ABLE TO UNDERSTAND THE CAUSES, SIGNS, SYMPTOMS, INVESTIGATIONS, DIFFERENTIAL DIAGNOSIS, FINAL DIAGNOSIS, MANAGEMENT IN RELATION WITH PHYSIOTHERAPY.

UNIT I: 20 Hrs

General Pathology

1. **Introduction to Pathology [1 Hour]**

2. **Cell injuries: [3 Hours]**

Aetiology and Pathogenesis with a brief recall of important aspects of normal cell structure. Reversible cell injury : Types, Sequential changes, Cellular swellings, vacuolation, Hyaline changes, Mucoid changes.Irreversible cell injury: Types of Necrosis & Gangrene, Autolysis. Pathologic calcification: Dystrophic and Metastatic.Intracellular Accumulations - Fatty changes, Protein accumulations, Glycogen accumulations, Pigments - Melanin / Hemosiderin.
Extra cellular accumulations: Amyloidosis - Classification, Pathogenesis, Pathology including special stains.

3. **Inflammation and Repair [4 Hours]**

Acute inflammation: features, causes, vascular and cellular events.
Inflammatory cells and Mediators. Chronic inflammation: Causes, Types, Classification nonspecific and granulomatous with examples.

Repair, Wound healing by primary and secondary union, factors promoting and delaying the process.
Healing in specific site including bone healing.

4. Immunopathology [4 Hours]

Immune system: General concepts.
Hypersensitivity: type and examples, antibody and cell mediated tissue injury with examples. . Secondary immunodeficiency including HIV infection. Auto-immune disorders: Basic concepts and classification, SLE.
AIDS-Aetiology, Modes of transmission, Diagnostic procedures, handling of infected material and health education.

5. Infectious diseases [4 Hours]

Mycobacterial diseases: Tuberculosis, Leprosy and Syphilis.
Bacterial disease: Pyogenic, Diphtheria, Gram negative infection, Bacillary dysentery.
Viral diseases: Poliomyelitis, Herpes, Rabies, Measles, Rickttsia, Chlamydial infection, HIV infection.
Fungal disease and opportunistic infections.
Parasitic diseases: Malaria, Filaria, Amoebiasis, Kala-azar, Cysticercosis, Hydatid cyst.

6. Circulatory Distrurbances [4 Hours]

Hyperemia/Ischemia and Haemorrhage Edema: Pathogenesis and types.
Chronic venous congestion: Lung, Liver, Spleen, Systemic Pathology
Thrombosis and Embolism: Formation, Fate and Effects.
Infarction: Types, Common sites.
Shock: Pathogenesis, types, morphologic changes.

UNIT II: 20Hrs

1. Growth Disturbances and Neoplasia [4 Hours]

Atrophy, Hypertrophy, Hyperplasia, Aplasia, Hypoplasia, Metaplasia, Malformation, agenesis, dysplasia. .
Precancerous lesions.
Neoplasia: Definition, classification, Biological behaviour : Benign and Malignant, Carcinoma and Sarcoma.
Malignant Neoplasia: Grades and Stages, Local & Distant spread.
Carcinogenesis: Environmental carcinogens, chemical, viral, occupational. Heredity and cellular oncogenes and prevention of cancer.
Benign & Malignant epithelial tumoursEg. Squamous papilloma, Squamous cell carcinoma, Malignant melanoma. Benign & Malignant mesenchymal tumoursEg:

Fibroma, Lipoma, Neurofibroma, Fibrosarcoma, Liposarcoma, Rhabdo-myosarcoma, Teratoma.

2. **Nutritional Disorders [2 Hour]**

Protein energy malnutrition: Marasmus, Kwashiorkor, and Vitamin deficiency disorders, classification with specific examples.

3. **Genetic Disorders [1 Hour]**

Basic concepts of genetic disorders and some common examples and congenital malformation.

Systemic pathology

4. **Hematology [4 Hours]**

Constituents of blood and bone marrow, Regulation of hematopoiesis.
Anemia: Classification, clinical features & lab diagnosis.
Nutritional anemias: Iron deficiency anemia, Folic acid,Vit. B 12 deficiency anemia including pernicious anemia. Hemolytic Anaemias: Classification and Investigations. Hereditary hemolytic anaemias: Thalessemia, Sickle cell anemia, Spherocytosis and Enzyme deficiencies. Acquired hemolytic anaemiasi. Alloimmune, Autoimmune ii. Drug induced, Microangiopathic Pancytopenia - Aplastic anemia.
Hemostatic disorders, Vascular and Platelet disorders & lab diagnosis.
Coagulopathies - (i) Inherited (ii) Acquired with lab diagnosis.
Leukocytic disorders: Leukocytosis, Leukopenis, Leukemoid reaction.
Leukemia: Classification, clinical manifestation, pathology and Diagnosis. Multiple myeloma and disproteinemias.
Blood transfusion; Grouping and cross matching, untoward reactions, transmissible infections including HIV & hepatitis, Blood-components & plasma-pheresis.

5. **Respiratory System [3 Hours]**

Pneumonia, Bronchitis, Bronchiectasis, Asthma, Tuberculosis, Carcinoma of lungs, Occupational lung diseases

6. **Cardiovascular Pathology [3 Hours]**

Congenital Heart disease: Atrial septal defect, Ventricular septal defect, Fallot's tetralogy, Patent ductus arteriosus.
Endocarditis.
Rheumatic Heart disease.

Vascular diseases: Atherosclerosis, monckeberg's medial calcification, Aneurysm and Arteritis and tumours of Blood vessels.
Ischemic heart Disease: Myocardial infarction.
Hypertension and hypertensive heart Disease.

7. Alimentary tract [3 Hours]

Oral Pathology: Ulcers, leukoplakia, Carcinoma, oral cavity diseases and tumour of salivary gland & esophagus and precancerous lesions, Esophagus inflammatory, functional disorders and tumours.
Stomach : Gastritis, Ulcer &Tumours.
Tumours and tumour like condition of the small and large Intestine: Polyps, carcinoid, carcinoma, Lymphoma.
Pancreatitis and pancreatic tumours :i) Exocrine, ii)
Endocrine Salivary gland tumours : Mixed, Warthin's

UNIT III: 20Hrs

1. Hepato – biliary pathology [3 Hours]

Jaundice: Types, aetio-pathogenesis and diagnosis.
Hepatitis: Acute, Chronic, neonatal.
Alcoholic liver disease
Cirrhosis: Postnecrotic, Alcoholic, Metabolic and Portal hypertension Liver abscesses; Pyogenic, parasitic and Amoebic.
Tumours of Liver

2. Lymphatic System [3 Hours]

Diseases of the gall bladder: Cholecystitis, Cholelithiasis, Carcinoma.
Lymphadenitis - Non specific and granulomatous
Causes of Lymph Node enlargements. Reactive Hyperplasia, Primary Tumours - Hodgkin's and Non hodgkin's Lymphomas, Metastatic Tumours. Causes of Splenic Enlargements.

3. Musculoskeletal System [5 Hours]

Osteomyelitis, acute, chronic, tuberculous, mycetoma
Metabolic diseases: Rickets/Osteomalacia, osteoporosis, Hyperparathyroidism, Paget's disease.
Tumours Classification: Benign, Malignant, Metastatic and synovial sarcoma.
Arthritis: Suppurative, Rheumatoid. Osteoarthritis, Gout, Tuberculous.

4. Endocrine pathology [4 Hours]

Diabetes Mellitus: Types, Pathogenesis, Pathology, Laboratory diagnosis

Non-neoplastic lesions of Thyroid: Iodine deficiency goiter, autoimmune Thyroiditis, Thyrotoxicosis, myxedema, Hashimoto's thyroiditis.

Tumours of Thyroid: Adenoma, Carcinoma: Papillary, Follicular, Medullary, Anaplastic. Adrenal diseases: cortical hyperplasia, atrophy, tuberculosis, tumours of cortex and medulla.

5. Neuropathology [4 Hours]

Inflammations and Infections : TB Meningitis, Pyogenic Meningitis, viral meningitis and Brain Abscess

Tuberculosis, Cysticercosis

CNS Tumors, Astrocytoma, Neuroblastoma, Meningioma, Medulloblastoma

6. Dermatopathology [1 Hour]

Skin tumors : Squamos cell carcinoma, Basal cell carcinoma, Melanoma

Recommended Textbooks

1. Text book of pathology: Harshmohan
2. General systemic pathology: Churchill Livingstone
3. Text book of Pathology: Robbins

YEAR : II YEAR
COURSE CODE : 17PT202
TITLE OF THE COURSE : MICROBIOLOGY

COURSE OBJECTIVES

THE COURSE WILL ENABLE STUDENTS TO UNDERSTAND THE CONDITIONS IN MICROBIOLOGY AND PATHOLOGY AND ITS APPLICATION IN RELATION WITH PHYSIOTHERAPY. STUDENTS WILL LEARN THE PATHOLOGICAL CHANGES IN VARIOUS CONDITIONS, DISEASES AND DISORDERS, WHICH ARE COMMONLY TREATED BY PHYSIOTHERAPY.

COURSE OUTCOMES

THE EXPECTED OUTCOMES OF THIS COURSE IS THAT AFTER THE PRESCRIBED HOURS OF LECTURES AND DEMONSTRATIONS IN ADDITION TO CLINICAL THE STUDENT WILL BE ABLE TO UNDERSTAND THE CAUSES, FINDINGS, INVESTIGATIONS, MANAGEMENT IN RELATION WITH PHYSIOTHERAPY.

UNIT I:

1. **General Microbiology [5 Hours]**

Definitions: infections, parasite, host, vector, fomite, contagious disease, infectious disease, epidemic, endemic, pandemic, Zoonosis, Epizootic, Attack rate.
Normal flora of the human body.
Routes of infection and spread; endogenous and exogenous infections; source at reservoir of infections.
Bacterial cell. Morphology limited to recognizing bacteria in clinical samples Shape, motility and arrangement. Structures, which are virulence, associated.
Physiology: Essentials of bacterial growth requirements.
Sterilization, disinfection and universal precautions in relation to patient care and disease prevention. Definition of asepsis, sterilization, disinfection.
Antimicrobials: Mode of action, interpretation of susceptibility tests, resistance spectrum of activity.

2. **Immunology [5 Hours]**

Basic principles of immunity immunobiology : lymphoid organs and tissues. Antigen, Antibodies, antigen and antibody reactions with relevance to pathogenesis and serological diagnosis.
Humoral immunity and its role in immunity Cell mediated immunity and its role in immunity. Imunology of hypersensitivity, Measuring immune functions.

UNIT II

3. Bacteriology [12 Hours]

To be considered under the following headings
Morphology, classification according to pathogenicity, mode of transmission, methods of prevention, collection and transport of samples for laboratory diagnosis, interpretation of laboratory reports

Staphylococci,
Streptococci and Pneumococci,
Mycobacteria: Tuberculosis, M.leprae, atypical mycobacteria,
Enterobacteriaceae,
Vibrois : V. cholerae and other medically important vibrios, Campylobacters and Helicobacters, Pseudomonas,
Bacillus anthracis,
Sporing and non-sporing anaerobes: Clostridia, Bacteroides and Fusobacteria,

4. General Virology [8 Hours]
General properties: Basic structure and broad classification of viruses. Pathogenesis and pathology of viral infections. Immunity and prophylaxis of viral diseases. Principles of laboratory diagnosis of viral diseases. List of commonly used antiviral agents.

UNIT III

5. Mycology [3 Hours]

General properties of fungi. Classification based on disease: superficial, subcutaneous, deep mycosel opportunistic infections including Mycotoxins, systemic mycoses. General principles of fungal diagnosis, Rapid diagnosis. Method of collection of samples. Antifungal agents.

6. Clinical/Applied Microbiology [12 Hours]

Streptococcal infections: Rheumatic fever and Rheumatic heart disease, Meningitis.
Tuberculosis,
Pyrexia of unknown origin, leprosy,
Sexually transmitted diseases,
Poliomyelitis,
Hepatitis,

Acute-respiratory infections,
Central nervous System infections,
Urinary tract infections,
Pelvic inflammatory disease,
Wound infection,
Opportunistic infections,
HlV infection,
Malaria,
Filariasis,
Zoonotic diseases.

Recommended Textbooks:

1. Short text book of Medical Microbiology by Sathish Gupta
2. Text book of Microbiology by JayaramPanicker
3. Microbilogy&Parasitiology by Rajeshwar Reddy
4. Text book of Microbiology by Anantha Narayanan
5. Microbiology by Baveja
6. Text book of microbiology by Chakraborthy

YEAR : II YEAR
COURSE CODE : 17PT203
TITLE OF THE COURSE PHARMACOLOGY

COURSE OBJECTIVES

THIS COURSE COVERS THE BASIC KNOWLEDGE OF PHARMACOLOGY INCLUDING ADMINISTRATION, PHYSIOLOGIC RESPONSE AND ADVERSE EFFECTS OF DRUGS UNDER NORMAL AND PATHOLOGIC CONDITIONS. TOPICS FOCUS ON THE INFLUENCE OF DRUGS IN REHABILITATION PATIENT/CLIENT MANAGEMENT. DRUGS USED IN IONTOPHORESIS AND PHONOPORESIS WILL BE DISCUSSED IN DETAIL.

COURSE OUTCOMES

THE EXPECTED OUTCOMES OF THE COURSE IS THAT AFTER THE PRESCRIBED HOURS OF LECTURES AND DEMONSTRATIONS, THE STUDENT WILL BE ABLE TO UNDERSTAND THE EFFECTS AND THE ADVERSE EFFECTS OF VARIOUS DRUGS ON DIFFERENT SYSTEMS OF THE BODY. THIS WOULD HELP THE STUDENTS TO UNDERSTAND THE LIMITATIONS IMPOSED BY THE DRUGS ON ANY THERAPY.

UNIT I:

1. General Pharmacology [5 Hours]

Introduction, Definitions, Classification of drugs, Sources of drugs, Routes of drug administration, Distribution of drugs, Metabolism and Excretion of drugs Pharmacokinetics, Pharmacodynamics, Factors modifying drug response, Adverse effects.

2. Autonomic Nervous system [5 hours]

General considerations – The Sympathetic and Parasympathetic Systems, Receptors, Somatic Nervous System
Cholinergic and Anti-Cholinergic drugs, Adrenergic and Adrenergic blocking drugs, Peripheral muscle relaxants.

3. Cardiovascular Pharmacology [10 Hours]

Drugs Used in the Treatment of Heart Failure: Digitalis, Diuretics, Vasodilators, ACE inhibitors
Antihypertensive Drugs: Diuretics, Beta Blockers, Calcium Channel Blockers, ACE Inhibitors,

Central Acting Alpha Agonists, Peripheral Alpha Antagonists, Direct acting Vasodilators Antiarrhythmic Drugs
Drugs Used in the Tratment of Vascular Disease and Tissue Ischemia : Vascular Disease,
Hemostasis Lipid-Lowering agents, Antithrombotics, Anticoagulants and Thrombolytics Ischemic Heart Disease – Nitrates, Beta-Blockers, Calcium Channel Blockers
Cerebral Ischemia

Peripheral Vscular Disease

UNIT II:

4. Neuropharmacology [8 Hours]

Sedative-Hypnotic Drugs: Barbiturates, Benzodiazepines
Antianxiety Drugs: Benzodiazepines, Other Anxiolytics
Drugs Used in Treatment of Mood Disorders: Monoamine Oxidase Inhibitors, Tricyclic Antidepressants, Atypical Antidepressants, Lithium Antipsychotic drugs

5. Disorders of Movement [6 Hours]

Drugs used in Treatment of Parkinson's Disease
Antiepileptic Drugs
Spasticity and Skeletal Muscle Relaxants

6. Geriatrics [6 Hours]

Pharmacology and the geriatric Population: Adverse effects of special concern in the Elderly,
Dementia, Postural hypotension

UNIT III:

7. Inflammatory/Immune Diseases [14 Hours]
Non-narcotic Analgesics and Nonsteroidal Anti-Inflammatory Drugs: Acetaminophen, NSAIDs, Aspirin, Nonaspirin NSAIDs, drug Interactins with NSAIDs

Glucocorticoids: Pharmacological Uses of Glucocorticoids, adverse effects, Physiologic Use of Glucocorticoids
Drugs Used in Treatment of Arthritic Diseases: Rheumatoid Arthritis, Osteoarthritis, Gout

Drugs Used in the Treatment of Neuromuscular Immune/Inflmmatory Diseases: Myasthena gravis, Idiopathic Inflammatory Myopathies, systemic lupus Erythmatosus, Scleroderma, Demyelinating Disease
Respiratory Pharmacology: Obstructive Airway Diseases, Drugs used in Treatment of Obstructive airway Diseases, Allergic Rhinitis

8. Digestion and Metabolism [6 Hours]

Gastrointestinal Pharmacology: Peptic Ulcer Disease, Constipation, Diarrhea Drugs Used in Treatment of Diabetes Mellitus: Insulin, Oral Hypoglycemics

Recommended Textbooks

1. Lippicott's Pharmacology.
2. Essential of Medical Phramacology by Tripathi
3. Text book of Medical Pharmacology by Padmajaudaykumar
4. Pharmacology by N.Murugesh
5. Pharmacolgy&Pharmacotherapeutics by Sadoskar.

YEAR : II YEAR
COURSE CODE : 17PT204
TITLE OF THE COURSE : EXERCISE THERAPY

COURSE OBJECTIVES

IN THIS COURSE THE STUDENT WILL LEARN THE PRINCIPLES, TECHNIQUES AND EFFECTS OF EXERCISE AS A THERAPEUTIC MODALITY IN THE RESTORATION OF PHYSICAL FUNCTION.

COURSE OUTCOMES

THE EXPECTED OUTCOMES OF THIS COURSE IS THAT AFTER THE PRESCRIBED HOURS OF LECTURES AND DEMONSTRATIONS IN ADDITION TO PRACTICAL AND CLINIC THE STUDENT WILL BE ABLE TO LIST THE INDICATIONS AND CONTRAINDICATIONS OF VARIOUS TYPES OF EXERCISE, DEMONSTRATE THE DIFFERENT TECHNIQUE, AND DESCRIBE THE EFFECTS.

UNIT I:

1. **Introduction to Exercise Therapy [3 Hours]**

The aims of Exercise Therapy, The techniques of Exercise Therapy, Approach to patient's problems, Assessment of patient's condition – Measurements of Vital parameters, Starting Positions – Fundamental positions & derived Positions, Planning of Treatment

2. **Methods of Testing [15 Hours]**

a) Functional tests

b) Measurement of Joint range: ROM-Definition, Normal ROM for all peripheral joints & spine, Goniometer-parts, types, principles, uses., Limitations of goniometry, Techniques for measurement of ROM for all peripheral joints- **revision**

c) Tests for neuromuscular efficiency

Manual Muscle Testing: Introduction to MMT, Principles & Aims, Indications & Limitations,
Techniques of MMT for group & individual muscles : Techniques of MMT for upper limb / Techniques of MMT for lower limb / Techniques of MMT for spine
Anthropometric Measurements: Muscle girth – biceps, triceps, forearm, quadriceps, calf Static power Test

Dynamic power Test
Endurance test
Speed test

Measurement of Limb Length: true limb length, apparent limb length, segmental limb length. Measurement of the angle of Pelvic Inclination.

d) Tests for Co-ordination

3. Relaxation [4 Hours]

Definitions: Muscle Tone, Postural tone, Voluntary Movement, Degrees of relaxation, Pathological tension in muscle, Stress mechanics, types of stresses, Effects of stress on the body mechanism, Indications of relaxation, Methods & techniques of relaxation-Principles & uses: General, Local, Jacobson's, Mitchel's, additional methods.

4. Passive Movements [4 Hours]

Causes of immobility, Classification of Passive movements, Specific definitions related to passive movements, Principles of giving passive movements, Indications, contraindications, effects of uses , Techniques of giving passive movements.

5. Active Movements [6 hours]

Definition of strength, power & work, endurance, muscle actions.
Physiology of muscle performance: structure of skeletal muscle, chemical & mechanical events during contraction &relaxation, muscle fiber type, motor unit, force gradation.
Causes of decreased muscle performance
Physiologic adaptation to training: Strength & Power, Endurance.
Types of active movements
Free exercise: Classification, principles, techniques, indications, contraindications, effects and uses
Active Assisted Exercise: principles, techniques, indications, contraindications, effects and uses

Assisted-Resisted Exercise: principles, techniques, indications, contraindications, effects and uses Resisted Exercise: Definition, principles, indications, contraindications, precautions & techniques, effects and uses
Types of resisted exercises: Manual and Mechanical resistance exercise, Isometric exercise, Dynamic exercise: Concentric and Eccentric, Dynamic exercise: Constant versus variable resistance, Isokinetic exercise, Open-Chain and Closed-Chain exercise.

6. Specific exercise regimens

Isotonic: de Lormes, Oxford, MacQueen, Circiut weight training

Isometric: BRIME (Brief Resisted Isometric Exercise), Multiple Angle Isometrics Isokinetic regimens

UNIT II:

7. Physiology of muscle performance: [2 hours]

Structure of skeletal muscle, chemical & mechanical events during contraction &relaxation, muscle fibre type, motor unit, force gradation. Causes of decreased muscle performance Physiologic adaptation to training: Strength & Power, Endurance.

8. Proprioceptive Neuromuscular Facilitation [6 Hours]

Definitions & goals
Basic neurophysiologic principles of PNF: Muscular activity, Diagonals patterns of movement: upper limb, lower limb Procedure: components of PNF

Techniques of facilitation
Mobility: Contract relax, Hold relax, Rhythmic initiation
Strengthening: Slow reversals, repeated contractions, timing for emphasis, rhythmic stabilization
Stability: Alternating isometric, rhythmic stabilization
Skill: timing for emphasis, resisted progression
Endurance: slow reversals, agonist reversal

9. Suspension Therapy [6 Hours]

Definition, principles, equipments& accessories, Indications & contraindications, Benefits of suspension therapy
Types of suspension therapy: axial, vertical, pendular
Techniques of suspension therapy for upper limb
Techniques of suspension therapy for lower limb

10. Functional Re-education [4 hours]

Lying to sitting: Activities on the Mat/Bed, Movement and stability at floor level; Sitting activities and gait; Lowerlimb and Upperlimb activities.

11. Aerobic Exercise [4 Hours]

Definition and key terms; Physiological response to aerobic exercise, Examination and evaluation of aerobic capacity – Exercise Testing, Determinants of an Exercise Program, The Exercise Program, Normal and abnormal response to acute aerobic

exercise, Physiological changes that occur with training, Application of Principles of an Aerobic conditioning program for patients – types and phases of aerobic training.

12. Stretching [3 Hours]

Definition of terms related to stretching; Tissue response towards immobilization and elongation,
Determinants of stretching exercise, Effects of stretching, Inhibition and relaxation procedures, Precautions and contraindications of stretching, Techniques of stretching.

13. Manual Therapy & Peripheral Joint Mobilization [5 Hours]

Schools of Manual Therapy, Principles, Grades, Indications and Contraindications, Effects and Uses – Maitland, Kaltenborn, Mulligan
Biomechanical basis for mobilization, Effects of joint mobilisation, Indications and contraindications, Grades of mobilization, Principles of mobilization, Techniques of mobilization for upper limb, lower limb, Precautions.

UNIT III:

14. Balance [4 Hours]

Physiology of balance: contributions of sensory systems, processing sensory information, generating motor output
Components of balance (sensory, musculoskeletal, biomechanical)

Causes of impaired balance, Examination & evaluation of impaired balance,
Activities for treating impaired balance: mode, posture, movement, Precautions & contraindications, Types Balance retraining

15. Co-ordination Exercise [4 Hours]

Anatomy & Physiology of cerebellum with its pathways
Definitions: Co-ordination, Inco-ordination
Causes for Inco-ordination, Test for co-ordination: equilibrium test, non equilibrium test
Principles of co-ordination exercise
Frenkel's Exercise: uses of Frenkel's exercise, technique of Frenkel's exercise, progression, home exercise.

16. Posture [3 Hours]

Definition, Active and Inactive Postures, Postural Mechanism, Patterns of Posture, Principles of re-education: corrective methods and techniques, Patient education.

15. Walking Aids [3 hours]

Walking aids Revision. Application : Pre crutch Training and crutch gaits.

16. Massage [4 Hours]

History and Classification of Massage
Technique Principles, Indications and
Contraindications Technique of Massage
Manipulations
Physiological and Therapeutic Uses of Specific Manipulations

17. Hydrotherapy [3 Hours]

Definitions, Goals and Indications, Precautions and Contraindications, Properties of water, Use of special equipments, techniques, Effects and uses, merits and demerits

18. Individual and Group Exercises [3 Hours]

Advantages and Disadvantages, Organisation of Group exercises, Recreational Activities and Sports

19. Introduction to Yoga [5 Hours]

Asanas – Principles and elements;
Pranayamas – Principles, Methods and Techniques

Recommended Textbooks

1. Therapeutic exercise by Barbara Bandy
2. Therapeutic exercise by Carolyn Kisner
3. Principles of exercise therapy by M.Dena Gardiner
4. Practical Exercise therapy by Hollis Margaret
5. Therapeutic exercise by Sydney Litch
6. Therapeutic exercise by Hall & Brody
7. Therapeutic exercise by Basmajjian
8. Physical Rehabilitation by o'Sullivan.
9. Therapeutic massage by Sinha
10. Principles of muscle testing by Hislop.

YEAR : II YEAR
COURSE CODE : 17PT205
TITLE OF THE COURSE : ELECTROTHERAPY

COURSE OBJECTIVES

IN THIS COURSE THE STUDENT WILL LEARN THE PRINCIPLES, TECHNIQUE AND EFFECTS OF ELECTROTHERAPY AS A THERAPEUTIC MODALITY IN THE RESTORATION OF PHYSICAL FUNCTION

COURSE OUTCOMES

THE EXPECTED OUTCOMES OF THIS COURSE IS THAT AFTER THE PRESCRIBED HOURS OF LECTURES, DEMONSTRATIONS, PRACTICALS AND CLINICS THE STUDENT WILL BE ABLE TO LIST THE INDICATIONS AND CONTRAINDICATIONS OF VARIOUS TYPES OF ELECTROTHERAPY DEMONSTRATE THE DIFFERENT TECHNIQUE AND DESCRIBE THEIR EFFECTS.

UNIT I:

Section I - Introductory Physics. [**This unit will have questions for short essay and short answer only]**

1. **Electricity definition, types [1 Hour]**

2. **Static electricity [2 Hour]**

a. Production of electrical charges.
b. Characteristics of charged body.
c. Characteristics of lines of forces.
d. Potential difference and EMG.

3. **Current Electricity [5 Hour]**

a. Units of Electricity, faraday, volt, ampere, coulomb, watt.
b. Resistance in series and parallel.
c. Ohms law and its application to DC/AC.
d. Fuse.
e. Shock: Micro/ Macro shocks, safety precaution and management, earthing techniques & precautions.
f. Burns: electrical & chemical burns, prevention and management.
g. Condensors: definition, principles, types, construction, working and uses.

4. Magnetism: Definition, properties, electro-magnetic induction, electro- magnetic spectrum. [1 Hour]

5. Valves, transformers, types, principles, construction and working. [1 Hour]
6. Ionization: Principles, effects of various technique of medical ionization. [1 Hour]

Section II – Therapeutic Electricity

Section II A - Low frequency Currents

1. **Basic types of current [1 Hour]**
    a. Direct Current: types, physiological &therapeutic effects.
    b. Alternating Current

2. **Types of Current used in Therapeutics [1 Hour]**
Modified D.C, Faradic Current, Galvanic Current, Modified A.C,
Sinusoidal Current and Diadynamic Current.

3. Faradic Current: Definition, Modifications, Techniques of Application of Individual, Muscle and Group Muscle stimulation, Physiological & Therapeutic effects of Faradic Current, Precautions, Indications & Contra-Indications, Dangers. **[2 Hours]**

4. Galvanic Current: Definition, Modifications, Physiological & Therapeutic effects of Galvanic Current, Indications & Contra-Indications, Dangers, Effect of interrupted galvanic current on normally innervated and denervated muscles and partially denervated muscles**. [2 Hours]**

5. Sinusoidal Current &Diadynamic Current in Brief. **[1 Hour]**

6. HVPGS – Parameters & its uses **[1 Hour]**

7. Ionization / Iontophoresis : Techniques of Application of Iontophoresis, Indications, Selection of Current, Commonly used Ions (Drugs) for pain, hyperhydrosis, would healing.**[1 Hour]**

8. Cathodal / Anodal galvanism. **[1 Hour]**

9. Micro Current & Macro Current **[1 Hour]**

10. Types of Electrical Stimulators**[1 Hour]**

NMES- Construction component.

Neuro muscular diagnostic stimulator- construction component

Components and working Principles.

11. Principles of Application: Electrode tissue interface, Tissue Impedance, Types of Electrode, Size & Placement of Electrode – Waterbath, Unipolar, Bi-polar, Electrode coupling, Current flow in tissues, Lowering of Skin Resistance. **[2 Hours]**

12. Nerve Muscle Physiology: Action Potential, Resting membrane potential, Propagation of Action Potential, Motor unit, synapse, Accommodation, Stimulation of Healthy Muscle, Stimulation of Denervated Muscle, Stimulation for Tissue Repair**. [2 Hours]**

13. TENS: Define TENS, Types of TENS, Conventional TENS, Acupuncture TENS, Burst TENS, Brief & Intense TENS, Modulated TENS. Types of Electrodes & Placement of Electrodes, Dosage parameters, Physiological & Therapeutic effects, Indications & Contraindications**. [3 Hrs]**

14. Pain: Define Pain, Theories of Pain (Outline only), Pain Gate Control theory in detail. **[2 Hours]**

UNIT II

Section II B - Electro-diagnosis

1. FG Test

2. SD Curve: Methods of Plotting SD Curve, Apparatus selection, Characters of Normally innervated Muscle, Characters of Partially Denervated Muscle, Characters of Completely denervated Muscle, Chronaxie&Rheobase. **[2 Hours]**

3. Nerve conduction velocity studies**[1 Hour]**

4. EMG: Construction of EMG equipment**.[1 Hour]**

5. Bio-feed back**.[1 Hour]**

Section II C - Medium Frequency

1. Interferential Therapy: Define IFT, Principle of Production of IFT, Static Interference System,
   Dynamic Interference system, Dosage Parameters for IFT, Electrode placement in IFT, Physiological & Therapeutic effects, Indications & Contraindications. **[2 Hour]**

2. Russian Current

3. Rebox type Current **[1 Hour]**

Section III - Thermo&Actinotherapy (High Frequency Currents)

1. Electro Magnetic Spectrum. **[1 Hour]**

2. SWD: Define short wave, Frequency & Wavelength of SWD, Principle of Production of SWD, Circuit diagram & Production of SWD, Methods of Heat Production by SWD treatment, Types of SWD Electrode, Placement & Spacing of Electrodes, Tuning, Testing of SWD Apparatus, Physiological & Therapeutic effects, Indications & Contraindications, Dangers, Dosage parameters **[8 Hours]**

3. Pulsed Electro Magnetic Energy: Principles, Production & Parameters of PEME, Uses of PEME. **[1 Hour]**

4. Micro Wave Diathermy: Define Microwave, Wave length & Frequency, Production of MW, Applicators, Dosage Parameters, Physiological & Therapeutic effects, Indications &Contraindications, Dangers of MWD. **[2 Hours]**

5. Ultrasound: Define Ultrasound, Frequency, Piezo Electric effects: Direct, Reverse, Production of US, Treatment Dosage parameters: Continous& Pulsed mode, Intensity, US Fields: Near field, Far field, Half value distance, Attenuation, Coupling Media, Thermal effects, Non- thermal effects, Principles & Application of US: Direct contact, Water bag, Water bath, Solid sterile gel pack method for wound. Uses of US, Indications & Contraindications, Dangers of Ultrasound. Phonophoresis: Define Phonophoresis, Methods of application,
Commonly used drugs, Uses. Dosages of US. **[8 Hours]**

6. IRR: Define IRR,wavelength& parameters, Types of IR generators, Production of IR, Physiological & Therapeutic effects, Duration & frequency of treatment, Indication &Contraindication. **[2 Hours]**

UNIT III:

7. UVR: Define UVR, Types of UVR, UVR generators: High pressure mercury vapour lamp, Water cooled mercury vapour lamp, Kromayer lamp, Fluorescent tube, Theraktin tunnel, PUVA apparatus. Physiological & Therapeutic effects. Sensitizers & Filters. Test dosage calculation. Calculation of E1, E2, E3, E4 doses. Indications, contraindications. Dangers. Dosages for different therapeutic effects, Distance in UVR lamp **[8 Hours]**

8. LASER: Define LASER. Types of LASER. Principles of Production. Production of LASER by various methods. Methods of application of LASER. Dosage of LASER. Physiological & Therapeutic effects of LASER. Safety precautions of LASER. Classifications of LASER. Energy density & power density **[8 Hours]**

Section IV – Superficial heating Modalities

1. Wax Therapy: Principle of Wax Therapy application – latent Heat, Composition of Wax Bath Therapy unit, Methods of application of Wax, Physiological & Therapeutic effects, Indications & Contraindication, Dangers. **[2 Hours]**

2. Contrast Bath: Methods of application, Therapeutic uses, Indications & Contraindications**.[1 Hour]**

3. Moist Heat Therapy: Hydro collator packs – in brief, Methods of applications, Therapeutic uses, Indications & Contraindications.**[1 Hour]**

4. Cyclotherm: Principles of production, Therapeutic uses, Indications & Contraindications. **[1 Hour]**

5. Fluidotherapy: Construction, Method of application, Therapeutic uses, Indications &Contraindications. **[1 Hour]**

6. Whirl Pool Bath: Construction, Method of Application, Therapeutic Uses, Indications & Contraindications. **[1 Hour]**

7. Magnetic Stimulation, Principles, Therapeutic uses, Indications & contraindication. **[1 Hour]**

8. Cryotherapy: Define- Cryotherapy, Principle- Latent heat of fusion, Physiological & Therapeutics effects, Techniques of Applications, Indications & Contraindications, Dangers, Methods of application with dosages. **[4 Hours]**

Recommended Textbooks

1. **C**laytons Electrotherapy by Forster &Plastangs
2. Electrotherapy Explained by Low & Reed
3. Clinical Electrotherapy by Nelson
4. Electrotherapy Evidene based practice by Sheila Kitchen
5. Physical agents by MichileCameroon
6. Principles of Electrotherapy by MichileCamreeon
7. Thermal agents by SusanMichlovitz.

YEAR : II YEAR
COURSE CODE : 17PT271
TITLE OF THE COURSE : EXERCISE THERAPY PRACTICALS

PRACTICALS

The students of exercise therapy are to be trained in Practical Laboratory work for all the topics discussed in theory. The student must be able to evaluate and apply judiciously the different methods of exercise therapy techniques on the patients. They must be able to-

1. Demonstrate the technique of measuring using goniometry
2. Demonstrate muscle strength using the principles and technique of MMT
3. Demonstrate the techniques for muscle strengthening based on MMT grading
4. Demonstrate the PNF techniques
5. Demonstrate exercises for training co-ordination – Frenkel's exercise
6. Demonstrate the techniques of massage manipulations
7. Demonstrate techniques for functional re-education
8. Assess and train for using walking aids
9. Demonstrate mobilization of individual joint regions
10. Demonstrate to use the technique of suspension therapy for mobilizing and strengthening joints and muscles
11. Demonstrate the techniques for muscle stretching
12. Assess and evaluate posture and gait
13. Demonstrate to apply the technique of passive movements
14. Demonstrate various techniques of Active movements
15. Demonstrate techniques of strengthening muscles using resisted exercises 16. Demonstrate techniques for measuring limb length and body circumference.

YEAR : II YEAR
COURSE CODE : 17PT272
TITLE OF THE COURSE : ELECTROTHERAPY PRACTICALS

PRACTICAL

The student of Electrotherapy must be able to demonstrate the use of electrotherapy modalities applying the principles of electrotherapy with proper techniques, choice of dosage parameters and safety precautions.

1. Demonstrate the technique for patient evaluation – receiving the patient and positioning the patient for treatment using electrotherapy.
2. Collection of materials required for treatment using electrotherapy modalities and testing of the apparatus.
3. Demonstrate placement of electrodes for various electrotherapy modalities
4. Electrical stimulation for the muscles supplied by the peripheral nerves
5. Faradism under Pressure for UL and LL
6. Plotting of SD curve with chronaxie and rheobase
7. Demonstrate FG test
8. Application of Ultrasound for different regions-various methods of application
9. Demonstrate treatment techniques using SWD, IRR and Microwave diathermy
10. Demonstrate the technique of UVR exposure for various conditions – calculation of test dose
11. Demonstrate treatment method using IFT for various regions
12. Calculation of dosage and technique of application of LASER
13. Technique of treatment and application of Hydrocollator packs, cryotherapy, contrast bath, wax therapy
14. Demonstrate the treatment method using whirl pool bath
15. Winding up procedure after any electrotherapy treatment method

Recommended Textbooks

1. **C**laytons Electrotherapy by Forster &Plastangs
2. Electrotherapy Explained by Low & Reed
3. Clinical Electrotherapy by Nelson
4. Electrotherapy Evidene based practice by Sheila Kitchen
5. Physical agents by MichileCameroon
6. Principles of Electrotherapy by MichileCamreeon
7. Thermal agents by Susan Michlovitz.

YEAR : III YEAR
COURSE CODE : 17PT301
TITLE OF THE COURSE : GENERAL MEDICINE

COURSE OBJECTIVES

THIS COURSE INTENDS TO FAMILIARIZE STUDENTS WITH MEDICAL TERMINOLOGY & ABBREVIATIONS FOR EFFICIENT & EFFECTIVE CHART REVIEWING & DOCUMENTATION. IT ALSO EXPLORES SELECTED SYSTEMIC DISEASES, FOCUSING ON EPIDEMIOLOGY, PATHOLOGY, HISTOLOGY, ETIOLOGY AS WELL AS PRIMARY & SECONDARY CLINICAL CHARACTERISTICS & THEIR MANAGEMENT. DISCUSSES & INTEGRATES SUBSEQUENT MEDICAL MANAGEMENT OF GENERAL, RHEUMATOLOGY, GERONTOLOGY, CARDIO-VASCULAR & RESPIRATORY SYSTEMS, TO FORMULATE APPROPRIATE INTERVENTION, INDICATIONS, PRECAUTIONS &CONTRAINDICATIONS.

COURSE OUTCOMES

THE EXPECTED OUTCOMES OF THIS COURSE IS THAT AFTER THE PRESCRIBED HOURS OF LECTURES AND DEMONSTRATIONS SO THAT STUDENTWILL BE ABLE TO UNDERSTAND THE CAUSES, FINDINGS, MANAGEMENT IN RELATION WITH PHYSIOTHERAPY. THEY SHOULD HAVE A BRIEF IDEA OF THE ETIOLOGY AND PATHOLOGY, THE PATIENT'S SYMPTOMS AND THE RESULTANT FUNCTIONAL DISABILITY. THIS WOULD HELP THE STUDENTS TO UNDERSTAND THE LIMITATIONSIMPOSED BY THE DISEASES ON ANY THERAPY.

UNIT I

1. Infection : Effects of Infection on the body – Pathology – source and spread of infection – vaccinations – generalized infections – rashes and infection – food poisoning and gasteroenteritis – sexually transmitted diseases – HIV infections and Aids **[3 Hours]**

2. Poisoning : Clinical features – general management – common agents in poisoning – pharmaceutical agents – drugs of misuse – chemical pesticides –Envenomation **[2 Hours]**

3. Food and Nutrition : Assessment – Nutritional and Energy requirements; Deficiency diseases – clinical features and treatment; Protein – Energy Malnutrition : Clinical features and treatment; Obesity and its related disorders : Causes – Complications – benefits of weight loss – management of Obesity – diet, exercise and medications**.[4 Hours]**

4. Endocrine diseases : Common presenting symptoms of Endocrine disease – common classical disease presentations, clinical features and its management; Diabetes

Mellitus : Etiology and pathogenesis of diabetes – clinical manifestations of the disease – management of the disease – Complications of diabetes. **[4 Hours]**

5. Diseases of the blood : Examinations of blood disorders – Clinical manifestations of blood disease; Anemia – signs and symptoms – types and management ; Hemophilia - Cause – clinical features severity of disease – management – complications due to repeated haemorrhages – complications due to therapy. **[4 Hours]**

UNIT II

6. Diseases of the digestive system : Clinical manifestations of gastrointestinal disease – Aetiology, clinical features, diagnosis, complications and treatment of the following conditions : Reflux Oesophagitis, Achlasia Cardia, Carcinoma of Oesophagus, GI bleeding, Peptic Ulcer disease, Carcinoma of Stomach, Pancreatitis, Malabsorption Syndrome, Ulcerative Colitis, Peritonitis, Infections of Alimentary Tract ; Clinical manifestations of liver diseases - Aetiology, clinical features, diagnosis, complications and treatment of the followingconditions : Viral Hepatitis, Wilson's Disease, Alpha1-antitrypsin deficiency, Tumors of the Liver, Gall stones, Cholycystitis. **[7 Hours]**

7. Cardiovascular Disease : Examination of the Cardiovascular System – Investigations : ECG, Exercise Stress Testing, Radiology ; Clinical manifestations of Cardiovascular disease ; Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases and disorders of the heart : Pericarditis, Myocarditis, Endocarditis, Rheumatic Fever – resulting in valve disorders, Ishemic Heart Disease, Coronary Valve Disease, Congenital disorders of the Heart, Cardiac Arrest ; Examination and Investigations of diseases of arteries and veins ; Hypertension : Definition, causes, classification, types, assessment, investigations and management. **[8 Hours]**

8. Respiratory Disease : Examination of the Respiratory System – Investigations : Chest Radiographs, Pulmonary Function Testing, Arterial Blood Gas Analysis ; Clinical manifestations of Lung disease ; Patterns of lung disease – Chronic Obstructive Lung Disease and Restrictive Lung Disease ; Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following lung diseases : Chronic Bronchitis, Emphysema, Asthma, Bronchiectasis, Cystic Fibrosis, Upper Respiratory Tract Infections, Pneumonia, Tuberculosis, Fungal Diseases, Interstitial Lung Diseases, Diseases of the pleura, diaphragm and chest wall ; Respiratory failure – Definition, types, causes, clinical features, diagnosis and management. **[9 Hours]**

UNIT III

9. Diseases of the Skin: Examination and clinical manifestations of skin diseases ; Causes, clinical features and management of the following skin conditions : Leprosy,

Psoriasis, Pigmentary Anomalies, Vasomotor disorders, Dermatitis, Coccal and Fungal Parasitic and Viral infections. **[6 Hours]**

10. Pediatrics : Problems and management of LBW infants, Perinatal problems and management, Congenital abnormalities and management, Respiratory conditions of childhood, Cerebral Palsy – causes, complications, clinical manifestations, treatment ; Spina Bifida – management and treatment, Epilepsies – types, diagnosis and treatment; Recognizing developmental delay, common causes of delay ; Orthopedic and Neuromuscular disorders in childhood, clinical features and management ; Sensory disorders – problems resulting from loss of vision and hearing ; Learning and behavioural problems – Hyperactivity, Autism, Challenging behaviours, Educational delay, The Clumsy Child. **[8 Hours]**

11. Psychiatric Disorders: Classifications, Causes, Clinical manifestations and treatment methods used in Psychiatry. **[5 Hours]**

Recommended books:

1. Davidson's Principles and Practice of Medicine
2. Harrison's Internal Medicine
3. Braunwald Text of Cardiology
4. Text Book of Cardiology by Hurst

YEAR : III YEAR
COURSE CODE : 17PT302
TITLE OF THE COURSE : GENERAL SURGERY

COURSE OBJECTIVES

THIS COURSE INTENDS TO FAMILIARIZE STUDENTS WITH PRINCIPLES OF GENERAL SURGERY INCLUDING VARIOUS SPECIALTIES LIKE CARDIOVASCULAR, THORACIC, NEUROLOGYAND PLASTIC SURGERY. IT ALSO FAMILIARIZES THE STUDENTS WITHTERMINOLOGY AND ABBREVIATIONS FOR EFFICIENT AND EFFECTIVE CHART REVIEWING AND DOCUMENTATION. IT EXPLORES VARIOUS CONDITIONS NEEDING ATTENTION, FOCUSING ON EPIDEMIOLOGY, PATHOLOGY, AS WELL AS PRIMARY AND SECONDARY CLINICAL CHARACTERISTICS AND THEIR SURGICAL AND MEDICAL MANAGEMENT.

COURSE OUTCOMES

AT THE END OF THE COURSE,THE CANDIDATE WILL BE ABLE TO:

1. DESCRIBE THE EFFECTS OF SURGICAL TRAUMA & ANAESTHESIA IN GENERAL
2. CLINICALLY EVALUATE & DESCRIBE THE SURGICAL MANAGEMENT IN BRIEF .
3. DESCRIBE PRE-OPERATIVE EVALUATION, SURGICAL INDICATIONS IN VARIOUS SURGICAL APPROACHES, MANAGEMENT AND POST OPERATIVE CARE IN ABOVE MENTIONED AREAS WITH POSSIBLE COMPLICATIONS.
4. BE ABLE TO READ & INTERPRET FINDINGS OF THE RELEVANT INVESTIGATIONS

UNIT I

1. Fluid, Electrolyte and Acid-Base disturbances – diagnosis and management ; Nutrition in the surgical patient ; Wound healing – basic process involved in wound repair, basic phases in the healing process, clinical management of wounds, factors affecting wound healing, Scars – types and treatment. Hemostasis – components, hemostatic disorders, factors affecting bleeding during surgery. Transfusion therapy in surgery – blood components, complications of transfusion ; Surgical Infections ; General Post – Operative Complications and its management **[6 Hours]**

2. Reasons for Surgery ; Types of anaesthesia and its affects on the patient ; Types of Incisons ; Clips Ligatures and Sutures ; General Thoracic Procedures – Radiologic Diagnostic procedures, Endoscopy – types, Biopsy – uses and types. Overview and Drainage systems and tubes used in Surgery.**[3 Hours]**

3. Causes, Clinical Presentation, Diagnosis and treatment of the following Thoracic Trauma situations – Airway obstruction, Pnuemothorax, Hemothorax, Cardiac Tamponade,

Tracheobronchial disruption, Aortic disruption, Diaphragmatic disruption, Esophageal disruption, Cardiac and Pulmonary Contusions. **[4 Hours]**

4. Surgical Oncology – Cancer – definition, types, clinical manifestations of cancer, Staging of Cancer, surgical procedures involved in the management of cancer. **[3 Hours]**

UNIT II

5. Disorders of the Chest Wall, Lung and Mediastinum – Definition, Clinical features, diagnosis and choice of management for the following disorders – chest wall deformities, chest wall tumors, Spontaneous Pneumothorax, Pleural Effusion, Empyema Thoracis, Lung abscess, Bronchiectasis, Tuberculosis, Bronchogenic Carcinoma, Bronchial Adenomas, Metastatic tumors of the Lung, tracheal Stenosis, Congenital tracheomalacia, Neoplasms of the trachea, Lesions of the Mediastinum. Carcinoma of the female breast. **[5 Hours]**

6. Disorders of the Heart – Definition, Clinical features, diagnosis and choice of management for the following disorders : Congenital Heart diseases – Acyanotic congenital heart disease & Cyanotic congenital heart disease : Patent Ductus Arteriosus, Coarctation of Aorta, Atrial Septal Defect, Ventricular Septal Defect, Tetraology of Fallot, Transposition of Great Vessels ; Acquired Heart Disease – Mitral Stenosis & Insufficiency, Aortic Stenosis and In sufficeiency, Ischemic Heart Disease – Coronary Artery Disease, Cardiac tumors. **[6 Hours]**

7. Thoracic surgeries – Thoracotomy – Definition, Types of Incisions with emphasis to the site of insision, muscles cut and complications. Lung surgeries :Pnumonectomy, Lobectomy, segmentectomy – Indications, Physiological changes and Complications ; Thoracoplasty, Pleurectomy, Pleurodesis and Decortication of the Lung. Cardiac surgeries – An overview of the Cardio-Pulmonary Bypass Machine – Extracardiac Operations, Closed Heart surgery, Open Heart surgery. Transplant Surgery – Heart, Lung and Kidney – Indications, Physiological changes andComplications. **[6 Hours]**

8. Diseases of the Arteries and Veins : Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases : Arteriosclerosis, Atherosclerosis, Aneurysm, Buerger's disease, Raynaud's Disease, Thrombophlebitis, Deep Vein Thrombosis, Pulmonary Embolism, Varicose Veins. **[5 Hours]**

UNIT III

9. Definition, Indication, Incision, Physiological changes and Complications following Common operations like Cholecystectomy, Colostomy, Ileostomy, Gastrectomy, Hernias, Appendicectomy Mastectomy, Neprectomy, Prostectomy**. [4 Hours]**

10. Burn: Definition, Classification, Causes, Prevention, Pathological changes, Complications, Clinical Features and Management. Skin Grafts – Types, Grafting Procedures, Survival of Skin Graft ; Flaps – Types and uses of Flaps. **[4 Hours]**

11. WomensHealth : Menstrual cycle and its disorders. Hormonal disorders of females-obesity and female hormones.Cancer of the female reproductive organs-management Infections and sexually transmitted disease in female Menopause - its effects on emotions and musculoskeletal system.Malnutrition and deficiencies in females.Sterility-pathophysiology- investigations-management.Maternal physiology in pregnancy.Musculo skeletal disorders during pregnancy.Prenatal complications-investigations-management.Child birth- Stages - complications-investigations-management – Pain relief in labour - Purperium - Post Natal care.Surgical procedures involving child birth.Incontinence – Types, Causes, Assessment and Management.Definition, Indications and Management of the following surgical procedures – Hysterosalphyngography, Dilatation and Curettage, Laproscopy, Colposopy, Hysterectomy. **[8 Hours]**

12. ENT: Common problems of ear, otitis media, Otosclerosis, functional achonia and deafness, management facial palsy classification, medical and surgical management of lower motor neuron type of facial palsy. [3 Hours]

13. Ophthalmology: Ophthalmologic surgical conditions, refraction's, conjunctivitis, glaucoma, corneal ulcer, iritis, cataract, retinitis, detachment of retina, defects of extra-ocular muscles- surgical management **[3 Hours]**

Recommended books:

1. General Surgical Operations – by Kirk / Williamson
2. Surgery by Nan 3. Bailey and Love's – Short Practice of Surgery
4. Chest Disease by Crofton and Douglas.
5. Patrica A Downie, Text book of Heart, Chest Vascular Disease for physiotherapists, JP Bros.

YEAR : III YEAR
COURSE CODE : 17PT303
TITLE OF THE COURSE : ORTHOPEDICS & TRAUMATOLOGY

COURSE OBJECTIVES

INTRODUCE THE STUDENT TO THE ORTHOPEDICCONDITIONS WHICH COMMONLY CAUSE DISABILITY. PARTICULAR EFFORT IS MADE IN THIS COURSE TO FACILITATE THE UNDERSTANDING OF STUDENT WITH ANY DETAILS PERTAINING TO DIAGNOSIS WHICH WILL CONTRIBUTE TO THEIR UNDERSTANDING OF THE LIMITATIONS IMPOSED BY ORTHOPEDIC PATHOLOGY ON THE FUNCTIONING OF THE INDIVIDUAL

COURSE OUTCOMES

THE EXPECTED OUTCOMES OF THIS COURSE IS THAT AFTER THE PRESCRIBED HOURS OF LECTURES AND DEMONSTRATIONS IN ADDITION TOCLINICS THE STUDENT WILL BE ABLE TO DEMONSTRATE AN UNDERSTANDING OF ORTHOPEDIC CONDITIONS CAUSINGDISABILITY AND THEIRMANAGEMENT

UNIT I : 21HRS

1. Introduction to orthopaedics. Clinical examination in an Orthopedic patient. Common investigative procedures. Radiological and Imaging techniques in Orthopeadics. Inflammation and repair, Soft tissue healing.**[3 Hours]**
2. Traumatology Fracture: definition, types, signs and symptoms.Fracturehealing.Complications of fractures.Conservative and surgical approaches.Principles of management – reduction (open/closed, immobilization etc). Subluxation/ dislocations – definition, signs and symptoms, management (conservative and operative). **[3 Hours]**
3. Fractures and Dislocations of Upper Limb Fractures of Upper Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures: Fractures of clavicle and scapula. Fractures of greater tuberosity and neck of humerus. Fracture shaft of humerus. Supracondylar fracture of humerus. Fractures of capitulum, radial head, olecranon, coronoid, and epicondyles. Side swipe injury of elbow. Both bone fractures of ulna and radius. Fracture of forearm – monteggia, galaezzi fracture –dislocation. Chauffer's fracture.Colle's fracture. Smith's fracture. Scaphoid fracture. Fracture of the metacarpals. Bennett's fracture. Fracture of the phalanges. (Proximal and middle.) Dislocations of Upper Limb - Anterior dislocation of shoulder – mechanism of injury, clinical feature, complications, conservative management (Kocher's and Hippocrates

maneuver), surgical management (putti plat, bankart's) etc. Recurrent dislocation of shoulder. Posterior dislocation of shoulder – mechanism of injury, clinical features and management. Posterior dislocation of elbow- mechanism of injury, clinical feature, complications & management.**[6 Hours]**

4. Fracture of Spine Fracture of Cervical Spine - Mechanism of injury, clinical feature complications (quadriplegia); Management- immobilization (collar, cast, brace, traction); Management for stabilization, management of complication (bladder and bowel, quadriplegia). Clay shoveller's fracture. Hangman's fracture. Fracture odontoid. Fracture of atlas. Fracture of Thoracic and Lumbar Regions - Mechanism of injury, clinical features, management —conservative and surgical of common fractures around thoracic and lumbar regions.Fracture of coccyx. Fracture of Rib Cage - Mechanism of injury, clinical features, management for Fracture Ribs, Fracture of sternum. **[4 Hours]**
5. Fractures and Dislocations of Lower Limb Fracture of Pelvis and Lower Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures: Fracture of pelvis. Fracture neck of femur – classification, clinical features, complications, management - conservative and surgical. Fractures of trochanters. Fracture shaft femur—clinical features, mechanism of injury, complications, management-conservative and surgical. Supracondylar fracture of femur. Fractures of the condyles of femur. Fracture patella. Fractures of tibial condyles. Both bones fracture of tibia and fibula. Dupuytren's fracture Maisonneuve's fracture. Pott's fracture – mechanism of injury, management. Bimalleolar fracture Trimalleolar fracture Fracturecalcaneum – mechanism of injury, complications and management. Fracture of talus. Fracture of metatarsals—stress fractures jone's fracture. Fracture of phalanges. Dislocations of Lower Limb - mechanism of injury, clinical features, complications, management of the following dislocations of lower limb. Anterior dislocation of hip. Posterior dislocation of hip. Central dislocation of hip. Dislocation of patella. Recurrent dislocation of patella**.[5 Hours]**

UNIT II : 19HRS

6. Soft Tissue Injuries - Define terms such as sprains, strains, contusion, tendinitis, rupture, tenosynovitis, tendinosis, bursitis. Mechanism of injury of each, clinical features, managements- conservative and surgical of the following soft tissue injuries: Meniscal injuries of knee. Cruciate injuries of knee. Medial and lateral collateral injuries of knee. Lateral ligament of ankle. Wrist sprains. Strains- quadriceps, hamstrings, calf, biceps, triceps etc. Contusions- quadriceps, gluteal, calf, deltoid etc. Tendon ruptures-Achilles, rotator cuff muscles, biceps, pectorals etc. **[3 Hours]**
7. Hand Injuries - mechanism of injury, clinical features, and management of the following - Crush injuries. Flexor and extensor injuries. Burn injuries of hand**.[2 Hours]**
8. Amputations - Definition, levels of amputation of both lower and upper limbs, indications, complications. **[2 Hours]**

9. Traumatic Spinal Cord Injuries - Clinical features, complications, medical and surgical management of Paraplegia and Quadriplegia. **[2 Hours]**
10. Deformities - clinical features, complications, medical and surgical management of the following Congenital and Acquired deformities. Congenital Deformities - CTEV. CDH. Torticollis. Scoliosis. Flat foot. Vertical talus. Hand anomalies- syndactyly, polydactyly and ectrodactly. Arthrogryposis multiplex congenita(amyoplasiacongenita). Limb deficiencies- Amelia and Phocomelia. Klippelfeil syndrome. Osteogenesis imperfecta(fragile ossium). Cervical rib. Acquired Deformities - Acquired Torticollis. Scoliosis. Kyphosis. Lordosis. Genu varum. Genu valgum. Genu recurvatum Coxa vara. Pes cavus. Hallux rigidus. Hallux valgus. Hammer toe. Metatarsalgia. **[6 Hours]**
11. Disease of Bones and Joints: Causes, Clinical features, Complications, Management-medical and surgical of the following conditions : Infective conditions: Osteomyelitis (Acute / chronic). Brodie's abscess. TB spine and major joints like shoulder, hip, knee, ankle, elbow etc. Arthritic conditions: Pyogenic arthritis. Septic arthritis. Syphilytic infection of joints. Bone Tumors: classification, clinical features, management - medical and surgical of the following tumors : Osteoma. Osteosarcoma, Osteochondroma. Enchondroma. Ewing's sarcoma. Gaint cell tumor. Multiple myeloma. Metastatic tumors. Perthes disease, Slipped Capital Femoral Epiphysis and Avascular Necrosis. Metabolic Bone Diseases: Rickets. Osteomalacia, Osteopenia. Osteoporosis. **[4 Hours]**

UNIT III: 20HRS

12. **InfIammatory and Degenerative Conditions [4 Hours]:** 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. Still's disease (juvenile rheumatoid arthritis). Charcot's joints. Connective Tissue Disorders- Systemic Lupus Erythematosis, Scleroderma, Dermatomyositis, Poliomyelitis, Mixed connective tissue Disease (MCTD)
13. **Syndromes [3 Hours]:** Causes, Clinical features, complications, management-conservative and surgical of the following :Cervico brachial syndrome. Thoracic outlet syndrome. Vertebro- basilar syndrome. Scalenus syndrome. Costo clavicular syndrome. Levator scapulae syndrome. Piriformis syndrome.
14. **Neuromuscular Disorders [3 hours]:** Definition, causes, clinical feature, complications, management. (Multidisciplinary approach) medical and surgical of the following conditions : Cerebral palsy. Poliomyelitis. Spinal Dysraphism. Leprosy.
15. **Cervical and Lumbar Pathology [3 Hours]:** Causes, clinical feature, patho-physiology, investigations, management-Medical and surgical for the following : Prolapsed interverbral disc (PID), Spinal Canal Stenosis. Spondylosis (cervical and lumbar) Spondylolysis. Spondylolisthesis. Lumbago/ Lumbosacral strain. Sacralisation. Lumbarisation. Coccydynia. Hemivertebra.
16. **Orthopedic Surgeries [3 Hours]:** Indications, Classification, Types, Principles of management of the following Surgeries : Arthrodesis. Arthroplasty (partial and total

replacement). Osteotomy , External fixators. Spinal stabilization surgeries(Harrington's, Luque's, Steffi plating) etc , Limb re-attachments.

17. **Regional Conditions [4 Hours]:** Definition, Clinical features and management of the following regional conditions

Shoulder: Periarthritic shoulder (adhesive capsulitis). Rotator cuff tendinitis. Supraspinatus Tendinitis. Infraspinatus Tendinitis. Bicipital Tendinitis.Subacromial Bursitis. Elbow: Tennis Elbow. Golfer's Elbow. Olecranon Bursitis (student's elbow). Triceps Tendinitis. Wrist and Hand: De Quervain's Tenosynovitis. Ganglion. Trigger Finger/ Thumb. Mallet Finger, Carpal Tunnel Syndrome, Dupuytren's Contracture. Pelvis and Hip : IT Band Syndrome. Piriformis Syndrome. Trochanteric Bursitis. Knee: Osteochondritis Dissecans. Prepatellar and Suprapatellar Bursitis.Popliteal Tendinitis. Patellar Tendinitis. Chondromalacia Patella.Plica Syndrome. Fat Pad Syndrome (Hoffa's syndrome). Ankle and Foot: Ankle Sprains. Plantar Fasciitis / Calcaneal Spur.Tarsal Tunnel Syndrome.Achilles Tendinitis.Metatarsalgia.Morton's Neuroma.

Books Recommended:

1. Outline of Fractures—John Crawford Adams.
2. Outline of Orthopedics.— John Crawford Adams.
3. Text book of Orthopedics.—Maheswari.
4. Apley'sOrthopedics.
5. Textbook of Orthopedics and Traumatology— M.N.Natarajan

YEAR : III YEAR
COURSE CODE : 17PT304
TITLE OF THE COURSE : MUSCULOSKELETAL & SPORTS PHYSIOTHERAPY

COURSE OBJECTIVES

THIS COURSE SERVES TO INTEGRATE THE KNOWLEDGE GAINED BY THE STUDENTS IN CLINICAL ORTHOPEDICS WITH THE SKILLS GAINED IN EXERCISE THERAPY, ELECTRO THERAPY AND MASSAGE, THUS ENABLING THEM TO APPLYTHESE IN CLINICAL SITUATIONS OF DYSFUNCTION DUE TO PATHOLOGY IN THE MUSCULOSKELETAL SYSTEM.

COURSE OUTCOMES

THE EXPECTED OUTCOMES OF THIS COURSE FOLLOWING THE PRESCRIBED HOURS OF LECTURES AND DEMONSTRATIONS, PRACTICAL ANDCLINICAL, THE STUDENT WILL BE ABLE TO IDENTIFY DISABILITY DUE TO MUSCULOSKELETAL DYSFUNCTION. SET TREATMENT GOALS AND APPLY THEIR SKILLS IN EXERCISE THERAPY, ELECTRO THERAPY AND MASSAGE IN CLINICAL SITUATION TO RESTORE MUSCULO SKELETAL FUNCTION.

UNIT I

1. Introduction to orthopaedics. Clinical examination in an Orthopedic patient. Common investigative procedures. Radiological and Imaging techniques in Orthopeadics. Inflammation and repair, Soft tissue healing**.[3 Hours]**
2. Traumatology Fracture: definition, types, signs and symptoms.Fracturehealing.Complications of fractures.Conservative and surgical approaches.Principles of management – reduction (open/closed, immobilization etc). Subluxation/ dislocations – definition, signs and symptoms, management (conservative and operative). **[3 Hours]**
3. Fractures and Dislocations of Upper Limb Fractures of Upper Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures: Fractures of clavicle and scapula. Fractures of greater tuberosity and neck of humerus. Fracture shaft of humerus. Supracondylar fracture of humerus. Fractures of capitulum, radial head, olecranon, coronoid, and epicondyles. Side swipe injury of elbow. Both bone fractures of ulna and radius. Fracture of forearm – monteggia, galaezzi fracture –dislocation. Chauffer's fracture.Colle's fracture. Smith's fracture. Scaphoid fracture. Fracture of the metacarpals. Bennett's fracture. Fracture of the phalanges. (Proximal and middle.) Dislocations of Upper Limb - Anterior dislocation of shoulder – mechanism of injury, clinical feature, complications, conservative management (Kocher's and Hippocrates maneuver), surgical management (putti plat, bankart's) etc. Recurrent dislocation of shoulder. Posterior dislocation of shoulder – mechanism of injury, clinical features

and management. Posterior dislocation of elbow- mechanism of injury, clinical feature, complications & management**.[6 Hours]**

4. Fracture of Spine Fracture of Cervical Spine - Mechanism of injury, clinical feature complications (quadriplegia); Management- immobilization (collar, cast, brace, traction); Management for stabilization, management of complication (bladder and bowel, quadriplegia). Clay shoveller's fracture. Hangman's fracture. Fracture odontoid. Fracture of atlas. Fracture of Thoracic and Lumbar Regions - Mechanism of injury, clinical features, management —conservative and surgical of common fractures around thoracic and lumbar regions.Fracture of coccyx. Fracture of Rib Cage - Mechanism of injury, clinical features, management for Fracture Ribs, Fracture of sternum. **[4 Hours]**
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UNIT II

6. Soft Tissue Injuries - Define terms such as sprains, strains, contusion, tendinitis, rupture, tenosynovitis, tendinosis, bursitis. Mechanism of injury of each, clinical features, managements- conservative and surgical of the following soft tissue injuries: Meniscal injuries of knee. Cruciate injuries of knee. Medial and lateral collateral injuries of knee. Lateral ligament of ankle. Wrist sprains. Strains- quadriceps, hamstrings, calf, biceps, triceps etc. Contusions- quadriceps, gluteal, calf, deltoid etc. Tendon ruptures-Achilles, rotator cuff muscles, biceps, pectorals etc. **[3 Hours]**
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UNIT III

12. **InfIammatory and Degenerative Conditions [4 Hours]:** 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. Still's disease (juvenile rheumatoid arthritis). Charcot's joints. Connective Tissue Disorders- Systemic Lupus Erythematosis, Scleroderma, Dermatomyositis, Poliomyelitis, Mixed connective tissue Disease (MCTD)
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Books Recommended:

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3. Text book of Orthopedics.—Maheswari.
4. Apley'sOrthopedics.
5. Textbook of Orthopedics and Traumatology— M.N.Natarajan

YEAR : III YEAR
COURSE CODE : 17PT305
TITLE OF THE COURSE : CARDIO-RESPIRATORY & GENERAL PHYSIOTHERAPY

COURSE OBJECTIVES

THIS COURSE SERVES TO INTEGRATE THE KNOWLEDGE GAINED BY THE STUDENTS IN CLINICAL CARDIORESPIRATORY CONDITIONS WITH THE SKILLS GAINED IN EXERCISE THERAPY, ELECTRO THERAPY AND MASSAGE, THUS ENABLING THEM TO APPLY THESE IN CLINICAL SITUATIONS OF DYSFUNCTION DUE TO PATHOLOGY IN THE CARDIO-RESPIRATORY PATHOLOGY.

COURSE OUTCOMES

THE EXPECTED OUTCOMES OF THIS COURSE FOLLOWING THE PRESCRIBED HOURS OF LECTURES AND DEMONSTRATIONS, PRACTICAL ANDCLINICAL, THE STUDENT WILL BE ABLE TO IDENTIFY DISABILITY DUE TO CARDIO-RESPIRATORY DYSFUNCTION. SET TREATMENT GOALS AND APPLY THEIR SKILLS IN EXERCISE THERAPY, ELECTRO THERAPY AND OTHER PERTAINING SUBJECT AREAS IN CLINICAL SITUATION TO RESTORE CARDIO-RESPIRATORY FUNCTION.

UNIT I

1. Anatomical and Physiological differences between the Adult and Pediatric lung **[1 Hour]**
2. Bedside assessment of the patient-Adult &Pediatric**[5 Hours]**
3. Investigations and tests – Exercise tolerance Testing – Cardiac & Pulmonary, Radiographs, PFT, ABG, ECG, Hematological and Biochemical Tests **[6 Hours]**
4. Physiotherapy techniques to increase lung volume – controlled mobilization, positioning, breathing exercises, Neurophysiological Facilitation of Respiration, Mechanical aids - Incentive Spirometry, CPAP,IPPB **[3 Hours]**
5. Physiotherapy techniques to decrease the work of breathing – Measures to optimize the balance between energy supply and demand, positioning, Breathing re-education – Breathing control techniques, mechanical aids – IPPB, CPAP, BiPAP **[3 Hours]**
6. Physiotherapy techniques to clear secretions – Hydration, Humidification & Nebulisation, Mobilisation and Breathing exercises, Postural Drainage, Manual techniques – Percussion, Vibration and Shaking, Rib Springing, ACBT, Autogenic Drainage, Mechanical Aids – PEP, Flutter, IPPB, Facilitation of Cough and Huff, Nasopharyngeal Suctioning **[3 Hours]**
7. Drug therapy – Drugs to prevent and treat inflammation, Drugs to treat Bronchospasm, Drugs to treat Breathlessness, Drugs to help sputum clearance, Drugs

to inhibit coughing, Drugs toimprove ventilation, Drugs to reduce pulmonary hypertension, Drug delivery doses, Inhalers and Nebulisers**.[1 Hour]**

8. Management of wound ulcers- Care of ulcers and wounds - Care of surgical scars- U.V.R and other electro therapeutics for healing of wounds, prevention of Hypergranulated Scars Keoloids, Electrotherapeutics measures for relief of pain during mobilization of scars tissues. **[2 Hours]**
9. Physiotherapy in dermatology -Documentation of assessment, treatment and follow up skin conditions. U.V.R therapy in various skin conditions; Vitiligo; Hair loss; Pigmentation; Infected wounds ulcers. Faradic foot bath for Hyperhydrosis. Massage maneuvers for cosmetic purpose of skin; use of specific oil as medium; Care of anesthetic hand and foot; Evaluation, planning and management of leprosy- prescription, fitting and training with prosthetic and orthotic devices **[2 Hours]**
10. Neonatal and Pediatric Physiotherapy – Chest physiotherapy for children, The neonatal unit, Modifications of chest physiotherapy for specific neonatal disorders, Emergencies in the neonatal unit **[3 Hours]**
11. Physiotherapy in Obstructive lung conditions **[2 Hours]**

UNIT II

12. Physiotherapy in Restrictive lung conditions **[2 hours]**
13. Management of breathlessness **[2 hours]**
14. Pulmonary Rehabilitation **[4 Hours]**
15. Physiotherapy following Lungsurgeries **[3 Hours]**
16. Respiratory failure – Oxygen Therapy and Mechanical Ventilation **[4 Hours]**
17. Introduction to ICU : ICU monitoring –Apparatus, Airways and Tubes used in the ICU - Physiotherapy in the ICU – Common conditions in the ICU – Tetanus, Head Injury, Lung Disease, Pulmonary Oedema, Multiple Organ Failure, Neuromuscular Disease, Smoke Inhalation, Poisoning, Aspiration, Near Drowning, ARDS, Shock; Dealing with an Emergency Situation in the ICU**[4 Hours]**
18. Burns management - Role of physiotherapy in the management of burns, post grafted cases- Mobilization and Musculo-skeletal restorative exercises following burns **[3 Hours]**
19. Physiotherapy management following cardiac surgeries **[3 Hours]**
20. Cardiac Rehabilitation **[4 Hours]**
21. Physiotherapy management following PVD **[3 Hours]**

UNIT III

22. Abdominal Surgeries - Management of Pulmonary Restorative Dysfunction following Surgical procedures on Abdomen and Thorax **[3 Hours]**
23. Management of Amputations following Diabetes, PVD - Prosthesis in amputations of lower limbs following ulcers and gangrenes **[3 Hours]**
24. Physiotherapy intervention in the management of Medical, Surgical and Radiation Oncology Cases **[3 Hours]**

25. Home program and education of family members in patient care **[2 Hours]**
26. Physiotherapy in Obstetrics – Antenatal Care, Antenatal Education, Postnatal Care. Electrotherapy and Exercise Therapy measures for the re-education of Ano-Urethral sphincters. **[3 Hours]**
27. Treatment, Response to exercise and Implications of Physiotherapy in the following disease conditions: Hypertension, Diabetes, Renal Failure and Obesity. **[5 Hours]**
28. Health Fitness and Promotion : Fitness Evaluation, Analysis of Body composistion, Evaluation and prescription of Exercise, Factors affecting exercise Performance, Exercise Prescription for Specific groups : Elderly, Women and Children. [5 Hours]
29. Applied Yoga in Cardio-respiratory conditions **[3 Hours]**

Recommended books:

1. Tidy's physiotherapy.
2. Cash's Text Book of Chest, Heart, Vascular Disorders for Physiotherapists.
3. The Brompton Guide to chest physiotherapy DU Gasket [Completed]
4. Physical Rehabilitation Assessment and Treament – O'Sullivan Schmitz
5. Elements in Pediatric Physiotherapy – Pamela M Eckersley
6. Essentials of Cardio Pulmonary Physical Therapy by Hillegass and Sadowsky
7. Cardiao pulmonary Symptoms in physical Therapy practice Cohen and Michel
8. Chest Physiotherapy in Intensive Care Unit by Mackenzi
9. Cash's Text book of General Medicine and Surgical conditions for Physiotherapists.
10. Physiotherapy in Psychiatry
11. Physical Therapy for the Cancer patient by M.C Garvey
12. Physiotherapy in Obstetrics and Gynecology by Polden

YEAR : III YEAR
COURSE CODE : 17PT371
TITLE OF THE COURSE : MUSCULOSKELETAL & SPORTS PHYSIOTHERAPY-PRACTICAL

Practical: 60 Hours

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

1. Bedside case presentations and case discussions

2. Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.

Recommended books:

1. Tidy's physiotherapy.

2. Textbook of orthopedics- Cash.

3. Clinical orthopedic rehabilitation- Brotzman.

4. Orthopedic physiotherapy - Jayant Joshi.

5. Physical Rehabilitation Assessment and Treament – O'Sullivan Schmitz

6. Sports physiotherapy- Maria Zuluaga

YEAR : III YEAR
COURSE CODE : 17PT372
TITLE OF THE COURSE : CARDIO-RESPIRATORY & GENERAL PHYSIOTHERAPY - PRACTICALS

Practical: 60 Hours

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

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

YEAR : IV YEAR
COURSE CODE : 17PT401
TITLE OF THE COURSE : NEUROLOGY & NEUROSURGERY

COURSE OBJECTIVES

1. The objective of this course is that after 60 hours of lectures and demonstration the student will be able to demonstrate an understanding of Neurological conditions causing disability and their management. Particular effort is made in this course to avoid burdening the student with any detail pertaining to diagnosis which will not contribute to their understanding of the limitations imposed by neuropathology on the functioning of the individual.

2. The objective of this course is that after 60 hrs of lectures and discussion the student will be able to list the etiology, pathology, clinical features and treatment methods for various neurological conditions.

1. Disorders of function in the context of Pathophysiology, Anatomy in Neurology and CorticalMapping. [1 hour]
2. Classification of neurological involvement depending on level of lesion.[1 hour]
3. Neurological assessment: Principles of clinical diagnosis, higher mental function, assessment of brain & spinal cord function, evaluation of cranial nerves and evaluation of autonomic nervous system. [3 hours]
4. Investigations: principles, methods, views, normal/abnormal values/features, types of following investigative procedures- skull x-ray, CT, MRI, evoked potentials, lumbar puncture,CSF examination, EMG, NCV. [3 hours]
5. Neuro-ophthalmology: Assessment of visual function – acuity, field, colour vision, Pupillary reflex, accommodation reflex, abnormalities of optic disc, disorders of optic nerve, tract,radiation, occipital pole, disorders of higher visual processing, disorders of pupil, disorders of eye movements, central disorders of eye movement. [1 hour]
6. Deafness, vertigo, and imbalance: Physiology of hearing, disorders of hearing, examination & investigations of hearing, tests of vestibular function, vertigo, peripheral vestibular disorders, central vestibular vertigo. [2 hours]
7. Lower cranial nerve paralysis – Etiology, clinical features, investigations, and management of following disorders - lesions in trigeminal nerve, trigeminal neuralgia, trigeminal sensory neuropathy, lesions in facial nerve, facial palsy, bell’s

palsy, hemi facial spasm, Glossopharangial neuralgia, lesions of Vagus nerve, lesions of spinal accessory nerve, lesions of hypoglossal nerve. Dysphagia – swallowing mechanisms, causes of dysphagia, symptoms, examination, and management of dysphagia. [3 hours]

8. Cerebro-vascular diseases: Define stroke, TIA, RIA, stroke in evolution, multi infarct dementia and Lacunar infarct. Classification of stroke – Ischemic, hemorrhagic, venous infarcts. Risk factors, cause of ischemic stroke, causes of hemorrhagic stroke. Classification of hemorrhagic stroke, classification of stroke based on symptoms, stroke syndrome, investigations, differential diagnosis, medical and surgical management. [4 hours]
9. Head injury: Etiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications. [3 hours]
10. Higher cortical, neuro psychological and neurobehavioral disorders: Causes of blackouts, physiological nature of Epilepsy, classification, clinical features, investigations, medical & surgical management of following disorders – Non-epileptic attacks of childhood, Epilepsy in childhood, Seizers, and Epilepsy syndromes in adult. Classification and clinical features of Dyssomnias, Parasomnias, Dementia, Obsessive-compulsive disorders. Neural basis of consciousness, causes & investigations of Coma, criteria for diagnosis of Brain death. Etiology, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Perceptual disorders and Speech disorders. [3hours]
11. Movement disorders: Definition, etiology, risk factors, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Parkinson's disease, Dystonia, Chorea, Ballism, Athedosis, Tics, Myoclonus and Wilson's disease. [3 hours]
12. Cerebellar and coordination disorders: Etiology, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Congenital ataxia, Friedreich's ataxia, Ataxia talengiectasia, Metabolic ataxia, Hereditary cerebellar ataxia, Tabes dorsalis and Syphilis. [3 hours]

13. Spinal cord disorders: Functions of tracts, definition, etiology, risk factors, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Spinal cord injury, Compression by IVD prolapse, Spinal epidural abscess, Transverse myelitis, Viral myelitis, Syringomyelia, Spina bifida, Sub acute combined degeneration of the cord, Hereditary spastic paraplegia, Radiation myelopathy, Progressive encephalomyelitis, Conus medullaris syndrome, Bladder & bowel dysfunction, and Sarcodosis. [3 hours]
14. Brain tumors and spinal tumors: Classification, clinical features, investigations, medical and surgical management. [3hours]
15. Infections of brain and spinal cord: Etiology, pathophysilogy, classification, clinical signs & Symptoms, investigations, differential diagnosis, medical management, surgical management And complications of following disorders – Meningitis, Encephalitis, Poliomyelitis and Post-Polio syndrome. Complications of systemic infections on nervous system – Septic Encephalopathy, AIDS, Rheumatic fever, Brucellosis, Tetanus, and Pertussis. [2 hours]
16. Motor neuron diseases: - Etiology, pathophysilogy, classification, clinical signs & symptoms, Investigations, differential diagnosis, medical management, and complications of following Disorders - Amyotrophic lateral sclerosis, Spinal muscular atrophy, hereditary bulbar palsy, Neuromyotonia and Post-irradiation lumbosacral polyradiculopathy. [2 hours]
17. Multiple sclerosis - Etiology, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications. [2 hours]
18. Disorders of neuromuscular junction – Etiology, classification, signs & symptoms, investigations, management, of following disorders Myasthenia gravis, Eaton-Lambert syndrome, and Botulism. [2 hours]
19. Muscle diseases: Classification, investigations, imaging methods, Muscle biopsy, management of muscle diseases, genetic counselling. Classification, etiology, signs & symptoms of following disorders – Muscular dystrophy, Myotonic dystrophy, myopathy, Non-dystrophic myotonia. [3hours]

20. Polyneuropathy – Classification of Polyneuropathies, Hereditary motor sensory neuropathy, Hereditary sensory and Autonomic neuropathies, Amyloid neuropathy, Acute idiopathic Polyneuropathies. Guillain-Barre syndrome – Causes, clinical features, management of GBS, Chronic Idiopathic Polyneuropathies, diagnosis of polyneuropathy, nerve biopsy. [2 hours]
21. Focal peripheral neuropathy: Clinical diagnosis of focal neuropathy, neurotmesis, Axonotmesis, Neuropraxia. Etiology, risk factors, classification, neurological signs & symptoms, investigations, management, of following disorders – RSD, Nerve tumors, Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions, Phrenic & Intercostals nerve lesions, Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy, Musculocutaneous nerve palsy, Anterior & Posterior interosseous nerve palsy, Axillary nerve palsy, Long thoracic nerve palsy, Suprascapular nerve palsy, Sciatic nerve palsy, Tibial nerve palsy, Common peroneal nerve palsy, Femoral nerve palsy, Obturator nerve palsy, Pudental nerve palsy. [3 hours]
22. Paediatric neurology: Neural development, Etiology, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders - Cerebral palsy, Hydrocephalus, Arnold-chiari malformation, Basilar impression, Klippel-Feil syndrome, Achondroplacia, Cerebral malformations, Autism, Dandy walker syndrome and Down's syndrome. [3 hours]
23. Toxic, metabolic and environmental disorders: Etiology, risk factors, classification, neurological signs & symptoms, investigations, management, of following disorders – Encephalopathy, Alcohol toxicity, Recreational drug abuse, Toxic gases & Asphyxia, Therapeutic & diagnostic agent toxicity, Metal toxicity, Pesticide poisoning, Environmental & physical insults, Pant & Fungal poisoning, Animal poisons, & Complications of organ transplantation. [3hours]
24. Introduction, Indications and Complications of following Neuro surgeries: Craniotomy, Cranioplasty, Stereotactic surgery, Deep brain stimulation, Burr-hole, Shunting,Laminectomy,Hemilaminectomy,Rhizotomy, Microvascular decompression surgery, Endarterectomy, Embolization, Pituitary surgery, Ablative surgery -

Thalamotomy andPallidotomy, Coiling of aneurysm, Clipping of aneurysm, and Neural implantation. [2 hours]

Recommended books:

1. Davidson's Principles and Practice of Medicine
2. Textbook of Neurology- Victor Adams
3. Brains Clinical Neurology.
4. Illustrated Neurology & Neurosurgery
5. Brains Diseases of Nervous System

YEAR : IV YEAR
COURSE CODE : 17PT402
TITLE OF THE COURSE : COMMUNITY MEDICINE

This subject follows the basic science subjects to provide the knowledge about conditions the therapist would encounter in their practice in the community. The objective of this course is that after 60 hrs of lectures and discussion the student will be able to demonstrate an understanding of various aspects of health and disease list the methods of health administration, health education and disease preventive measures.

1. Health and Disease: Definitions, Concepts, Dimensions and Indicators of Health, Concept of well-being, Spectrum and Determinants of Health, Concept and natural history of Disease, Concepts of disease control and prevention, Modes of Intervention, Population Medicine, The role of socio-economic and cultural environment in health and disease. [5 hours]
2. Epidemiology, definition and scope. Principles of Epidemiology and Epidemiological methods: Components and Aims, Basic measurements, Methods, Uses of Epidemiology, Infectious disease epidemiology, Dynamics and modes of disease transmission, Host defenses and Immunizing agents, Hazards of Immunization, Disease prevention and control, Disinfection. Screening for Disease: Concept of screening, Aims and Objectives, Uses and types of screening. [7 hours]
3. Epidemiology of communicable disease: Respiratory infections, Intestinal infections, Arthropod- borne infections, Zoonoses, Surface infections, Hospital acquired infections Epidemiology of chronic non-communicable diseases and conditions: Cardio vascular diseases: Coronary heart disease, Hypertension, Stroke, Rheumatic heart disease, Cancer, Diabetes, 0besity, Blindness, Accidents and Injuries. [7 hours]
4. Public health administration- an overview of the health administration set up at Central and state levels. The national health programme-highlighting the role of social, economic and cultural factors in the implementation of the national programmes. Health problems of vulnerable groups- pregnant and lactating women, infants and pre-school children, occupational groups [4 hours]
5. Health programmes in India: Vector borne disease control programme, National leprosy eradication programme, National tuberculosis programme, National AIDS control programme, National programme for control of blindness, Iodine deficiency disorders (IDD) programme, Universal Immunisation programme, Reproductive and child health programme, National cancer control programme, National mental health programme. National diabetes control programme, National family welfare programme, National sanitation and water supply programme, Minimum needs programme [4 hours]

6. Demography and Family Planning: Demographic cycle, Fertility, Family planning-objectives of national family planning programme and family planning methods, A general idea of advantage and disadvantages of the methods. [3 hours]
7. Preventive Medicine in Obstetrics, Paediatrics and Geriatrics: MCH problems, Antenatal, Intranatal and post natal care, Care of children, Child health problems, Rights of child and National policy for children, MCH services and indicators of MCH care, Social welfare programmes for women and children, Preventive medicine and geriatrics. [6 hours]
8. Nutrition and Health: Classification of foods, Nutritional profiles of principal foods, Nutritional problems in public health, Community nutrition programmes [4 hours]
9. Environment and Health: Components of environment, Water and air pollution and public health: Pollution control, Disposal of waste, Medical entomology. [3 hours]
10. Hospital waste management: Sources of hospital waste, Health hazards, Waste management [3 hours]
11. Disaster Management: Natural and man-made disasters, Disaster impact and response, Relief phase, Epidemiologic surveillance and disease control, Nutrition, Rehabilitation, Disaster preparedness [4 hours]
12. Occupational Health: Occupational environment, Occupational hazards, Occupational diseases, Prevention of occupational diseases. Social security and other measures for the protection from occupational hazard accidents and diseases. Details of compensation acts. [4 hours]
13. Mental Health: Characteristics of a mentally healthy person, Types of mental illness, Causes of mental ill health, Prevention, Mental health services, Alcohol and drug dependence. Emphasis on community aspects of mental health. Role of Physiotherapist in mental health problems such as mental retardation. [3 hours]
14. Health Education: Concepts, aims and objectives, Approaches to health education, Models of health education, Contents of health education, Principles of health education, Practice of health education [3 hours]

Recommended books:

1. Textbook of Preventive & Social Medicine, Dr. J E Park

YEAR : IV YEAR
COURSE CODE : 17PT403
TITLE OF THE COURSE : NEURO-PHYSIOTHERAPY

Course Objectives:
At the end of the course, the candidate will –

1) The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to identify disabilities due to neurological dysfunction, plan and set treatment goals and apply the skills gained in exercise therapy and electrotherapy in these clinical situations to restore neurological function.

2) Acquire the knowledge of normal neurodevelopment, with specific reference to locomotion, be able to assess, identify & analyze neuro-motor & psychosomatic dysfunction in terms of alteration in the muscle tone, power, coordination, involuntary movements sensations/perception etc, E.M.G. / N.C. Studies & arrive at functional diagnosis with clinical reasoning.

3) Acquire the skill of application of P.N.F. technique on patients.,Be able to plan, prescribe & execute short term & long term treatment, with special reference to relief of Neuropathic & psycho-somatic pain, mat exercises, functional re-education, gait training, postural & functional training for A.D.L., ergonomic advise, & parents education in neuro- pediatric care, Be able to prescribe appropriate Orthosis / splints & will be able to fabricate temporary protective & functional splints.

1. Neurological Assessment: Required materials for examination, Chief complaints, History taking – Present, Past, medical, familial, personal histories, Observation, Palpation, Higher mental function – Consciousness, Orientation, Wakefulness, memory, Speech, Reading, Language, Writing, Calculations, Perception, Left right confusion, Reasoning, and Judgment, Motor Examination – Muscle power, Muscle tone, Spasticity, Flaccidity, Reflexes –Developmental reflexes, deep tendon reflexes, Superficial reflexes, Sensory examination –Superficial, Deep and Cortical sensations, Special tests – Romberg's, Kernig's sign, Brudenzki sign, Tinels's sign, Slum test, Lehermitte's sign, Bells Phenomenon, Gower's sign, Sun set sign, Battle's sign, Glabellar tap sign, etc, Balance examination, coordination examination, Gait analysis – Kinetics & Kinematics (Quantitative & Qualitative analysis), Functional Analysis, Assessment tools & Scales – Modified Ashworth scale, Berg balance scale, FIM, Barthel index, Glasgow coma scale, Mini mental state examination, Rancho Los Amigos Scale for Head injury, APGAR score, ASIA scale, Reflex Grading. Differential diagnosis. [10 hours]
2. Neuro physiological Techniques – Concepts, Principles, Techniques, Effects of following Neurophysiological techniques: NDT, PNF, Vojta therapy, Rood's Sensory motor Approach, Sensory Integration Approach, Brunnstorm movement therapy,

Motor relearning program, Contemporary task oriented approach, Muscle re-education approach and Constraint induced Movement therapy. [14 hours]

3. Paediatric Neurology: Paediatric Examination, Developmental milestones, developmental reflexes, Neuro developmental screening tests. Evaluation & Management - History, Observation, Palpation, Milestone Examination, developmental reflex Examination, Higher mental function, Cranial nerve examination, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches & Modalities in Risk babies, Minimum brain damage, Developmental disorders, Cerebral palsy, Autism, Down's syndrome, Hydrocephalus, Chorea, Spina bifida and syringomyelia. [14 hours]

4. Evaluation and Management of Brain and Spinal Cord Disorders : History, Observation, Palpation, Higher mental function, Cranial nerve examination, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of Various Neurophysiological approaches& Modalities in Cerebro vascular Accident, Meningitis, Encephalitis, Head Injury, Brain Tumors, Perceptual disorders, Amyotrophic Lateral sclerosis, and Multiple sclerosis. [10 hours]

5. Evaluation and Management of Cerebellar, Spinal Cord and Muscle Disorders: History, Observation, Palpation, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches & Modalities in Ataxia, Sensory Ataxia, Parkinson's disease, Muscular dystrophy (DMD), Myasthenia Gravis, Eaton-Lambert Syndrome, Spinal tumors, Spinal cord injury, Transverse Myelitis, Bladder & Bowel Dysfunction, Spinal muscular atrophies, Poliomyelitis, Post Polio Syndrome [10 hours]

6. Evaluation and Management of Peripheral Nerve Injuries and Disorders : History, Observation, Palpation, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches & Modalities in Hereditary motor sensory neuropathy, Guillain-Barre syndrome, Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions, Phrenic & intercostals nerve lesions, Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy, Musculocutaneous nerve palsy, Anterior & Posterior interosseous nerve palsy, Axillary nerve palsy, Long thoracic

nerve palsy, Suprascapular nerve palsy, sciatic nerve palsy, Tibial nerve palsy, Common peroneal nerve palsy, Femoral nerve palsy, Obturator nerve palsy, and Pudental nerve palsy. [10 hours]

7. Assessment and management of Neurological gaits: Quantitative and Qualitative (Kinetic & Kinematics) analysis, List of Problems, short & Long Term goals, Management of following Neurological Gaits - Hemiplegic gait, Parkinson gait, High step gait, Hyperkinetic gait, Hypokinetic gait, Waddling gait, Scissoring gait, Spastic gait, Choreaform Gait, Diplegic Gait, and Myopathic Gait [10 hours]

8. Pre and Post surgical assessment and treatment following conditions - Spinal disc herniation,Spinal stenosis, Spinal cord trauma, Head trauma, Brain tumors, Tumors of the spine, Spinal cord and peripheral nerves, Cerebral aneurysms, Subarachnoid hemorrhages, epilepsy, Parkinson's disease, Chorea, Hemiballism, Psychiatric disorders, Malformations of the nervous system, Carotid artery stenosis , Arteriovenous malformations, and Spina bifida [9 hours]

9. Electro physiological testing and applications to physiotherapy

10. Applied Yoga in Neurological condition

Recommended books:

1) Cash's Text book for physio Therapist in Neurological disorders-Jaypee bros.

2) Proprioceptive Neuro muscular Faciliation – by Herman Kabat

3) Practical Physical Therapy – Margaret Hollis

4) Therapeutic exercise – by O'Sullivan

5) "Right in the middle" – by Patricia Davis

6) Stroke rehabilitation – by Margaret Johnson

7) Neurological Rehabilitation by D Umphred

8) Physical Rehabilitation Assessment and Treament – O'Sullivan Schmitz

9) Elements of Pediatric Physiotherapy-Eckersley

YEAR : IV YEAR
COURSE CODE : 17PT404
TITLE OF THE COURSE : COMMUNITY BASED REHABILITATION

Course objective:

The candidate will:

1. Should be able to describe:
   The general concepts about health, disease and physical fitness.
   Physiology of aging process and its influence on physical fitness.
   National policies for the rehabilitation of disabled – role of PT.
   The strategies to access prevalence and incidence of various conditions responsible for increasing morbidity in the specific community – role of PT in improving morbidity, expected clinical and functional recovery, reasons for non-compliance in specific community environment solution for the same.
   The evaluation of disability and planning for prevention and rehabilitation.
   Community Based Rehabilitation in urban and rural set up.

2. Be able to identify with clinical reasoning the prevailing contextual (e.g. environmental and psycho-social cultural factors, causing high risk responsible for various dysfunctions and morbidity related to sedentary life style and specific community like women, children, aged as well as industrial workers and describe planning strategies of interventional policies to combat such problems.

3. Be able to conduct as small project {cross sectional study /survey} to access to the prevalence of specific physical health problem and /or morbidity in specific community – which may be based at the institutional level or in field.

1. Rehabilitation: Definition, types [1 hour]
2. Community: [5 hours]
   - Definition of community
   - Multiplicity of communities
   - The community based approach
   - Community entry strategies
   - CBR and community Development
   - Community initiated versus community oriented programme
   - Community participation and mobilization
3. Introduction to Community Based Rehabilitation: [6 hours]
   - Definition
   - Historical review
   - Concept of CBR

- Need for CBR
- Difference between Institution based and Community based Rehabilitation
- Objectives of CBR
- Scope of CBR
- Members of the CBR team
- Models of CBR

4. Principles of Community based Rehabilitation: [10 hours]
    - W.H.O.'s policies – about rural health care, concept of primary/tertiary health centers – district hospitals etc.
    - Role of P.T. – Principles of a team work of Medical person/P.T./O.T. audiologist/speech therapist/P. & O./ Vocational guide in C.B.R. of physically challenge person
    - Agencies involved in rehabilitation of physical handicapped – Legislation for physically handicapped
    - Concept of multipurpose health worker
    - Role of family members in the rehabilitation of a physically handicapped
5. Planning and management of CBR Programmes: [6 hours]
    - CBR Programmed planning and management
    - Ownership and Governance
    - Decentralization and CBR
    - Management of CBR
    - Programmed sustainability
    - Communication and Coordination
    - Community participation
    - Mobilization and awareness
    - CBR programme influence on promoting and developing public policies
6. Disability: [6 hours]
    - Definition of Impairment, Handicap and Disability
    - Difference between impairment, handicap and disability
    - Causes of disability
    - Types of disability
    - Prevention of disability
    - Disability in developed countries
    - Disability in developing countries
    - Disability Surveys: Demography
    - Screening : Early detection of disabilities and developmental disorders
    - Prevention of disabilities – types and levels
7. Disability Evaluation: [5hours]
    - Introduction
    - What, Why and How to evaluate
    - Quantitative versus Qualitative data

- Uses of evaluation findings

8. Role of Government in CBR: [5 hours]
    - Laws
    - Policies
    - Programmes
    - Human Rights Policy
    - Present rehabilitation services
    - Legal aspects of rehabilitation
9. Role of Social work in CBR: [4 hours]
    - Definition of social work
    - Methods of social work
    - History of social work
    - Role of social worker in rehabilitation
10. Role of Voluntary Organizations in CBR: [4 hours]
    - Charitable Organizations
    - Voluntary health agencies – National level and International NGO's, Multilateral and Bilateral agencies
    - International Health Organizations: WHO, UNICEF, UNDP, UNFPA, FAO, ILO, World Bank, USAID, SIDA, DANIDA, Rockfeller, Ford foundation, CARE, RED CROSS
11. National district level Rehabilitation: [5 hours]
    - Primary Rehabilitation Unit
    - Regional training center
    - District rehabilitation center
    - Primary health center
    - Village rehabilitation worker
    - Anganwadi worker
12. Role of Physiotherapy in CBR: [5 hours]
    - Screening for disabilities
    - Prescribing exercise programme
    - Prescribing and devising low cost locally available assistive aids
    - Modifications physical and architectural barriers for disabled
    - Disability prevention
    - Strategies to improve ADL
    - Rehabilitation programmes for various neuromusculoskeletal and cardiothoracic disabilities
13. Screening and rehabilitation of pediatrics disorders in the community: [5 hours]
    - Early detection of high risk babies
    - Maternal nutrition and education
    - Rehabilitation of Cerebral Palsy, Polio, Downs Syndrome, Muscular Dystrophies etc

- Prevention and rehabilitation of mental retardation and Behavioral disorders
- Immunization programmes
- Early intervention in high risk babies
- Genetic counselling

14. Extension services and mobile units: [2 hours]
    - Introduction
    - Need
    - Camp approach
15. Vocational training in rehabilitation: [2 hours]
    - Introduction
    - Need
    - Vocational evaluation
    - Vocational rehabilitation services
16. Geriatrics: [9 hours]
    - Physiology of aging/degenerative changes – Musculoskeletal/Neuromotor/Cardio – respiratory/Metabolic, Endocrine, Cognitive, Immune Systems
    - Role of Physio therapy in Hospital Based Care, Half-way homes, Residential homes, Meals on wheels etc.
    - Home for the aged, Institution based Geriatric Rehabilitation
    - Few conditions: Alzheimer's disease, Dementia, Parkinson's disease, Incontinence, Iatogenic drug reactions, etc.
    - Ethics of Geriatric Rehabilitation
17. Industrial Health & Ergonomics: [10 hours]
    - Occupational Hazards in the industrial area – Accidents due to
        1) Physical agents: Ex. Heat/cold, light, noise, vibration, U.V. radiation, Ionizing radiation
        2) Chemical agents: Inhalation, local action, ingestion
        3) Mechanical hazards: overuse/fatigue injuries due to ergonomic alteration and ergonomic evaluation of work place – mechanical stresses per hierarchy –
            i Sedentary table work – executives, clerk
            ii Inappropriate seating arrangement – vehicle drivers
            iii Constant standing – watchman, defense forces, surgeons
            iv Over – exertion in laborers, common accidents
    - Role of P.T. in Stress management
        4) Psychological hazards: Ex. Executives, monotonicity & dissatisfaction in job, anxiety of work completion with quality, Role of P.T. in Industrial setup & Stress management – relaxation modes.
        5) Biological hazards

18. Lifestyle disorders:
    - Physiotherapy role in planning
    - Execution of lifestyle diseases like hypertension, obesity and diabetes mellitus
    - Role in developing awareness programs

Practical: 60 Hours

This will consist of Field visits to urban and rural PHC's., Visits to regional rehabilitation training center, Regular mobile camps, Disability surveys in villages, Disability screening, Demonstration of Evaluation and Physiotherapy prescription techniques for musculoskeletal, neuromuscular, cardiorespiratory, pediatric, gynecological and geriatric problems in community, Demonstration of evaluation and prescription techniques for ambulatory and assistive devices, Fabrication of low cost assistive devices with locally available materials.

Recommended books:

1. Rehabilitation Medicine by Howard A Rusk.
2. Rehabilitation Medicine by Joel A Delisa

YEAR : IV YEAR
COURSE CODE : 17PT405
TITLE OF THE COURSE : RESEARCH METHODOLOGY AND BIOSTATISTICS

Research Methodology:[30 hours]

Course Objective:

The student will gain knowledge on the basic research methodology and various designs and sampling methods used in research methodology.

Course Outcome:

At the end of the course the candidate will be able to describe about the designs, sampling methods and interpretation of data in professional practice.

1. Introduction to Research Methodology: [4 hours]
    - Meaning of research
    - Objectives of research
    - Motivation in research
    - Types of research and research approaches
    - Research methods vs Methodology
    - Criteria for good research
    - Problems encountered by researchers in India.
2. Research problem: [2 hours]
    - Statement of research problem
    - Statement of purpose and objectives of research problem
    - Necessity of defining the problem.
3. Research design: [4 hours]
    - Meaning of research design
    - Need for research design
    - Features for good design
    - Different research designs
    - Basic principles of research design
4. Sampling design: [4 hours]
    - Criteria for selecting sampling procedure
    - Implications for sample design
    - Steps in sampling design
    - Characteristics of good sample design
    - Different types of sample design
5. Measurement and scaling techniques: [4 hours]

- Measurement in research – measurement scales
- Sources of error in measurement
- Technique of developing measurement tools
- Meaning of scaling, its classification
- Important scaling techniques

6. Methods of data collection: [4 hours]
    - Collection of primary data
    - Collection of data through questionnaires and schedules
    - Difference between questionnaires and schedules
7. Sampling fundamentals: [2 hours]
    - Need for sampling and some fundamental definitions
    - Important sampling distributions
8. Processing and analysis of data: [2 hours]
    - Processing operations
    - Problems in processing
    - Types of analysis
    - Statistics in research
    - Measures of central tendency
    - Dispersion
    - Asymmetry
    -
9. Testing of Hypothesis: [3 hours]
    - What is hypothesis?
    - Basic concepts concerning testing of hypothesis
    - Procedure of hypothesis testing
    - Measuring the power of hypothesis testing
    - Tests of hypothesis
    - Limitations of the tests of hypothesis
10. Computer technology: [1 hour]
    - Introduction to computers
    - Computer application in research
    - Computers and researchers

Recommended Textbooks:

1. Research Principles and Methods: L Denise F. Poli&Hungler
2. Fundamentals of Research, 4thEdn.: David J. fox

Biostatistics:[30 hours]

Course Objective:

The student will gain knowledge on the basic concepts of biostatistics. Statistical concepts, methods of statistical analysis and interpretation of data.

Course Outcome:

At the end of the course the candidate will be able to describe the use of statistics and its need in professional practice and research.

1. Introduction: [6 hours]
    - Meaning, definition, characteristics of statistics
    - Importance of the study of statistics
    - Branches of statistics
    - Statistics and health science including physiotherapy
    - Parameters and Estimates
    - Descriptive and inferential statistics
    - Variables and their types
    - Measurement scales
2. Tabulation of data: [4 hours]
    - Basic principles of graphical representation
    - Types of diagrams – histograms, frequency polygons, smooth frequency polygon, cumulative frequency curve
    - Normal probability curve
3. Measure of Central Tendency: [4 hours]
    - Need for measures of central tendency
    - Definition and calculation of mean – ungrouped and grouped
    - Meaning, Interpretation and calculation of median ungrouped and grouped
    - Meaning and calculation of mode
    - Comparison of mean, median and mode
    - Guidelines for the use of various measures of central tendency
4. Probability and Standard Distributions: [4 hours]
    - Meaning of probability of standard distribution
    - The binominal distribution
    - The normal distribution
    - Divergence from normality – skewness, kurtosis
5. Sampling techniques: [3 hours]
    - Need for sampling – Criteria for good samples

- Application of sampling incommunity
- Procedures of sampling and sampling designs errors
- Sampling variation and tests of significance

6. Statistical significance: [5hours]
    - Parametric tests: t – test
    - Non parametric tests: chi square test, Mannwhitney U test, Z test, Wilcoxons matched pairtest
    - Correlations
7. Analysis of variance and covariance: [4 hours]
    - Analysis of variance(ANOVA)
    - What is ANOVA?
    - Basic/principle of ANOVA
    - ANOVA technique
    - Analysis of Co variance(ANACOVA)

Recommended Textbooks:

1) Methods in Biostatistics – B. K.Mahajan
2) Manual of Biostatistics – Kulkarni, Bairde, Muzumdar
3) Elements of Health Statistics: Rao. N. S. N
4) An introduction of Biostatistics: Sunder Rao. P. S. S
5) Methods in Bio-Statistics 6th Edition, 1997: B. K. Mahajan
6) Biostatistics: a manual of Statistics Methods: K. Visweswara Rao
7) Elementary Statistics 1stEdn, 1990 in Medical Workers: Inderbir Singh
8) An Introduction to Gupta C. B. Statisticals Methods, 1972: Ram Prasad & Sons
9) Basic Statistics, 3rdEdn: Simpsory G. Kaftha. P