Shri Govind Guru University

(Established by Government of Gujarat Vide Gujarat Act no 24/2015)

Towards Smart Quality Education

Programme & Subject: **Bachelor of Physiotherapy – B.P.T**

(4½ Year Degree Course)

Under **The Faculty of Medicine**

Regulations & Curriculum

ANNUAL PATTERN

(In force for the students from academic year 2019-2020 and thereafter)

INDEX

YEAR WISE SUBJECTS			
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Paper I: Human Anatomy	Paper –I: Pathology	Paper-I: Orthopedics – Traumatology & Non-Traumatology	Paper-I Physiotherapy in Orthopedic Conditions & Sports
Paper II: Human Physiology	Paper –II: Microbiology	Paper-II: Medicine	Paper-II Physiotherapy in Medical & Surgical conditions
Paper III: Biochemistry	Paper-III: Pharmacology	Paper – III: Surgery	Paper-III Physiotherapy in Cardiovascular & Pulmonary Conditions
Paper IV: Sociology	Paper-IV: Biomechanics & Kinesiology	Paper-IV Clinical Neurology& Neurosurgery	Paper – IV Physiotherapy in Neuromuscular & Psychosomatic disorders
Paper –V: Psychology	Paper –V: Exercise Therapy	Paper – V Clinical Cardiovascular & Pulmonary Conditions + CT	Paper- V Physiotherapy in Community Health
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1st Year NON EXAM	2nd Year NON EXAM	3rd Year NON EXAM	4th Year NON EXAM
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Paper – IX: English, Communication and soft skills	Paper –IX: Medical Terminology & Record keeping	Extra-Curricular Activities (Conference, Tours, Seminar, Workshop, Sports and cultural activities)	Extra-Curricular Activities (Conference, Tours, Seminar, Workshop, Sports and cultural activities)
Paper –X: PBL / Assignment / ICT learning / Integrated seminar	Extra-Curricular Activities (Conference, Tours, Seminar, Workshop,	Clinical Training	Clinical Training
Paper –XI: Introduction to quality and patient safety	Supervised Clinical Practice		
Extra-Curricular Activities (Conference, Tours, Seminar, Workshop, Sports and cultural activities), Community orientation and clinical visit			

BACHELOR OF PHYSIOTHERAPY (BPT)

Introduction:

The Bachelor of Physiotherapy program shall be under the Faculty of Medicine. The name of the Degree program shall be:

Bachelor of Physiotherapy or Bachelor of Physical Therapy – **B.P.T**

These REGULATIONS & CURRICULUM will be applicable from the academic year 2019-2020 and thereafter.

LEARNING OBJECTIVES:

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

1. Able to perform as a competent physiotherapist who will be able to examine, evaluate, diagnose, plan, execute and document physiotherapy treatment independently or along with the multidisciplinary team.
2. Able to evaluate patients for impairments and functional limitations and able to execute all routine physiotherapeutic procedures as per the evaluation.
3. Able to operate and maintain physiotherapy equipment used in treatment of patient, physiotherapy treatment planning (both electrotherapy and exercise therapy) & procedures independently.
4. Able to provide patient education about various physiotherapeutic interventions to the patient and care givers.

EXPECTATIONS FROM THE FUTURE PHYSIOTHERAPY GRADUATES

1. Coursework entitles independent Physiotherapy assessment and treatment by the graduates.
2. The coursework is designed to train students to work as independent Physiotherapists or in conjunction with a multidisciplinary team to diagnose and treat movement disorders as per red and yellow flags.
3. Course works will skill the graduate's physical/ functional diagnosis, treatment planning, management, and administration of Physiotherapy treatment and for patient support.
4. Graduates can find employment opportunities in hospitals/nursing homes/sports

teams/fitness centers/Community Rehabilitation /Health planning boards/Health promotions services in both private and public sectors as well as in independent Physiotherapy clinics.

5. Physiotherapy graduate is encouraged to pursue further qualification to attain senior position in the professional field and to keep abreast with the recent advances, new technology and research. The professional should opt for continuous professional education credits offered by national and international institutes.

Terminal Objectives (Expected Outcomes):

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

Regulations and Curriculum governing BPT degree course

O. GEN B.P.T- 1

CRITERIA OF ELIGIBILITY FOR ADMISSION

1. A candidate applying for the degree of BPT being eligible for admission to the Physiotherapy College affiliated to this university must have passed the Higher Secondary (10+2) or equivalent examination recognized by any Indian University or a duly constituted Board and passed in physics, chemistry and biology and English.

OR,

Candidates who have studied abroad and have passed the equivalent examination as per the guidelines of the Association of Indian Universities to determine the eligibility and must have passed in the subjects: Physics, Chemistry, Biology and English up to 12th Standard level.

2. He/she has attained the age of 17 years as on the date of admission.

3. He/she must furnish at the time of submission of application form, a certificate of Physical fitness from a registered medical practitioner that the candidate is physically fit to undergo Physiotherapy course.

A candidate fulfilling above requirements will be provisionally admitted in the First Semester of B.P.T Degree Programme, as per the rules of Admission Committee for Professional Medical Educational Courses of Gujarat and/or Government of Gujarat and/or Shri Govind Guru University, Godhra.

O. GEN B.P.T- 2

DURATION OF COURSE:

B.P.T is 4½ years regular & fulltime degree programme. The 4½ years includes **4 years** of Class room teaching (Minimum of 5640 hours) and **6 months** (minimum 1100 hours), of compulsory rotatory internship (and additional 100 hours for Dissertation / Project work – Desirable – Not Mandatory).

Total Transcript Hours = 5640 hours + 1100 hours + 100 hours = 6840 hours

O. GEN B.P.T- 3

MEDIUM OF INSTRUCTION:

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

O. GEN B.P.T- 4

ADMISSION TO THE PROGRAMME:

Admission granted by the Central Admission Committee appointed by the State Government to any student shall be provisional till the enrollment/ registration/ enlistment is made by the university, and in case of admission is granted on the basis of provisional eligibility certificate, the condition & instruction given by the university should be complied with in the time limit fixed by the university otherwise term kept and fees paid by the such a student will be forfeited and no fees on any account will be refunded.

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

O. GEN B.P.T- 5

RE-ADMISSION AFTER BREAK OF STUDY:

All re-admissions of candidates are subject to the approval of the Vice Chancellor.

O. GEN B.P.T- 6

COMMENCEMENT OF THE COURSE -

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

Academic year begins from 1st September to 31st of August for the First academic year and 1st of August to 31st of July for each consecutive academic year (i.e. 2nd , 3rd and 4th year.

O. GEN B.P.T- 7

SCHEDULE OF EXAMINATION –

The scheme of examination for the B.P.T course shall be divided into 4 professional examinations, namely, 1st Year B.P.T examination at the end of 1st academic Year, 2nd Year at the end of 2nd academic Year, 3rd Year B.P.T examination at the end of 3rd academic Year, 4th Year B.P.T examination at the end of 4th academic Year.

There will be 2 internal examinations in each Year. Internal evaluation based on continuous assessment, for 20% of the marks of the subject. There will be University examination through written paper and/or practical examination for 80% of the marks of the subject at the end of every semester.

O. GEN B.P.T- 8

ELIGIBILITY CRITERIA TO APPEAR IN UNIVERSITY EXAMINATION

A. Attendance: A candidate must secure minimum 80% of attendance

A candidate is required to attend at least 80 percent of the total classes conducted in a year in all subjects prescribed for that year, separately, in theory and practical / clinical to become eligible to appear for the university examination

No relaxation, whatsoever, will be permissible to this rule under any ground including indisposition etc. Condone of shortage of attendance rests with the discretion of vice-chancellor.

B. Filling of University examination form:

Candidates desirous of appearing for University examination must forward their applications in the prescribed form to **The Registrar** through **The Principal** of the institutions on or before the date prescribed for the purpose.

O. GEN B.P.T- 9

STUDENTS' ASSESSMENT:

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

Internal evaluation based on continuous assessment, for 20% of the marks of the subject; University examination through written paper and/or practical examination for 80% of the marks of the subject

O. GEN B.P.T- 10

SCHEME OF EXAMINATION: SUBJECTS AND DISTRIBUTION OF MARKS

BPT – 1 ST YEAR

Paper. No.	Subject	Theory (Maximum Marks)			Practical & Viva Voce (Maximum Marks)		Total (Maximum Marks)
		Time	University Exam	Internal Assessment	University Exam	Internal Assessment	
1.	Paper-I : Human Anatomy	3 Hours	80	20	8	20	200
2.	Paper-II : Human Physiology	3 Hours	80	20	8	20	200
3.	Paper-III : Biochemistry	2 Hours	40	10	*	***	50
4.	Paper-IV :Sociology	2 Hours	40	10	*	***	50
5.	Paper-V : Psychology	2 Hours	40	10	*	***	50
6.	Paper-VI : Biomedical Physics	2 Hours	40	10	* *	***	50
7.	Paper-VII : Foundation of Exercise Therapy and Therapeutic Massage	3 Hours	80	20	8 0	20	200
						Total :	**800**

BPT – 2 ND YEAR

Paper. No.	**Subject**	Theory (Maximum Marks)			Practical & Viva Voce (Maximum Marks)		Total (Maximum Marks)
		Time	University Exam	Internal Assessment	University Exam	Internal Assessment	
1.	Paper –I: Pathology	2 Hours	40	10	***	***	50
2.	Paper –II: Microbiology	2 Hours	40	10	***	***	50
3.	Paper-III: Pharmacology	2 Hours	40	10	***	***	50
4.	Paper-IV: Biomechanics & Kinesiology	3 Hours	80	20	40	10	150
5.	Paper –V: Exercise Therapy	3 Hours	80	20	80	20	200
6.	Paper –VI: Electrotherapy	3 Hours	80	20	80	20	200
7.	Paper – VII: Yoga and Alternative Medicine	2 Hours	40	10	***	***	50
						Total:	**750**

BPT 3rd Year

Paper. No.	Subject	Theory (Maximum Marks)			Practical & Viva Voce (Maximum Marks)		Total (Maximum Marks)
		Time	University Exam	Internal Assessment	University Exam	Internal Assessment	
1.	Paper-I: Orthopedics – Traumatology & Non-Traumatology	3 Hours	80	20	***	***	100
2.	Paper-II: Medicine	3 Hours	80	20	***	***	100
3.	Paper – III: Surgery	3 Hours	80	20	***	***	100
4.	Paper-IV Clinical Neurology& Neurosurgery	3 Hours	80	20	***	***	100
5.	Paper – V Clinical Cardiovascular & Pulmonary Conditions + CT	3 Hours	80	20	***	***	100
6.	Paper – VI Community Medicine	3 Hours	80	20	***	***	100
7.	Paper –VII: Physical & Functional Diagnosis	3 Hours	80	20	80	20	200
						Total:	**700**

BPT 4th Year

Paper. No.	Subject	Theory (Maximum Marks)			Practical & Viva Voce (Maximum Marks)		Total (Maximum Marks)
		Time	University Exam	Internal Assessment	University Exam	Internal Assessment	
1.	Paper-I Physiotherapy in Orthopedic Conditions & Sports	3 Hours	80	20	80	20	200
2.	Paper-II Physiotherapy in Medical & Surgical conditions	3 Hours	80	20	80	20	200
3.	Paper-III Physiotherapy in Cardiovascular & Pulmonary Conditions	3 Hours	80	20	80	20	200
4.	Paper – IV Physiotherapy in Neuromuscular & Psychosomatic disorders	3 Hours	80	20	80	20	200
5.	Paper- V Physiotherapy in Community Health	3 Hours	80	20	80	20	200
6.	Paper – VI Biostatistics & Research	2 Hours	40	10	***	***	50
						Total:	**1050**

O. GEN B.P.T- 11

INTERNAL ASSESSMENT:

The internal assessment will be done based on continuous evaluation method. Every semester, there will be two internal examinations for both the theory and the practical. For the award of internal marks in theory and practical, the better of the two internal examinations will be considered along with other components like attendance, seminar presentations, workshops & conferences attended and journal submission.

Internal marks calculation - 20% of total marks of a subject (Separately for theory and practical):

The better of two internal examinations : 10% of total marks

Attendance : 5% of total marks

Seminar presentations, workshops & conferences attended and journal submission : 5% of total marks

A candidate must obtain minimum of 35% marks of internal evaluation in each paper for both theory and practical separately. Failing which he/she would not be eligible in that paper(s)/ head of passing.

The subsidiary subjects in whom only the internal exam will be conducted, a candidate must obtain minimum of 35% of the total marks before appearing for University examination.

O. GEN B.P.T- 12

UNIVERSITY (EXTERNAL) EXAMINATION:

PASSING CRITERIA: Every student must have an aggregate score of minimum 50% marks of both the internal and University (external) Examination of 100 % marks in theory and practical examination combined together to be declared pass in the University Examination. It is not compulsory to pass in section – I and section – II separately. But, the student has to score minimum 40 % of marks separately in theory and practical in the University Examination of 80 % marks in theory and practical examination.

Illustration of Mark sheet of a student appearing for University exam at First Year BPT.

Subject No	Subject		Internal evaluation		University Examination		Total		Remarks
			Maximum marks	Marks Secured	Maximum/Minimum marks	Marks Secured	Maximum/Minimum marks	Marks Secured	
1.	**Human Anatomy**	Theory	**20**	11	**80/32**	42			
		Practical	**20**	12	**80/32**	35	**200/100**	100	Pass
2.	**Human Physiology**	Theory	**20**	16	**80/32**	56			
		Practical	**20**	10	**80/32**	**30**	**200/100**	112	Fail
3.	**Biochemistry**	Theory	**10**	**03**	**40/16**	24	**50/25**	27	Fail
4.	**Sociology**	Theory	**10**	05	**40/16**	17	**50/25**	**22**	Fail
5.	**Psychology**	Theory	**10**	05	**40/16**	16	**50/25**	**25**	Pass
6.	**Biomedical Physics**	Theory	**10**	05	**40/16**	16	**50/25**	**24**	Fail
7.	Foundation of Exercise Therapy and Therapeutic Massage	Theory	**20**	14	**80/32**	38	**200/100**	**70**	Fail
		Practical	**20**	10	**80/32**	**32**			
							800/400	380	Failed in Subject Nos. 2, 3, 4, 6 & 7

STRUCTURE OF QUESTION PAPERS:

Paper-style for 80 marks subjects for University (External) examination (Including section I and II for 40 marks each)

Duration: **3 Hours**

Section - I

Que. 1 Long Answer	1 x 15 = 15	(Any 1 out of 2)
Que. 2 Short Answer	3 x 05 = 15	(Any 3 out of 4)
Que. 3 Very Short Answer	5 x 02 = 10	(Any 5 out of 7)

Section - II

Que. 4 Long Answer	1 x 15 = 15	(Any 1 out of 2)
Que. 5 Short Answer	3 x 05 = 15	(Any 3 out of 4)
Que. 6 Very Short Answer	5 x 02 = 10	(Any 5 out of 7)

Applicable for following subjects

Year	Subject
1st Year	Human Anatomy
1st Year	Human Physiology
1st Year	Foundation of Exercise Therapy and Therapeutic Massage
2nd Year	Paper-IV: Biomechanics & Kinesiology
2nd Year	Paper –V: Exercise Therapy
2nd Year	Paper –VI: Electrotherapy
3rd Year	Paper-I: Orthopedics – Traumatology & Non-Traumatology
3rd Year	Paper – III: Surgery
3rd Year	Paper-IV Clinical Neurology & Neurosurgery
3rd Year	Paper- V Clinical Cardiovascular & Pulmonary Conditions + CT Surgery
3rd Year	Paper – VI Community Medicine
3rd Year	Paper –VII: Physical & Functional Diagnosis
Final Year	Paper-I Physiotherapy in Orthopedic Conditions & Sports
Final Year	Paper-II Physiotherapy in Medical & Surgical conditions
Final Year	Paper-III Physiotherapy in Cardiovascular & Pulmonary Conditions
Final Year	Paper – IV Physiotherapy in Neuromuscular & Psychosomatic disorders
Final Year	Paper- V Physiotherapy in Community Health

Paper-style for 80 marks subjects for University (External) examination
(Including section I for 60 marks and II for 20 marks)

Duration: **3 Hours**

Section - I (Medicine)

Que. 1 Long Answer	1 x 16 = 16	(Any 1 out of 2)
Que. 2 Long Answer	1 x 16 = 16	(Any 1 out of 2)
Que. 3 Short Answer	3 x 04 = 12	(Any 3 out of 4)
Que. 4 Short Answer	3 x 04 = 12	(Any 3 out of 4)

Section II - (Skin & V.D.)

Que. 5 Long Answer	1 x 16 = 16	(Any 1 out of 2)
Que. 6 Short Answer	2 x 04 = 08	(Any 2 out of 3)

Applicable for following subjects

3rd Year	Medicine (General Medicine + Paeditrics+ Skin and VD)

Paper-style for 40 marks subjects for University (External) examination
(Including only one section)

Duration: **2 Hours**

Que. 1 Long Answer	1 x 15 = 15	(Any 1 out of 2)
Que. 2 Short Answer	3 x 05 = 15	(Any 3 out of 4)
Que. 3 Very Short Answer	5 x 02 = 10	(Any 5 out of 7)

Applicable for following subjects

Year	Subject
2 Hours	Biochemistry
2 Hours	Sociology
2 Hours	Psychology
2 Hours	Biomedical Physics
2 Hours	Paper –I: Pathology
2 Hours	Paper –III: Microbiology
2 Hours	Paper-III: Pharmacology
2 Hours	Paper – VII: Yoga and Alternative Medicine
2 Hours	Paper – VI Biostatistics & Research Methodology

GENERAL INSTRUCTIONS FOR UNIVERSITY PRACTICAL EXAMINATION

(1) Practical examination should be taken and marks should be given by pair of examiners only and not by single examiner.

(2) Sealed original and duplicate mark sheets should be submitted at the end of each session to the special supervisor or coordinator of examination.

(3) Examiner shall not keep any kind of rough or fair copy of any mark sheet with him/her.

O. GEN B.P.T- 13

REVIEW OF ANSWER PAPERS OF FAILED CANDIDATES

As per the regulations prescribed for review of answer papers by the University

O. GEN B.P.T- 14

INTERNAL EVALUATION FOR REPEATERS:

A candidate who has been declared failed in University examination for either of 1st, 2nd, 3rd, 4th year BPT is a repeater for said examination /paper/ subject.

The eligibility criteria for appearing for university examination shall be applicable for the repeaters. But the candidate may appear for the theory and practical held during that semester, for the improvement of internal marks for the subsequent University examination in the paper/papers he/she has failed.

O. GEN B.P.T- 15

PROMOTION CRITERIA / CARRY OVER SYSTEM:

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

ii. It is not mandatory to pass in 2nd Year B.P.T Examination to proceed to 3rd Year B.P.T. However, it is mandatory to pass in all subjects of 2nd Year B.P.T examination to be eligible to appear for 3rd Year B.P.T examination.

iii. It is not mandatory to pass in 3rd Year B.P.T Examination to proceed to 4th Year B.P.T. However, it is mandatory to pass in all subjects of 3rd Year B.P.T examination to be eligible to appear for Final Year B.P.T examination.

iv. The candidate who has failed in 1st Year BPT but attended all the classes of 2nd ear, 3rd Year and Final year BPT will be allowed to appear in 2nd Year, 3rd Year and Final year exam at 6 month intervals.

O. GEN B.P.T- 16

GRACE MARKS:

The Grace Marks / Condonation may be awarded by the university to a student, who has failed in any paper, either theory or Practical; but it is a subject to discretion of the Vice Chancellor.

O. GEN B.P.T- 17

DEFINITION OF TRIAL/ATTEMPT

First trial/attempt is deemed to take place when the candidate is due to appear as per the regulation of University for the examination. Similarly, 2nd, 3rd, etc, trials relating to subsequent examination….

O. GEN B.P.T- 18

EXEMPTION FROM RE-EXAMINATION:

Candidates who have failed in the examination but obtained pass marks in any subjects shall be exempted from re-examination in that subject.

O. GEN B.P.T- 19

DECLARATION OF CLASS:

A successful candidate-

1. Who secures 75% and above in the aggregate marks shall be declared to have secured 'FIRST CLASS WITH DISTINCTION' provided he/she passes the whole examination in the FIRSTATTEMPT;
2. Who secures above 60% and less than 75% in the aggregate marks and completes the course within the stipulated course period shall be declared to have passed the examinations in the 'FIRST CLASS, provide he/she passes the whole examination in the FIRSTATTEMPT';
3. Who secures above 50% and less than 60% in the aggregate marks and completes the course within the stipulated course period shall be declared to have passed the examinations in the 'SECOND CLASS'; provide he/she passes the whole examination in the FIRST ATTEMPT'; and
4. All other successful candidates who passed the examination in more than first/one attempt shall be declared to have PASS CLASS; irrespective of percent of marks secured.

O. GEN B.P.T- 20

COMPULSORY ROTATORY INTERNSHIP

All students of Bachelor of Physiotherapy must undergo a compulsory rotatory internship for a period of 6 months after passing Final year examination in all subjects. It includes Minimum 1100 hours. Candidate will have to join internship within 15 days of declaration of Final year University examination result. Internship should be done in only Hospitals/Institutions recognized by the University. No candidate shall be awarded degree certificate without successfully completing six months of Internship.

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

The student has to do a dissertation/Project work (Not Mandatory) in the internship as part of the curriculum of BPT course and submit it before the completion of the degree. The student will get 100 additional hours in his/her transcript for his/her dissertation / project work if they carry out during the period.

O. GEN B.P.T- 21

AWARD OF RANK:

Award of rank shall be declared based on aggregate marks obtained by a candidate in university examinations only. Students who have passed all the subjects in 1stattempt in all four years without a gracing shall be eligible for the award of rank.

For declaration of outstanding student of the University for the Batch, weightage of University examination marks will be as follows:

1st Year BPT – 20%
2nd Year BPT – 20%
3rd Year BPT – 30%
Final Year BPT – 30%

O. GEN B.P.T- 22

DRESS CODE:

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

O. GEN B.P.T- 23

MIGRATION/TRANSFER OF CANDIDATES:

The Vice Chancellor shall have the powers to place any migration/transfer he deems fit for grant of permission for migration/transfer to candidates undergoing course of study in another University as prescribed by university

COURSE OF STUDY – SUBJECTS & HOURS DISTRIBUTION

Table – I: 1st YEAR BPT

Paper No	Papers	Weekly Class Hours	Total	Hours		Marks		Total Marks
	Exam Papers			Theory	Practical	Theory (External + Internal)	Practical (External + Internal)	
1	Paper I: Human Anatomy	10	300	180	120	80+20	80+20	200
2	Paper II: Human Physiology	8	240	180	60	80+20	80+20	200
3	Paper III: Biochemistry	2	60	60	*****	40+10	*****	50
4	Paper IV: Sociology	2	60	60	*****	40+10	*****	50
5	Paper –V: Psychology	2	60	60	*****	40+10	*****	50
6	Paper –Vi: Biomedical Physics	3	90	90	*****	40+10	*****	50
7	Paper –Vii: Foundation of Exercise Therapy and Therapeutic Massage	7	210	120	90	40+10	40+10	100
		34	1020					
Non-Exam Papers								
6	Paper –VI: Introduction to Physiotherapy and National Healthcare delivery system in India	1	30	60	******	******	******	******
7	Paper –VII: English, Communication and soft skills	1	30	30	******	******	******	******
8	Paper –VIII: PBL / Assignment / ICT learning / Integrated seminar	1	30			******	******	******
	Paper –V: Introduction to quality and patient safety	2	60	60		******	******	****
9	Extra-Curricular Activities (Conference, Tours, Seminar, Workshop, Sports and cultural activities)	-	150	75		******	******	******
10	Community orientation and clinical visit	3	90					
	Total Hours	**42**	**1410 Hours**					

Table – II: 2nd YEAR BPT

Paper No	Papers	Weekly Class Hours	Total	Hours		Marks		Total Marks
	Exam Papers			Theory	Practical	Theory (External + Internal)	Practical (External + Internal)	
1	Paper –I: Pathology	2	60	60	******	40+10	*****	50
2	Paper –II: Microbiology	2	60	60	******	40+10	*****	50
3	Paper-III: Pharmacology	2	60	60	******	40+10	*****	50
4	Paper-IV: Biomechanics & Kinesiology	5	150	120	30	80+20	40+10	150
5	Paper –V: Exercise Therapy	7	210	150	60	80+20	80+20	200
6	Paper –VI: Electrotherapy	7	210	150	60	80+20	80+20	200
7	Paper – VIII: Yoga and Alternative Medicine	2	60	45	15	40+10	*****	50
		28	840					
Non-Exam Papers								
5	Paper –VII: Medical Law, ethics in physiotherapy and Professionalism and values	1	30	30	******	******	******	******
6	Paper –VIII: Medical Terminology & Record keeping	1	30	30	*****	******	******	******
7	Extra-Curricular Activities (Conference, Tours, Seminar, Workshop, Sports and cultural activities)	-	150	75		******	******	******
8	Supervised Clinical Practice	12	360					
	Total Hours	**42**	**1410 Hours**					

Table – III: 3rd YEAR BPT

Paper No	Papers	Weekly Class Hours	Total	Hours		Marks		Total Marks
	Exam Papers			Theory	Practical	Theory (External + Internal)	Practical (External + Internal)	
1	Paper-I: Orthopedics – Traumatology & Non-Traumatology	3	90	90	*****	80+20	*****	100
2	Paper-II: Medicine	3	90	90	*****	80+20	*****	100
3	Paper – III: Surgery	3	90	90	*****	80+20	*****	100
4	Paper-IV Clinical Neurology& Neurosurgery	3	90	90	*****	80+20	*****	100
5	Paper – V Clinical Cardiovascular & Pulmonary Conditions + CT Surgery	3	90	90	*****	80+20	*****	100
6	Paper – VI Community Medicine	2	60	60	*****	80+20	*****	100
7	Paper –VII: Physical & Functional Diagnosis	7	210	100	110	40+10	40+10	100
		24	720					
Non-Exam Papers								
6	Paper –IX: Basic Computers and Information Science	1	30	15	15	******	******	******
7	Extra-Curricular Activities (Conference, Tours, Seminar, Workshop, Sports and cultural activities)	-	150	75		******	******	******
8	Clinical Training	16	480					
	Total Hours	**42**	**1410 Hours**					

Table – IV: 4th YEAR BPT

Paper No	Papers	Weekly Class Hours	Total	Hours		Marks		Total Marks
	Exam Papers			Theory	Practical	Theory (External + Internal)	Practical (External + Internal)	
1	Paper-I Physiotherapy in Orthopedic Conditions& Sports	4	120	80	40	80+20	80+20	200
2	Paper-II Physiotherapy in Medical & Surgical conditions	4	120	80	40	80+20	80+20	200
3	Paper-III Physiotherapy in Cardiovascular& Pulmonary Conditions	4	120	80	40	80+20	80+20	200
4	Paper – IV Physiotherapy in Neuromuscular & Psychosomatic disorders	4	120	80	40	80+20	80+20	200
5	Paper- V Physiotherapy in Community Health	4	120	80	40	80+20	80+20	200
6	Paper VI Biostatistics & Research Methodology	2	60	60	*****	40+10	*****	50
		22	660					
Non-Exam								
	Paper –VIII: Administration & Management in Physiotherapy AND Teaching Skills	1	30	15		******	******	** ** **
5	Extra-Curricular Activities (Conference, Tours, Seminar, Workshop, Sports and cultural activities)	-	150	75		******	******	******
6	Clinical Training	17	510					
	Total Hours	**42**	**1410 Hours**					

Table – IX: INTERNSHIP & PROJECT WORK

Sr. No.	Program/Work	Weekly Hours	Total hours
1.	Internship	42-48	1100
2.	Project work / Dissertation	6	100
	Total		**1200**

BACHELOR OF PHYSIOTHERAPY-TRANSCRIPT

Sr.No	I Year - Subject / Paper Subject	Total hour
1	Paper I: Human Anatomy	300
2	Paper II: Human Physiology	240
3	Paper III: Biochemistry	60
4	Paper IV: Sociology	60
5	Paper –V: Psychology	60
6	Paper –VI: Biomedical Physics	90
7	Paper –VII: Foundation of Exercise Therapy and Therapeutic Massage	210
	Non- Exam Papers	
8	Paper –VIII: Introduction to Physiotherapy and National Healthcare delivery system in India	30
9	Paper – IX: English, Communication and soft skills	30
10	Paper –X: PBL / Assignment / ICT learning / Integrated seminar	30
11	Paper –XI: Introduction to quality and patient safety	60
12	Extra-Curricular Activities (Conference, Tours, Seminar, Workshop, Sports and	150
13	Community orientation and clinical visit	90
	Total Hours in 1st Year BPT	**1410 Hours**
	II Year - Subject / Paper	
1	Paper –I: Pathology	60
2	Paper –II: Microbiology	60
3	Paper-III: Pharmacology	60
4	Paper-IV: Biomechanics & Kinesiology	150
5	Paper –V: Exercise Therapy	210
6	Paper –VI: Electrotherapy	210
7	Paper – VII: Yoga and Alternative Medicine	60
	Non- Exam Papers	
8	Paper –VIII: Medical Law, ethics in physiotherapy and Professionalism and values	30
9	Paper –IX: Medical Terminology & Record keeping	30
10	Extra-Curricular Activities (Conference, Tours, Seminar, Workshop, Sports and cultural activities)	150
11	Supervised Clinical Practice	360
	Total Hours in 2nd Year BPT	**1410 Hours**

Sr.No	III Year - Subject / Paper	Total hour
1	Paper-I: Orthopedics – Traumatology & Non-Traumatology	90
2	Paper-II: Medicine	90
3	Paper – III: Surgery	90
4	Paper-IV Clinical Neurology& Neurosurgery	90
5	Paper – V Clinical Cardiovascular & Pulmonary Conditions + CT Surgery	90
6	Paper – VI Community Medicine	60
7	Paper –VII: Physical & Functional Diagnosis	210
	Non- Exam Papers	
8	Paper –VIII: Basic Computers and Information Science	30
9	Extra-Curricular Activities (Conference, Tours, Seminar, Workshop, Sports and	150
10	Clinical Training	480
	Total Hours in 3rd Year BPT	**1410 Hours**

Sr.No	Final Year Subject /Paper	Total hour
1	Paper-I Physiotherapy in Orthopedic Conditions & Sports	120
2	Paper-II Physiotherapy in Medical & Surgical conditions	120
3	Paper-III Physiotherapy in Cardiovascular & Pulmonary Conditions	120
4	Paper – IV Physiotherapy in Neuromuscular & Psychosomatic disorders	120
5	Paper- V Physiotherapy in Community Health	120
6	Paper – VI Biostatistics & Research Methodology	60
Non- Exam Papers		
8	Paper –VIII: Administration & Management in Physiotherapy and Teaching Skills	30
9	Extra-Curricular Activities (Conference, Tours, Seminar, Workshop, Sports and	150
10	Clinical Training	510
	Total Hours in 4th Year BPT	**1410 Hours**

INTERNSHIP & PROJECT WORK

Sr. No.	Program/Work	Weekly Hours	Total hours
1.	Internship	42-48	1100
2.	Project work / Dissertation (Desirable - Not mandatory)	6	100
	Total		**1200**

Total Transcript Hours = 5640 Hours + 1200 Hours = **6840** Hours

SYLLABI

First Year B.P.T

HUMAN ANATOMY

SUBJECT DESCRIPTION - It is designed to provide students with the working knowledge of the structure of the human body which is essential foundation for their clinical studies. Studies are concerned with the topographical and functional anatomy of the limbs and thorax. Particular attention is paid to the muscles, bones and joints of the regions. The head and neck and central nervous system (CNS) are studied with reference to topics of importance to physiotherapists. The study of the CNS includes detailed consideration of the control of motor function.

THEORY –

General Introduction:

1) Definitions and subdivisions
2) Plan of human body
3) System of the body
4) The unit of structure and function of the cell

Histology: (Not For University Examination)

1) Cell
2) Tissues of the body
3) Epithelium
4) Connective tissue
5) Cartilage
6) Bone
7) Lymphoid tissue

Embryology: (Not For University Examination)

1) Ovum, spermatozoa, fertilization and formation of germ layers and their derivations
2) Development of skin, fascia, blood vessels and lymphatics
3) Neural tube, brain vessels, spinal cord
4) Development of brain and brainstem structures, developmental anomalies (brief)
5) Development of bones, axial and appendicular skeleton and muscles

MUSCULOSKELETAL ANATOMY: (all topics to be taught in detail)

Osteology:

1) Anatomical positions of the body, axes, planes, common anatomical terminologies (grooves, tuberosity, trochanters etc)
2) Connective tissue classification
3) Bones:- Composition and functions, classification of types according to morphology and development, growth and repair, structure of long bone, vertebral column, types of vertebrae, bones of extremities and body landmarks

Arthrology:

1) Definitions
2) Classification of joints
3) Construction of joints
4) Motions of joints
5) Structure of fibrous, cartilaginous joints
6) Blood supply and nerve supply of joints
7) Articulations – articular surfaces, types of joints, motions of upper and lower extremities, trunk, head

Myology:

1) Types of muscle tissue
2) Muscles of upper extremity, lower extremity, trunk, eye, face etc. origin, insertion, nerve supply and action (in detail)

Myology of other systems:

1) Cardiovascular system
2) Blood lymph, tissue fluid-characteristics, composition, and function
3) The heart-main arteries, veins, capillaries
4) Lymph circulation

Neuro-anatomy

1) Division and function of the nervous system
2) Brain, spinal cord-their structures, division
3) Nerve tissue-neuron, nerve, fibre, synapse, end-organs etc
4) Organization of Central Nervous System-spinal nerves and autonomic nervous system-mainly pertaining to cardiovascular, respiratory and urogenital system.
5) Cranial nerves
6) Peripheral nervous system-Peripheral nerves, sensory and organs, neuromuscular junction, spinal segments and areas
7) Nerve supply to voluntary muscles and segmental distribution
8) Central nervous system-Brain, cerebellum, Thalamus, Hypothalamus, Corpus striatum, Cerebral hemispheres – white and gray matter, lateral ventricles, blood supply of brain, meninges, pyramidal system, extrapyramidal systems, anatomic integration.
9) Cerebro-spinal fluid
10) Sensory end-organs and sensations
11) Autonomic nervous system-sympathetic, parasympathetic

Respiratory System:

1) Thoracic cage
2) Brief outline of air passages
3) Brief gross anatomy of respiratory organs-lungs, pleura, bronchial tree, broncho-pulmonary segments
4) Intercostals muscles in detail
5) Mechanisms of respiration and muscles of respiration
6) Diaphragm

Cardiovascular System:

1) Heart (gross anatomy and functions)
2) Arteries
3) Veins
4) Collateral Circulation

Digestive System:

1) Anatomy of digestive organs – Oesophagus, stomach, intestine, rectum etc
2) Digestive glands

Urinary System:

1) Anatomy of urinary organs, kidneys, ureters, urinary bladder urethra in males and females etc.
2) Types of bladder especially in paraplegics

Reproductive System:

1) Brief outline of genital organs
2) Outline of male and female reproductive system

Endocrine System:

1) Glands – classification, sites and section
2) Enzymes
3) Hormones

Lymphatic System – brief outline

Special sensory organs and sensations:

1) Emphasis on skin, ear and eyes
2) Less detail on smell and taste

Regional Anatomy:

Upper Extremity:

1) Osteology: Clavicle, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, Phalanges in articulated hand
2) Soft parts: Breast, pectoral region, axilla, front of arm, cubital fossa, front of forearm, back of forearm, palm, dorsum of hand, muscles, fascia, nerves, blood vessels and lymphatic drainage of upper extremity
3) Joints: shoulder girdle, shoulder joint, elbow joint, radio-ulnar joint, wrist joint and joints of hand
4) Arches of hand, skin of the palm and dorsum of hand

Lower Extremity

1) osteology: Hip bone, femur, tibia, fibula, patella, tarsals, metatarsals, phalanges.
2) Soft parts: Gluteal region, front and back of thing {femoral triangle, femoral canal and inguinal canal}, medical side of the thigh {adductor canal}, lateral side of the thigh, popeliteal 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 the foot, skin of foot.
3) Joints: Hip joint, knee joint, ankle joint, joints of the foot.

Trunk

1) Osteology: Cervical, thoracic, lumbar, sacral and coccygeal vertebra and ribs.
2) Sift tissue: Pre and para vertebral muscles, anterior abdominal wall muscles, intervertebral disc.

Head and neck

1) osteology: Mandible and bones of the skull.
2) Soft parts: Muscles of the faced and neck and their nerve and blood supply – Extraocular muscles, salient points about the eye ball and internal ear.

List of Practical / Demonstrations:

1. Histology-Elementary tissue including surface Anatomy- **Not for University Examination**
2. Embryology-models, charts- **Not for University Examination**
3. Demonstration of regions of body, dermatomes, Myotomes, classification of the joints, muscles, movements and range of motion on the models and charts
4. Demonstration of Anatomical position of body
5. Demonstration of elementary tissue by specimen, charts, model etc
6. Thorax including surface anatomy, abdominal muscles
7. Demonstration of the muscles of the respiration, movements of the thorax (pump handle and bucket handle), organs in the thorax
8. Identification of the ribs, sternum, thoracic vertebra, its parts, attachment of the muscles, nerves and vessels relation to bone
9. Surface making of the lung, pleura, fissures and lobes of lungs, Heart
10. Male and female reproductive system
11. Demonstration of the muscles of anterior abdominal wall, surface marking of various abdominal organs and identification of the parts of abdominal organs.
12. Identification and surface anatomy of the endocrine organs.
13. Surface markings of various organs and bony prominences
14. Upper extremity including surface Anatomy. Demonstration of the muscles of the upper extremity, movements in joints, identification of body prominences on inspection and by palpation, points of palpation of nerves and arteries. Identification of the bones of the upper extremity, side determination, parts, attachment of the muscles, nerves and vessels relation to bone.
15. Lower extremity including surface Anatomy. Demonstration of the muscles of the lower extremity, movements in joints, identification of body prominences on inspection and by palpation, points of palpation of nerves and arteries. Identification of the bones of the lower extremity, side determination, parts, attachment of the muscles and relation of nerves and vessels to bone.
16. Demonstration of the Head & Neck and Spinal cord & Brain including surface Anatomy.
17. Demonstration of the muscles of the back, pelvic girdle, pre and para vertebral muscles, movements in joints, identification of body prominences on inspection and by palpation.
18. Identification of the bones of the vertebral column (cervical, thoracic, lumbar, sacral and coccygeal) parts, attachment of the muscles and relation of nerves and vessels to bone.
19. Surface Markings of Various Organs and Bony Prominences
20. Radiographic Identification of Bone and Joints

Recommended Text books:

1. SNELL [Richard S], Clinical Anatomy for Medical students: Ed. 5. Little Brownand Company Boston.
2. B.D Caucasia's Human Anatomy – Regional and Applied; Volume I, Volume Ii and Volume III.
3. SINGH [Inderbir], Human Osteology. JP Brothers, New Delhi1990.
4. SINGH [Inderbir], Text book of Anatomy with colour atlas: Vol I, II, III.
5. SINGH [Inderbir], Essentials of Anatomy JP Brothers, New Delhi
6. Anatomy by Vishram Singh
7. F. Netter Atlas
8. Atlas of Anatomy – Gilroy, Ross, Thieme Publishers
9. Adam`s Atlas.
10. McMinns Atlas
11. Grant`s Atlas

Recommended Text books for Practical:

1. ROMANES [G J], Cunningham manual of practical anatomy: Vol I, II, III

Reference Books:

1. PODAR - Handbook of Osteology: Ed. 11 Scientific bookco.
2. Gray's Anatomy
3. TORTORA – Principles of Anatomy & Physiology: Ed. 8 Harper & Row pub.
4. McMinn – McMinn's color atlas of Human Anatomy.

HUMAN PHYSIOLOGY

SUBJECT DESCRIPTION: The course in Physiology over the first year is designed to give the student an in-depth knowledge of fundamental reactions of living organisms, particularly in the human body. The major topics covered include the following: the cell; primary tissue; connective tissue; skin; muscle; nervous tissue; blood; lymphoid tissues; respiration; blood vessels; circulation; cardiac cycle; systemic circulation; gastrointestinal tract; kidneys; uterus; urinary tract; pregnancy; endocrine system.

THEORY

GENERAL PHYSIOLOGY:

1. Cell Structure and Organelle.
2. General Principles of Biophysics
3. Body Fluid Compartments.

Blood:

1. Composition of Blood, Plasma, Protein Formation and their Function.
2. Structure, formation and functions of R.B.C.
3. Structure, formation and functions of W.B.Cs. and platelets.
4. Coagulation and its defects of bleeding and clotting time.
5. Blood Groups and their significance, Rh. Factor.
6. Reticulo-endothelial system, Jaundice, Structure and functions of spleen.
7. Hemoglobin and E.S.R.

Cardiovascular System:

1. Structure, properties of heart muscle and nerve supply of heart structure and function of arteries, arterioles, capillaries and veins.
2. Cardiac cycle and heart sounds.
3. Cardiac output measurement, factors affecting.
4. Heart rate and its regulation, Cardiovascular reflexes.
5. Blood pressure, its regulations and physiological variations.
6. Peripheral resistance, factors controlling and its role in B.P.
7. Hemorrhage.
8. Changes in muscular exercise.

Respiratory System:

1. Mechanism of respiration, intra-pleural and intrapulmonary pressure.
2. Lung volumes and capacities.
3. O2 and CO2 carriage and their exchange in tissues and lungs.
4. Nervous chemical regulation of respiration – Respiratory Centers. Respiratory states – Anoxia, Asphyxia, Cyanosis, and Acclimatization.

Digestive System:

5. General outline and salivary digestion.
6. Gastric secretion and its mechanism of section and functions.
7. Digestion, Absorption and Metabolism of Proteins
8. Structure, Secretions and Function of Liver

Nutrition:

10. Digestion, Absorption and Metabolism of Carbohydrates.
11. Digestion, Absorption and Metabolism of Fats.
12. Digestion, Absorption and Metabolism of Proteins.
13. Vitamins, its sources, functions and resources.
14. Balanced diet in different age groups and occupation.

Endocrines:

1. Anterior Pituitary.
2. Posterior Pituitary and Parathyroid.
3. Thyroid.
4. Adrenal Cortex.
5. Adrenal Medulla, Thymus
6. Pancreas and Blood sugar regulation.

Reproductive System:

1. Sex determination and development, Puberty.
2. Male sex hormones and their functions, spermatogenesis.
3. Female sex hormones and functions, menstrual cycle, ovulation and contraceptives.
4. Pregnancy, functions of placenta and lactation.

Excretory System:

1. Gross and minute structure of Kidney and features of Renal circulation.
2. Mechanism of formation of Urine, GFR and Tubular function.
3. Renal function.
4. Physiology of Micturition.

NEURO MUSCULAR PHYSIOLOGY:

Muscle and Nerve:

1. Structure of Neurons, membrane potential and generation of action potential.
2. Nerve impulse conduction, Saltatory conduct ion.
3. Neuromuscular junction and drugs acting on it – Myasthenia.
4. Degeneration and regeneration in peripheral nerves – Wallerian degeneration of electro tonus and Pflagers Law.

Muscle:

1. Type of muscles and their gross structure, stimulus chronaxie, strength duration curve.
2. Structure of sarcomere – Basis of muscle contraction, Starling's Law and changes during muscle contraction.
3. Electrical – Biphasic and monophasic action potentials.
4. Chemical, Thermal and Physical changes, isometric and isotonic contraction.
5. Motor units and its properties, Clonus, Tetanus, All or None Law, Beneficial Effect.
6. Nature of Voluntary contraction, Fatigue.

Nervous System:

1. Types and properties of Receptors, types of sensations.
2. Structure of Synapses, Reflex and its properties, occlusion summation, sub minimal fringe, etc.
3. Tracts of Spinal Cord.
4. Descending, Pyramidal and Extra pyramidal Tracts.
5. Hemi section and complete section of spinal cord, upper and lower motor neuron paralysis.
6. Cerebral cortex – areas and functions, E.E.G.
7. Structure, connections and functions of Cerebellum.
8. Connections and functions of Basal Ganglia and Thalamus.
9. Reticular formation, tone, posture and equilibrium.
10. Autonomic nervous system.

Special Senses:

1. Broad features of Eye, errors of refraction, lesions of visual pathways.
2. Speech and its disorders.
3. Ear and vestibular apparatus.

Physiology of exercise–Effects of acute and chronic exerciseon

- O_2transport
- Muscle strength/power/endurance
- B.M.R./R.Q.
- Hormonal and metabolic effect
- Cardiovascular system
- Respiratory system
- Body fluids and electrolyte

Effect of gravity / altitude /acceleration / pressure on physical parameters.

Physiology of Aging

PRACTICALS –

1. Blood pressure– palpatory and auscultatory method: Variation of blood pressure in posture.
2. Auscultation of Normal breath sound & heart sound
3. Spirometry**:** Recording of Lung volumes & capacities.
4. Breathe holding time
5. Mercury column test (40 mm Hg test)
6. Clinical Examination: Chest expansion, Pulse rate and Respiratory rate,

Central Nervous System:

1. Testing of peripheral sensations.
2. Superficial and deep reflexes.
3. Tests for Cerebellar functions- Equilibrium and Non-equilibrium Tests

Graphs-

1. Skeletal muscle-properties.
2. Cardiac muscle-properties

Physical fitness:

1. Six-minute walk test.
2. Mosso‘s finger ergography
3. Step Test

Hematology: **(Not For University Examination)**

a. Study of Microscope and its uses
b. Determination of RBC count
c. Determination of WBC count
d. Differential leukocyte count
e. Estimation of hemoglobin
f. Calculation of blood indices
g. Determination of blood groups
h. Determination of bleeding time
i. Determination of clotting time

Demonstrations only **(NOT for University Exam)**

1. Determination of ESR
2. Determination of PCV

Recommended text books:

1. Text book of medical physiology – Guyton Arthur
2. Concise medical physiology – Chaudhuri SujitK.
3. Human Physiology – ChatterjeeC.C.
4. Text book of practical Physiology –Ranade.
5. Text of Physiology – A. K.Jain.
6. Basics of Medical physiology- Venkatesh D &Sudhakar HH
7. Manipal Manual of Physiology – Prof. C NChandrashekar
8. Exercise Physiology – McArdle, Katch&Katch

Reference:

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

BIOCHEMISTRY

THEORY

1. Nutrition–
    a. 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.
    b. Physical activities - Energy expenditure for various activities. Calculation of energy requirement of a person
    c. Balanced diet
        i. Recommended dietary allowances
        ii. Role of carbohydrates in diet: Digestible carbohydrates and dietary fibers
        iii. Role of lipids in diet
        iv. 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
        v. Nutritional disorders.
2. Carbohydrate Chemistry–
    a. Definition, general classification with examples, Glycosidicbond
    b. Structures, composition, sources, properties and functions of Monosaccharides, Disaccharides, Oligosaccharides and Polysaccharides.
    c. Glycosaminoglycan(mucopolysaccharides)
3. Lipid Chemistry–
    a. Definition, general classification
    b. Definition, classification, properties and functions of Fatty acids, Triacylglycerol, Phospholipids,Cholesterol
    c. Essential fatty acids and their importance
    d. Lipoproteins: Definition, classification, properties, Sources and function Ketonebodies
4. Amino-acid Chemistry–
    a. Amino acid chemistry: Definition, Classification, Peptide bonds
    b. Peptides: Definition, Biologically important peptides
    c. Protein chemistry: Definition, Classification, Functions of proteins,
5. Enzymes–
    a. 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)
6. Nucleotide and Nucleic acid Chemistry-
    a. Nucleotide chemistry: Nucleotide composition, functions of free nucleotides in body.

b. 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-
    a. General characteristics of digestion and absorption, Digestion and absorption of carbohydrates, proteins and lipids. Disorders of digestion and absorption – Lactose intolerance.
8. Carbohydrate Metabolism-
    a. Introduction, Glycolysis – Aerobic, Anaerobic Citric acid cycle, Substrate level phosphorylation.
    b. Glycogen metabolism – Glycogenesis, Glycogenolysis, Metabolic disorders glycogen, Gluconeogenesis, Coricycle
    c. Hormonal regulation of glucose, Glycosuria, Diabetes mellitus.
9. Lipid Metabolism-
    a. Introduction to lipid metabolism, Lipolysis, Oxidation of fatty acids -oxidation of fatty acids,
    b. Lipogenesis - Denovo synthesis of fatty acids, chain elongation, desaturation, triacylglycerol synthesis, fat metabolism in adipose tissues
    c. Ketonebody metabolism: Ketone body formation (ketogenesis), utilization (ketolysis), ketosis, Rothera's test.
    d. Cholesterol metabolism: synthesis, degradation, cholesterol transport
    e. Hypercholesterolemia and its effects (atherosclerosis and coronary heart diseases) Hypocholesterolemic agents, Common hyper lipoproteinemia, Fatty liver
10. Amino acid and Protein Metabolism-
    a. Catabolism of amino acids - Introduction, transamination, deamination, Fate of ammonia, transport of ammonia, Urea cycle
    b. Specialized products formed from amino acids - from glycine, arginine, methionine, phenylalanine and tyrosine.
11. Vitamins-
    a. Definition, classification according to solubility,
    b. Individual vitamins - Sources, Coenzyme forms, functions, RDA, digestion, absorption and transport, deficiency and toxicity.
12. Mineral Metabolism-
    a. 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. Biochemistry of Connective tissue-
    a. Introduction, various connective tissue proteins: Collagen, elastin - Structure and associated disorders. Glycoproteins,Proteoglycans.
14. Acid-Base balance-
    a. 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.

15. Water balance-
    a. Water distribution in the body, Body water, water turnover, Regulation of water balance: role of ADH and thirst centre.
16. Electrolyte balance-
    a. Osmolarity. Distribution of electrolytes.
    b. Electrolyte balance: Role of aldosterone, rennin angiotensin system and ANF.
17. Clinical Biochemistry-
    a. 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 Textbooks:

1. Fundamentals of Biochemistry by U. Satyanarayana, UChakrapani.
2. Manipal manual of Clinical Biochemistry.

Reference Books: -

1. Fundamentals of Biochemistry by A.C. Deb Publisher: New central book agency
2. T.B. of Medical Biochemistry by MN Chatterjee, RanaShinde.
3. T.B. of Biochemistry by DM Vasudevan, shreekumariS.
4. MURRAY [ROBERT KK], Harper's Bio Chemistry Ed 24, Prentice Hall.1996
5. RAMAKRISHNA [S], PRASANNA [KG], RAJAN [R], Text Book of Medical Biochemistry.
6. VASUDEVAN [DM] and SREE KUMARI [S], Text Book of Biochemistry for Medical students.
7. DAS [Debajyothi], Biochemistry.
8. LEHININGER [Albert] et. al., Principles of Biochemistry.
9. ORTEN [James M] and NEUHAUS [OHO.W]. Human Biochemistry.
10. Strayer [LUBERT], Biochemistry.
11. DEVLIN [Thomas M], Biochemistry with Clinical Correlation.

GENERAL & CLINICAL PSYCHOLOGY

SUBJECT DESCRIPTION -

Human Psychology involves the study of various behavioral patterns of individuals, theories of development, normal and abnormal aspects of motor, social, emotional and language development, communication and interaction skills appropriate to various age groups.

The study of these subjects will help the student to understand their clients while assessment and while planning appropriate treatment methods.

THEORY -

1. **Introduction to Psychology**
    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**
    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**
    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 (experience and context).
    d. Illusion and hallucination: different types.
4. **Motivation**
    a. Motivation cycle (need, drive, incentive, reward).
    b. Classification of motives.
    c. Abraham Maslow’s theory of need hierarchy
5. **Frustration and conflict**
    a. Frustration: sources of frustration.
    b. Conflict: types of conflict.
    c. Management of frustration and conflict
6. **Emotions**
    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**
    a. Theories of intelligence.
    b. Distribution of intelligence.
    c. Assessment of intelligence
8. **Thinking**
    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
9. **Learning**
    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**
    a. Approaches to personality: type & trait, behaviorist, 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, introjections, acting out.
11. **Social psychology**
    a. Leadership: Different types of leaders. Different theoretical approaches to leadership.
    b. Attitude: development of attitude. Change of attitude.
12. Clinical psychology –Physiotherapist and patient interaction.

Recommended text books:

1. Ramalingam& Bid (2009). Psychology for Physiotherapists. Jaypee Brothers, New Delhi.
2. Morgan et al (2003). Introduction to Psychology. New Delhi: Tata McGraw-Hill.
3. Feldman. R. H. (1996). Understanding Psychology. New Delhi: Tata McGraw-Hill.
4. Atkinson(1996). Dictionary of Psychology.

SOCIOLOGY

SUBJECT DESCRIPTION - Sociology will introduce student to the basic sociology concepts, principles and social process, social institutions in relation to the individual, family and community and the various social factors affecting the family in rural and urban communities in India will be studied.

THEORY

1. Introduction:
    a. Meaning- Definition and scope of sociology
    b. Its relation to Anthropology, Psychology, Social Psychology.
    c. Methods of Sociological investigations- Case study, social survey, questionnaire, Interview and opinion poll methods.
    d. Importance of its study with special reference to Health Care Professionals.
2. Social Factors in Health and disease situations:
    a. Meaning of social factors
    b. Role of social factors in health and illness
3. Socialization:
    a. Meaning and nature of socialization.
    b. Primary, Secondary and Anticipatory socialization.
    c. Agencies of socialization.
4. Social Groups:
    a. Concepts of social groups, influence of formal and informal groups on health and sickness. The role of primary groups and secondary groups in the hospital and rehabilitation setup.
5. Family:
    a. The family, meaning and definitions.
    b. Functions of types of family
    c. Changing family patterns
    d. Influence of family on the individual's health, family and nutrition, the effects of sickness in the family and psychosomatic disease and their importance to physiotherapy.
6. Community:
    a. Rural community: Meaning and features –Health hazards of ruralities, health hazards to tribal community.
    b. Urban community: Meaning and features- Health hazards of urbanities.
7. Culture and Health:
    a. Concept of Health
    b. Concept of Culture
    c. Culture and Health
    d. Culture and Health Disorders
8. Social change:
    a. Meaning of social changes.
    b. Factors of social changes.
    c. Human adaptation and social change

d. Social change and stress.
e. Social change and deviance.
f. Social change and health programme
g. The role of social planning in the improvement of health and rehabilitation.

9. Social Problems of disabled: Consequences of the following social problems in relation to sickness and disability, remedies to prevent these problems.
    a. Population explosion
    b. Poverty and unemployment
    c. Beggary
    d. Juvenile delinquency
    e. Prostitution
    f. Alcoholism
    g. Problems of women in employment
    h. Geriatric problems
    i. Problems of underprivileged.
10. Social Security:
    a. Social security and social legislation in relation to the disabled.
11. Social worker:
    a. Meaning of Social Work
    b. The role of a Medical Social Worker.

Recommended Books:

1. Bid D. (2006). Sociology for Physiotherapists. Jaypee Brothers, New Delhi.
2. Sachdeva and Vidyabushan: Introduction to the study of Sociology.
3. K. Parks Textbook of Preventive & Social Medicine.
4. Textbook of Preventive & Social Medicine – P.K. Mahajan & M.C.Gupta

FOUNDATION OF EXERCISE THERAPYAND THERAPEUTIC MASSAGE

SUBJECT DESCRIPTION - In this course, the students will learn the principles and effects of exercise as a therapeutic modality and will learn the techniques in the restoration of physical functions.

THEORY

1. **Introduction to Exercise Therapy** - The aims of Exercise Therapy, The techniques of Exercise Therapy, Basic of exercise: Physiological effects and Therapeutic uses of exercises, Psychogenic aspects of exercises, Pharmacological effects of exercises
2. **Starting Positions** – Fundamental positions & derived Positions
3. **Evaluation Measures/Tests**
    a. Measurements of Vital parameters like Body temp, RR, HR, BP
    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
    c. Manual Muscle Testing: Introduction to MMT, Principles & Aims, Indications & Limitations, Techniques of MMT for group & individual: Techniques of MMT for upper limb / Techniques of MMT for lower limb / Techniques of MMT for spine.
    d. Measurement of Limb Length and Girth
    e. Pelvic tilt and Measurement of the angle of Pelvic Inclination
4. **Passive Movements**: 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**: Definition and Classification
    a. Definition of strength, power & work, endurance, muscle actions.
    b. Physiology of muscle performance: structure of skeletal muscle, chemical & mechanical events during contraction &relaxation, muscle fiber type, motor unit, force gradation.
    c. Free exercise: Classification, principles, techniques, indications, contraindications, effects and uses
    d. Active Assisted Exercise: Principles, techniques, indications, contraindications, effects and uses
    e. Assisted-Resisted Exercise: principles, techniques, indications, contraindications, effects and uses
    f. Resisted exercises: Definition, Classification, principles, indications, contraindications, effects and uses, techniques, Manual and Mechanical resistance exercise, Isometric exercise, Dynamic exercise: Concentric and Eccentric, Constant versus variable resistance, Isokinetic exercise, Open-

Chain and Closed-Chain exercise.

6. **Relaxation**- 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, Principles, techniques & Methods of relaxation, Types & uses: General, Local. Jacobson's, Mitchel's, additional methods of Relaxation.
7. **Suspension Therapy:** 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
8. **Walking Aids**: Types: Crutches, Canes, Frames; Principles and gait training with walking aids, Pre-crutch training
9. **Individual and Group Exercises**: Advantages and Disadvantages, Organization of Group exercises, Recreational Activities and Sports
10. **Trick movements**
11. **Use of apparatuses/equipments in Exercise Therapy**

THERAPEUTIC MASSAGE

1. History and Classification of MassageTechnique
2. Principles, Indications and Contraindications
3. Technique of Massage Manipulations
4. Physiological and Therapeutic Uses of Specific Manipulations

PRACTICAL: The students to be trained in Practical Laboratory work for all the topics discussed in theory. They must be able to

1. Demonstrate Starting positions and Derived positions
2. Demonstrate Measurements of Vital parameters Body temp, RR, HR, BP
3. Demonstrate muscle strength using the principles and technique of MMT
4. Demonstrate relaxation techniques.
5. Demonstrate the techniques of passive movements
6. Demonstrate various techniques of Active movements
7. Demonstrate the techniques of suspension therapy for mobilizing and strengthening joints and muscles
8. Demonstrate to use the walking aids for gait training
9. Demonstrate massage technique application according to body parts.
10. Demonstrate the uses of different exercise therapy equipment
11. Demonstrate the technique of measuring ROM using goniometer
12. Demonstrate techniques for measuring limb length and Girth.

Recommended books:

1. Principles of exercise therapy- Dena Gardiner
2. Practical exercise therapy- Margaret Hollis
3. Guide line for goniometry-Cynthia Norkin& JoyceWhite
4. Principals of therapeutic soft tissue manipulation – A. G.Sinha

Reference Books:

1. Therapeutic exercise – Carolyn Kisner and Colby
2. Massage for Therapist- Margaret Hollis
3. Physical Rehabilitation- Susan B.O'Sullivan
4. Physiotherapy in Orthopaedic conditions-by Jayant Joshi

BIOMEDICAL PHYSICS (FUNDAMENTALS OF ELECTROTHERAPY) :

SUBJECT DESCRIPTION - To understand the concept and basic principles to know electrotherapy equipments is given under this topic. The student will be taught about physics related to electrotherapy and application on human body tissues.

1. **Physical principles**
    a. Structure and properties of matter -solids, liquids and gases, adhesion, surface tension, viscosity, density and elasticity.
    b. Structure of atom, molecules, elements and compound
    c. Electricity: Definition and types. Therapeutic uses. Basic physics of construction. Working
    d. Importance of currents in treatment.
    e. Static Electricity: Production of electric charge. Characteristic of a charged body.
    f. Condensers: Definition, principle, Types- construction and working, capacity & uses.
    g. Magnetism: Definition. Properties of magnets. Electromagnetic induction. Transmission by contact. Magnetic field and magnetic forces. Magnetic effects of an electric field.
    h. Conductors, Insulators, Potential difference, Resistance and intensity
    i. Ohm's law and its application to DC and AC currents. Fuse: construction, working and application.
    j. Transmission of electrical energy through solids and liquids
    k. Rectifying Devices-Thermionic valves, Semiconductors, Transistors, Amplifiers, transducer and Oscillator circuits.
    l. Transformer: Definition, Types, Principle, Construction, Eddy current, working uses
    m. Chokes: Principle, Construction and working, Uses
2. **Effects of Current Electricity**
    a. Chemical effects-lons and electrolytes, lonisation, Production of an EMF by chemical actions.
    b. Ionization: Principles, effects of various technique of medical ionization.
    d. Electromagnetic spectrum.

3. **Electrical Supply**
    a. Brief outline of main supply of electric current
    b. Dangers-short circuit, electric shocks: Micro/ Macro shocks
    c. Precaution-safety devices, earthing, fuses etc.
    d. First aid and initial management of electric shock
    e. Burns: electrical & chemical burns, prevention and management
4. **Various agents**
    a. Thermal agents: Physical Principles of cold, Superficial and deep heat.
    b. Principles and production of SWD, Infra Red Radiation, Ultra Violet Radiation,Microwave Diathermy, LASER, and Ultra sound .

5. **Therapeutic Electricity**–
    a. Therapeutic currents –Impulses, definition and types, pulse duration and Depletion times.
    b. Galvanic current, Faradic currents, Surging current, exponentially progressive current, biphasic current.
    c. Types of electrodes of elector diagnostic and therapeutic application.

Recommended Books:

1. Biophysical Bases of Electrotherapy: by Alex Ward, 1stEdition
2. Physical Principles Explained: Low &Reed
3. Biophysics: An Introduction [Paperback] Roland Glaser
4. Principal of Electronics By. V. K.Mehta
5. Fundamentals of Physics by RobertResnik

Not for University Exam

INTRODUCTION TO PHYSIOTHERAPY AND NATIONAL HEALTHCARE DELIVERY SYSTEM IN INDIA

SUBJECT DESCRIPTION: The course provides the students a basic insight into the main features of Indian health care delivery system and how it compares with the other systems of the world. Topics to be covered under the subject are as follows:

1. Introduction to healthcare delivery system
    a. Healthcare delivery system in India at primary, secondary and tertiary care
    b. Community participation in healthcare delivery system
    c. Health system in developed countries.
    d. Private Sector
    e. National Health Mission
    f. National Health Policy
    g. Issues in Health Care Delivery System in India
2. National Health Programme- Background objectives, action plan, targets, operations, achievements and constraints in various National Heath Programme.
3. Introduction to AYUSH system of medicine
    a. Introduction to Ayurveda.
    b. Yoga and Naturopathy
    c. Unani
    d. Siddha
    e. Homeopathy
    f. Need for integration of various system of medicine
4. Health scenario of India- past, present and future
5. Demography & Vital Statistics-
    a. Demography – its concept
    b. Vital events of life & its impact on demography
    c. Significance and recording of vital statistics
    d. Census & its impact on health policy
6. Epidemiology
    a. Principles of Epidemiology
    b. Natural History of disease
    c. Methods of Epidemiological studies
    d. Epidemiology of communicable & non-communicable diseases, disease transmission, host defense immunizing agents, cold chain, immunization, disease monitoring and surveillance.
7. Components of Physiotherapy Profession
    a) History of Medical therapeutics.
    b) Information of education department, training and course detail.

c) Information for new student commencing physiotherapy.
d) Why to select physiotherapy?

8. Role of Physiotherapy in meeting Health Care Needs in India Needs versus Demands
   Physiotherapist as 'Educator' Educational resources.
   Common problems and solutions

ENGLISH, COMMUNICATION AND SOFT SKILLS

Major topics to be covered under Communication course –

1. Basic Language Skills: Grammar and Usage.
2. Business Communication Skills. With focus on speaking - Conversations, discussions, dialogues, short presentations, pronunciation.
3. Teaching the different methods of writing like letters, E-mails, report, case study, collecting the patient data etc. Basic compositions, journals, with a focus on paragraph form and organization.
4. Basic concepts & principles of good communication
5. Special characteristics of health communication
6. Types & process of communication – verbal, non-verbal and written communication. Upward, downward and lateral communication.
7. Therapeutic communication: empathy versus sympathy.
8. Communication methods for teaching and learning.
9. Communication methods for patient education.
10. Barriers of communication & how to overcome.

COMMUNITY ORIENTATION AND CLINICAL VISIT

The objective of this section of the foundation course is to sensitize potential learners with essential knowledge; this will lay a sound foundation for their learning across the under-graduate program and across their career. Innovative teaching methods should be used to ensure the attention of a student and make them more receptive such as group activities, interactive fora, role plays, and clinical bed-side demonstrations.

1. The community orientation and clinical visit will include visit to the entire chain of healthcare delivery system -Sub centre, PHC, CHC, SDH, DH and Medical College, private hospitals, dispensaries and clinics.

2. The student will also be briefed regarding governance at village level including interaction and group discussion with village panchayat and front line health workers.

3. Clinical visit to their respective professional department within the hospital.

INTRODUCTION TO QUALITY AND PATIENT SAFETY

1. Quality assurance and management - The objective of the course is to help students understand the basic concepts of quality in health Care and develop skills to implement sustainable quality assurance program in the health system.
    a. Concepts of Quality of Care
    b. Quality Improvement Approaches
    c. Standards and Norms
    d. Quality Improvement Tools
    e. Introduction to NAB guidelines

2. Basics of emergency care and life support skills - Basic life support (BLS) is the foundation for saving lives following cardiac arrest. Fundamental aspects of BLS include immediate recognition of sudden cardiac arrest (SCA) and activation of the emergency response system, early cardiopulmonary resuscitation (CPR), and rapid defibrillation with an automated external defibrillator (AED). Initial recognition and response to heart attack and stroke are also considered part of BLS. The student is also expected to learn about basic emergency care including first aid and triage. Topics to be covered under the subject are as follows:

    a. Vital signs and primary assessment
    b. Basic emergency care – first aid and triage
        i. Importance of First Aid in Physiotherapy.
        ii. Instrumentation used in First Aid (First Aid kit).
        iii. Examination of Vital Signs
        iv. First Aid in cardiac arrest.
        v. First Aid in Respiratory failure.
        vi. First Aid in Burns.
        vii. First Aid in Electric shock.
        viii. First Aid in Drowning.
        ix. First Aid in Spinal cord injuries and fractures**.**
        x. First Aid in Hypovolemic Shock.
        xi. First Aid in Poisoning
        xii. First Aid in RTA.

    c. Ventilations including use of bag-valve-masks(BVMs)
    d. Choking, rescue breathing methods

e. One- and Two-rescuer CPR
f. Using an AED (Automated external defibrillator).
g. Managing an emergency including moving a patient

At the end of this topic, focus should be to teach the students to perform the maneuvers in simulation lab and to test their skills with focus on airways management and chest compressions. At the end of the foundation course, each student should be able to perform and execute/operate on the above-mentioned modalities.

3. **Disaster preparedness and management**- The objective of this section will be to provide knowledge on the principles of on-site disaster management. Concepts to be taught should include-

    a. Fundamentals of emergency management,
    b. Psychological impact management,
    c. Resource management,
    d. Preparedness and risk reduction,
    e. Key response functions (including public health, logistics and governance, recovery, rehabilitation and reconstruction), information management, incident command and institutional mechanisms.

Second Year B.P.T

PATHOLOGY:

Objectives:

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

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

General Pathology:

1. Introduction: Aims and objects of study of pathology, definitions of health, disease, causes of disease, methods of study of disease.
2. Inflammation – General morphology, types, phenomenon of acute inflammation.
3. Tissue repair – Wound healing, fracture, skin, nerves, muscles
4. Cell Injury – Degeneration, physical and chemical irritants, ionizing radiations, cellulites.
5. Disturbance of circulation – edema, thrombosis, infarction, embolism.
6. Necrosis, Gangrene
7. Growth and its disorders – atrophy and hypertrophy (pseudo).
8. Cellular ageing
9. Tumors – definitions, classification, characteristics of being and malignant tumors, etiology and spread of tumors, systemic effects.
10. Infection – Acute, chronic, including AIDS.
11. Blood-Anemia, definition, classification, etiology, lab investigations, blood picture; Hemorrhagic disorders – causes and classification (hemophilia)
12. Immunity and Hypersensitivity

Systemic Pathology: (Each condition in this section is to be taught under the specific headings of Causes, Development, Gross and Microscopic only).

Respiratory System Pneumonia, Bronchitis, Bronchiectesis, Asthma, Emphysema,Tuberculosis and Carcinoma of Lungs Occupational Lung Diseases

Cardiovascular System Rheumatic Heart diseases, Myocardial infarction, Atherosclerosis and other disease of blood vessels – TAO, Buerger's diseases, Thrombophlebitis Congenital Heart diseases,

Alimentary System	Peptic Ulcer , Ulcerative lesions of intestine
Liver	Hepatitis, Cirrhosis
CNS	Meningitis, Encephalitis, Cerebral Hemorrhage, CVA, Brief outline of CNS Tumors
Peripheral Nerves	Neuritis, Neuralgia, GBS, Neuropathies.
Bones and Joints	Osteomyelitis, Osteoarthritis, Septic, Arthritis, Gout, Osteomalacia, Bone Tumors briefly-Giant Cell tumor, Osteosarcoma, Ewing's Only, Hemarthrosis.
Muscles	Disorder of muscles including Poliomyelitis and Myopathies, Volkman's Ischaemic contracture
Skin	Scleroderma, Psoriasis, Autoimmune disorders
Urinary System	Nephritis, Glomerular Nephritis, Nephrotic Syndrome
Endocrine System	Thyroid – Thyroiditis and Thyroid tumors, Diabetes

Recommended Textbooks

1. Text book of pathology:Harshmohan
2. General Systemic pathology: Churchill Livingstone
3. Text book of Pathology: Robbins
4. Textbook of Pathology.: S. G.Deodhare
5. Pathology. Anderson(reference).

MICROBIOLOGY:

Objectives:

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

General Bacteriology:

1. Introduction, historical background, classification of micro – organisms
2. Morphology of bacteria
3. Staining of bacteria
4. Sterilization
5. Cultivation and culture media

Systemic Bacteriology:

1. Gram-Positive cocci – Streptococci, Pneumococci, Staphylococci
2. Gram-Negative Cocci – Gono and Meningo cocci
3. Gram-Positive Bacilli – Helicobacter, Y. Pestis
4. Gram-Negative Bacilli-Typhoid, Cholera, Dysentry
5. Aerobic-Diptheria, T.B., Leprosy
6. Anaerobic-Tetanus, Gas Gangrene, Botulism

Immunology:

1. Immunity, Antigens
2. Antibodies, Ag-Ab Reaction
3. Agglutination, precipitation
4. Hypersensitivity reactions

General Virology:

1. Poliomyelitis
2. Rabies

Demonstration of test in: diagnosis of AIDS, Hepatitis and Syphilis

Parasitology:

1. Malaria
2. Amoebiasis
3. Round worm and Hook worm

Mycology:

1. Candidiasis
2. Ring worm
3. Opportunistic Infections

Recommended Textbooks:

1. Short textbook of Medical Microbiology by Sathish Gupta
2. Microbiology & Parasitology by Rajeshwar Reddy
3. Text book of Microbiology by Anantha Narayanan and JayaramPanicker
4. Microbiology byBaveja
5. Text book of Microbiology by Chakraborthy

PHARMACOLOGY

Objectives:

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

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

Syllabus:

1. Chemical character and general action of drugs
2. Principles of drug administration and routes of administration, distribution, metabolism, excretion of drugs, factors influencing drug reaction, dosage and factors modifying it.
3. Drug toxicity including allergy and idiosyncrasy.
4. Definition, action, indication, contraindication, adverse reaction of the following:
    a. Drugs acting as PNS: stimulating and inhibiting, cholinergic and anticholinergics. Drugs acting at NM junction. Muscle relaxants, alcohol
    b. Drugs acting on CNS: Analgesics, antipyretics, narcotics, anti inflammatory, anti epileptic, sedatives, hypnotics, tranquilizers, anticonvulsants, stimulants, psychotherapeutics.
    c. Pulmonary effects of general and local anesthetic agents
    d. Drugs acting on CVS: antihypertensive, vasoconstrictors, vasodilators, diuretics, mucolytic agents. Drugs that influence myocardiac contractility and heart rate.
    e. Drugs acting on Respiratory system: bronchodilators, drugs used in inhalation therapy, drugs acting on CNS and cardio respiratory system which influence the physical exercise.
    f. Antimicrobial Agents
    g. Immunological agents and vaccines
    h. Chemotherapeutic agents
    i. Endocrine Pharmacology: thyroxin, glucocorticoids, anabolic steroids, calcitonin, insulin and hypoglycemic agents
    j. The vitamins
    k. Irritants counterirritants, plasters, poultice and pastes
    l. Diagnostics.

Recommended Textbooks

1. Essential of Medical Pharmacology by K. D.Tripathi
2. Text book of Medical Pharmacology by Padmaja Udaykumar
3. Pharmacology by N.Murugesh
4. Pharmacology &Pharmacotherapeutics bySatoskar.

Reference Books:

1. Clinical Pharmacology – D.R Laurence, Pn Ben net, MJBrown
2. Goodman’s & Gilman’s the Pharmacological basis of therapeutics

BIOMECHANICS AND KINESIOLOGY –

Course Description:

Biomechanics involves the study of basic concepts of human movement, and application of various biomechanical principles in the evaluation and treatment of disorders of musculoskeletal system. Students are taught to understand the various quantitative and qualitative methods of movement. Mechanical principles of various treatment methods are studied.

Kinesiology involves the study of basic concepts of human movement, and application of various biomechanical principles in the evaluation and treatment of disorders of musculoskeletal system. Students are taught to understand the various quantitative methods of movement. Mechanical principles of various treatment methods are studied. Study of posture and gait are also included.

BASIC PRINCIPLES OF BIOMECHANICS

THEORY

1. Basic Concepts in Biomechanics
    - **i. Description of motion (Kinematics)**
        a. Types of motion,
        b. laws of motion,
        c. location of motion,
        d. direction of motion,
        e. magnitude of motion
        f. Planes and axis of motion (mechanical and anatomical)
    - **ii. Analysis of force (Kinetics)**
        a. Definition of force,
        b. magnitude of force,
        c. point of application,
        d. Linear force- Tensile Forces, Joint Distraction, Newton’s Law of Inertia
        e. direction of force,
        f. Components of force,
        g. composite effects of two or more forces,
        h. torque,
        i. Force of friction,
        j. force of inertia,
        k. force of gravity,
        l. equilibrium
        m. Centripetal and Centrifugal force

n. Work
o. Lever: definition,
p. orders of lever,
q. mechanical advantage and disadvantage in lever
r. anatomical lever,
s. levers in Physiotherapy
t. Equilibrium of levers
u. Anatomical pulley,
v. anatomical wheel &axis

2. **Principles of stability**
    a. Base of support,
    b. height,
    c. mass of body,
    d. the impact of forces(e.g. Gravity),
    e. segmentation,
    f. visual factors,
    g. psychological factors,
    h. physiological factors
3. **Joint structure and Function-**
    a. Joint design
    b. Materials used in human joints
    c. General properties of connective tissues
    d. Human joint design
    e. Joint function
    f. Joint motion
    g. General effects of disease, injury and immobilization.
4. **Muscle structure and function-**
    a. Classification of muscles & Elements of muscle structure
    b. Line of pull
    c. Types of contractions
    d. Role of muscles and tendons,
    e. Mobility and stability functions of muscles
    f. Muscle function, action of two joint motions, non customary action
    g. Effects of immobilization, injury and aging
5. **Impetus:** Impetus to external objects and receiving impetus
6. **Biomechanics of the vertebral column-**
7. **Biomechanics of the Thorax and Chest wall-**
8. **The Temporomandibular Joint-**

9. **Biomechanics of the peripheral joints-**
   I. The shoulder complex
   II. The elbow complex
   III. The wrist and hand complex
   IV. The hip complex
   V. The knee complex
   VI. The ankle and foot complex

10. **Analysis of Posture and Gait** – Types of Posture, Static and dynamic posture, postural control, kinetics and kinematics of posture, ideal posture analysis of posture, effects of posture on age, pregnancy, occupation and recreation; 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, effects of age, gender, assistive devices, disease, muscle weakness, paralysis, asymmetries of the lower extremities, injuries and mal-alignments in gait

11. **Movement Analysis**: ADL activities like sitting to standing, lifting, Pushing and Pulling, Various grips and pinches

PRACTICAL- 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 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. The demonstrations may be done on models or skeleton.

Recommended Text Books:

1. Joint Structure and Function – A comprehensive Analysis by Cynthia Norkin.
2. Brunnstrom's Clinical Kinesiology by Laura Smith, Elizabeth Beth Weiss, and Don Lehmkuhl.

Recommended Reference Books:

1. Clinical Kinesiology for Physical Therapist Assistants byLippert
2. Applied Kinesiology: A Training Manual and Reference Book of Basic Principles and Practices by Robert Frost (Mar 28,2002)
3. Kinesiology: The Mechanics and Pathomechanics of Human Movement by Carol A.Oatis
4. Kinesiology by K. Wells; Saunder’s Publications.
5. Basic Biomechanics of the Musculoskeletal System by Margareta Nordin and Victor Frankel

EXERCISE THERAPY

SUBJECT DESCRIPTION- After the course on exercise therapy student will be able to understand the different types of exercise for the benefit of patient in different situations and conditions both in health and disease or disorder.

1. **Strengthening of muscles:** Definition of strength, power & work, endurance, muscle actions. Causes of decreased muscle performance. Factors that influence the strength of the normal muscle, Principles of Muscle strengthening, Principles, indications, contraindications, precautions of strength training, Physiologic adaptation to strength training: Strength & Power, Endurance.
   Progressive strengthening of muscles (loads assisted and resisted exercises), use of equipments, reeducation of muscles and restoration of functions,
   Practice of strengthening of muscles of limbs, neck, trunk and face, emphasis on hand and foot muscles, quadriceps, glutei, triceps, deltoid and face muscles, use of manual and mechanical resistance, contraindications;
   Specific exercise regimens, Isotonic: de Lorme's, Oxford, Mac Queen, Circuit weight training, Isometric: BRIME (Brief Resisted Isometric Exercise), Plyometrics, MET (Muscle Energy Techniques)

2. **Proprioceptive Neuromuscular Facilitation**
   a. Definitions &goals
   b. Basic neurophysiologic principles of PNF: Muscular activity, Diagonals patterns of movement: upper limb, lower limb
   c. Procedure: components of PNF
   d. Techniques of facilitation
   e. Mobility: Contract relax, Hold relax, Rhythmic initiation
   f. Strengthening: Slow reversals, repeated contractions, timing for emphasis, rhythmic stabilization Stability: Alternating isometric, rhythmic stabilization
   g. Skill: timing for emphasis, resisted progression Endurance: slow reversals, agonist reversal
3. **Functional Re-education:** Indications, Effects and Uses. Lying to sitting: Activities on the Mat/Bed, Movement and stability at floor level; Sitting activities; Lower limb and Upper limb activities.
4. **Aerobic Exercise**: 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.

5. **Stretching**: Definition of terms related to stretching; Types of Contracture, 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.

6. **Manual Therapy & Peripheral Joint Mobilization**
    a. Schools of Manual Therapy, Principles, Grades, Indications and Contraindications, Effects and Uses – Maitland, Kaltenborn,Mulligan
    b. Biomechanical basis for mobilization, Effects of joint mobilsation, Indications and contraindications, Grades of mobilization, Principles of mobilization, Techniques of mobilization for upper limb, lower limb, Precautions.

7. **Balance**–Definition, Physiology of balance: contributions of sensory systems, processing sensory information, generating motor output
    a. Components of balance (sensory, musculoskeletal,biomechanical)
    b. Causes of impaired balance, Examination & evaluation of impaired balance, Activities for treating impaired balance: mode,posture,movement, Precautions & contraindications, Types of Balance training.

8. **Co-ordination Exercise**: Definitions: Co- ordination, In coordination
    a. Anatomy & Physiology of cerebellum with its pathways
    b. Causes for Inco-ordination, Test for co-ordination: equilibrium test, non-equilibrium test Principles of co-ordination exercise.
    c. Frenkel's Exercise: uses of Frenkel's exercise, technique of Frenkel's exercise, progression, home exercise.
9. **Posture**: Definition, Types, Postural Mechanism, Patterns of Posture, And Factors influencing Posture, Principles of re-education: corrective methods and techniques, Patient education. Crawling exercises: principles, types, effects and uses of Clapp's crawl
10. **Basics in Manual Therapy**
    i. Examination of joint integrity
        1. Contractile tissues
        2. Non-contractile tissues
    ii. Mobility - assessment of accessory movement & Endfeel
    iii. Assessment of articular & extra-articular soft tissue status
        1. Myofascial assessment
        2. Tightness
        3. Pain-original &referred

iv. **Basic principles**, Indications & Contra-Indications **of mobilization** skills for joints & soft tissues.

1. Maitland
2. Mulligan
3. McKenzie
4. Muscle Energy Technique
5. Myofascial stretching
6. Cyriax
7. Neuro Dynamic Testing

11. **Hydrotherapy**: Definitions, Goals and Indications, Precautions and Contraindications, Properties of water, use of special equipment, techniques, Effects and uses, merits and demerits

12. **Breathing exercises:** Mechanisms of normal breathing, muscles of respiration, changes in thoracic cage during the process of Breathing, segmental and diaphragmatic breathing exercises, pursed lip breathing

13. **Airway Clearance Techniques:** Postural drainage, assistive measures, techniques, indications and contraindications, Forced Expiratory Technique

PRACTICAL

The students of exercise therapy are to be trained in Practical Laboratory work for all the topics discussed in theory. They must be able to

1. Demonstrate the techniques for muscle strengthening based on MMT grading
2. Demonstrate the PNF techniques
3. Demonstrate techniques for Aerobic exercises
4. Demonstrate exercises for training co-ordination – Frenkel's exercise
5. Demonstrate techniques for functional re-education
6. Demonstrate mobilization of individual joint regions
7. Demonstrate the techniques for muscle stretching
8. Assess and evaluate posture and gait
9. Demonstrate techniques of strengthening muscles using resisted exercises
10. Demonstrate techniques for Breathing exercises
11. Demonstrate Airways clearance techniques

Recommended Textbooks:

1. Therapeutic Exercise: Foundations and Techniques: Carolyn Kisner, Lynn Allen Colby
2. Principles of exercise therapy: M. Dena Gardiner
3. Practical Exercise therapy by Hollis Margaret
4. PNF in Practice: An Illustrated Guide: SusanS.Aler, DominiekBeckers, MathBuck

Reference Books:

1. Principles of muscle testing by Hislop.
2. Proprioceptive Neuromuscular Facilitation: Patterns and Techniques: Voss, Ionta&Myers
3. Facilitated Stretching -Robert McAtee, JeffCharland
4. Relaxation Techniques: A Practical Handbook for the Health Care Professional , Marie Donaghy, Rosemary A. Payne &KeithBellamy
5. Water Exercise : 78 Safe and Effective Exercises for Fitness and Therapy Martha White
6. Yoga as Therapeutic Exercise: A Practical Guide for Manual Therapists Luise Worle, ErikPfeiff
7. Proven Therapeutic Exercise Techniques: Best Practices for Therapists and Trainers R. Eric Oestmann
8. Therapeutic Exercise in Developmental Disabilities Barbara H. Connolly, Patricia Montgomery
9. Therapeutic Exercise: Moving Toward Function - Lori TheinBrody, CarrieM.Hall
10. Therapeutic Exercises Using the Swiss Ball: Caroline Corning Creager, CarylRiedel , Mike Berry
11. Ultimate Core Ball Workout: Strengthening and Sculpting Exercises JeanineDetz
12. Therapeutic Exercises Using Foam Rollers[Paperback] Caroline Corning Creager
13. Therapeutic Exercises Using Resistive Bands[Paperback] Caroline CorningCreager
14. Therapeutic Exercise: Techniques for Intervention : William D. Bandy, Barbara Sanders
15. Advanced Fitness Assessment and Exercise Prescription : Vivian H.Heyward
16. Progressive Exercise Therapy in Rehabilitation and Physical Education: John H.Colson
17. New Directions in Progressive Relaxation Training: A Guidebook for Helping Professionals: Douglas A. Bernstein , Thomas D.Borkovec

ELECTROTHERAPY

SUBJECT DESCRIPTION - In this course the student will learn the Principles, Techniques, and Effects, Indication, Contra-Indication and the dosage parameter for various indications of electro therapeutic modalities in the restoration of physical function. The objective of this course is that the student will be able to list the indications, contra indications, dosages of electro therapy modalities, demonstrates the different techniques, and describe their effects on various conditions.

THEORY

A - LOW FREQUENCY CURRENTS

1. **Basic types of current**
    a. Direct Current: types, physiological &therapeutic effects.
    b. Alternating Current
2. **Types of Current used in Therapeutics**
    a. ModifiedD.C
        i. Faradic Current
        ii. Galvanic Current
    b. Modified A.C
        i. Sinusoidal Current
        ii. 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.
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.
5. **Sinusoidal Current & Diadynamic Current in Brief.**
6. **HVPGS** – Parameters & its uses
7. **Ionization / Iontophoresis**: Techniques of Application of Iontophoresis, Indications, Selection of Current, commonly used Ions (Drugs) for pain, hyperhydrosis, would heal.
8. **Cathodal / Anodal galvanism.**
9. **Microcurrent & Macrocurrent**
10. **Types of Electrical Stimulators**
    a. NMES- Construction component.
    b. Neuro muscular diagnostic stimulator- construction component.
    c. Components and working Principles

11. **Principles of Application:** Electrode tissue interface, Tissue Impedance, Types of Electrode, Size& Placement of Electrode – Water bath, Unipolar, Bi-polar, Electrode coupling, Current flow in tissues, Lowering of Skin Resistance.
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.
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.
14. **Pain**: Define Pain, Theories of Pain (Outline only), Pain Gate Control theory in detail.

B. MEDIUMFREQUENCY CURRENTS

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. Russian Current
3. Rebox type Current

C- THERMO&ACTINOTHERAPY (HIGH FREQUENCYCURRENTS)

1. **Electro Magnetic Spectrum.**
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.
3. **Pulsed Electro Magnetic Energy:** Principles, Production & Parameters of PEME, Uses of PEME.
4. **Microwave Diathermy:** Define Microwave, Wave length &Frequency, Production of Microwave, Applicators, Dosage Parameters, Physiological & Therapeutic effects, Indications & Contraindications, Dangers of MWD.
5. **Ultrasound**: Define Ultrasound, Frequency, Piezo Electric effects: Direct, Reverse, Production of US, Treatment Dosage parameters: Continuous& 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.

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

D . 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. **Contrast Bath:** Methods of application, Therapeutic uses, Indications & Contraindications.
3. **Moist Heat Therapy:** Hydro collator packs – in brief, Methods of applications, Therapeutic uses, Indications &Contraindications.
4. **Whirl Pool Bath:** Construction, Method of Application, Therapeutic Uses, Indications &Contraindications.
5. **Cryotherapy:** Define- Cryotherapy, Principle- Latent heat of fusion, Physiological & Therapeutics effects, Techniques of Applications, Indications & Contraindications, Dangers, Methods of application with dosages.
6. **Fluidotherapy :** Principles, Methods of application, Therapeutic uses, Indications & Contraindications

PRACTICAL

The student of Electrotherapy must be able to Check, Safety handling, 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. Application of Ultrasound for different regions-various methods of application
7. Demonstrate treatment techniques using SWD, IRR and Microwave diathermy
8. Demonstrate the technique of UVR exposure for various conditions – calculation of test dose
9. Demonstrate treatment method using IFT for various regions
10. Calculation of dosage and technique of application of LASER
11. Technique of treatment and application of Hydro collator packs, cry therapy, contrast bath, wax therapy
12. Demonstrate the treatment method using whirl pool bath
13. Winding up procedure after any electrotherapy treatment method.

Recommended Textbooks:

1. Claytons Electrotherapy by Forster &Plastanga
2. Electrotherapy Explained by Low &Reed
3. Clinical Electrotherapy by Nelson
4. Principles and Practice of Electrotherapy: Joseph Kahn

Reference Books:

1. Electrotherapy: Clinical Procedures Manual: Theresa Nalty, MohammedA. Sabbahi
2. Electrotherapy in Rehabilitation : Meryl Roth Gersh
3. Electrotherapy and light therapy:Richard Kovács
4. Handbook of Electrotherapy for Practitioners and Students: Baker Grover
5. Physical Agents in Rehabilitation: From Research to Practice: Michelle H. Cameron
6. Physical Agents: Theory and Practice: Barbara J. Behrens, Susan L.Michlovitz
7. Ultrasound and Laser Light Handbook Package: From Research to Practice: Michelle H.Cameron
8. Laboratory Manual for Physical Agents Theory and Practice PT,BarbaraJ.Behrens MS
9. Manual for Physical Agents : Karen W. Hayes, Roger M.Nelson
10. Evidence-Based Guide to Therapeutic Physical Agents: Alain Ivan Belanger
11. Therapeutic Electro physical Agents: Evidence Behind Practice Alain Ivan Belanger
12. Therapeutic Modalities in Rehabilitation. William Prentice
13. Electrotherapy Evidence based practice by Sheila Kitchen

YOGA & ALTERNATIVE MEDICINE

SUBJECT DESCRIPTION- After the course on Yoga & Alternative Medicine, the student will be able to understand the different types of Yoga & Alternative Medicine treatment for the benefit of patient in different situations and conditions both in health and disease or disorder.

THEORY

A. YOGA

1. **The Principles ,Techniques and Biomechanics of Yog asana**- Basic yogic postures and their physiological effects and therapeutic uses

I. Sukshama Kriya Yoga- Yogic Joint mobilization techniques

1. Pancham Kriya
2. Joint mobilization in Standing
3. Upper limb joint mobilization
4. Spinal mobilization
5. Lower limb joint mobilization

II. Yogasanas

1. **For Meditation**- Sukhasana, Swastikasana, Padmasana, Vajrasana
2. **For Relaxation**- Shavasana, Makarasana, Balakasana
3. **For Health**-

i. Asanas in Supine lying

a. Uttanpadasan
b. Pavanmuktasan
c. Katiutthanasan
d. Naukasan
e. Matsyasan
f. Setubandhasan
g. Udarkunchanasan

ii. Asanas in Prone lying

a. Bhujangasan
b. Sarpasan
c. Shalabhasan
d. Dhanurasan
e. Viparit Naukasan
f. Niralambasan
g. Dradhasan

iii. Asanas in Sitting Posture

a. Yogamudrasan
b. Shashankasan
c. Ustrasan
d. Janushirasan
e. Paschimotanasan
f. Vakrasana
g. Ardhamastyendrasan
h. Dandasan

iv. Asanas in Standing posture

a. Tadasan
b. Dhruvasan
c. Trikonasan
d. Utkatasan
e. Padahastasan

v. **Suryanamaskar Asana** – Combination of 12 Asanas

III. Pranayama and Respiratory Physiology

1. Suryabhedan
2. Ujjayi
3. Sitkari
4. Sheetali
5. Bhastrika

2. **The Patanjali's Ashtang Yoga**- Yama, Niyama, Asana and Pranayama
3. **The Yogic Physiotherapy**-The comparative guidelines between Physical Exercise and Yogic Exercise. The integrated approach: Physio-Yoga

ALTERNATIVE MEDICINE

A. Acupuncture & Acupressure: Definition, Principles, Techniques, Physiological effects, Indications, Contra-Indications, Dangers & Integration of Acupuncture & Acupressure with Physiotherapy
<u>(B to E only for short and very short questions)</u>

B. Introduction to **Magnetotherapy**
C. Introduction to **Naturopathy**
D. Introduction to **Ayurvedic Medicine**
E. IntroductiontoTai-Chi, Reiki and Pranic Healing, Reflexology, Vipassana, Sujok.

<u>PRACTICALS</u>- Practical demonstration of Yogasanas, Relaxation, Meditation, and Pranayama

TEXT BOOKS & REFERENCE BOOKS: YOGA & ALTERNATIVE MEDICINE

1. Yoga and Rehabilitation, Patel Nilima, Jaypee Publications,2008
2. Yoga for common ailments and IAYT for different diseases, Dr R Nägarthna, Dr H R Nägendra and Dr.Shamanthakamni, Swami Vivekananda Yoga Prakashana, Bangalore,2002.
3. Alternative Therapies by Swati Bhagat. 1st Edition. Jaypee Publications.
4. Yogic Exercises by Datta Ray. 1st Edition. Jaypee Publications.
5. Acupuncture and Trigger Points by Peter. 3rd Edition. Elsevier.
6. Acupressure in Clinical Applications by John. 1st Edition. B & Publications.
7. The Program for Reversing Heart Disease–The Ornish Spectrum by Dean Ornish
8. Back Health Through Yoga, Ramesh Bijlan, Rupa Publications India Pvt. Ltd, 2011.
9. Yoga Therapy Series, MDNIY Publications, MDNIY Publications: 10 Booklets, New Delhi,2009.
10. Yogic Therapy, Reddy M Venkata& others: Sri M.S.R Memorial Yoga Series Arthamuru A.P.2005
11. Yogic Therapy, Swami Kuvalayananda& SL Vinekar:1963
12. Discovering Human Potential energy: A Physiological Approach to Yoga, Rai, Lajpat: Anubhava Rai Publications,1998

(Not for University Exam)

MEDICAL/ PHYSIOTHERAPY LAW AND ETHICS

Legal and ethical considerations are firmly believed to be an integral part of medical practice in planning patient care. Advances in medical sciences, growing sophistication of the modern society's legal framework, increasing awareness of human rights and changing moral principles of the community at large, now result in frequent occurrences of healthcare professionals being caught in dilemmas over aspects arising from daily practice.

Medical/ Physiotherapy ethics has developed into a well based discipline which acts as a "bridge" between theoretical bioethics and the bedside. The goal is "to improve the quality of patient care by identifying, analyzing, and attempting to resolve the ethical problems that arise in practice". Doctors are bound by, not just moral obligations, but also by laws and official regulations that form the legal framework to regulate medical practice. Hence, it is now a universal consensus that legal and ethical considerations are inherent and inseparable parts of good medical practice across the whole spectrum.

Few of the important and relevant topics that need to focus on are as follows:

1. Medical ethics versus medical law - Definition - Goal -Scope
2. Introduction to Code of conduct
3. Basic principles of medical ethics –Confidentiality

4. Malpractice and negligence - Rational and irrational drug therapy
5. Autonomy and informed consent - Right of patients
6. Care of the terminally ill-Euthanasia
7. Organ transplantation
8. Medical diagnosis versus physiotherapy diagnosis.
9. Medico legal aspects of medical records – Medico legal case and type- Records and document related to MLC - ownership of medical records - Confidentiality Privilege communication - Release of medical information - Unauthorized disclosure - retention of medical records - other various aspects.
10. Professional Indemnity insurance policy
11. Development of standardized protocol to avoid near miss or sentinel events
12. Obtaining an informed consent.
13. Biomedical ethical principles
14. Code of ethics for physiotherapists
15. Ethics documents for physiotherapists
16. Laws affecting physiotherapy practice

PROFESSIONALISM AND VALUES

The module on professionalism will deliver the concept of what it means to be a professional and how physiotherapy profession is different from a usual vocation. It also explains how relevant professionalism in terms of healthcare system is and how it affects the overall patient environment.

1. Professional values- Integrity, Objectivity, Professional competence and due care, Confidentiality. Core values- Accountability, Altruism, Compassion/ caring, excellence, integrity, professional duties, social responsibility.
2. Personal values- ethical or moral values
3. Attitude and behavior- professional behavior, treating people equally
4. Code of conduct, professional accountability and responsibility, misconduct
5. Differences between professions and importance of team efforts
6. Cultural issues in the healthcare environment
7. Entry level health care practitioner, direct access, autonomy in profession, practitioner of practice and evidence based practice.

MEDICAL TERMINOLOGIES AND RECORD KEEPING

This course introduces the elements of medical terminology. Emphasis is placed on building familiarity with medical words through knowledge of roots, prefixes, and suffixes. Topics include: origin, word building, abbreviations and symbols, terminology related to the human anatomy, reading medical orders and reports, and terminology specific to the student's field of study. Spelling is critical and will be counted when grading tests. Topics to be covered under the subject are as follows:

1. Derivation of medical terms.
2. Define word roots, prefixes, and suffixes.
3. Conventions for combined morphemes and the formation of plurals.
4. Basic medical terms in health care and physiotherapy.
5. Form medical terms utilizing roots, suffixes, prefixes, and combining roots.
6. Interpret basic medical abbreviations/symbols.
7. Utilize diagnostic, surgical, and procedural terms and abbreviations related to the integumentary system, musculoskeletal system, respiratory system, cardiovascular system, nervous system, and endocrine system.
8. Interpret medical records/reports.
9. Data entry and management on electronic health record system.

CLINICAL ORTHOPEDICS-TRAUMATOLOGY& NON-TRAUMATOLOGY

SUBJECT DESCRIPTION - This subject follows the basic science subjects to provide the knowledge about Orthopedic conditions the therapist would encounter in their practice. The objective of this course is that after completion of the lectures and discussion the student will be able to demonstrate an understanding of orthopedic conditions causing disability, list the etiology, clinical features and methods of investigations and management.

1. **Introduction**
    a. Introduction to orthopaedics.
    b. Clinical examination in an Orthopedic patient.
    c. Common investigative procedures.
    d. Radiological and Imaging techniques in Orthopeadics.
    e. Inflammation and repair, Soft tissue healing.
2. **Traumatology**
    a. Fracture: definition, types, signs and symptoms.
    b. Fracture healing.
    c. Complications of fractures.
    d. Conservative and surgical approaches.
    e. Principles of management – reduction (open/closed, immobilization etc).
    f. Subluxation/dislocations – definition, signs and symptoms, management (conservative and operative).
3. **Fractures and Dislocations of Upper Limb**
    a. **Fractures of Upper Limb** - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures:
        i. Fractures of clavicle and scapula.
        ii. Fractures of greater tuberosity and neck of humerus.
        iii. Fracture shaft of humerus.
        iv. Supracondylar fracture of humerus.
        v. Fractures of capitulum, radial head, olecranon, coronoid, and epicondyles.
        vi. Side swipe injury of elbow.
        vii. Both bone fractures of ulna and radius.
        viii. Fracture of forearm – monteggia, galaezzi fracture–dislocation.
        ix. Chauffer’s fracture.

x. Colle's fracture.
xi. Smith's fracture.
xii. Scaphoid fracture.
xiii. Fracture of the metacarpals.
xiv. Bennett's fracture.
xv. Fracture of the phalanges. (Proximal and middle.)

b. Dislocations of Upper Limb–

i. Anterior dislocation of shoulder – mechanism of injury, clinical feature, complications, conservative management (Kocher's and Hippocrates maneuver), surgical management (putti plat, bankart's)etc.
ii. Recurrent dislocation of shoulder.
iii. Posterior dislocation of shoulder – mechanism of injury, clinical features and management.
iv. Posterior dislocation of elbow – mechanism of injury, clinical feature, complications &management.

4. Fracture of Spine

a. 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).
   i. Clay shoveller's fracture.
   ii. Hangman's fracture.
   iii. Fracture odontoid.
   iv. Fracture of atlas.
b. Fracture of Thoracic and Lumbar Regions - Mechanism of injury, clinical features, and management— conservative and surgical of common fractures around thoracic and lumbar regions.
c. Fracture of coccyx.
d. Fracture of Rib Cage - Mechanism of injury, clinical features, management for Fracture Ribs, Fracture of sternum.

5. Fractures and Dislocations of Lower Limb

a. **Fracture of Pelvis and Lower Limb** - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures:
   i. Fracture of pelvis.
   ii. Fracture neck of femur – classification, clinical features, complications, and management - conservative and surgical.
   iii. Fractures of trochanters.
   iv. Fracture shaft femur—clinical features, mechanism of injury, complications, management-conservative and surgical.

v. Supracondylar fracture of femur.
vi. Fractures of the condyles of femur.
vii. Fracture patella.
viii. Fractures of tibial condyles.
ix. Both bones fracture of tibia and fibula.
x. Dupuytren's fracture
xi. Maisonneuve's fracture.
xii. Pott's fracture – mechanism of injury, management.
xiii. Bi-malleolar fracture
xiv. Tri-malleolar fracture
xv. Fracture calcaneum – mechanism of injury, complications and management.
xvi. Fracture of talus.
xvii. Fracture of metatarsals—stress fractures jone's fracture.
xviii. Fracture of phalanges.

b. **Dislocations of Lower Limb** - mechanism of injury, clinical features, complications, management of the following dislocations of lower limb.
   i. Anterior dislocation of hip.
   ii. Posterior dislocation of hip.
   iii. Central dislocation of hip.
   iv. Dislocation of patella.
   v. Recurrent dislocation of patella.

6. **Soft Tissue Injuries** - Define terms such as sprains, strains, contusion, tendinitis, rupture, tenosynovitis, tendinosis,bursitis.
   a. Mechanism of injury of each, clinical features, managements- conservative and surgical of the following soft tissue injuries:
      i. Meniscal injuries of knee.
      ii. Cruciate injuries of knee.
      iii. Medial and lateral collateral injuries of knee.
      iv. Lateral ligament of ankle.
      v. Wrist sprains.
      vi. Strains- quadriceps, hamstrings, calf, biceps, triceps etc.
      vii. Contusions- quadriceps, gluteal, calf, deltoid etc.
      viii. Tendon ruptures-Achilles, rotator cuff muscles, biceps, pectorals etc.
7. **Hand Injuries** - mechanism of injury, clinical features, and management of the following–
   a. Crush injuries.
   b. Flexor and extensor injuries.
   c. Burn injuries offhand.

8. **Amputations** - Definition, levels of amputation of lower and upper limbs, indications, complications.
9. **Traumatic Spinal Cord Injuries** - Clinical features, complications, medical and surgical management of Paraplegia and Quadriplegia.

NON-TRAUMATOLOGY

10. **Deformities** - clinical features, complications, medical and surgical management of the following Congenital and Acquired deformities.

a. Congenital Deformities–

i. CTEV.
ii. CDH.
iii. Torticollis.
iv. Scoliosis.
v. Flatfoot.
vi. Vertical talus.
vii. Hand anomalies- syndactyly, polydactyly and ectrodactly. Arthrogryposis multiplex congenita (amyoplasia congenita).
viii. Limb deficiencies- Amelia and Phocomelia. Klippelfeil syndrome, Osteogenesis imperfect (fragileossium).
ix. Cervical rib.

b. Acquired Deformities–

i. Acquired Torticollis.
ii. Scoliosis.
iii. Kyphosis.
iv. Lordosis.
v. Genu varum.
vi. Genu valgum.
vii. Genu recurvatum
viii. Coxa vara.
ix. Pes cavus.
x. Hallux rigidus.
xi. Hallux valgus.
xii. Hammertoe.
xiii. Metatarsalgia.

11. **Disease of Bones and Joints:** Causes, Clinical features, Complications, Management- medical and surgical of the following conditions:
    a. Infective conditions: Osteomyelitis (Acute / chronic). Brodie's abscess. TB spine and major joints like shoulder, hip, knee, ankle, elbow etc.
    b. Arthritic conditions: Pyogenic arthritis. Septic arthritis. Syphilytic infection of joints.
    c. Bone Tumors: classification, clinical features, management - medical and surgical of the following tumors: Osteoma. Osteosarcoma, Osteochondroma.Enchondroma.
       Ewing's sarcoma. Giant cell tumor. Multiple myeloma. Metastatic tumors.
    d. Perthes disease, Slipped Capital Femoral Epiphysis and Avascular Necrosis.
    e. Metabolic Bone Diseases: Rickets. Osteomalacia, Osteopenia, Osteoporosis
12. **Inflammatory and Degenerative Conditions**: causes, clinical feature, complications, deformities, radiological features, management- conservative and surgical for the following conditions:
    a. Osteoarthritis. Rheumatoid arthritis. Ankylosing spondylitis Gouty arthritis. Psoriatic arthritis. Hemophilic arthritis. Still's disease (juvenile rheumatoid arthritis). Charcot's joints.
    b. Connective Tissue Disorders- Systemic Lupus Erythematosis, Scleroderma, Dermatomyositis, Poliomyelitis, Mixed connective tissue Disease (MCTD)
13. **Syndromes**: Causes, Clinical features, complications, management- conservative and surgical of the following:
    a. Cervico brachial syndrome. Thoracic outlet syndrome. Vertebro- basilar syndrome. Scalenus syndrome. Costo clavicular syndrome. Levator scapulae syndrome. Piriformis syndrome.
14. **Neuromuscular Disorders**: Definition, causes, clinical feature, complications, management. (Multidisciplinary approach) medical and surgical of the following conditions:
    a. Cerebral palsy.
    b. Poliomyelitis.
    c. Spinal Dysraphism.
    d. Leprosy.
15. **Cervical and Lumbar Pathology:** Causes, clinical feature, patho-physiology, investigations, management-Medical and surgical for the following:
    a. Prolapsed interverbral disc (PID),
    b. Spinal Canals enosis.
    c. Spondylosis (cervical and lumbar)

d. Spondylolysis.
e. Spondylolisthesis.
f. Lumbago/ Lumbosacral strain.
g. Sacralisation.
h. Lumbarisation.
i. Coccydynia.
j. Hemi vertebra.

16. **Orthopedic Surgeries:** Indications, Classification, Types, Principles of management of the following Surgeries:
    a. Arthrodesis.
    b. Arthroplasty (partial and total replacement).
    c. Osteotomy,
    d. External fixators.
17. **Regional Conditions:** Definition, Clinical features and management of the following regional conditions
    a. Shoulder: Periarthritic shoulder (adhesive capsulitis). Rotator cuff tendinitis. Supraspinatus Tendinitis. Infraspinatus Tendinitis. Bicipital Tendinitis. Subacromial Bursitis.
    b. Elbow: Tennis Elbow. Golfer's Elbow. Olecranon Bursitis (student's elbow). Triceps Tendinitis.
    c. Wrist and Hand: De - Quervain's Tenosynovitis. Ganglion. Trigger Finger/ Thumb. Mallet Finger, Carpal Tunnel Syndrome, Dupuytren's Contracture.
    d. Pelvis and Hip: IT Band Syndrome. Piriformis Syndrome. Trochanteric Bursitis.
    e. Knee: Osteochondritis Dissecans. Prepatellar and Suprapatellar Bursitis. Popliteal Tendinitis. Patellar Tendinitis. Chondromalacia Patella. Plica Syndrome. Fat Pad Syndrome (Hoffa'ssyndrome).
    f. Ankle and Foot: Ankle Sprains. Plantar Fasciitis / Calcaneal Spur. Tarsal Tunnel Syndrome. Achilles Tendinitis. Metatarsalgia. Morton's Neuroma.

Recommended Books:

1. Apley's System of Orthopaedics and Fractures by Louis Solomon, David Warwick, and Selvadurai Nayagam(2010)
2. Text book of Orthopedics.—Maheswari.
3. Orthopedic Principles - A Resident's Guide by David Ip(2005)
4. Campbell's Operative Orthopaedics by S. Terry Canale and James H. Beaty (2007)
5. Outline of Orthopedics. — John Crawford Adams.

MEDICINE

SUBJECT DESCRIPTION - This subject follows the basic science subjects to provide the knowledge about relevant aspects of general medicine. The student will have a general understanding of the diseases the therapist would encounter in their practice. The objective of this course is that discussion the student will be able to list the etiology, pathology, clinical features and treatment methods for various medical conditions.

1. **Infection**: Effect of infection on the body, pathophysiology, clinical manifestation, source and spread of infection, vaccinations, and management – Tuberculosis, Malaria, Typhoid, Infective hepatitis, Tetanus.
2. **Nutritional disorder**: Vitamins and its deficiencies, Disorder including rickets, Osteomalacia.
3. **Endocrine disorders:** Diabetes mellitus, Thyrotoxicosis, myxedema, obesity
4. **GI Disorders:** Reflux Oesophagitis, Achlasia Cardia Peptic ulcer, Dysentery, Pancreatitis, Diarrhea, Inflammatory bowel disease, Jaundice, Cirrhosis of liver, Viral hepatitis, Wilson's disease, Cholycystitis.
5. **Blood disorders:** Anaemia, Haemophilia, Thalassemia
6. **Urogenital disorder:** Structure and function of kidneys including physiology of micturition, acute and chronic renal failure, glomerular nephritis, Pyelonephritis
7. **Intensive and Emergency medicine: A)** Common emergencies (Surgical and Medical) – Trauma – accidents; explosions, gun shots, shock hemorrhage, burns, septicaemia, overdose and poisoning, intensive/metabolic emergencies. **B)** Bioelectric Instrumentation, interpretation, Systemic monitoring, fluid and electrolytic balance, haematological studies. **C)** Psychological aspect of critical care
8. **Geriatric Medicine: A)** Basic sciences: Biology of human aging, Immunology of human ageing, effect of ageing on different organs, death. **B)** Clinical Geriatric medicine: Chronic disease conditions; hypertension, diabetes, asthma, ischemic heart disease, obesity and osteoarthritis
9. **Psychiatric disorders:** Classifications, causes, clinical manifestations and treatment methods used in psychiatry. Modalities of psychiatric treatment, Psychiatric illness and physiotherapy. Brief description of etio-pathogenesis, manifestations and management of psychiatric illness – Anxiety neurosis, Depression, Obsessive compulsive neurosis, Psychosis, Maniac depressive psychosis, Post-traumatic stress disorder, Psychosomatic reactions: Stress and Health, theories of Stress illness.

   Etio-pathogenesis, manifestations, and management of psychiatric illness

   a. Drug dependence and alcoholism,
   b. Somatoform and Dissociate Disorders – conversion reactions,Somatization, Dissociate Amnesia, and Dissociate Fugue,
   c. Personality disorders
   d. Child psychiatry - manifestations, and management of childhood disorders - attention deficit syndrome and behavioral disorders.
   e. Geriatric psychiatry**.**

PAEDIATRICS

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

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

SYLLABUS: -

1. Growth and development of a child from birth to 12 years, including physical, social, adaptive development.
2. Cerebral Palsy: Etiology - prenatal, perinatal and postnatal causes, pathogenesis, types of cerebral palsy (classification), findings on examination, general examination, examination of C.N.S., musculoskeletal system, respiratory system, G.I. Tract and nutritional status.
3. Associated defect-down's syndrome, Mental retardation, microcephaly, blindness, hearing and speech impairment, squint and convulsions.
4. Prevention - Appropriate management of high-risk pregnancies, prevention of neonatal and postnatal infections, metabolic problems. APGAR Score
5. Muscular Dystrophy: Various forms, modes of inheritance and clinical manifestation, physical findings in relation to disabilities, progression of various forms and prognosis, treatment goals in forms which are not fatal.
6. Spina-bifida, Meningomyelocele: Development, clinical features - lower limbs, bladder and bowel complications - U.T.I. and hydrocephalus, medical management.
7. Still's Disease: Classification, pathology in brief, physical findings, course and prognosis, treatment, prevention and correction of deformity.
8. Acute C.N.S. infections, Classification (Bacterial and Viral), the acute illness, C.N.S. squeal leading to mental retardation, blindness, deafness, speech defect, motor paralysis, bladder and bowel problems, seizure disorder and specific problems such as subdural effusion, hydrocephalus, pressure sores, feeding difficulties.
9. Lung infections: Clinical findings, complications and medical treatment of bronchiectasis, lung abscess and bronchial asthma.

SKIN & V.D. (DERMATOLOGY)

OBJECTIVES: - At the end of the course, the students will be able to

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

SYLLABUS: -

1. Structure and functions of normal skin, primary and secondary skin lesions.
2. Scabies and pediculosis.
3. Fungal infections of skin: Dermatophytosis, Pityriasisversicolor, Candidiasis.
4. Bacterial infections of skin-lmpetigo / Boil.
5. Viral infections of skin-Herpes zoster.
6. Eczema / Dermatitis / Allergies.
7. Psoriasis / Acne / Alopecia / Vitiligo and Leucoderma.
8. Leprosy / Lepra - reaction/Physiotherapy in leprosy.
9. Sexually transmitted diseases: Syphillis - primary & secondary, Gonorrhoea, Chancroid, AIDS.

Recommended Text Books:

1. Davidson's Essentials of Medicine by Stanley Davidson (2009)
2. Medicine for Students: Golwalla
3. Clinical Psychiatry, Mayol – gloss; 3rd Edition, AITBS
4. Psychiatry, James Scully, 4th Edition, Lippincott Williams &Wilkins
5. A short textbook of Psychiatry, Ahuja; 5th Edition –Jaypee
6. Handbook of Psychiatry, Dr. L.P. Shah, 3rd Edition, Uni U.C.B. Pvt.Ltd.

Reference books:

1. Harrison's Principles of Internal Medicine, 17th Edition by Anthony S. Fauci,
2. Braunwald Text of Cardiology
3. Text Book of Cardiology by Hurst
4. Davidson's Principles and Practice of Medicine by Nicki R. Colledge (Ed), Brian R. Walker (Ed), and Stuart H. Ralston MD (2010)

SURGERY

SUBJECT DESCRIPTION - This subject follows the basic science subjects to provide the knowledge about relevant aspects of general surgery. The student will have a general understanding of the surgical conditions the therapist would encounter in their practice. The objective of this course is that after 60 hrs of lectures and discussion the student will be able to list the indications for surgery, etiology, clinical features and surgical methods for various conditions.

GENERAL SURGERY INCLUDING BURNS AND PLASTIC SURGERY, OBSTETRICS AND GYNECOLOGY

1. **GENERAL SURGERY INCLUDING BURNS AND PLASTIC SURGERY, OBSTETRICS AND GYNECOLOGY**

   a. **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.

   b. **Reasons for Surgery**; Types of anaesthesia and its effects 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.

   c. **Surgical Oncology** – Cancer – definition, types, clinical manifestations of cancer, Staging of Cancer, surgical procedures involved in the management of cancer.

   d. **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. Surgery of portal hypertension

   e. Definition, Indication, Incision, Physiological changes and Complications following **Common operations** like Cholecystectomy, Colostomy, Ileostomy, Gastrectomy, Hernias, Appendicectomy Mastectomy, Neprectomy, Prostectomy.

f. 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.

g. Principles of cineplasty, tendon transplant, cosmetic surgery, types of grafts, surgery of hands with emphasis on a management of traumatic and leprosy hand.

h. Neck and skin contractures and managements

Acute infections, Inflammatory fever, bacteremia, septicaemia, pyemia, toxaemia, specific types – cellulitis, abscess with special reference to hand infection, carbuncle

OBSTETRICS AND GYNECOLOGY

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

1. Describe the normal and abnormal physiological events during the puberty, labor, puerperium, post – natal stage and menopause.
2. Discuss the various complications during pregnancy, labour, puerperium and post – natal stage, pre and post-menopausal stage and various aspects of urogenital dysfunction and their management in brief.
3. Acquire the skill of clinical examination of pelvic floor
4. Acquire the skill of clinical examination of pregnant woman.

THEORY

1. Anatomy and physiology of the female reproductive organs. Puberty dynamics

2. Physiology of menstrual cycle–

3. Hormonal disorders of females-obesity and female hormones

4. Pregnancy

a. Diagnosis of pregnancy
b. Abortion
c. Physiological changes during pregnancy
d. Importance of antenatal care exercise
e. High risk pregnancy, prenatal common complications – investigation and management
f. Musculoskeletal disorders during pregnancy
g. Multiple childbirth
h. Normal labor

5. **Child birth** complications, investigation and management
6. **Normal puerperium**, lactation and importance of post-natal exercises
7. **Family planning**.
8. **Medical termination of pregnancy**
9. **Infection of female genital tract** including sexually transmitted diseases, low backache

10. **Prolapse of uterus and vagina**
11. **Principle of common gynaecological operations** – hysterectomy, D&C, D&E, Pop smear
12. **Menopause**: Its effect on emotions and musculoskeletal system
13. **Urogenital dysfunction** – pre and post-natal condition
14. **Sterility**: Pathophysiology, investigations, management, Malnutrition and deficiencies in females.
15. **Surgical procedures involving childbirth**.
    a. Definition, Indications and Management of the following surgical procedures – pelvic repair, caesarian section, nephrectomy, Hysterosalphyngography, Dilatation and Curettage, Laparoscopy, Colposopy, Hysterectomy.
16. **Carcinoma of female reproductive organs** – surgical management in brief Mastectomy – Simple, radical.Hysterectomy.
17. **Incontinence** – Types, Causes, Assessment and Management.

Recommended Text books:

1. Textbook of surgery-das
2. Bailey and Love's – Short Practice of Surgery
3. Obstetrics & Gynecology-Dutta

Reference books:

1. General Surgical Operations – by Kirk /Williamson
2. Surgery by Nan
3. Chest Disease by Crofton and Douglas.
4. Surgery – S.Basu

CLINICAL NEUROLOGY and NEUROSURGERY

OBJECTIVES: -

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

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

SYLLABUS: - (NEUROLOGY)

1. Anatomy, Physiology, Lesions and diseases of Pyramidal system, extra-pyramidal system, cerebellar system, spinal cord, upper and lower motor neuron, cranial nerves, brachial plexus, lumbosacral plexus and peripheral nerves.
2. Neurophysiology, basis of tone, disorders of tone and posture, bladder control, muscle contraction, movement and pain.
3. Causes, Clinical features, and management of: Unconscious patient, hemiplegia, paraplegia, quadriplegia, cerebral diplegia, spastic child, foot drop and wrist drop.
4. Disorders of cerebral circulation.
5. Infections: Encephalitis, meningitis, poliomyelitis, transverse myelitis, slow viral diseases.
6. Diseases of Peripheral nerves: Peripheral neuropathy, other neuropathies.
7. Muscle disorders: Myopathy, polymyositis, Muscular dystrophies.
8. Degenerative diseases: Parkinsonism, motor neuron diseases, spinocerebellar degenerations and diseases of anterior horn cell, dementia.
9. Costo-clavicular syndrome.
10. Demyelinating disorders including multiple sclerosis.
11. Basic concept of electrophysiology and electromyography.

Clinical Features and management of the following (Neurosurgery)

1. Congenital and childhood disorders - hydrocephalus spina bifida.
2. Trauma - Broad localization, first aid and management of sequelae of head injury and spinal cord injury.
3. Diseases of the Spinal Cord - Craniovertebral junction anomalies, Syringomyelia, cervical and lumbar disc disease, tumours.
4. Peripheral nerve disorders - Peripheral nerve injuries, localization& management. Entrapment neuropathies.
5. Intracranial tumours - Broad classification, signs and symptoms.
6. Pre-operative Assessment and indications and contra - indication for neurosurgery.
7. Management of pain, electrical stimulation of brain and spinal cord.

Recommended books: Text books:

1. Davidson's Principles and Practice of Medicine
2. Brains Clinical Neurology.
3. Bailey and Love's – Short Practice of Surgery
4. Textbook of Surgery ByDas

Reference books:

1. Illustrated Neurology &Neurosurgery
2. Brain's Diseases of Nervous System
3. Textbook of Neurology- Victor Adams
4. Neurology & Neuro surgery By Lindsay

CLINICAL CARDIOVASCULAR AND PULMONARY CONDITIONS AND CARDIOTHORACIC SURGERY

SUBJECT DESCRIPTION –

Following the basic science and clinical science course, this course introduces the Student in cardio-thoracic conditions which commonly cause disability.

The objective of this course is that after lectures and demonstration in addition to clinics the candidate will be able to demonstrate an understanding of Cardio-thoracic 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 cardiovascular pathology on the functioning of the individual. Student also will be able to describe the types of incisions, pre and post-operative assessment, management and complications of cardiothoracic surgery, clinically evaluate post-operative cardiovascular and pulmonary functional status.

Cardiothoracic Medicine:

1. Anatomy and Physiology
   - **a.** Respiratory system
     - i. Upper respiratory tract
     - ii. Lower respiratory tract – Trachea, Bronchial tree, Bronchopulmonary segments
     - iii. Respiratory unit, hilum of lung.
     - iv. Muscles of respiration
     - v. Pleura, intra pleural space, intra pleural pressure, surfactant
     - vi. Mechanics of respiration – Chest wall movements, lung & chest wall compliance
     - vii. V/Q relationship, airway resistance
     - viii. Respiratory centre, Neural & chemical regulation of respiration
     - ix. Pulmonary circulation, Lung sounds, cough reflex
   - **b. Cardiovascular systems**
     - i. Chambers of heart, semi lunar and atria ventricular valves
     - ii. Coronary circulation, conductive system of heart
     - iii. Cardiac cycle, ECG, Heart sounds
     - iv. Blood pressure, pulse, cardiac output

2. Outline, etiopathogenesis of cardio respiratory disorders, investigations, diagnosis, differential diagnosis and principles of management.

   Cardiovascular System:

   a. Cardiac Failure-Definition, causes, signs and symptoms and brief management of cardiac failure

   b. Rheumatic fever-Definition, brief description of etiology, clinical features, complications and treatment.

c. Congenital Heart Diseases-Classification, symptoms and complications

d. Ischemic Heart Disease – Etiopathogenesis, classification, symptoms, diagnosis including stress test, medical and surgical treatment

e. Hypertension-Definition Classification, symptoms and complications and treatment.

f. Infective Endocarditis – brief description of etiology, clinical features, diagnosis and treatment.

g. Brief description of DVT and Pulmonary Embolism

h. Vascular Diseases – Atherosclerosis, Buerger's Disease, Raynaud's Disease,
Phlebitis etc.

i. Cardiac Muscle Disorders – Cardiomyopathies, Myocarditis

j. Cardiac Tumors.

Respiratory System: (Respiratory disease including the diseases of the chest wall)

a. Chronic Bronchitis and Emphysema – definition, clinical features, diagnosis and treatment

b. Bronchial Asthma – definition, etiopathogenesis, clinical features, diagnosis and treatment

c. Pneumonia – Definition, classification, clinical test of pulmonary tuberculosis, diagnosis, complication and treatment.

d. Tuberculosis – Etiopathogenesis, classification, clinical test of pulmonary tuberculosis, diagnosis, complication and treatment

e. Lung Abscess and Bronchiectasis – definition, clinical features, diagnosis and treatment

f. Pleural Disorders – Pleural effusion, Empyema, Pneumothorax

g. Chest wall deformities – Describe various deformities of the chest wall and effect and pulmonary diseases associated with it.

h. Occupational Lung Diseases – Clinical features, diagnosis and treatment

i. Respiratory Failure – Classification, causes and treatment

j. Lung Function Test

k. ARDS

Intensive and Emergency Care:

a. Common emergencies (surgical and medical)

Acute respiratory failure, pulmonary edema, pulmonary embolism, cardiac failure, Myocardial infraction, cardiac arrythmias, unconsciousness, coma, cerebral hypoxia, tetanus, respiratory paralysis, polio, GBS, renal failure, pediatric emergencies

b. Anesthetics: Types, indications, merits, demerits, effects of general anesthesia on cardiopulmonary function

c. Special procedures in ICU: Cardiopulmonay resuscitation, Airway care bronchoscopy, Thoracocentasis, tracheostomy, intubation, chest tubes

(nasogastric tubes and tracheal intubation), Skeletal and skin traction

d. Bioelectric Instrumentation, interpretation, ECG, Cardiopulmonay monitoring, Radiological evaluation, A&C analysis, fluid and electrolyte balance, hematological studies.
e. Therapeutics, mechanical ventilators, medical gas therapy, IPPB.

CARDIOTHORACIC SURGERY:

1. Chest injury
2. Common supprative diseases of the lung: Bronchiectesis and Lung abscess
3. Bronchogenic Carcinoma
4. Common surgeries of chest: thoracoplasty, pulmonary dissections, thoracotomy; Pneumothorax, hydropneumothorax and empyema
5. Common diseases of esophagus and related conditions causing dysphagia
6. Surgery of portal hypertensions
7. Surgery of pulmonary T.B.
8. Surgery of heart and great vessels
9. Basic anatomy of heart and great vessels
10. Investigation of patients undergoing cardiac surgery
11. Cardiac arrest and its management
12. Basic principles of open heart surgery: Heart lung by-pass, (extracorporeal circulation)
13. Common diseases of heart requiring surgery both congenital and acquired including open heart surgery
14. Common drugs used in cardiac surgery its uses and side effects
15. Common vascular surgeries – Embolectomy, vascular deconstructive surgery, (thrombosis, embolism, atherosclerotic and occlusive vascular diseases) including coronary artery by-pass

Recommended Text Books:

1. Davidson's Essentials of Medicine by Stanley Davidson(2009)
2. Medicine for Students: Golwala
3. Textbook of surgery-das
4. Bailey and Love's – Short Practice of Surgery

Reference books:

1. Harrison's Principles of Internal Medicine, 17th Edition by Anthony S.Fauci,
2. Braunwald Text of Cardiology
3. Text Book of Cardiology by Hurst
4. Davidson's Principles and Practice of Medicine by Nicki R. Colledge (Ed), Brian R. Walker (Ed), and Stuart H. Ralston MD (2010)
5. General Surgical Operations – by Kirk /Williamson
6. Surgery by Nan
7. Chest Disease by Crofton and Douglas.
8. Surgery – S.Basu

COMMUNITY MEDICINE

SUBJECT DESCRIPTION - 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.
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.
3. **Epidemiology of communicable disease**: Respiratory infections, Intestinal infections, Arthropod-borne infections, Zoonoses, Surface infections, Hospital acquired infections
4. **Epidemiology of chronic non-communicable diseases and conditions:** Cardio vascular diseases: Coronary heart disease, Hypertension, Stroke, Rheumatic heart disease, Cancer, Diabetes, Obesity, Blindness, Accidents and Injuries.
5. **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.
6. **Health programmes in India**: Vector borne disease control programme, National leprosy eradication programme, National tuberculosis programme, National, AIDS controlprogramme, National programme for control of blindness, Iodine deficiency disorders (IDD) programme, Universal Immunization programme, Reproductive and child health programme, National cancer control programme, National mental health programme. National diabetes control programme, National family welfare programme, National sanitation and water supply programme, Minimum needs programme.

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.
8. **Nutrition and Health:** Classification of foods, Nutritional profiles of principal foods, Nutritional problems in public health, Community nutritionprogrammes.
9. **Environment and Health**: Components of environment, Water and air pollution and public health: Pollution control, Disposal of waste, Medical entomology.
10. **Hospital waste management**: Sources of hospital waste, Health hazards, Waste management.
11. **Disaster Management**: Natural and man-made disasters, Disaster impact and response, Relief phase, Epidemiologic surveillance and disease control, Nutrition, Rehabilitation, Disaster preparedness.
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.
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.
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.

RECOMMENDED BOOKS: -

1. Preventive and social Medicine – Park &Park
2. P.K. Mahajan & M.C. Gupta – Textbook of Preventive &Social

Recommended Books:

1. Textbook of Physical Diagnosis with DVD: History and Examination MarkH.Swartz
2. Physical Diagnosis Secrets: Salvatore MangioneMD
3. Bates' Guide to Physical Examination and History Taking, 10thEdition LynnS.Bickley
4. Differential Diagnosis for Physical Therapists: Screening for Referral Catherine C.Goodman ,Teresa KellySnyder
5. ACSM's Guidelines for Exercise Testing and Prescription. American Sports Medicine
6. Principles of Exercise Testing and Interpretation: Including Pathophysiology and Clinical Applications. Karlman Wasserman, James E. Hansen, Darryl Y. Sue,William W. Stringer , Brian J.Whipp
7. The Physiotherapist's Pocket Guide to Exercise: Assessment, Prescription and Training. Angela Jane Glynn, Helen Fiddler
8. Physiotherapy Assessment [Paperback] Anne Parry.
9. Neuro musculoskeletal Examination and Assessment: A Handbook for Therapists. Nicola J.Petty
10. Neurological Disabilities: Assessment and Treatment Susan E. Bennett , James L. Karnes

PHYSICAL AND FUNCTIONAL DIAGNOSIS

Course description:

This course serves to integrate knowledge gained by the students in basic and clinical medical science with the skills gained by basic physiotherapy subject. Thus, enabling them to apply this in evaluation of functions and measurements in clinical situations of dysfunction of different system

THEORY

Introduction and general consideration of evaluation and measurement of:

A. Assessment of Musculoskeletal dysfunction:

a) Anthropometric measurements, Posture and postural disorder evaluation
b) Physical examination of joints in normal and patho–mechanical conditions; special tests
c) Assessment of Muscle strength, power and endurance, Range of motion of joints, flexibility, Agility, Measurement of girth, leg length, pelvic inclination, Angle of scoliotic curve, etc
d) Gait analysis in pathological conditions and measurement of gait parameters
e) Assessment of pelvic floor muscle strength and dysfunction
f) Assessment of Hand: Pinches, Grips, Routine sensory motor evaluation, Stereognosis

B. **Assessment of Pain:** with techniques and clinical reasoning Types of pain: Somatic, referred, Neurogenic, Visceral, etc. Location, duration, progressive or non-progressive, localize or generalize, distribution, quality, diurnal variations, Modifying factors, Severity, nature of pain, tissue irritability, Measurement and Documentation

C. **Assessment of Gait**

Gait Cycle, Phases of Gait, Observational Gait Analysis, Kinematic Quantitative Gait Analysis, Energy Costs during Gait.

D. Assessment of Obesity

a. Classification
b. Assessment – BMI, Waist circumference, Waist – Hip ratio

E. Electro –Diagnosis:

a. Review of electro physiology
b. Surface and needle electromyography
c. Nerve conduction velocity test (motor and sensory)
d. H-Reflex and F-wave
e. SD curve
f. Biofeedback:Introduction, principles of biofeedback, therapeutic effects, indications and contraindications, Advantages and disadvantages
g. Interpretation of electro diagnostic findings, routine biochemical investigations

F. Assessment of Neurological dysfunction

1. Evaluation of function and measurement in general and with reference to upper motor and lower motor neuron lesions;
2. Level of Consciousness and Orientation,
3. Higher Mental functions,
4. Speech and Language,
5. Cranial nerves,
6. Sensations & sensory organization,
7. Motor Examination: Tone, reflexes (superficial and deep), Voluntary movement and Voluntary control Tests (Isolated and Skilled),
8. Posture and Gait.
9. Balance and Coordination examination
10. Bladder and Bowel Assessment
11. Myotomes and Dermatomes.
12. Primitive reflexes

G. Assessment of cardio -pulmonary dysfunction

1. Clinical basis of Subjective and Objective assessment: History, Obsevation, Palpation, Percussion, Auscultation and Examination: Vital parameters, chest expansion, breath holding test, Rate of perceived exertion (RPE), NYHA, MMRC
2. Exercise Tolerance Test: Lab Protocols, Field test: Six minutes' walk test, 20 meter Shuttle Run Test, Step test: Queen's College and Harvard Step test
3. Ankle Brachial Index, tests for peripheral arterial & venous circulation
4. Functional diagnosis using ICF
5. of X-ray chest, routine bio-chemical investigations, ABG, PFT, ECG (normal values)

H. Functional Evaluation

a. Introduction, What, Why and How to evaluate, Quantitative versus Qualitative data, Uses of evaluation findings, Percentage of disability (temporary and permanent)
b. International Classification of Functioning, Disability, and Health (ICF) and Documentation based on ICF.
b. Scales: FRT, Berg's Balance, modified Ashworth, Glasgow Coma, TUG, FIM
c. Functional diagnosis using ICF
d. Barthel Index and HRQoL – SF36
e. Introduction to Quality of Life Questionnaire.
f. Mobility in bed, transfers, ambulation
g. Personal care – eating, dressing, washing, bathing etc
h. Household jobs
i. Work and recreation.

I. Interpretation of various investigations:

a) Radiological (X-rays, CT scan, MRI). [Musculoskeletal, Neurological & Cardio-Respiratory Conditions]

b) Normal Values of Routine Biochemical investigations (ABG, Blood, CSF, ECG).

Recommended Books:

2. Textbook of Physical Diagnosis with DVD: HistoryandExaminationononSwartz
3. Physical Diagnosis Secrets: Salvatore MangioneMD
4. Bates' Guide to Physical Examination and History Taking, 10thEdition LynnS.Bickley
5. Differential Diagnosis for Physical Therapists: Screening for Referral Catherine C.Goodman ,Teresa KellySnyder
6. Pocket Guide to Musculoskeletal Diagnosis [Paperback] GrantCooper
7. Differential Diagnosis for the Orthopedic Physical Therapist - James Meadows
8. Electro-Diagnosis and Electro-Therapeutics: A Guide for Practitioners and Students Toby Cohn
9. Electrodiagnosis in Diseases of Nerve and Muscle: Principles and Practice [Hardcover] Jun KimuraM.D.
10. Biofeedback, Third Edition: A Practitioner's Guide [Paperback] Mark S. SchwartzPhD (Editor), Frank Andrasik PhD(Editor)
11. ACSM's Guidelines for Exercise Testing and Prescription. American Sports Medicine
12. Principles of Exercise Testing and Interpretation: Including Pathophysiology and Clinical Applications. Karlman Wasserman, James E. Hansen, Darryl Y. Sue,William W. Stringer , Brian J.Whipp
13. The Physiotherapist's Pocket Guide to Exercise: Assessment, Prescription and Training. Angela Jane Glynn, Helen Fiddler
14. Physiotherapy Assessment [Paperback] Anne Parry.
15. Clinical Orthopedic Assessment Guide -2ndEdition Janice Loudon, Marcie Swift Stephania Bell
16. Pocket Guide to Musculoskeletal Assessment Richard E.Baxter

(Not for University Exam)

PROFESSIONALISM AND VALUES

The module on professionalism will deliver the concept of what it means to be a professional and how physiotherapy profession is different from a usual vocation. It also explains how relevant professionalism in terms of healthcare system is and how it affects the overall patient environment.

1. Professional values- Integrity, Objectivity, Professional competence and due care, Confidentiality. Core values- Accountability, Altruism, Compassion/ caring, excellence, integrity, professional duties, social responsibility.
2. Personal values- ethical or moral values
3. Attitude and behavior- professional behavior, treating people equally
4. Code of conduct, professional accountability and responsibility, misconduct
5. Differences between professions and importance of team efforts
6. Cultural issues in the healthcare environment
7. Entry level health care practitioner, direct access, autonomy in profession, practitioner of practice and evidence based practice.

BASIC COMPUTERS AND INFORMATION SCIENCE

SUBJECT DESCRIPTION: The students will be able to appreciate the role of computer technology. The course has focus on computer organization, computer operating system and software, and MS windows, Word processing, Excel data worksheet and PowerPoint presentation. Topics to be covered under the subject are as follows:

1. Introduction to computer: Introduction, characteristics of computer, block diagram of computer, generations of computer, computer languages.
2. Input output devices: Input devices(keyboard, point and draw devices, data scanning devices, digitizer, electronic card reader, voice recognition devices, vision-input devices), output devices(monitors, pointers, plotters, screen image projector, voice response systems).
3. Processor and memory: The Central Processing Unit (CPU), main memory.
4. Storage Devices: Sequential and direct access devices, magnetic tape, magnetic disk, optical disk, mass storage devices.
5. Introduction of windows: History, features, desktop, taskbar, icons on the desktop, operation with folder, creating shortcuts, operation with windows (opening, closing, moving, resizing, minimizing and maximizing,etc.).

6. Introduction to MS-Word: introduction, components of a word window, creating, opening and inserting files, editing a document file, page setting and formatting the text, saving the document, spell checking, printing the document file, creating and editing of table, mail merge.
7. Introduction to Excel: introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs.
8. Introduction to power-point: introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.
9. Introduction of Operating System: introduction, operating system concepts, types of operating system.
10. Computer networks: introduction, types of network (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid), components of Network.
11. Internet and its Applications: definition, brief history, basic services (E-Mail, File Transfer Protocol, telnet, the World Wide Web (WWW)), www browsers, use of the internet.
    a. Application of Computers in clinical settings.

PRACTICAL: Practical on fundamentals of computers -

1. Learning to use MS office: MS word, MS PowerPoint, MS Excel.
2. To install different Software.
3. Data entry efficiency

Recommended Books:

1. V. Rajaraman: Fundamentals of Computers, Prentice Hall of India,2002
2. R. Hunt, J. Shelley: Computers and Commonsense, Prentice Hall of India,2002
3. A. Leon, M. Leon, Fundamentals of Information Technology, Leon Vikas,2002
4. MS Office2007.
5. Ajay Gaur:SPSS

DIAGNOSTIC IMAGING FOR PHYSIOTHERAPIST

SUBJECT DESCRIPTION- This course covers the study of common diagnostic and therapeutic imaging tests. At the end of the course students will be aware of the indications and implications of commonly used diagnostic imaging tests as they pertain to patient's management. The course will cover that how X-Ray, CT, MRI, Ultrasound and Other Medical Images are created and how they help the health professionals to save lives.

1. **IMAGE INTERPRETATION**
    a. History
    b. A New Kind of Ray
    c. How a Medical Image Helps
    d. What Imaging Studies Reveal
    e. Radiography(x-rays)
    f. Fluoroscopy
    g. Computed Tomography (CT)
    h. Magnetic Resonance Imaging (MRI)
    i. Ultrasound
    j. Endoscopy.
2. **RADIOGRAPHY ANDMAMMOGRAPHY**
    a. Equipment components
    b. Procedures for Radiography &Mammography
    c. Benefits versus Risks and Costs
    d. Indications and contraindications.
3. **FLUOROSCOPY**
    a. What is Fluoroscopy?
    b. Equipment used for fluoroscopy
    c. Indications and Contraindications
    d. How it helps in diagnosis
    e. The Findings in Fluoroscopy
    f. Benefits versus Risks and Costs.
4. **COMPUTED TOMOGRAPHY(CT)**
    a. What is Computed Tomography?
    b. Equipment used for Computed Tomography
    c. Indications and Contraindications
    d. How it helps in diagnosis
    e. The Findings in Computed Tomography
    f. Benefits versus Risks and Costs.

5. MAGNETIC RESONANCE IMAGING(MRI)

a. What is MRI?
b. Equipment used for MRI
c. Indications and Contraindications
d. How it helps in diagnosis
e. The Findings in MRI
f. Benefits versus Risks and Costs
g. Functional MRI.

6. ULTRASOUND

a. What is Ultrasound?
b. Equipment used for Ultrasound
c. Indications and Contraindications
d. How it helps in diagnosis
e. The Findings in Ultrasound
f. Benefits versus Risks and Costs.

5. ENDOSCOPY

a. What is Endoscopy?
b. Equipment used for Endoscopy
c. Indications and Contraindications
d. How it helps in diagnosis
e. The Findings in Endoscopy
f. Benefits versus Risks and Costs.

8. NUCLEARMEDICINE

a. What is Nuclear Medicine?
b. Equipment used for Nuclear Medicine
c. Indications and Contra-indications
d. How it helps in diagnosis.
e. Benefits versus Risks and Costs.

Recommended books:

1. James Swain & Kenneth W. Bush. Diagnostic Imaging for Physiotherapists.
2. Lynn N. McKinnis. Fundamentals of Musculoskeletal Imaging; F.A.Davis
3. L.C. Gupta & A. Gupta. X-ray Diagnosis and Imaging.

ENT

Course Description:

This course will introduce to the student to acquire knowledge to describe pathophysiology, signs & symptoms, clinical features, examination & management of diseases of ENT conditions.

THEORY

1. Anatomy and physiology of hearing
2. General introduction to diseases of E.N.T., emphasis on otitis media, facial palsy classification, medical and surgical management of lower motor neuron type of facial palsy, sinusitis,rhinitis.
3. Mastoid surgery**.**
4. Larynx and associated functional paralysis with tracheostomy and care of tracheostomy.
5. Causes of hearing loss, Conservative and surgery intervention including types and availability of hearing aids**.**

Recommended Books:

1. Maqbool: TB of Nose Throat & Ear: 11/e2007
2. Tuli: TB of Nose Throat & Ear:2005
3. Golwalla –Medicine for students
4. Principles and practice of Medicine-Davidson

OPHTHALMOLOGY

Course Description:

This course will introduce to the student to acquire knowledge to describe pathophysiology, signs & symptoms, clinical features, examination & management of diseases of ophthalmic conditions.

THEORY

Ophthalmologic surgical conditions, Refractions, Conjunctivitis, Glaucoma, Corneal ulcer, Iritis, Cataract, Retinitis, Detachment of retina, Defects of extra-ocular muscles-surgical management

Recommended Books:

1. Maqbool: TB of Nose Throat & Ear: 11/e2007
2. Tuli: TB of Nose Throat & Ear:2005
3. Golwalla –Medicine for students
4. Principles and practice of Medicine-Davidson.

Fourth Year B.P.T

PHYSIOTHERAPY IN ORTHOPEDIC CONDITIONS& SPORTS

SUBJECT DESCRIPTION -

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

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

SYLLABUS: -

Anatomy of bones and soft tissues (musculoskeletal system)

1. Evaluation, interpretation of investigations & functional diagnosis (ICF) with appropriate clinical reasoning for planning & implementation of management techniques
2. Planning, Prescription & Implementation of short term &long-term goals with clinical reasoning
3. Documentation
4. Different physiotherapeutic techniques for functional restoration/ maintenance and prevention of disability
5. Different electro therapeutic techniques for relief of acute and chronic pain, swelling, wound healing, re-education with clinical reasoning
6. Different physiotherapeutic techniques to improve/maintain muscle performance
7. Different physiotherapeutic techniques to increase joint mobility.
8. Different physiotherapeutic strategies for correction / maintenance of good posture
9. Different physiotherapeutic strategies to improve efficiency and safety of gait pattern
10. Prescription of appropriate orthotic & prosthetic devices & fabrication of simple temporary splints.

11. Appropriate Home Program & Ergonomic advice for preventive measures & Functional efficiency at home & work place
12. Physiotherapy approach in Traumatology. Definition of fracture, classification of fracture, signs and symptoms of fracture, healing process of fracture, factors affecting healing, methods of reduction, complications of fracture
13. Physiotherapy assessment in fracture cases. Principles of PT management in fractures - Guidelines for fracture treatment during period of immobilization and guidelines for treatment after immobilization period Physiotherapy assessment and management of upper limb fractures and dislocations, lower limb fractures and dislocations including pelvis and spinal fractures
14. Physiotherapy assessment & management of soft tissue injury. Contusion, sprains, strains, ruptures
15. Physiotherapy assessment & management of degenerative conditions. Osteoarthritis (OA) with emphasize on Knee, Hip and Hand cervical spondylosis, lumbar spondylosis
16. Physiotherapy assessment & management of inflammatory conditions. Rheumatoid arthritis (RA), Ankylosing spondylitis (AS), Still's disease, gout, periarthritis, bursitis, synovitis, capsulitis, tendinitis, tenosynovitis, fasciitis, Osgood Schlatter disease
17. Physiotherapy assessment and management of infective Conditions. Tuberculosis (TB) of spine and other major joints, Osteomyelitis, pyogenic arthritis, septic arthritis
18. Physiotherapy assessment & management of congenital and acquired deformities Congenital - CTEV, CDH, Torticollis, pes planus, pes cavus, Sprengel's scapula, Madelung's deformity. Acquired: scoliosis, kyphosis, coxa vara, genu varum, valgum and recurvatum, wry neck
19. Physiotherapy assessment & management of spinal conditions. Spondylolisthesis, Spinal canal stenosis, Spondylolysis, Intervertebral disc prolapse, Sacro-iliac joint dysfunction, Coccydynia Sacralisation, Lumbarisation, Spina bifida occulta
20. Physiotherapy assessment & management of amputations. Definition, indications, types, levels of amputation of lower and upper extremities, pre and post operative assessment and management with emphasize on stump care and bandaging, pre and post prosthetic training and complete rehabilitation
21. Rehabilitation of patient with orthopedic surgery Pre and post operative management of arthroplasty of all major joints, girdle stone arthroplasty, Arthrodesis, arthroscopy, Osteotomy Reattachment of limb
22. Physiotherapy assessment & management of re-constructive surgery. Cerebral Palsy, poliomyelitis, leprosy
23. Physiotherapy assessment & management of hand injury
24. Physiotherapy assessment & management of metabolic and hormonal disorders of the bone tissue Osteoporosis, rickets, Osteomalacia

25. Physiotherapy assessment & management of miscellaneous orthopedic conditions Mallet finger, trigger finger, Dequervain's disease, metatarsalgia, hallux valgus, Dupuytren's contracture, thoracic outlet syndrome, Chondromalacia patellae, ganglion, tennis elbow, and plantar fasciitis
26. Sports Medicine: Introduction& classification of sports injury Aetiological factors Prevention of sports injury Frequency and site of injury Investigation and assessment in sports injury
27. Management of sports injuries Pharmacology in sports. Rehabilitation in sports

PRACTICAL - 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 –Porter
2. Physical Therapies in Sport and Exercise by Gregory Kolt and Lynn Snyder-Mackler,2007.
3. Clinical orthopedic rehabilitation-Brotzman.
4. Orthopedic physiotherapy - JayantJoshi.
5. Physical Rehabilitation Assessment and Treatment – O'SullivanSchmitz
6. Sports Injuries: Diagnosis and Management for Physiotherapists by Christopher M. Norris(1992)
7. Orthopedic Physical Therapy – Donatelli&Wooden
8. Management of Common Musculoskeletal Disorders – Hertling & Kessler
9. Treatment and Rehabilitation of Fractures by Stanley Hoppenfeldand Vasantha LMurthy
10. Physiotherapy In Orthopaedics: A Problem-Solving Approach by Karen Atkinson Fiona Coutts, and Anne-Marie Hassenkamp
11. Principles of Neuro musculoskeletal Treatment and Management by NicolaJ.Petty(2004)
12. Therapy for Amputees by Barbara Engstrom and Catherine Van de VenZ
13. Pocketbook of Taping Techniques by Rose MacDonald
14. Orthopedic Physical Assessment by David J. Magee(2007)
15. Orthopaedic Physiotherapy (Cash's Textbook) by MarianTidswell
16. Rehabilitation for the Postsurgical Orthopedic Patient by Lisa Maxey MS PT and Jim Magnusson
17. Orthopedic and Sports Physical Therapy by Terry Malone, Thomas McPoil and Arthur J.Nitz
18. Differential Diagnosis for the Orthopedic Physical Therapist by James Meadows(1999)
19. In-Patient Physiotherapy: Management of Orthopaedic Surgery by LucyS.Chipchase, ScottA.
20. Pocket Guide to Musculoskeletal Assessment by Richard Baxter.
21. Sports physiotherapy- MariaZuluaga

PHYSIOTHERAPY IN MEDICAL & SURGICAL CONDITIONS

SUBJECT DESCRIPTION -At the end of the course the candidate will be able to:

1. Identify discuss and analyze cardiovascular and pulmonary dysfunctions based on pathophysiological principles and arrive at appropriate functional diagnosis.
2. Acquire knowledge of rationals of basic investigative approaches in the medical system and surgical intervention, regimes in general surgeries (special emphasis on abdominal surgeries)
3. Execute effective physiotherapeutic measures (with appropriate clinical reasoning) and exercise, conditioning in general medical and surgical conditions.
4. Acquire knowledge of the overview of patient's care in the I.C.U. for bronchial hygiene and continuous monitoring of the patient in I.C.U.
5. Select strategies for cure, care and prevention, adopt restorative and rehabilitative measures for maximum possible functional independence of a patient at home, work and in community.
6. Acquire the knowledge of evaluation and physiotherapeutic treatment for obstetric and gynecological conditions
7. Acquire the knowledge of various conditions where physiotherapy plays a vital role in the rehabilitation (psychiatry, dermatology, geriatric and ENT conditions)
8. Evaluate, grade and treat non healing wounds.

THEORY

1. Woman's Health:

A. Adolescent phase–

a) Obesity
b) Menstrual disorders like PCOD (poly cystic ovarian disorder), pre-menstrual syndrome and dysmenorhea with its PT management

B. Child-bearing phase–

a) Complications during pregnancy and its PT management according to specific conditions/complications.
b) Antenatal Phase– specific breathing exercise, relaxation, postural training, pelvic floor exercise and strengthening exercise.
c) Physiotherapy during labor.
d) Postnatal Phase – complication and its physiotherapy management. Postnatal exercise after normal labour and labour with invasive procedures like: Episiotomy, Forceps delivery, Caesarian section

C.

D. Climacteric Phase-

a) Menopause, Osteoporosis & Physiotherapy management
b) Gynecological conditions like Incontinence & its types, Prolapse & displacement along with its PT management
c) Gynecological operations - hysterectomy, prostatectomy, Mastectomy-Simple and Radical, pelvic repair and other operations with PT management.

2. **Skin conditions & Venereal diseases:** Acne, Psoriasis, Alopecia, Vitiligo, Hyperhidrosis, And STD's: AIDS, syphilis, and gonorrhea along with PT management. Wounds, local infection, ulcers, pressure sore-UVR and other electrotherapeutic modalities for healing of wounds, hypergranulated scars, relief of pain and modality.
3. **Role of Physiotherapy** in diabetes Mellitus, Hypertension, Vertigo, Leprosy, Myofascial Pain, Acute and Chronic Pain Syndromes, Obesity, and Hemophilia.
4. **Psychiatry** - physiotherapy in psychiatric conditions:
   A Introduction to Psychiatry in Physiotherapy.
   B Substance related disorders-alcohol, opium, hallucinogens,etc.
   C Sleep disorders.
   D Anxiety disorders - GAD, phobias, panic disorder, ASD, PTSD, and OCD.
5. **Physiotherapy management of Complication common to all operations**
6. **Physiotherapy management of Abdominal incisions**
7. **Physiotherapy in pre and post operative stages**
8. **Physiotherapy management of Operations of upper G.I. Tract - esophagus, stomach, duodenum.**
9. Physiotherapy management of Operations of large and small intestine: Appendicectomy, Cholecystectomy, partial colectomy, colostomy, ileostomy, hernia and herniotomy, hernioraphy, hernioplasty.
10. **Burns and its treatment:** Physiotherapy in burns, skin graft, and reconstructive surgeries.
11. **ENT**: Physiotherapy management of sinusitis, non suppurative and chronic suppurative otitis media, otosclerosis, labrynthitis, mastoidectomy, chronic rhinitis, laryngectomy, pharyngeo-laryngectomy, facialpalsy.
12. **Oncology**: Etiology, stages and types of cancer developments; Clinical manifestations, Diagnosis of cancer; Physiotherapy examination and treatment of specific representative cancers: Breast and lung cancer.

PRACTICAL:

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 session

Recommended books:

1. Tidy's Physiotherapy (Physiotherapy Essentials) by Stuart Porter(2008)
2. Physiotherapy in Obstetrics and Gynecology by Jill Mantle; Jeanette Haslam and SueBarton
3. Women's Health: A Textbook for Physiotherapists by Ruth Saps ford, Joanne Bullock-Saxton, and Sue Markwell.
4. Burn Care and Rehabilitation: Principles and Practice (Contemporary Perspectives in Rehabilitation) by Reginald L. Richard and Marlys J. Stanley (1994).
5. Cash's Textbook of Medical and Surgical conditions for Physiotherapists by Joan E. Cash and Patricia A. Downie (1993)

Reference Books:

1. Obstetric and Gynecologic Care in Physical Therapy, by Rebecca G.Stephenson andO'Connor
2. Rehabilitation and palliation of cancer patients by HerrmannDelbrück
3. Physiotherapy in Psychiatry by Mary Hare
4. Physiotherapy in Mental Health: A Practical Approach by Tina Everett, Dennis, and Eirian Ricketts.
5. Health Promotion Throughout the Life Span by Carole Lium Edelman and Carol LynnMandle
6. Geriatric Physical Therapy by Andrew A., Ph.D.Guccione.
7. Essentials of Geriatric Physical Therapy by Jennifer M.,Bottomley
8. Saunders Manual of Physical Therapy Practice by Rose Sgarlat Myers; W. B. Saunders Company

PHYSIOTHERAPY IN CARDIO VASCULAR & PULMONARY CONDITIONS

SUBJECT DESCRIPTION -

At the end of the course candidate will be able to

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

SYLLABUS: -

1) Anatomy and physiology of respiratory & cardiac system. Anatomy of thorax, biomechanics of thoracic cage, muscles of respiration, ventilation perfusion matching /mismatching, compliance
2) Investigations and tests. Sub maximal /maximal exercise tolerance testing, Cardiac & Pulmonary radiographs, PFT, ABG, ECG, hematological and biochemical Tests
3) Physiotherapy techniques to increase lung volume. Positioning, breathing exercises, Neurophysiological facilitation of respiration, mechanical aids - Incentive spirometry, CPAP, IPPB
4) 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
5) Physiotherapy techniques to clear secretions. Hydration, Humidification & Nebulization, Mobilization and breathing exercises, postural drainage, Manual techniques: Percussion, vibration and shaking, ACBT, Autogenic Drainage, Mechanical aids: PEP, Flutter, IPPB, facilitation of cough and huff, suctioning

6) Physiotherapy in common complications following surgery And 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 to improve ventilation, drugs to reduce pulmonary hypertension, drug delivery doses, inhalers and nebulizers
7) Introduction to ICU & mechanical ventilator. ICU monitoring – apparatus, airways and tubes used in the ICU - Physiotherapy in the ICU – common conditions in the ICU. Mechanical ventilator: types, modes of ventilator, advantages and disadvantages Oxygen therapy, CPR, aseptic precautions
8) Physiotherapy assessment & management techniques in Obstructive lung conditions. Chronic bronchitis, emphysema, asthma, bronchiectasis, cystic fibrosis
9) Physiotherapy assessment & management techniques in Restrictive lung conditions. Rib fracture, Pleural effusion, pleurisy and Empyema, pulmonary embolism, pulmonary tuberculosis, atelectasis, pneumothorax, bronchopulmonary fistula, pneumonia, ARDS
10) Physiotherapy following Lung surgeries. Pre and post operative physiotherapy assessment and management in Lobectomy, Pneumonectomy, decortication, thoracoplasty
11) Pulmonary Rehabilitation. Definition, aims and objectives, team members, benefits, principles of exercise prescription and techniques of rehabilitation
12) Anatomy and physiology of cardiovascular system. Anatomy, blood supply and conduction system of heart
13) Physiotherapy assessment & management for cardiovascular disorders. Cardiovascular disease, congestive heart failure, myocardial infarction, valvular diseases of heart, cyanotic and acyanotic congenital heart diseases, Endocarditis
14) Physiotherapy assessment & management for cardiothoracic Surgeries: CABG, PTCA, Heart transplant, and Valvular surgeries
15) Cardiac Rehabilitation. Definition, aims and objectives, team members, benefits, principles of Exercise prescription and techniques of rehabilitation
16) Physiotherapy assessment & management of vascular diseases. Venous: Thrombosis, phlebitis and phlebo-thrombosis, varicose veins, DVT, venous Ulcers Arterial: Berger's disease, acute and chronic arterial occlusion, lymphoedema

PRACTICAL:

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

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

Recommended books: Text Book:

1. Tidy's Physiotherapy by Stuart Porter(2008)
2. Cash's Textbook of Chest, Heart and Vascular Disorders for Physiotherapists by Joan E. Cash and Patricia A. Downie(1993)
3. Physiotherapy for Respiratory and Cardiac Problems: Adults and Paediatrics by Ammani S Prasad and Jennifer A. Pryor(2008)
4. Principles and Practice of Cardiopulmonary Physical Therapy by Elizabeth, Ph.D. Dean, Donna Frown felter, Donna L. Frown felter, and Elizabeth Dean1996.

Reference Books:

1. The Brompton Hospital Guide to Chest Physiotherapy byGASKELL.
2. Cardiopulmonary Physiotherapy by M. Jones and F. Moffatt.
3. Physical Therapy by W. Darlene Reid and Frank hung
4. Cardiopulmonary Rehabilitation: Basic Theory and Application by Margaret Wiley Foley, Julie Ann Starr, Lauren M. Saul, and Frances J.Brannon
5. Essentials of Cardiopulmonary Physical Therapy by H. Steven Sadowsky andEllen A. Hillegass.
6. Cardiopulmonary Physical Therapy: A Clinical Manual by Joanne Watchie.
7. Cardiovascular and Pulmonary Physical Therapy: An Evidence-based Approach by William DeTurk and LawrenceCahalin.
8. Physiotherapy in Respiratory Care: An Evidence-Based Approach to Respiratory and Cardiac Management by Alexandra Hough by Jonathan Corne and Kate Pointon (Paperback - Sept. 22,2009).
9. ECG Made Easy. John R. Hampton, Churchill Livingstone.

PHYSIOTHERAPY IN NEUROLOGY & PSYCHOSOMATIC DISORDER

SUBJECT DESCRIPTION

At the end of the course candidate will be able to

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

SYLLABUS: -

1. Review of basic neuro anatomy and physiology
2. Physiotherapy techniques to improve tone, voluntary control, co-ordination.
3. Neuro physiotherapeutic Techniques: Concepts, principles, techniques and effects of NDT, PNF, Brunnstrom movement therapy, Vojta therapy, Rood's sensory motor approach, Contemporary task-oriented approach.
4. Application of skills as PNF, co-ordination, functional re- education, balancing exercise by using techniques based on neuro physiological principles.
5. Tools used for neuro rehabilitation like vestibular balls, tilt board etc.
6. Application of transfer, functional re-education exercises & gait training
7. Bladder training.
8. Prescription of appropriate orthotic devices & fabrication of temporary splints.
9. Lifting techniques, wheel chair modifications, adaptive devices.
10. Ergonomic advice for prevention/rehabilitation to the patients / parents /caregivers
11. Education about handling of a patient.
12. Pediatric Neuro-physiotherapy. Use of various Neurophysiological approaches & modalities in high risk babies, minimum brain damage, developmental disorders, Cerebral palsy, Down's syndrome, Hydrocephalus, Spina bifida
13. Assessment & management of brain Disorders. Stroke, Meningitis, Encephalitis,

Head Injury, Parkinson's disease, Parkinsonian syndromes, Multiple sclerosis, Brain tumors. Basal Ganglia and extra pyramidal tract lesion: Movement disorders

14. Assessment & management of spinal cord lesions and bladder dysfunction Multiple sclerosis, transverse myelitis, Poliomyelitis/PPRP, Syringomyelia, spinal cord injury and sub acute combined degeneration of spinal cord, Motor neuron disease (ALS, SMA and other types), spinal tumors, Tabes Dorsalis
15. Assessment & Management of Co-ordination Disorders Ataxia, Friedreich's ataxia, Cerebellar ataxia, Sensory ataxia
16. Assessment & Management of Muscle Disorders. Muscular dystrophy (DMD) & other Myopathies
17. Assessment & Management of disorders of neuromuscular junction. Myasthenia Gravis
18. Assessment & management of neuropathies and nerve injuries. Cranial nerves, Peripheral nerves, Polyneuropathy – Classification of Polyneuropathies, Leprosy and Herpes Zoster
19. Pre and post-surgical assessment & management in neuro surgery. Hydrocephalus and myelomeningocele, C.V. junction anomalies, Syringomyelia
20. Vestibular Dysfunction (BPPV) and its management:

PRACTICAL: 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: Text books:

1. Cash's Textbook of Neurology for Physiotherapists
2. Physical Rehabilitation Assessment and Treatment – Susan O'SullivanSchmitz
3. Neurological Rehabilitation By Darcy Umphred.

Reference books:

1. Neurological Rehabilitation: Optimizing Motor Performance by Janet H. Carr and Roberta B.Shepherd
2. Treatment of Cerebral Palsy and Motor Delay by Sophie Levitt
3. Tetraplegia and Paraplegia: A Guide for Physiotherapists by Ida Bromley Elements of Pediatric Physiotherapy-Eckersley
4. Physical Management in Neurological Rehabilitation by Maria Stokes
5. Neurological Physiotherapy: A Problem-Solving Approach by Susan Edwards and Susan Edwards
6. Steps to follow By Patricia M.Davies
7. Right in the Middle By Patricia M.Davies
8. Neurological Examination made easy By Fuller.
9. Physical Rehabilitation By Braddom.

PHYSIOTHERAPY IN COMMUNITY HEALTH

SUBJECT DESCRIPTION –

The subject serves to integrate the knowledge gained by the students in community medicine and other areas with skills to apply these in clinical situations of health and disease and its prevention. The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to identify rehabilitation methods to prevent disabilities and dysfunctions due to various disease conditions and plan and set treatment goals and apply the skills gained in rehabilitating and restoring functions.

Health Promotion, Fitness and Wellness include discussion on the theories of health and wellness, including motivational theory, locus of control, public health initiative, and psycho-Social. Health risks, screening, and assessment considering epidemiological principles are emphasized. Risk reduction strategies for primary and secondary prevention, including programs for special populations are covered.

1. **Rehabilitation**: Definition, Types
2. **Community:** Definition of Community, Community based approach, Community Entry strategies, CBR and Community development, Community participation and mobilization.
3. **Introduction to Community Based Rehabilitation**: Definition, Concept of CBR, Need for CBR, Difference between Institution based and Community based Rehabilitation, Objectives of CBR, Scope of CBR, Members of CBR team, Principles of Community based Rehabilitation
4. **Disability:** Definition of Impairment, Disability, and Handicap. Difference between impairment, disability, and handicap, causes of disability, Types of disability, Prevention of disability, Disability Surveys: Demography. Screening: Early detection of disabilities and developmental disorders, Prevention of disabilities- Types and levels.
5. **Role of Social work in CBR**: Definition of social work, Methods of social work, History of social work, Role of social worker in rehabilitation.
6. **National / District Level Rehabilitation Programme**: Primary rehabilitation unit, Regional training center, District rehabilitation center, Primary Health center, Village rehabilitation worker, Anganwadi worker
7. **Role of Physiotherapy in CBR in Architectural Barriers & Possible Modifications**:
    a. 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 neuro-musculoskeletal and cardiothoracic disabilities.

8. **Vocational training in rehabilitation**: Introduction, Need, Vocational evaluation, Vocational rehabilitation services.

9. **Geriatrics-Physiology of Aging / degenerative changes** -

Musculoskeletal/Neuromotor /cardio–respiratory/Metabolic, Endocrine, Cognitive, Immune systems and Postural Changes due to aging, Balance and fall in Aging Adults, Acute changes and chronic adaptations to exercise in aged, Role of PT in Aging (Evaluation and Management), Psychosocial implications in ageing, Role of Physiotherapy in Hospital based care, Residential homes, Home for the aged, Institution based Geriatric Rehabilitation, Preventive Geratrics

10. **Industrial Health & Ergonomics**–

A. **Occupational Hazards and physiotherapy management in the industrial area-**

i. Physical agents-e.g.-Heat/cold, light, noise, Vibration, U.V. radiation, Ionizing radiation,
ii. Chemical agents-Inhalation, local action, ingestion,
iii. Mechanical hazards-overuse/fatigue injuries due to ergonomic alteration & ergonomic evaluation of work place-mechanical stresses–
    a. sedentary table work –executives,clerk,
    b. inappropriate seating arrangement- vehicle drivers
    c. constant standing- watchman- Defense forces, surgeons,
    d. Over-exertion in laborers, Common accidents
iv. Psychological hazards- e.g.-executives, monotonicity & dissatisfaction in job, anxiety of work completion with quality, Role of P.T. in Industrial setup & Stress management-relaxation modes.
v. Biological Hazards

11. Health Promotion and Fitness

1. Basic Concept of Health Promotion

a. Introduction and definition of term: Health promotion
b. Physical, Environmental, Emotional & Psychological health
c. Promotion of Healthy Lifestyles through Physical Activity, Diet, Stress Management
d. Need of health promotion in India

2. Basic Concept of Fitness

a. Introduction and definition of term: Fitness
b. Basic Concepts of Fitness
c. Mental and physical fitness
d. Health benefits of activity and Fitness

3. Acute and chronic adaptations of various systems to exercise
4. Physical fitness testing

PRACTICAL: This will consist of Field visits to urban and rural PHC's, Industrial visits, 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, cardio-

respiratory, paediatric, gynecological and geriatric problems Bed-side and community, Demonstration of evaluation and prescription techniques for ambulatory and assistive devices, Assessment and management of Occupational hazards.

Recommended books:

1. A textbook on physical medicine and rehabilitation by Howard A Rusk(1964)
2. Community Based Rehabilitation of Persons with Disabilities by Pruthvish; Jaypee Brothers.
3. Ergonomics for Beginners: A Quick Reference Guide, Third Edition by Jan Dul and Bernard
4. Ergonomics for Therapists by Karen Jacobs
5. Ergonomic Living : How to Create a User-Friendly Home & Office: Gordon Inkeles and Iris Schencke
6. Textbook of Rehabilitation by Sunder, Jaypee Publications
7. Physical Medicine and Rehabilitation: Principles and Practice (2 Volume Set) by Joel A DeLisa, Bruce M Gans, Nicolas E Walsh, and William LBockenek
8. Essentials of Physical Medicine and Rehabilitation: Walter R. Frontera MD PhD, Julie K. Silver MD, and Thomas D. Rizzo Jr. MD(2008)
9. Community Based Rehabilitation by Peat (Paperback - July1997)
10. Physical Medicine & Rehabilitation Secrets by Bryan J. O'Young MD, Mark A Young MD, and Steven A. Stiens MD MS(2007)
11. Physical Rehabilitation by Susan B. O'Sullivan and Thomas J. Schmitz(2006)
12. Orthotics and Prosthetics in Rehabilitation by Michelle M. Lusardi and Caroline Nielsen(2006)
13. Preventive & social medicine by Park &Park
14. Textbook of community medicine & community health by BhaskaraRao.
15. Legal rights of disabled in India by GautamBannerjee
16. Geriatric Physiotherapy by Andrew Guccione.
17. Industrial Therapy by Glenda Key
18. Textbook of Preventive & Social Medicine- Dr. K. Park
19. Textbook of community medicine: V. K. Mahajan
20. Chiropractic,Health, Promotion and Wellness –Meridel I.Gatterman MA, DC,Med
21. Health, Promotion and Wellness: evidence-based guide to clinical preventive services—Cheryl Hawk & Will Evas
22. Fitness and Health – 6th edition – Brian J Sharkey,PhD
23. ACSM's Guidelines for Exercise Testing and Prescription. American College of Sports Medicine. 9th Edition.

REFERENCE BOOKS:

1. Principles of Health Education and Health Promotion, (2nd edition), J. Thomas Butler, Morton Publishing Company, Englewood, Colorado
2. Foundations of Health Education, R. M. Eberst, Editor, Coyote Press, San Bernardino: 1998-99
3. Evaluation in health promotion – principles and perspective- WHO Regional Publications, European Series, No. 92
4. Principles and foundation of health promotion and education (5th edition) by Randall R. Cottrell, James T. Girvan, James F. McKenzie

BIOSTATISTICS & RESEARCH METHODOLOGY-

The objective of this module is to help the students understand the basic principles of research and methods applied to draw inferences from the research findings.

RESEARCH METHODOLOGY

1. **Introduction to Research methodology**: Meaning of research, objectives of research, Motivation in research, Types of research & research approaches, Research methods vs methodology, Criteria for good research, Problems encountered by researchers in India.
2. **Research problem**: Statement of research problem., Statement of purpose and objectives of research problem, Necessity of defining the problem
3. **Research design**: Meaning of research design, Need for research design, Features for good design, Different research designs, Basic principles of research design
4. **Sampling Design**: 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 & scaling techniques**: Measurement in research- Measurement scales, sources of error in measurement, Technique of developing measurement tools, Meaning of scaling, its classification. Important scaling techniques.
6. **Methods of data collection**: collection of primary data, collection data through questionnaires & schedules, Difference between questionnaires & schedules.
7. **Sampling fundamentals** need for sampling & some fundamental definitions, important sampling distributions.
8. **Processing & analysis of data**: Processing operations, problems in processing, Types of analysis, Statistics in research, Measures of central tendency, Dispersion, Asymmetry, relationship.
9. **Testing of hypothesis**: What is hypothesis? Basic concepts concerning testing of hypothesis, Procedure of hypothesis testing, measuring the power of hypothesis test, Tests of hypothesis, limitations of the tests of hypothesis
10. **Computer technology**: Introduction to Computers, computer application in research, computers & researcher.

BIOSTATISTICS

1. **Introduction**: 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**: 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**: 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 the mean, median and mode, Guidelines for the use of various measures of central tendency.

4. **Probability and Standard Distributions**: Meaning of probability of standard distribution, the binominal distribution, the normal distribution, Divergence from normality – skewness, kurtosis.
5. **Sampling techniques**: Need for sampling - Criteria for good samples, Application of sampling in community, Procedures of sampling and sampling designs errors, Sampling variation and tests of significance.
6. **Analysis of variance & covariance**: Analysis of variance (ANOVA), what is ANOVA? Basic principle of ANOVA, ANOVA technique, Analysis of Co variance (ANACOVA).
7. **Format of scientific documents**. (Structure of protocols, formats reporting in scientific journals, systematic reviews and meta-analysis).

Recommended Textbooks:

1. Research Methods for Clinical Therapists -- Applied Project Design and Analysis by Carolyn M. Hicks.
2. Research Methodology By Kothari.
3. Elements of Research in Physical Therapy: Dean P. Currier
4. First Steps in Research: A Pocketbook for Healthcare Students by Stuart B. Porter.
5. Practical Research: A Guide for Therapists by Sally French, Frances Reynolds, and John Swain, 2001.
6. The Researching Therapist: A Practical Guide to Planning, Performing and Communicating Research by Sue Jenkins, Connie J. Price, and Leon Straker
7. Physical Therapy Research: Principles and Applications by Elizabeth Domholdt.
8. Evaluating Research: Methodology for People Who Need to Read Research by Francis C. Dare (2010)
9. How to Read a Paper: The Basics of Evidence-Based Medicine by Trisha Greenhalgh (2010).
10. How to Write a Great Research Paper, New Edition by Leland Graham and Isabelle McCoy (2007)
11. How to Write a Paper: George M. Hall (2008) Elements of Health Statistics: Rao.N.S.N
12. An introduction of Biostatistics: Sunder Rao. P.S.S.
13. Methods in Bio-Statistics 6thEdn. 1997: B.K. Mahajan
14. Biostatistics: A manual of Statistics Methods: K. Visweswara Rao
15. Elementary Statistics 1stEdn, 1990. in Medical Workers: Inderbir Singh
16. Statistics in Psychology and education: Great and Henry
17. Biostatistics: Ramakrishnan

(NOT FOR UNIVERSITY EXAMINATION)

ADMINISTRATION & MANAGEMENT IN PHYSIOTHERAPY

Course description:

This course serves to integrate knowledge gained by the students in basic management knowledge and skills essential for effective functioning and to be conversant with planning organization, work scheduling, and cost & control of quality in relation to physiotherapy care & service.

THEORY

1. Administration, Management and Supervision

a) Introduction: Branches of administration, Nature and scope of administration, how to be an effective administrator, Planning hospital administration as part of a balanced health care program. [3hours]
b) Principles of hospital administration and its applications to physiotherapy. [2 hours]
c) Hospital administration: Organization, Staffing, Information, Communication, Coordination, Cost of services, Monitoring and evaluation. [3hours]
d) Organization of physiotherapy department: Planning, Space, Manpower, Other basic Resources. [5hours]
e) Organizing meetings, committees, and negotiations [2hour]
f) Personnel management: Personnel performance appraisal system, Quality care delivery from the staff [2hours]
g) Public relations in hospital and human resource management. [3hours]

2. Standards of Practice

a) IAP
b) American Physical Therapy Association
c) EUROPEAN CORE STANDARDS OF PHYSIOTHERAPY PRACTICE OF WCPT.

3. Clinical Audit
4. Documentation
5. Clinical Decision-making
6. Outcome Measures in Physiotherapy

Recommended books:

1. Consumer Protection Act – 1986, Government of India, New Delhi.
2. Francis C M – Hospital Administration
3. Davies, R and Macaulay, BMC – Hospital Planning and Administration
4. Prescription Writing by Frederic HenryGerrish
5. Innovations in Rehabilitation Sciences Education: Preparing Leaders for the Future by Patricia Solomon and SueBaptiste
6. Management in Physical Therapy Practice by Catherine G.Page

7. Physical Therapy Management by Ronald W. Scott and Christopher LPetrosino
8. Management in Physiotherapy byJones
9. Clinical Decision Making and Outcomes in Sports Rehabilitation by Dinesh A. Kumbhare and John V.Basmajian
10. Ethical Decision Making in Therapy Practice (Skills for Practice Series) by JuliusSim
11. Documentation for Rehabilitation: A Guide to Clinical Decision Making by Lori Quinn EdD PT and James Gordon EdDPT
12. Expertise in Physical Therapy Practice by Gail M. Jensen, Jan M. Gwye, Laurita M. Hack, and Katherine F. Shepard.
13. Legal Aspects of Physiotherapy by BridgitDimond
14. Therapy Outcome Measures Manual: Physiotherapy, Occupational Therapy,Rehabilitation Nursing by Pam Enderby, Alexandra John, and Brian Petheram
15. Therapy Outcome Measures for Rehabilitation Professionals: Speech and Language Therapy, Physiotherapy, Occupational Therapy by Pamela Enderby, Alexandra John, and BrianPetheram
16. Evidence-Based Rehabilitation: A Guide to Practice by Mary C. Law PhD and Joy MacDermidPhD
17. Writing Soap Notes: With Patient/Client Management Formats by GingeKettenbach
18. Writing Patient/ Client Notes: Ensuring Accuracy in Documentation by GingeKettenbach

TEACHING SKILLS

1. Aims of physiotherapy education

a. Concepts of teaching and learning
b. Curriculum development
c. Principles and methods of academic and clinical teaching
d. Measurement and evaluation
e. Guidance and counseling
f. Faculty development program
g. Administration in clinical setting
h. Use of A-V aids in teaching
i. Taxonomy of education

RESEARCH PROJECT-

The project may be a case study or of recent technique or literature reviews and etc. to make the student to have research mind and to facilitate for higher studies.

During the Internship, candidate has to undertake a Scientific Project. Project will be a clinical assignment on given topic or condition. This may be done in the form of a literature review or a small research project. This will give the student a practical background on research methods and recent advances. Selection of topic & place for the conduct shall be in consultation & with consent of the Guide and the Head of the institution – Physiotherapy & the Ethical Clearance Committee of Parent Institution. Scientific inquiry shall be based on Comparative diagnostic, clinical trials, reviews, Meta analysis, Research Article etc. This can be done as a **group work** of 3-4 students on a given research title.

Research Proposal for this project should be approved before fourth year B. Physiotherapy University Examination. **Project Guide** will be assigned by the Principal to the students. The Candidate shall submit the project 2 weeks prior to the Day of Completion of Internship & the Head of Parent Institution/ Concerned Guide shall sign on the same if the project is up to her /his satisfaction.

CLINICAL EDUCATION- Students will be posted in rotation in the following areas/wards. The students will be clinically trained to provide physiotherapy care for the patients under supervision. They will be trained on bed side approach, patient assessment, performing special tests, identifying indications for treatment, ruling out contraindications, decision on treatment parameters, dosage and use relevant outcome measures under supervision. Evidence based practice will be part of training.

1. Physiotherapy OPD
2. Neurology, Neurosurgery & Neuro ICU
3. Community-PHC
4. Orthopedics
5. General Medicine &MICU
6. General Surgery & CTSICU
7. Developmental Pediatrics & Child Guidance Clinic
8. OBG
9. Geriatric – Old Age Homes
10. Industrial Visits -Ergonomics

INTERNSHIP

INTERNSHIP - The internship time period provides the students the opportunity to continue to develop confidence and increased skill in simulation and treatment delivery. Students will demonstrate competence in beginning, intermediate, and advanced procedures in both areas. Students will participate in advanced and specialized treatment procedures. The student will complete the clinical training by practicing all the skills learned in classroom and clinical instruction. The students are expected to work for minimum 7- 8 hours per day.

1. **Initial Assessment Documentation:** Clinical staff must document the following information:

    a. Initial assessment documented based on SOAP format.
    b. Subjective examination(symptomatic)
    c. Objective examination (measureable, observable)
    d. Action/Analysis (interpretation of current condition/intervention provided)
    e. Plan of action
    f. Written or verbal feedback to the client or other relevant carers
    g. Discharge plan documented
    h. Agreement to treatment plan by patient or “person responsible”

2. **Progress Documentation:** Progress documentation may include the following information:

    a. Any individual intervention should be documented in SOAP format (including response to intervention/s using outcome measures)
    b. Oral consent obtained and documented when there is a significant change in treatment/ treatment options/ status of patient’s health.
    c. Written consent obtained for designated invasive procedures
    d. Change in status or events that may affect discharge plans/goals
    e. Documented consultation with key clinical team members

SKILLS BASED OUTCOMES AND MONITORABLE INDICATORS FOR BACHELOR OF PHYSIOTHERAPY

Bachelor of
Physiotherapy
Competency Statements

1. Consults with the client to obtain information about his/her health, associated history, previous health interventions, and associated outcomes.
2. Collects assessment data relevant to the client's needs and physiotherapy practice.
3. Be able to conduct the patient evaluation and assessment as per condition.
4. Analyzing Assessment findings & Establish a physiotherapy diagnosis and prognosis.
5. Develops and Recommends an intervention strategy.
6. Be able to prepare the patient (physically and emotionally) and as well as the equipment to be used as per treatment plan
7. Implements intervention.
8. Be able to accurately explain the treatment plans and able to demonstrate and teach self exercises
9. Advise patient on appropriate nutrition, exercises, rest, relaxation other issues
10. Evaluates the effectiveness of interventions.
11. Be able to complete accurate treatment documentation.
12. Develops, builds and maintains rapport, trust and ethical professional relationships through effective communication.
13. Establishes and maintains inter professional relationships, which foster effective client-centered collaboration.
14. Understand the principles of continuous quality improvement.
15. Be able to carry out the daily/weekly Quality Control (QC)checks.
16. Be able to review the literature.
17. Be able to suggest implementation of research findings.
18. Be able to suggest/ initiate topics for physiotherapy research
19. Be able to interpret, apply and disseminate information as a member of the physiotherapy team.