

BACHELOR OF PHYSIOTHERAPY (B.P.T. Course)

1. Duration of course

The duration of Bachelor Physiotherapy course shall be four and half academic years including six months compulsory rotatory internship as under:

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|---------------------------------------|----------|
| a) First Professional B.P.T. | 1 year |
| b) Second Professional B.P.T. | 1 year |
| c) Third Professional B.P.T. | 1 year |
| d) Fourth (Final) Professional B.P.T. | 1 year |
| e) Internship | 6 months |

2. Admission criteria and qualifications

The admission to the B.P.T. course shall be made on the terms & conditions prescribed in the Notification issued by the Government from time to time.

3. English shall be the medium of instruction for study and examination of the Bachelor of Physiotherapy degree course.

4. Examinations

4.1 Examination for each class shall be held twice a year in the months of May/June and November / December or on such dates as may be fixed by the University from time to time.

4.2 Every candidate shall pay examination fee to the University as may be prescribed by the Board of Management from time to time unless otherwise notified by the University. The last dates for receipt of examination form and fee in the University Office shall be as under:

Examination Session for B.P.T.	Without Late fee	With late fee of Rs. 1500/-
May / June	31 st March	15 th April
Nov / Dec	30 th Sept.	15 th October
In case of late declaration of result due to any reason	Upto 20 days (including the date of declaration of result) from the date of declaration of result.	Upto 35 days (including the date of declaration of result) from the date of declaration of result.

The university may accept examination form and fee alongwith late fee of Rs 5000/-, ten days before the commencement of examination with permission of the worthy Vice Chancellor.

Note: - The schedule of examination session and fee may be amended as per University directions from time to time

5. First Professional B.P.T. Examination

First Professional B.P.T. Examination shall be open to a person who:

- has been enrolled for one academic year preceding the examination in a Physiotherapy College affiliated to the University.
- has his/her name submitted to the Registrar by the Principal of the college with the following certificates:

i) of having attended separately in theory and practical / clinical not less than 75 percent of the lectures delivered and practical conducted in each of the subjects prescribed for the examination provided that deficiency in the number of lectures delivered and practical conducted may be condoned by the Principal to the extent of 10% of the lectures delivered. Provided further that if a candidate fulfils the conditions laid down for one or more subjects and not for other(s), he may be allowed to take examination only in such subject(s) in which he fulfils the conditions. ii) of having secured at least 35% marks of the total marks fixed for internal assessment in each subject, separately, order to be eligible to appear in all University examinations iii) of good moral character.								
Note 1) Internal Assessment should be submitted to the University about two weeks before the commencement of theory examinations. All the colleges shall adopt uniform criteria for Internal Assessment for which a record of such student shall be maintained in each department, which should be made available for inspection by the student concerned as well as University authorities. The re-appear/fail students will not be re-assessed every time for the purpose of Internal Assessment and their previous score of assessment will be carried forward except when their score is less than 50%. 2) If a candidate fulfils the condition laid down in clause 5 (b) (i) and (ii) above for one or more subject (s) he/she may be allowed to take the examination in such subject (s) in which he/she fulfils the requirements. 3) Every candidate before appearing in First Professional B.P.T. Examination must have cleared House Examination securing at least 35 percent marks in both theory as well as practical separately.								
c) The First Professional B.P.T. Annual Examination shall be held in May/June and the supplementary within six months of the annual examinations. d) The First Professional B.P.T. examination shall be in the following subjects and candidate shall be required to pass all the subjects: -								
Sr.No	Subject	Theory			Practical			Grand Total
		Marks	Int. Assess	Total	Marks	Int. Assess.	Total	
BPT 101.	Anatomy	80	20	100	80	20	100	200
BPT102.	Physiology	80	20	100	80	20	100	200
BPT103	Biochemistry	80	20	100	-	-	-	100
BPT104	Electrotherapy-I	80	20	100	80	20	100	200
BPT105.	Exercise therapy-1	80	20	100	80	20	100	200
BPT106.	Computer Applications	-	-	-	40	10	50	50
BPT107.	English	40	10	50	-	-	-	50

	Total							1000	
(i)	There shall be a provision of Internal assessment of 20% marks in each subject of B.P.T. course in theory and practical, separately.								
(ii)	Each theory paper shall be of three hours duration and minimum pass percentage of marks will be 50% separately in theory & practical (including internal assessment) except English which will be of 1½ hours duration and minimum pass percentage of marks will be 40%.								
(iii)	A candidate securing 75% or above marks in any of the subjects shall be declared to have passed with Distinction in that subject provided he has passed the examination in the first attempt.								
(iv)	A candidate who fails in all but one subject in 1 st Prof BPT in his/her 1st attempt shall be provisionally promoted to 2 nd Prof. BPT course and shall be provisionally allowed to attend classes in 2 nd Prof. and provisionally permitted to appear in 2 nd Prof B.P.T. examinations. If the candidate fails in all subjects, then he/she shall not be promoted to Second Prof BPT but he/she can appear in the supplementary exam. If he/she passes in any one subject in supplementary exam, he/she will be provisionally promoted to the Second Prof BPT. However, he/she must pass all the subjects of First Prof B.P.T. examinations in a maximum of four attempts .								
(v)	A candidate who passes in one or more subjects shall be exempted from appearing in these subjects at a subsequent examination, but the candidate must pass the examination in a maximum of four attempts , failing which he/she shall have to appear in all the subjects of the 1 st Prof. examination.								
(vi)	A candidate must pass all the subjects of 1st Prof. examination in order to be eligible to sit/ attend in 3rd Prof BPT course classes.								
6. Second Professional B.P.T. Examination									
The Second Professional B.P.T. Examination shall be open to a person who –									
a)	has been enrolled for one academic year preceding the examination in a Physiotherapy College affiliated to this University.								
b)	has previously passed the First Prof. B.P.T. examination of this University or an examination of any other recognized University / Institution in India considered equivalent for the purpose of the University.								
c)	has his/her name submitted to the Registrar by the Principal of the College with the following certificates:								
i)	of having attended separately in theory and practical / clinical not less than 75 percent of the lectures delivered and practical conducted in each of the subjects of Second Professional B.P.T. course prescribed for the examination provided that deficiency in the number of lectures delivered and practicals conducted may be condoned by the Principal to the extent of 10% of the lectures delivered.								
ii)	of having secured at least 35% marks of the total marks fixed for internal assessment in each subject, separately, in order to be eligible to appear in all University examinations.								
iii)	of good moral character.								
Note	1)	Internal Assessment should be submitted to the University about two weeks before the commencement of theory examinations. All the colleges shall adopt uniform criteria for Internal Assessment for which a record of such student shall be maintained in each department in each department, which should be made available for inspection by the student concerned as well as University authorities. The re-appear/fail students will not be re-assessed every time for the purpose of Internal Assessment and their previous score of assessment will be carried forward except when the score is less than 50%.							
	2)	If a candidate fulfils the condition laid down in clause 6 (b) (i) and (ii) above for one or more							

- subject (s) he/she may be allowed to take the examination in such subject (s) in which he/she fulfils the requirements.
- 3) Every candidate before appearing in 2nd Professional B.P.T. Examination must have cleared House Examination securing at least **35 percent** marks in both theory as well as practical separately.
- Note 1) Internal Assessment should be submitted to the University **about** two weeks before the commencement of theory examinations. All the colleges shall adopt uniform criteria for Internal Assessment for which a record of such student shall be maintained in each department in each department, which should be made available for inspection by the student concerned as well as University authorities.
The re-appear/fail students will not be re-assessed every time for the purpose of Internal Assessment and their previous score of assessment will be carried forward except when the score is less than 50%.
- 2) If a candidate fulfils the condition laid down in clause 6 (b) (i) and (ii) above for one or more subject (s) he/she may be allowed to take the examination in such subject (s) in which he/she fulfils the requirements.
- 3) Every candidate before appearing in 2nd Professional B.P.T. Examination must have cleared House Examination securing at least **35 percent** marks in both theory as well as practical separately.
- d) The 2nd B.P.T. course shall be of one year duration and examination shall ordinarily be held in May/June. The Supplementary examination shall be held within six months of the annual examination.
- e) The Second Professional B.P.T. Examination shall be held one year after First Professional B.P.T. Examination and the candidate is required to pass the following subjects:

Sr. No	Subject	Theory			Practical			Grand Total
		Marks	Int. Assess	Total	Marks	Int. Assess.	Total	
BPT 201	Pathology	80	20	100	-	-	-	100
BPT 202	Microbiology	80	20	100	-	-	-	100
BPT 203	Pharmacology	80	20	100	-	-	-	100
BPT 204	Electrotherapy-II	80	20	100	80	20	100	200
BPT 205	Exercise therapy-II	80	20	100	80	20	100	200
BPT 206	Biomechanics and Kinesiology	80	20	100	80	20	100	200
BPT 207	Sociology & Psychology	80	20	100	-	-	-	100

	Total							1000	
(i)	There shall be a provision of Internal assessment of 20% marks in each subject of B.P.T. course in theory and practical, separately.								
(ii)	Each theory paper shall be of three hours duration except Pharmacology which will be of 1½ hours duration.								
(iii)	The minimum number of marks to pass the examination shall be 50% in theory including Internal Assessment and 50% in practical / clinical including Internal Assessment in each subject.								
(iv)	A candidate securing 75% or above marks in any of the subjects shall be declared to have passed with Distinction in that subject provided he has passed the examination in first attempt.								
(v)	A candidate who fails in all but one subject in 2 nd Prof BPT in his/her 1st attempt shall be provisionally promoted to 3 rd Prof. BPT course and shall be provisionally allowed to attend classes in 3 rd Prof. and provisionally permitted to appear in 3 rd Prof B.P.T. examinations. If the candidate fails in all subjects, then he/she shall not be promoted to 3 rd Prof BPT but he/she can appear in the supplementary exam. If he/she passes in any one subject in supplementary exam, he/she will be provisionally promoted to the 3 rd Prof BPT. However, he/she must pass all the subjects of 2 nd Prof B.P.T. examinations in a maximum of four attempts failing which the advantage of provisional promotion to 3 rd Prof shall be withdrawn.								
(vi)	A candidate who passes in one or more subjects shall be exempted from appearing in these subjects at a subsequent examination, but the candidate must pass the examination in a maximum of four attempts , failing which he/she shall have to appear in all the subjects, of the 2 nd Prof. examination.								
vii)	A candidate must pass all the subjects of BPT 2nd Prof examination in order to sit in 4th Prof BPT course.								
7. Third Professional B.P.T. Examination									
	The Third Professional B.P.T. Examination shall be open to a person who:								
a)	has been enrolled for one academic year preceding the examination in a Physiotherapy College affiliated to the University.								
b)	has previously passed the Second Prof. B.P.T. examination of this University or an examination of any other recognized University / Institution in India considered equivalent for the purpose by the University.								
c)	Must have passed all the subjects of BPT 2 nd Prof. in a maximum of four attempts.								
d)	has his/her name submitted to the Registrar by the Principal of the college with the following certificates								
i)	of having attended separately in theory and practical / clinical not less than 75 percent of the lectures delivered and practical conducted in each of the subjects of Third Professional B.P.T. course prescribed for the examination provided that deficiency in the number of lectures delivered and practical conducted may be condoned by the Principal to the extent of 10% of the lectures delivered.								
ii)	of having secured at least 35% marks of the total marks fixed for internal assessment in each subject, separately, order to eligible to appear in all University examinations.								
iii)	of good moral character.								
Note	1) Internal Assessment should be submitted to the University about two weeks before the commencement of theory examinations. All the colleges shall adopt uniform criteria for Internal Assessment for which a record of such student shall be maintained in each department in each department, which should be made available for inspection by the student concerned as well as University authorities. The re-appear/fail students will not be re-assessed every time for the purpose of Internal Assessment and their previous score of assessment will be carried forward except when the score								

is less than 50%.

2) If a candidate fulfils the condition laid down in clause 7 (b) (i) and (ii) above for one or more subject (s) he/she may be allowed to take the examination in such subject (s) in which he/she fulfils the requirements.

3) Every candidate before appearing in 3rd Professional B.P.T. Examination must have cleared House Examination securing atleast **35 percent** marks in both theory as well as practical separately.

e) The 3rd Prof. B.P.T. Annual Examination shall be held in May / June and the Supplementary within six months of the annual examination.

f) The Third Professional B.P.T. Examination shall be held one year after the Second Professional Examination and the candidate is required to pass the following subjects:

Sr.No	Subject	Theory			Practical			Grand Total
		Marks	Int.Ass	Total	Marks	Int.Ass	Total	
BPT 301	Orthopaedics	80	20	100	80	20	100	200
BPT 302	General Medicine	80	20	100	80	20	100	200
BPT 303	PT in Ortho conditions	80	20	100	80	20	100	200
BPT 304	PT in Medical conditions	80	20	100	80	20	100	200
BPT 305	Research Methodology	80	20	100	-	-	-	100
	Total							900

(i) There shall be a provision of Internal assessment of **20% marks** in each subject of B.P.T. course in theory and practical separately.

(ii) Each theory paper shall be of three hours duration.

(iii) The minimum number of marks to pass the examination shall be 50% in theory including Internal Assessment and 50% in practical / clinical including Internal Assessment in each subject.

(iv) A candidate securing 75% or above marks in any of the subjects shall be declared to have passed with Distinction in that subject provided he has passed the examination in first attempt.

(v) A candidate who fails in all but one subject in 3rd Prof BPT in his/her 1st attempt shall be provisionally promoted to 4th Prof. BPT course and shall be provisionally allowed to attend classes in 4th Prof. and provisionally permitted to appear in 4th Prof B.P.T. examinations. If the candidate fails in all subjects, then he/she shall not be promoted to 4th Prof BPT but he/she can appear in the supplementary exam. If he/she passes in any one subject in supplementary exam, he/she will be provisionally promoted to the 4th Prof BPT. However, he/she must pass all the subjects of 3rd Prof B.P.T. examinations in a maximum of **four attempts** failing which the advantage of provisional promotion to 4th Prof shall be withdrawn.

8. Fourth Professional B.P.T. Examination

The Fourth Professional B.P.T. Examination shall be open to a person who :

- has been enrolled for one academic year preceding the examination in a Physiotherapy College affiliated to the University.
- has previously passed the 3rd Prof. B.P.T. examination of this University or an examination of any other recognized University / Institution in India considered equivalent for the purpose by the University.
- Must have passed all the subjects of BPT 3rd Prof examination in a maximum of four attempts.
- has his/her name submitted to the Registrar by the Principal of the college with the following

certificates:	
i)	of having attended separately in theory and practical / clinical not less than 75 percent of the lectures delivered and practical conducted in each of the subjects of Third Professional B.P.T. course prescribed for the examination provided that deficiency in the number of lectures delivered and practical conducted may be condoned by the Principal to the extent of 10% of the lectures delivered.
ii)	of having secured at least 35% marks of the total marks fixed for internal assessment in each subject, separately, in order to be eligible to appear in all University examinations.
iii)	of good moral character.
Note	1) Internal Assessment should be submitted to the University about two weeks before the commencement of theory examinations. All the colleges shall adopt uniform criteria for Internal Assessment for which a record of such student shall be maintained in each department in each department, which should be made available for inspection by the student concerned as well as University authorities. The re-appear/fail students will not be re-assessed every time for the purpose of Internal Assessment and their previous score of assessment will be carried forward except when their score is less than 50%. 2) If a candidate fulfils the condition laid down in clause 8 (b) (i) and (ii) above for one or more subject (s) he/she may be allowed to take the examination in such subject (s) in which he/she fulfils the requirements. 3) Every candidate before appearing in Fourth (Final) Professional B.P.T. Examination must have cleared House Examination securing atleast 35 percent marks in both theory as well as practical separately. d) The Final B.P.T. Prof. course shall be of one year duration and the examination shall ordinarily be held in May / June. The Supplementary examination shall be held within six months of the annual examination. e) The Final Professional B.P.T. Examination shall be held one year after the Third Professional Examination and the candidates is required to pass the following subjects :

Sr.No	Subject	Theory			Practical			Grand Total
		Marks	Int. Assess	Total	Marks	Int. Assess	Total	
BPT4 01.	General Surgery	80	20	100	80	20	100	200
BPT4 02.	Neurology	80	20	100	80	20	100	200
BPT4 03.	PT in Neurological Conditions	80	20	100	80	20	100	200
BPT4 04.	Physiotherapy in Surgical, Cardio Thoracic and Vascular Surgical Conditions	80	20	100	80	20	100	200
BPT4 05.	Physiotherapy Ethics, Administration & Rehabilitation	80	20	100	80	20	100	200

	Total							1000
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(i) There shall be a provision of Internal assessment of 20% marks in each subject of B.P.T. course in theory and practical, separately. (ii) Each theory paper shall be of three hours duration. (iii) The minimum number of marks to pass the examination shall be 50% in theory including Internal Assessment and 50% in practical / clinical including Internal Assessment in each subject. (iv) A candidate securing 75% or above marks in any of the subjects shall be declared to have passed with Distinction in that subject provided he/she has passed the examination in first attempt. (v) A candidate who passes in one or more subjects shall be exempted from appearing in these subject at a subsequent examination, but the candidate must pass the examination in a maximum of four attempts, failing which he/she shall have to appear in all the subjects, of the 4th Prof. examination.	
9. General Conditions 9.1 The examiners shall be appointed by the University on the recommendations of the Board of Studies / Faculty of Physiotherapy. Provided that : (i) The senior most teacher in a subject who has taught the students for at least six months shall be appointed as internal examiner. No person below the rank of Lecturer/Sr Lecturer/Assistant Professor and with three years teaching experience in the subject at Degree Level institution shall be appointed as an Internal Examiner. All examiners / papers setters to be appointed must be teaching / have taught in B.P.T. Classes. (ii) External Examiner shall be appointed only from the teaching staff of Physiotherapy College outside the State of Punjab. (iii) The University may get each paper set from External Examiner only. The moderation of question papers may be got done under the direction of the Vice-Chancellor, if necessary. (iv) The practical examination shall be conducted jointly by the internal examiner of the respective institution and the external examiner for that institute. (v) The award list duly signed by both the examiners would be submitted to the University immediately after the conduct of examination. A copy of the result of practical examination would be kept by the Internal Examiner for six months for reference and record. vi) In order to maintain secrecy the evaluation of answer books shall be got evaluated by putting fictitious roll numbers thereon-spot evaluation (table marking) or any other method under the direction of the Vice-Chancellor.	
10.	The Internal Assessment shall be determined by Head of the Department concerned based on the student's class work/ presentations, projects/assignments , house examination records and participation in co-curricular activities and the same duly countersigned by the Principal shall be submitted to the University about two weeks before the commencement of the examination.
11.	The Registrar / Controller of Examinations shall publish the result after the examination. The candidates shall be issued Detailed Marks Certificate through their Principals. The Degree of Bachelor of Physiotherapy (B.P.T.) shall be awarded by the University on successful completion of six months compulsory rotatory internship, duly certified by the Principal of the College.
12.	Migration A student of any Physiotherapy College who has passed his 1 st , 2 nd , 3 rd or 4 th Prof. B.P.T. examination may be permitted to migrate from one College to another under the jurisdiction of Baba Farid University of Health Sciences, Faridkot, and from any other University to BFUHS in 1 st , 2 nd , 3 rd , or 4 th Prof. BPT course on the following conditions : a) The student has to apply for migration to the University within two months from the

	declaration of his/her previous Prof. B.P.T. result. b) The applicant student will be permitted to migrate if a vacant seat is available in the College where he/she wants to migrate. c) The applicant's total aggregate marks should not be less than the lowest marks obtained by a student of the college to which the migration is sought. This will be applicable only to the applicants seeking inter-university migration. d) The applicant must submit 'No Objection Certificate' from both the Principals. e) An applicant who has passed the 1st, 2nd or 3rd Prof. BPT exam. from another University and seeks migration to a college of Physiotherapy under BFUHS, he/ she may be considered if the above mentioned conditions are fulfilled and equivalence of the subjects covered during previous years is established. f) Notwithstanding anything contained in the above rules, if an applicant does not fulfil any of the conditions given above, the Vice-Chancellor may allow a student to migrate under exceptional circumstances to another College.
13.	The grace marks upto a maximum of five marks in total (which can be divided depending on the number of subjects the student is failing in each Prof) may be awarded at the discretion of the University to a student who has failed in one or more subjects.
14.	All the candidates shall complete 300 teaching hours in Clinical Training during the course.
15.	Compulsory Internship
15.1	All the students after passing Final Prof. B.P.T. examination shall go in for six months supervised compulsory rotatory internship in the following areas:
i)	Physiotherapy Out-Patient Department 1month
ii)	ICU & ICCU 15 days
iii)	General Medicine 15 days
iv)	General Surgery 15 days
v)	Paediatrics 15 days
vi)	Cardiology 15 days
vii)	Neurology 15 days
viii)	Neurosurgery 15 days
ix)	Cardiothoracic surgery 15 days
x)	Orthopaedics 15 days
xi)	Physical Medicine & Rehabilitation 15 days
	All efforts should be made to ensure that the BPT Intern gets posted to the above mentioned disciplines for the duration indicated. However, where some of the above facilities are not existing, efforts for attachments with the Institutions affiliated with BFUHS where these are available should be made. Failing these, the Interns may be posted in those disciplines which closely match the missing disciplines, for the Internship posting. 15.2 After completion of internship the concerned Principal will certify that the student has satisfactorily completed internship. Thereafter the student will be eligible for award of the degree of Bachelor of Physiotherapy (B.P.T.) by BFUHS. 15.3 All the students of Baba Farid University of Health Sciences, Faridkot, will complete their internship in their parent Colleges. 15.4 Under some exceptional circumstances a student may be permitted to complete his internship in another affiliated Physiotherapy College if Principals of both the colleges give their consent and the University issues No Objection Certificate to this effect. This would be allowed only if a seat is vacant in the college in which the student wants to complete his internship.

15.5	A candidate from a Physiotherapy College other than those affiliated with Baba Farid University of Health Sciences, Faridkot is allowed to do Internship in a college affiliated with Baba Farid University of Health Sciences, Faridkot provided a seat is lying vacant in the college in which the student wants to complete his internship & if Principals of both the colleges give their consent and the University issues No Objection Certificate to this effect.
15.6	All the students shall start their internship within 15 days from the declaration of result. Under exceptional circumstances, if a student cannot do so, he/she will have to take special permission of the University on the recommendations of the Principal.
15.7	All students shall have to submit a dissertation/ research project as a part and in partial fulfillment of the internship program .

DETAILED BPT SYLLABUS

BPT FIRST PROF	
Total Theory + Practical/Lab = 1100 Hours	
BPT 101: ANATOMY	
Teaching Hours:	Theory = 130, Practical/ Lab= 120
Theory Exam Time:	03 Hours
MARKS	Theory: 80 + 20 Int. Assessment = 100 Marks
	Practical: 80 + 20 Int. Assessment = 100 Marks
Instructions for theory paper setting: The question paper covering the entire course shall be divided into two sections. Both sections will be attempted on a single answer sheet and to be evaluated by a single examiner.	
Section A:	
Question1: This will consist of Five short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 3 marks total weightage being 15 marks.	
Question 2: This will consist of one medium answer question with answer upto three pages in length. This question will be compulsory. This question will carry 10 marks.	
Question 3: This will consist of two long answer questions with answer to each question upto 5 pages in length. Two questions will be set by the examiner and the candidate will be required to attempt any one and the question will carry 15 marks.	
Section B:	
Same as in Section A.	
COURSE OBJECTIVES& LEARNING OUTCOMES: After the specified hours of lectures and demonstrations the student will- 1. Have complete knowledge of all the bones, and their attachments and ossifications. 2. Have a perfect knowledge in arrangements of all the joints, Ligaments, type and range of movements. 3. Muscle functions for the movements with their attachments and nerve supply. 4. Nervous system.	

5. Radio anatomy of bones and joints.
6. Gross knowledge of other topics of Anatomy.
7. Anatomy should be taught preferably on samples in original and Dissection of cadaver if possible.
8. Surface, regional Anatomy (structures around a particular region of bones and joints).

SECTION A

UNIT-I General Introduction:

1. Histology – Theory & microscopic sections of loose connective tissue, dense connective tissue (tendons & ligamentum nuchae), epithelium, areolar tissue, adipose tissue, hyaline, elastic & fibrous cartilage, compact & spongy bone, bone marrow, skeletal, smooth & cardiac muscle, nerve, lymph node etc.
2. Osteology – Theory of structure, function, growth, fracture & repair of bones. Physical study of all bones in the body. Also general features & functions of cartilage, tendon, ligament, articular capsule, synovial membranes, bursae, menisci, intra-articular cartilages. Classification of joints with their examples & specific features.
3. General Embryology –Development of muscles, bones, joints & nerves etc.

UNIT – II Systems of the Human Body:

1. Cardio-Vascular System – Description of Arteries, capillaries, veins on a regional basis. Heart, lymphatic system.
2. Respiratory System – Anatomy of upper & lower respiratory tract including nose, larynx, trachea, bronchi, pleura & lungs. Also, muscles of normal & forced respiration. Description of intercostal spaces with surface markings.
3. Digestive System - Anatomy of the gastro intestinal tract with special emphasis on surface marking.
4. Urogenital System - Anatomy of Urinary System, male and female reproductive system.
5. Endocrine System - The various endocrine glands with their structure, functions and neuro-regulation. Also role of hypothalamus.
6. Integumentary System

UNIT – III Neuro-anatomy:

Microscopic and gross study of:

- | | |
|--------------------------|----------------------------------|
| 1. Peripheral Nerves | 2. Neuromuscular Junction |
| 3. Sensory End Organs | 4. Spinal Cord Segments & Areas. |
| 5. Brainstem | 6. Cerebellum |
| 7. Inferior colliculi | 8. Superior Colliculi |
| 9. Diencephalon | 10. Hypothalamus |
| 11. Epithalamus | 12. Thalamus |
| 13. Cerebral hemispheres | 14. Corpus striatum |
| 15. Rhinencephalon | 16. Lateral Ventricles |
| 17. Meninges | 18. Blood supply of the brain |
| 19. Internal Capsule | 20. Visual radiation |
| 21. Auditory radiation | 22. Thalamocortical radiations |
| 23. Pyramidal systems | 24. Extra - pyramidal systems |
| 25. Anatomic integration | 26. Intra - cortical integration |
| 27. Sympathetic system | 28. Para-sympathetic system |

29.	Cranial nerves
SECTION B	
Unit – IV	Musculo Skeletal System
	40 Hrs
(A)	Myology:
	1. The fascia and muscles of upper limb. 2. The fascia and muscles of lower limb. 3. The fascia and muscles of trunk. 4. The fascia and muscles of head, neck and face. 5. Muscles of eye.
(B)	Osteology & Arthrology:
	1. General structure and classification of all bones of skeleton and their attachments. 2. Classification of joints. 3. Movements of Joints. 4. Factors permitting and limiting movements of joints. 5. Joints of Upper Limb. 6. Joints of Lower Limb. 7. Shoulder girdle 8. Pelvic Girdle 9. Joints of Head & Neck and T.M Joints. 10. Joints of Trunk.
Unit – V Surface & Radiological Anatomy:	
Surface Anatomy of the body. Radiographic appearance of Musculo skeletal system of Upper limb, Lower-limb & Spine.	
Anatomy Practical	
Scheme for Practical Exam in Anatomy	
Spotting: 20 Marks Viva(Soft Organs): 25 Marks Viva (Hard Organs): 25 Marks Practical record: 10 Marks	
1. Surface Anatomy: To study, identify and mark the surface land marks on human Body. 2. To study the muscles of trunk, lower and upper extremities and face on a dissected human body. 3. To study the Bones of Human Body with special emphasis on origin and insertion of muscles & ligaments. 4. To study the anatomy of joints of upper and lower extremities and vertebral column on a dissected human body. 5. To study the anatomy of C.N.S. and P.N.S.on a dissected human body. 6. To study the gross anatomy of Respiratory, Digestive, Endocrine, Urinary and Genital system on a dissected human body.	
Recommended Reading:	
1. Inderbir Singh, Textbook of Anatomy with colour Atlas - Vol.1,2,3. Jaypee Brothers. 2. B.D.Chaurasia, Human Anatomy - Volume 1,2,3, CBS Publishers & Distributors. 3. Meminn's Last's Anatomy - Regional and applied, Churchill Livingstone. 4. Meminn, et al- A Colour Atlas of Human Anatomy, Mosby. 5. Conningham Manual of Practical Anatomy Vol. I,II,III, Churchill. Livingstone.... 6. Inderbir Singh, A Textbook on Human Neuro Anatomy, Jaypee Brothers. 7. Snell - Clinical Anatomy - Lippincott.	

8. Williams & Warwick, Gray's Anatomy - Churchill Livingstone.	
BPT102: PHYSIOLOGY	
Teaching Hours:	Theory = 120, Practical/ Lab = 130
Theory Exam Time: 03 Hours	
MARKS	Theory: 80 + 20 Int. Assessment = 100 Marks
	Practical: 80 + 20 Int. Assessment = 100 Marks
Instructions for theory paper setting: The question paper covering the entire course shall be divided into two sections. Both sections will be attempted on a single answer sheet and to be evaluated by a single examiner.	
Section A: Question1: This will consist of Five short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 3 marks total weightage being 15 marks. Question 2: This will consist of one medium answer question with answer upto three pages in length. This question will be compulsory. This question will carry 10 marks. Question 3: This will consist of two long answer questions with answer to each question upto 5 pages in length. Two questions will be set by the examiner and the candidate will be required to attempt any one and the question will carry 15 marks.	
Section B: Same as in Section A.	
COURSE OBJECTIVES& LEARNING OUTCOMES: The OBJECTIVES of the course is that after the specified hours of lectures and demonstrations the student will be able to understand- 1. Cell structure it's organisation maintainence of constant internal environment. 2. Different blood cells their structure functions and clinical importance during variation. 3. Nerve muscle response to stimulation and how impulse transmission occur. 4. Role of GIT in digestion and absorption of various nutrients. 5. How blood pressure is regulated and principles of haemodynamics. 6. How gases are transported and nervous system regulates it. 7. How waste products are excreted out and body pH is maintained. 8. Various hormones that regulate our internal functions and various clinical abnormalities produced with hyper or hypo secretion. 9. Functional nerve cell sensory and motor component reflex pathway and functions of cerebellum and basal ganglia. 10. Functional organisation of receptors of special senses anatomy functions and clinical abnormalities. 11. ICardiovascular and respiratory adujustments during exercises. 12. Muscles during exercise performance effect of hormones,red and white fibres and metabolic system used during exercise programs	

Section A

Unit – I General Introduction:

1. Cell Introduction: Outline of basic concepts of cell structure, functions of components and transport across membranes.
2. Skin: Functions, blood of flow and temperature regulation.
3. Blood and Lymph: Cell renewal system, haemoglobin, erythrocyte granulocyte, lymphocyte, coagulation, regulation of hydrogen within concentration of body fluids, fluid distribution and exchange.

Unit – II Physiology of the system of the body:

1. Digestion: Control of food and water intake and secretion and absorption movements of the alimentary canal.
2. Circulation: Cardio-vascular system, mechanical and electro-physiological activity of the heart, regulation of heart, coronary circulation, haemodynamics, circulation through brain, skin and skeletal muscle.
3. Excretion: Renal functions including formation of Urine & Micturition.
4. Respiration: Respiratory gases, pulmonary gas exchange, control and mechanics of breathing, hypoxia, asphyxia, dyspnoea, oxygen therapy and resuscitation.
5. Endocrine System: Outline of various hormones and their actions, pituitary gland, thyroid, parathyroid, adrenal glands & Gonads.
6. General Metabolism: Carbohydrate, Protein & Fat Metabolism.

Section B

Unit – III Neuro – Physiology:

1. Neuron: Properties and functions.
2. Action Potential.
3. Special properties of nerve trunks and tracts.
4. Motor Units.
5. Reflex physiology.
6. Synapse and synaptic transmission.
7. Supraspinal control.
8. Cerebellum and basal ganglia.
9. Autonomic nervous system
10. Somatic sensation.
11. Pain
12. Taste, Olfaction, Auditory and Vision
13. Neuro Physiological Psychology

Unit – IV Muscle Physiology:

1. Structure and function of Muscle tissue - skeletal and cardiac
2. Chemical processes involved in muscle contraction.
3. Physiology of muscle contraction.

Unit– V Physiology of exercise and work:

1. Neuromuscular activity, human movement, physiological mechanism in movement behaviour, strength, endurance, analysis of movement.
2. Circulatory and respiratory response to exercise including effects on the heart blood circulation body fluid changes, pulmonary -ventilation, gas exchange and transport, etc.
3. Effects of exercise and work on other body functions.
4. Metabolic and environmental aspects of exercise and work - metabolism, energy requirement,

efficiency of muscular work, nutritional aspects, heat and body temperature regulation & environmental factors. 5. Effects of Exercise training - endurance, fatigue and recovery. 6. Fitness and health - age sex, body type, race, stress and medical aspects of exercise.
PHYSIOLOGY PRACTICAL
Scheme of Practical Exam in Physiology Haematology: 20 Marks Clinicals/ Human practical: 20 Marks Viva: 30 Marks Practical Record: 10 marks
To study the following physiological Phenomena: Identification of blood cells and different counts. 1. W.B.C. Count. 2. R.B.C. Count. 3. Haemoglobin percentage and colour index. 4. E.S.R. and Blood groups. 5. Bleeding time and clotting time. 6. Respiratory efficiency tests. 7. Artificial respiration and C.P.R. 8. Pulse rate, heart rate and measurement of Blood Pressure. 9. Respiratory rate and Auscultation. 10. Normal E.C.G. 11. Reflexes - Superficial Deep. 12. Sensations. 13. Tests for functions of Cerebrum. 14. Tests for functions of Cerebellum
Recommended Reading: 1. Textbook of Medical Physiology - Arthur Guyton (Mosby.) 2. Text book of Physiology – Anand & Manchanda, Tata McGraw Hill. 3. Human Physiology - Vol. I & 2, Chatterjee, CC, Calcutta, Medical Allied. 4. Concise Medical Physiology- Chaudhari, S.K., New Central Agency, Calcutta. 5. Principles of Anatomy and Physiology- Tortora& Grabowski – Harper Collins. 6. Textbook of Practical Physiology - Ghai- Jaypee Brothers.
BPT 103: BIOCHEMISTRY
Teaching Hours: Theory = 50, Practical/Lab = Nil
Theory Exam Time: 03 Hours
MARKS Theory: 80 + 20 Int. Assessment = 100Marks
Instructions for theory paper setting: The question paper covering the entire course shall be divided into two sections. Both sections will be attempted on a single answer sheet and to be evaluated by a single examiner.

Section A:

Question1: This will consist of Five short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 3 marks total weightage being 15 marks.

Question 2: This will consist of one medium answer question with answer to each question upto three pages in length. One question will be set by the examiner and will be compulsory. This question will consist of 10 marks.

Question 3: This will consist of two long answer questions with answer to each question upto 5 pages in length. Two questions will be set by the examiner and the candidate will be required to attempt any one and the question will carry 15 marks.

Section B:

Same as in Section A.

COURSE OBJECTIVES& LEARNING OUTCOMES:

The OBJECTIVES of the course is that after the specified hours of lectures and demonstrations the student will be able to-

1. Demonstrate comprehensive understanding of biochemistry.
2. Acquire the knowledge in biochemistry that is required to be practiced in community and health care system.
3. Understand relevant investigations which will help to know about the important medical conditions.

Section A

1. Biophysics: Concepts of pH and buffers, acid base equilibrium osmotic pressure and its physiological applications.
2. Cell: Morphology, structure & functions of cell, cell membrane, Nucleus, chromatin, Mitochondria, Endoplasmic Reticulum, Ribosomes.
3. Carbohydrates: Definition, functions, sources, classifications, Monosaccharides, Disaccharides, Polysaccharides, mucopolysaccharide and its importance.
4. Lipids: Definition, function, sources, classification, simple lipid, compound lipid, derived lipid, unsaturated and saturated fatty acid. Essential fatty acids and their importance, Blood lipids and their implications, cholesterol and its importance.
5. Proteins Definition, sources, classification, simple protein conjugated protein, derived proteins and its, properties.
6. Nucleic acid: Structure and function of DNA and RNA, Nucleosides, nucleotides, Genetic code, biologically important nucleotides.
7. Enzymes: Definitions, classification, mode of action, factor affecting enzyme action, clinical importance of enzyme.
8. Vitamins: Classification, fat soluble vitamins, A,D,E & K, water soluble vit. B complex & C, Daily Requirements, Physiological functions and diseases of Vitamin deficiency.
9. Bioenergetics: Concept of free energy charge, Exergenic and endogenic reaction, concepts regarding energy rich compounds, Respiratory chain and Biological oxidation.

Section B

10. Carbohydrate Metabolism: Glycolysis, HMP shunt pathway, TCA cycle, glyconogenesis, Glucongenesis, Maintenance of Blood Glucose.

11. Lipid Metabolism: Fatty acid oxidation, Fatty acid synthesis, Metabolism of Cholesterol, Ketone bodies, Atherosclerosis and obesity.
12. Protein Metabolism: Transamination, Transmethylation, Deamination, Fate of ammonia, urea synthesis and synthesis of creatine, inborn errors of metabolism.
13. Water and Electrolyte Fluid compartment, daily intake and output sodium and potassium metabolism.
14. Nutrition: Balance, diet metabolism in exercise and injury, Diet for Chronically ill and terminally ill patients.
15. Connective tissue: Mucopolysaccharide connective tissue proteins, glycoprotein, chemistry and Metabolism of bone.
16. Nerve tissue: Composition, metabolism, chemical mediators of Nerve activity.
17. Hormones: General characteristics and mechanism of Hormone action insulin, glucagon, Thyroid and Parathyroid hormones, cortical & sex hormones.
18. Isotopes: Isotopes and their role in treatment and diagnosis of diseases.

Recommended Reading:

1. Medical Biochemistry for Physiotherapy students- Harpreet Kaur-- Jaypee Brothers.
2. Human Physiology and Biochemistry – Dr. A K Jain
3. Textbook of Biochemistry - Chatterjee M.N. - Jaypee Brothers.
4. Textbook of Biochemistry for Medical Students - Vasudevan D.M. - Jaypee Brothers.
5. Clinical Biochemistry - Metabolic & Clinical aspects - Marshall & Baigert Churchill Livingstone.
6. Biochemistry by Southerland - Churchill Livingstone

BPT 104 : ELECTROTHERAPY - I

Teaching Hours: Theory = 100, Practical/ Lab = 100

Theory Exam Time: 03 Hours

MARKS Theory: 80 + 20 Int. Assessment = 100 Marks

Practical: 80 + 20 Int. Assessment = 100 Marks

Instructions for theory paper setting:

The question paper covering the entire course shall be divided into two sections. Both sections will be attempted on a single answer sheet and to be evaluated by a single examiner.

Section A:

Question 1: This will consist of Five short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 3 marks total weightage being 15 marks.

Question 2: This will consist of one medium answer question with answer to each question upto three pages in length. One question will be set by the examiner and will be compulsory. This question will consist of 10 marks.

Question 3: This will consist of two long answer questions with answer to each question upto 5 pages in length. Two questions will be set by the examiner and the candidate will be required to attempt one. Each question will carry 15 marks.

Section B:

Same as in Section A.

COURSE OBJECTIVES AND LEARNING OUTCOMES

1. To make students recall the physics principles, Laws of Electricity, Electromagnetic Spectrum.
2. Describe main electrical supply, Shock and precautions
3. To acquaint students with types and production of various electrical currents, superficial heating modality.
4. To make students aware of various Electro-diagnostic Measures.

By the end of the module the student will be able to:

1. Adjudge the role of a therapeutic modality in Rehabilitation.
2. Cognize the indications and contraindications of electrotherapeutic modalities.
3. Formulate the most appropriate electrotherapy modality to use in clinical practice.
4. To know the theory underpinning electrotherapy modalities.

Section A

Unit-I Physical Principles:

Structure and Properties - of matter - solids, liquids and gases, adhesion, surface tension; viscosity, density and elasticity.

Structure of atom, molecules, elements and compounds.

Election theory, static and current electricity.

Conductors, Insulators, Potential difference, Resistance & Intensity.

Ohm's Law - Its application to AC & DC currents.

- a) Rectifying Devices - Thermionic Valves, Semiconductors; Transistors, Amplifiers, Transducers Oscillator circuits.
- b) Capacitance, condensers in DC and AC circuits.
- c) Display devices & indicators - analogue & digital.

Effects of Current Electricity:

1. Chemical effects - Ions and electrolytes, Ionisation, Production of a E M.F. by chemical action.
2. Magnetic effects, Molecular theory of magnetism, Magnetic fields, Electromagnetic induction.
3. Milli ammeter and Voltmeter, Transformers and Choke Coil.
 - a. Thermal Effects – Joule's Law and Heat production.
4. Physical Principles of sound and its properties.
5. Physical Principles of light and its properties.
6. Electromagnetic spectrum - biophysical application.

Unit – II Electrical Supply:

- a) Brief outline of main supply of electric current.
- b) Dangers - short circuits, electric shocks.
- c) Precautions - safety devices, earthing, fuses etc.
- d) First aid & initial management of electric shock.
- e)

Unit – III Low Frequency Currents:

1. Introduction to direct, alternating & modified currents.
2. Production of direct current - Physiological and therapeutic effects of constant current, anodal and cathodal Galvanism, Ionisation and their application in various conditions
3. Iontophoresis - Principles of clinical application, indication, contraindication, precaution, operational skills of equipment & patient preparation.
4. Modified direct current - various pulses, duration and frequency and their effect no Nerve and Muscle tissue. Production of interrupted and surged current & their effects.
5. Modified direct current - Physiological and therapeutic effects, principles of clinical application indications, contra indications, precautions, operational skills of equipment & patient preparation.
6. Transcutaneous Electrical Nerve Stimulations (TENS):

- Types of Low Frequency, pulse widths, frequencies & intensities used as TENS applications. - Theories of pain relief by TENS. - Principle of clinical application, effects & uses, indications, contraindications, precautions. operational skills of equipment & patient preparation. .						
SECTION-B						
Unit -IV: Electrical Reactions and Electro - diagnostic tests: - Electrical Stimuli and normal behaviour of Nerve and muscle tissue. - Types of lesion and development of reaction of degeneration. - Faradic - Intermittent direct current test. - S.D. Curve and its application. - Chronaxie, Rheobase & pulse ratio.						
Unit -V - Infra red rays - Wavelength, frequency, types & sources of IRR generation, techniques of irradiation, physiological & therapeutic effects, indications, contraindications, precautions, operational skills of equipment & patient preparation. - Ultra - violet <u>rays (UVR)</u>: - Wavelength, frequency, types & sources of UVR generation, techniques of irradiation, physiological & therapeutic effects, indications, contraindications, precautions, operational skills of equipment & patient preparation. - Dosimetry of UVR.						
Unit -VI Superficial heat - Paraffin wax bath, moist heat, electrical heating pads - Mechanism of production. - Mode of heat transfer. - Physiological & therapeutic effects. Indications, contraindications, precautions, operational skills of equipment & patient preparation.						
Electrotherapy – I Practical						
Scheme of Practical Exam in Electrotherapy -I <table style="margin-left: auto; margin-right: auto;"> <tr> <td>Electrical stimulation and SD Curve: 10 marks</td> </tr> <tr> <td>Low frequency modality: 15 marks</td> </tr> <tr> <td>Radiation therapy and Superficial heat: 15 marks</td> </tr> <tr> <td>External Viva: 15 Marks</td> </tr> <tr> <td>Internal Viva: 15 Marks</td> </tr> <tr> <td>Practical Record: 10 Marks</td> </tr> </table>	Electrical stimulation and SD Curve: 10 marks	Low frequency modality: 15 marks	Radiation therapy and Superficial heat: 15 marks	External Viva: 15 Marks	Internal Viva: 15 Marks	Practical Record: 10 Marks
Electrical stimulation and SD Curve: 10 marks						
Low frequency modality: 15 marks						
Radiation therapy and Superficial heat: 15 marks						
External Viva: 15 Marks						
Internal Viva: 15 Marks						
Practical Record: 10 Marks						
- To study the basic operation of electric supply to the equipment & safety devices. - To experience sensory and motor stimulation of nerves and muscles by various types of low frequency currents on self. - To locate and stimulate different motor points region wise, including the upper & lower limb, trunk free. - Therapeutic application of different low frequency currents Faradic foot bath, Faradism under pressure, Iontophoresis. - To study the reactions of degeneration of nerves, to plot strength duration curves. - To find Chronaxie and Rheobase. - To study a hydro collator Unit, its operations and therapeutic application of Hot packs - region wise.						

8. To study the various types of Infrared lamps and their application to body region wise.
9. To study a paraffin wax bath Unit, its operation and different methods of application - regions wise.
10. To study the different types of Ultra violet Units, their operation, assessment of test dose and application of U.V.R. - region wise.
11. To study a TENS Stimulator, its operation and application - region wise.

Recommended Reading:

1. Electrotherapy Explained: Principles & Practice - Low & Reed - Butterworth Heinemann.
2. Clayton's Electrotherapy, (9th edi.) Forster & Palastanga Bailliere Tindall.
3. Therapeutic Heat and Cold - Lehmann - Williams & Wilkins.
4. Principles and Practice of Electrotherapy - Kahn - Churchill Livingstone.
5. Textbook of Electrotherapy – Jagmohan Singh - JAYPEE Bros, New Delhi

BPT 105: EXERCISE THERAPY – I

Teaching Hours: Theory = 100, Practical/ Lab = 150

Theory Exam Time: 03 Hours

MARKS Theory: 80 + 20 Int. Assessment = 100 Marks

Practical: 80 + 20 Int. Assessment = 100 Marks

Instructions for theory paper setting:

The question paper covering the entire course shall be divided into two sections. Both sections will be attempted on a single answer sheet and to be evaluated by a single examiner.

Section A:

Question 1: This will consist of Five short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 3 marks total weightage being 15 marks.

Question 2: This will consist of one medium answer question with answer to each question upto three pages in length. One question will be set by the examiner and will be compulsory. This question will consist of 10 marks.

Question 3: This will consist of two long answer questions with answer to each question upto 5 pages in length. Two questions will be set by the examiner and the candidate will be required to attempt one. Each question will carry 15 marks.

Section B:

Same as in Section A.

COURSE OBJECTIVES& LEARNING OUTCOMES:

On completion of 200 hours of this subject, the students will be able to:

1. Apply and analysis of basic principles, technique and effects of exercises and goal setting for physical disorders as an intervention technique,
2. Understand, integrate and apply the fundamentals principles of movement, motor control, and motor learning.
3. Learn various evaluation techniques their procedures and guidelines like

Goniometry, MMT, 4. Learn about various intervention techniques procedures indications, precautions and contraindications of various exercises with or without equipments, soft tissue manipulations, suspension therapy 5. Identify the exercise therapy equipment and demonstrate their use and effects 6. learn prescription and demonstration of exercises as a therapeutic technique to patients. 7. Will be able to apply technique for research purpose
Section A
UNIT-I Introduction to Exercise therapy, Principles, techniques and general areas of its application, Assessment & its importance. Description of Fundamental starting positions and derives position including joint positions, muscle work, stability, effects and uses. Introduction to Movements including analysis of joint motion, and muscle work. Classification of movements - Describe the types, technique of application, indications, contraindication, effects and uses of the following: a) Active movement b) Passive movement c) Active assisted movement d) Resisted movement e) To study the principles, techniques of application indication, precaution, effects and uses of Suspension Therapy. UNIT – II 1. Manual Muscle Testing a. Principles and application techniques of Manual muscle testing. b. Testing position, procedure and grading of muscles of the upper limb, lower limb and trunk etc. UNIT-III Goniometry Goniometers and its types a. Principles, techniques and application of Goniometry. b. Testing position, procedure and measurement of R.O.M. of the joints of upper limbs, lower limbs and trunk.
Section B
Unit - IV 1. Soft Tissue Manipulation (Therapeutic Massage) a. History, various types of soft tissue manipulation techniques. b. Physiological effects of soft tissue manipulation on the following systems of the body, Circulatory, Nervous, Musculoskeletal, Excretory, Respiratory, Integumentary system and Metabolism. c. Classify, define and describe: - effleurage, stroking, kneading, petrissage, deep friction, vibration and shaking etc. d. Preparation of patient: Effects, uses, indications and contraindications of the above manipulation. UNIT– V: Motor Learning

- a. Introduction to motor learning
 - i. Classification of motor skills.
 - ii. Measurement of motor performance.
- b. Introduction to motor control
 - i. Theories of motor control.
 - ii. Applications.
- c. Learning Environment
 - i. Learning of Skill.
 - ii. Instruction & augmented feedback.
 - iii. Practice conditions.

UNIT-VI Relaxation & Therapeutic Gymnasium

1. Relaxation:

- a) Describe relaxation, muscle fatigue, muscle spasm and tension (mental & physical)
- b) Factors contributing to fatigue & tension
- c) Techniques of relaxation (local and general)
- d) Effects, uses and clinical application
- e) Indication & contraindication.

2. Therapeutic Gymnasium

- a) Setup of a gymnasium & its importance.
- b) Various equipment in the gymnasium. Operational skills, effects & uses of each equipment.

Exercise Therapy -I Practical

Scheme of Practical Exam in Exercise Therapy -I

Soft tissue manipulation: 10 Marks
 Manual Muscle Testing: 10 Marks
 Goniometry: 10 Marks
 Suspension and Gymnasium: 10 Marks
 Internal Viva: 15 Marks
 External Viva: 15 marks
 Practical Record: 10 Marks

1. To practice all the soft tissue manipulative techniques region wise - upper limb, lower limb, neck, back and face.
2. To practice the measurement of ROM of joints - upper limb, lower limb & trunk.
3. To practice the grading of muscle strength region wise - upper limb, lower limb and trunk.
4. To study the position of joints, muscle work and stability of various fundamental and derived positions.
5. To study the different types of muscle contraction, muscle work, group action of muscles and co-ordinated movements. .
6. To practice the various types of suspension therapy and its application on various parts of body - region wise.
7. To study & practice local & general relaxation techniques.
8. To study the structure & function alongwith application of various equipment in a gymnasium.

Recommended Reading:

1. Practical Exercise Therapy - Hollis - Blackwell Scientific Publications.
2. Therapeutic Exercise - Basmajian - Williams and Wilkins.
3. Therapeutic Exercises Foundations and Techniques - Kisner and Colby. F.A. Davis.
4. Proprioceptive Neuromuscular Facilitation - Voss et al - Williams and Wilkins.
5. Principle of Exercise therapy - Gardiner - C.B.S. Delhi.

6.	Beard's Massage - Wood - W.B. Saunders.
7.	Motor Control: Theory and Practical Applications Shumway - Cook & Wallcott - Lippincott.
8.	Hydrotherapy, Principles and Practices - Campion - Butterworth Heinmann.
9.	Muscle testing and functions - Kendall - Williams & Wilkins.
10.	Daniels and Worthingham's - Muscle testing - Hislop & Montgomery - W.B. Saunder.
11.	Measurement of Joint Motion: A Guide to Goniometry - Norkins & White F.A. Davis.
BPT 106: Computer Applications (Practical)	
Teaching Hours:	Theory: 15, Pract/ Lab: 35
Marks:	
Theory = NIL	Practical: 40 + 10 Int. Assess = 50
Theory Exam Time: NIL	
Instructions for theory paper setting: None .	
ONLY PRACTICAL EXAM WILL BE CONDUCTED FOR THIS SUBJECT	
COURSE OBJECTIVES & LEARNING OUTCOMES:	
On completion of this subject, the students will be able to-	
1.	Understand the role of computer technology.
2.	Focus on computer operating system and software, and MS windows, Word processing, Excel data worksheet and PowerPoint presentation.
• Components of a personal computer. • Hardware and software required for physiotherapy practice and research. • Common Operating Systems. • Common computer applications- including word processing, presentation and spread sheet software. • Multi-media applications. • Skills of web surfing and electronic communication.	
Scheme for Practical Exam in Computer Application	
Power-point presentation: 10 Marks	
MS Word: 05 Marks	
Excel with basic formulae and graphs: 10 Marks	
Viva: 10 Marks	
Practical Record: 05 Marks	
BPT 107 : English (Theory)	
Teaching Hours:	Theory = 50, Practical / Lab = NIL
MARKS	Theory: 40 + 10 Int. Assessment = 50 Marks
Practical: Nil	
Course Description: The Course is designed to enable students to enhance ability to comprehend spoken and written English (and use English) required for effective communication in their professional work. Students will practice their skills in verbal and written English during clinical and classroom experiences.	

Unit	Learning OBJECTIVES	Content	Teaching Learning Activities	Assessment methods	
I.	Speak and write grammatically correct English	- Review of Grammar - Remedial study of Grammar - Building Vocabulary - Phonetics - Public Speaking	- Demonstrate use of dictionary - Class-room conversation - Exercise on use of Grammar - Practice in public speaking	- OBJECTIVES Type - Fill in the blanks - Para Phrasing.	
II.	Develop ability to read, understand and express meaningfully, the prescribed text.	- Read and comprehend passages. - Note Making	- Exercise on : - Reading - Summarizing - Comprehension	- Short Answers - Essay Types	
III	Develop writing skills	- Various forms of composition - Letter writing - Precise writing - Notice writing - Anecdotal records - Dairy writing - Report on health problems	- Exercise on writing : - Letter writing - Precis - Diary - Health problems - Story writing - Resume / CV - Discussion on written reports / documents.	Assessment of the skills based on the check list	

		etc. – Resume / CV – Advertisements – Article writing			
IV	Develop skill in spoken English	- Spoken English – Oral report – Discussion – Debate – Telephonic Conversation	- Exercise on : – Debating – Participating in Seminar, Panel, symposium – Telephonic conversation	Assessment of the skills based on the check list.	
V	Develop skill in listening Comprehension	- Listening Comprehension – Media, audio, video, speeches etc.	- Exercise on : – Listening to audio, video, tapes and identify the key points.	Assessment of the skills based on the check list.	

BPT SECOND Prof

(Total Theory + Practical/Clinical = 1100 hours)

BPT 201: PATHOLOGY

Teaching Hours: Theory = 100, Practical/ Lab = NIL

Exam Time: 03 Hrs.

MARKS Theory: 80 + 20 Int. Assessment = 100 Marks

Instructions for theory paper setting:

Question 1: This will consist of Five short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 3 marks total weightage being 15 marks.

Question 2: This will consist of one medium answer question with answer to each question upto three pages in length. One question will be set by the examiner and will be compulsory. This question will

consist of 10 marks.

Question 3: This will consist of two long answer questions with answer to each question upto 5 pages in length. Two questions will be set by the examiner and the candidate will be required to attempt one. Each question will carry 15 marks.

COURSE OBJECTIVES& LEARNING OUTCOMES:

On completion of this subject, the students will be able to-

1. Learn the pathological changes in various conditions, diseases and disorders, which are commonly treated by physiotherapy.
2. Demonstrate an understanding of the pathology and microbiology of common diseases that therapists would encounter in their daily practice.
3. Understand how to protect themselves and their patients from infections during their interactions.

1. Introduction to Pathology

2. Cell injuries:

- a) Aetiology and Pathogenesis with a brief recall of important aspects of normal cell structure.
- b) Reversible cell injury: Types, Sequential changes, Cellular swellings, vacuolation, Hyaline changes, Muroid changes.
- c) Irreversible cell injury: Types of Necrosis & Gangrene, Autolysis.
- d) Pathologic calcification: Dystrophic and Metastatic. Intracellular Accumulations.

3. Inflammation and Repair

- a) Acute inflammation: features, causes, vascular and cellular events, Inflammatory cells and Mediators.
- b) Chronic inflammation: Causes, Types, Classification nonspecific and granulomatous with examples.
- c) Repair, Wound healing by primary and secondary union, factors promoting and delaying the process. Healing in specific site including bone healing.

4. Deficiency Diseases

5. Circulatory Disturbances -

- a) Hyperemia/Ischemia and Haemorrhage
- b) Edema: Pathogenesis and types.
- c) Chronic venous congestion: Lung, Liver, Spleen, Systemic Pathology
- d) Thrombosis and Embolism: Formation, Fate and Effects.
- e) Infarction: Types, Common sites.
- f) Shock: Pathogenesis, types, morphologic changes.

6. Growth Disturbances and Neoplasia

- a) Atrophy, Hypertrophy, Hyperplasia, Aplasia, Hypoplasia, dysplasia. Precancerous lesions.
- b) Neoplasia: Definition, classification, biological behaviour- Benign and Malignant (brief idea), Carcinoma and Sarcoma.

7. Hematology

- a) Constituents of blood and bone marrow, Regulation of hematopoiesis.
- b) Anemia: Classification, clinical features & lab diagnosis (brief idea).
- c) Hemostatic disorders, Vascular and Platelet disorders & lab diagnosis.
- d) Coagulopathies - (i) Inherited (ii) Acquired with lab diagnosis.
- e) Leukocytic disorders: Leukocytosis, Leukopenias, Leukemoid reaction. - Leukemia: Classification, clinical manifestation, pathology and Diagnosis (brief idea).

8. Respiratory System - Pneumonia, Bronchitis, Bronchiectasis, Asthma, Tuberculosis, Carcinoma of lungs, Occupational lung diseases

9. Cardiovascular Pathology

- a) Congenital Heart diseases: Atrial septal defect, Ventricular septal defect, Fallot's tetralogy, Patent ductus arteriosus, Endocarditis, Rheumatic Heart disease.
- b) Vascular diseases: Atherosclerosis, Monckeberg's medial calcification.
- c) Ischemic heart Disease: Myocardial infarction.

10. Hepato Biliary Pathology - Jaundice: Types, aetio-pathogenesis and diagnosis.

11. Musculoskeletal Pathology

- a) Osteomyelitis: acute, chronic, tuberculous, mycetoma
- b) Metabolic diseases: Rickets/ Osteomalacia, osteoporosis, Hyperparathyroidism, Paget's disease.
- c) Tumours Classification: Benign, Malignant, Metastatic and synovial sarcoma.
- d) Arthritis: Suppurative, Rheumatoid. Osteoarthritis, Gout, Tuberculous.
- e) Volkman's Ischemic Contractures

12. Endocrine pathology - Non-neoplastic lesions of Thyroid: Thyrotoxicosis, myxedema,

13. Neuropathology - Inflammations and Infections: TB Meningitis, Pyogenic Meningitis, viral meningitis and Brain Abscess, Tuberculosis, Cysticercosis.

14. Dermatopathology: - Skin tumors: Squamous cell carcinoma, Basal cell carcinoma, Melanoma (brief idea)

15. Congenital Myopathy & myasthenia gravis

Recommended Reading:

1. Robbins Pathological Basis of Disease – Cotran, Kumar & Robbins – W.B. Saunders.
2. General Pathology – Walter & Israel – Churchill Livingstone.
3. Muir's Textbook of Pathology – Anderson – Edward Arnold Ltd.
4. Textbook of Pathology – Harsh Mohan – Jaypee Brothers.
5. Pathology : Implications for Physical Therapists – Godmann and Boissonault – W.B. Saunders.

BPT 202: MICROBIOLOGY

Teaching Hours: Theory =50, Practical/ Lab = NIL

Exam Time: 1 ½ Hrs.

MARKS Theory:80 + 20 Int. Assessment = 100Marks

Instructions for theory paper setting:

Question1: This will consist of Five short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 3 marks total weightage being 15 marks.

Question 2: This will consist of one medium answer question with answer upto three pages in length. This question will be compulsory. This question will carry 10 marks.

Question 3: This will consist of two long answer questions with answer to each question upto 5 pages in length. Two questions will be set by the examiner and the candidate will be required to attempt any one and the question will carry 15 marks.

COURSE OBJECTIVES& LEARNING OUTCOMES:

On completion of this subject, the students will be able to-

1. Learn the pathological changes in various conditions, diseases and disorders, which are commonly treated by physiotherapy.
2. Demonstrate an understanding of the pathology and microbiology of common diseases that therapists would encounter in their daily practice.
3. Understand how to protect themselves and their patients from infections during their interactions.

1. Introduction & History of Microbiology

2. Classification of microorganism : Bacterial Morphology, cells structure, difference between prokaryotes & eukaryotes, capsule, flagella, fimbriae, pilli, cell wall, plasma membrane, cytoplasm, ribosomes etc.

3. Bacteriology - Classification of Bacteria, Morphological characteristics of different bacteria.

4. Bacterial growth/Reproduction : Growth curve

5. Sterilization & disinfection : a) Physical Methods b) Chemical Methods c) Mechanism of Sterilizations d) Difference between sterilization and disinfection.

6. Modes of transmission of diseases a) Various routes of spread of infection. b) Hospital acquired infection. c) Bacterias responsible for nosocomial infectious

7. Bacterial diseases (in brief): • Mycobacterial diseases: Tuberculosis, Leprosy and Syphilis. •

Bacterial disease: Pyogenic, Diphtheria, Gram negative infection, Bacillary dysentery.

8. Viral diseases (in brief) : Poliomyelitis, Herpes, Rabies, Measles, Ricktsia, Chlamydial infection, HIV infection.

9. Fungal diseases and opportunistic infections (in brief).

10. Food sanitation a) Hygiene in restaurants & kitchens. b) Health of food handlers & hygiene. c) Disease caused by infected food & water.

11. ImmUnity a) Active, passive b) Natural, acquired c) Antigen d) Antibody, type of antibodies e) Antigen antibody reactions. f) Mechanism of immUnity g) Immunization.

12. AIDS - Aetiology, modes of transmission, diagnostic procedure.

13. Handling of infected material.

Recommended Reading:

1. Essential of Medical Microbiology – Bhatia & Lal – Japjee Brothers.

2. Medical Microbiology – Mims – Jaypee Brothers.

3. Microbiology : An Introduction for the Health Science – Ackerman and Richards – W.B. Saunders

BPT 203: Pharmacology

Teaching Hours: Theory = 100, Practical/ Lab = NIL

Theory Exam Time: 03 Hours

MARKS Theory: 80 + 20 Int. Assessment = 100 Marks

Practical: NIL

Instructions for theory paper setting:

Question1: This will consist of Five short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 3 marks total weightage being 15 marks.

Question 2: This will consist of one medium answer question with answer upto three pages in length. This question will be compulsory. This question will carry 10 marks.

Question 3: This will consist of two long answer questions with answer to each question upto 5 pages in length. Two questions will be set by the examiner and the candidate will be required to attempt any one and the question will carry 15 marks.

COURSE OBJECTIVES& LEARNING OUTCOMES:

On completion of this subject, the students will be able to-

1. Possess a relevant knowledge in basic principles of pharmacology and its recent advances.
2. Understand the basic pharmacology of common drugs used, their importance in the overall treatment including Physiotherapy.
3. Understand the general principles of drug action and the handling of drugs by the body.
4. Understand the contribution of both drug and physiotherapy factors in the outcome of treatment.

1. General action of drugs.
2. Drug allergy and idiosyncrasy
3. Drug toxicity.

4. Metabolic fate of drug.
5. Methods of administration.
6. Chemical character of drugs.
7. Common Drugs acting on Central nervous system, Peripheral nervous system, Neuromuscular junction and muscles.
8. Common Drugs acting on cardio-respiratory system.
9. Common Antibiotics & Chemotherapeutic agents.
10. Hormones, Vitamins and drugs affecting endocrine functions.

Recommended Reading:

1. Pharmacology and Pharmacotherapeutics – R.S. Satoskar – Popular Publications, Bombay.
2. The Pharmacologic Principles of Medical Practice – Krantz & Jelleff – Calcutta Scientific Book Agency.
3. Pharmacology – Praseem K. Das. – Churchill Livingstone.
4. Essential of Medical Pharmacology – K.D. Tripathi– Jaypee Brothers.
5. Pharmacology for Physiotherapist – Ramesh and Shenoy – Jaypee brothers

BPT 204: Electrotherapy – II

Teaching Hours: Theory = 100, Practical/ Lab = 150

Theory Exam Time: 03 Hours

MARKS Theory: 80 + 20 Int. Assessment = 100 Marks

Practical: 80 + 20 Int. Assessment = 100 Marks

Instructions for theory paper setting:

The question paper covering the entire course shall be divided into two sections. Both sections will be attempted on a single answer sheet and to be evaluated by a single examiner.

Section A:

Question 1: This will consist of Five short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 3 marks total weightage being 15 marks.

Question 2: This will consist of one medium answer question with answer upto three pages in length. This question will be compulsory. This question will carry 10 marks.

Question 3: This will consist of two long answer questions with answer to each question upto 5 pages in length. Two questions will be set by the examiner and the candidate will be required to attempt any one and the question will carry 15 marks.

Section B:

Same as in Section A.

COURSE OBJECTIVES AND LEARNING OUTCOMES:

1. To make students recall the types and production of various electrical currents and various superficial heating modalities.
2. To acquaint students with indications, contraindications, operational methods and different techniques of application of various modalities such as shortwave

diathermy, microwave diathermy, interferential therapy, ultrasound and LASER.	
3.	To make students learn about effectiveness of cryotherapy and its different methods of applications along with its contraindications.
4.	To make students aware of various Electro-diagnostic Measures such as E.M.F. and E.N.G.
5.	To teach students about the instrumentation of biofeedback.
By the end of the module, the students will be able to:	
1.	Proclaim the role of various therapeutic modalities in Rehabilitation.
2.	Identify the use of appropriate modality depending on the presenting complaints of the patient.
Section A	
SECTION – I	
1.	Review of Neuro – muscular Physiology including effects of electrical stimulation.
2.	Physiological responses to heat gain or loss on various tissues of the body.
3.	Therapeutic effects of heat, cold and electrical currents.
4.	Physical principles of Electro-magnetic radiation.
5.	Physics of sound including characteristics and propagation.
Section II	
1.	High frequency currents (S.W.D. & M.W.D.) – Production, biophysical effects, types, therapeutic effects, techniques of application, indications, contraindications, precautions, operational skills and patient preparation.
2.	Medium frequency currents (Interferential therapy) – Conceptual framework of medium frequency current therapy, production, biophysical effects, types, therapeutic effects, techniques of application, indications, contraindications, precautions, operational skills and patient preparation.
3.	High frequency sound waves (Ultrasound) – Production, biophysical effects, types therapeutic effects, techniques of application, indications, contraindications, precautions, operational skills and patient preparation.
Section B	
Section III	40Hrs
1.	Therapeutic light in Physiotherapy (LASER) – Definition, historical background, physical principles, biophysical effects, types, production, therapeutic effects, techniques of application, indications, contraindications, precautions, operational skills and patient preparation.
2.	Therapeutic cold (Cryotherapy) - Sources, biophysical effects, types, therapeutic effects, indications, contraindications, precautions, application technique and patient preparation.
3.	Therapeutic mechanical effects, indications, contraindications, precautions, operational skills and patient preparation.
Section IV	
20Hrs	
1.	Electro-diagnosis – Instrumentation, definition & basic techniques of E.M.F. and E.N.G.
2.	Bio-feedback – Instrumentation, principles, therapeutic effects, indications, contraindications, limitations, precautions, operational skills and patient preparation.

ELECTROTHERAPY – II PRACTICAL	
Scheme of Practical exam in Electrotherapy – II Medium Frequency Current: 10 Marks High Frequency Current: 15 Marks LASER, US, Cryotherapy: 15 Marks External Viva: 15 Marks Internal Viva: 15 Marks Practical Record: 10 Marks	
1. To study a short wave diathermy Unit, its operation and different methods of application – region wise. 2. To study a Micro wave diathermy Unit, its operation and different methods of application – region wise. 3. To study an Ultrasound Unit, its operation and different methods of application – region wise. 4. To study a Laser Unit, its operation and different methods of application – region wise. 5. To study various forms of therapeutic cold application region wise including – ice, cold packs, vapour coolant sprays etc. 6. To study Interferential therapy Unit, its operation and different methods of application – region wise. 7. To study an Intermittent pneumatic therapy Unit, its operation and different methods of application – region wise. 8. To observe various Electro – myography (EMG) procedures. 9. To observe various Electro – neurography (ENG) procedures. 10. To study a Bio feedback Unit, its operation and different methods of application – region wise.	
Recommended Reading: 1. Electrotherapy Explained: Principles & Practice Low & Reed – Butterworth Heinmann. 2. Clayton's Electrotherapy (10th Edition) – Kitchen & Bazin – W.B. Saunders. 3. Therapeutic Heat and Cold Lehmann – Williams and Wilkins. 4. Principles and Practice of Electrotherapy – Kahn – Churchill Livingstone. 5. Electrotherapy : Clinics in Physical Therapy – Wolf – Churchill Livingstone 6. Step by Step Practical Electrotherapy – Jagmohan Singh - JAYPEE Bros, New Delhi.	
BPT 205: Exercise Therapy – II	
Teaching Hours:	Theory = 100, Practical/ Lab = 150
Theory Exam Time:	03 Hours
MARKS	Theory: 80 + 20 Int. Assessment = 100 Marks
	Practical: 80 + 20 Int. Assessment = 100 Marks
Instructions for theory paper setting: The question paper covering the entire course shall be divided into two sections. Both sections will be attempted on a single answer sheet and to be evaluated by a single examiner. Section A: Question1: This will consist of Five short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 3 marks total weightage being 15 marks. Question 2: This will consist of one medium answer question with answer upto three pages in length. This question will be compulsory. This question will carry 10 marks.	

Question 3: This will consist of two long answer questions with answer to each question upto 5 pages in length. Two questions will be set by the examiner and the candidate will be required to attempt any one and the question will carry 15 marks.

Section B:

Same as in Section A.

COURSE OBJECTIVES& LEARNING OUTCOMES:

The OBJECTIVES of the course is that after the specified hours of lectures and demonstrations the student will be able to-

1. The student will learn the principles, classification, techniques and effects of therapeutic exercises along with aerobic and anaerobic exercises
2. The student will understand region wise assessment and evaluation of a patient
3. The student will have the basic understanding of joint mobility and muscle insufficiency
4. The students will learn to gain better knowledge about neural mechanisms of neuromuscular coordination and will understand the concept of functional re-education
5. The student will be able to assess normal posture and gait and will apply knowledge of walking aids in the process of rehabilitation
6. The student will understand the principle, effects, types, indications, contraindications and precautions of hydrotherapy
7. The student will demonstrate the techniques of mobilization, PNF and traction and breathing exercises
8. The student will understand the focus of improving the functional status of the patient.
9. The student will understand the importance of group therapy and yoga

Section A

UNIT – I : Therapeutic Exercise:

1. Principle, Classification, techniques, physiological & therapeutic effects, indications & contraindications of therapeutic exercises. Also, study aerobic and anaerobic exercises.
2. Stretching: Classification, techniques, physiological & therapeutic effects, indications & contraindications of stretching.
3. Joint Mobility – Aetiology of joint stiffness, general techniques of mobilization, effects, indications, contraindications & precautions.
4. Muscle Insufficiency – Aetiology of muscle insufficiency (Strength, tone, power, endurance & volume), general techniques of strengthening effects, indication, contraindications & precautions.
5. Neuromuscular Incoordination: Normal neuromuscular coordination, Aetiology of neuromuscular incoordination & general therapeutic techniques, effects, indication, contraindications & precautions.
6. Functional re-education – General therapeutic techniques to re-educate ADL function.

UNIT – II: Posture, Balance &Gait

1. Normal Posture -= Overview of the mechanism of normal posture
2. Abnormal Posture – Assessment. Types. Aetiogenesis. Management. Including, therapeutic exercises.
3. Static and Dynamic Balance – Assessment & management including therapeutic exercises.
4. Gait-Overview of normal gait & its components.
5. Gait deviations – Assessment types, aetiogenesis, management, including therapeutic exercises.
6. Types of walking aids, indications, efforts and various training techniques.

Section B

UNIT–III: Hydrotherapy

1. Basic Principles of fluid mechanics as they relate to hydrotherapy.
2. Physiological & therapeutic effects of hydrotherapy including joint mobility muscle strengthening & wound care etc.
3. Types of Hydrotherapy equipment, indications, contra-indications, operation skills & patient preparation.

UNIT – IV: Special Techniques

1. Introduction to **Basic Mobilization**, & Manipulation Techniques effects, indications & contraindications.
2. Conceptual framework, principle of proprioceptive neuromuscular facilitation (PNF) techniques, including indications, therapeutic effects and precautions.
3. Principles of traction, Physiological & therapeutic effects classification, types, indications, contraindications, techniques of application, operational skills & precautions.
4. Review normal breathing mechanism types techniques, indications, contraindications, therapeutic effects & precaution of breathing exercises.
5. Group Therapy – Types advantages & disadvantages.
6. Exercises for the normal person -= Importance and effects of exercise to maintain optimal health & its role in the prevention of diseases. Types, advantages disadvantages, indications, contraindications & precautions for all age groups.
7. Introduction to Yoga – Conceptual framework, various “asanas” the body – mind relationship, effects & precautions.

Exercise Therapy – II Practical

Scheme of practical Exam in Exercise Therapy – II

Stretching and Peripheral joint mobilization: 10 Marks
Strength training of muscle: 10 Marks
Crutches and Gait: 10 Marks
Posture and coordination: 10 Marks
Viva: 30 Marks
Practical Record: 10 Marks

1. To practice assessment & evaluative & evaluative procedures, including motor, sensory, neuromotor

co-ordination, vital capacity, limb length & higher functions. 2. To study & practice the various techniques of mobilization of joints region wise. 3. To study & Practice the various techniques of progressive strengthening exercises of muscles region wise. 4. To study & Practise the use of various ambulation aids in gait training. 5. To assess & evaluate ADL's and practice various training techniques. 6. To study & practice mat exercises. 7. To assess & evaluate normal & abnormal posture & practice various corrective techniques. 8. To assess & evaluate equilibrium/ balance & practice various techniques to improve balance. 9. To study the structure & functions of hydrotherapy equipment & their applications. 10. To study & practice various traction techniques, including manual, mechanical & electrical procedures. 11. To study & practice various group exercise therapies. 12. To practice & experience effects of basic Yoga "asanas". 13. To study, plan & Practice exercise programmes for normal persons of various age groups.	
Recommended Reading: 1. Practical Exercise Therapy – Hollis- Blackwell Scientific Publications. 2. Therapeutic Exercises – Basmajian – William & Wilkins. 3. Therapeutic Exercise Foundations and Techniques Kisner& Colby – F.A. Davis 4. Proprioceptive Neuromuscular Facilitation – Voss et al – William and Wilkins. 5. Principle of Exercise Therapy – Gardiner- C.B.S. Delhi. 6. Orthopaedics Physical Therapy – Woods- Churchill Livingstone. 7. Manipulation and Mobilisation extremities and spinal techniques- Edmond- Mosby. 8. Aquatic Exercise Therapy- Bates and Hanson – W.B. Saunders. 9. Manual examination and treatment of spine and extremities- Wadsworth- Lippincott. 10. Hydrotherapy: Principles and Practise- Campion – Butterworth Heinmann.	
BPT 206:Biomechanics & Kinesiology	
Teaching Hours:	Theory = 100, Practical / Lab= 100
Theory Exam Time: 03 Hours	
MARKS	Theory: 80 + 20 Int. Assessment = 100 Marks
	Practical: 80 + 20 Int. Assessment = 100 Marks
Instructions for theory paper setting: The question paper covering the entire course shall be divided into two sections. Both sections will be attempted on a single answer sheet and to be evaluated by a single examiner.	
Section A:	
Question1: This will consist of Five short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 3 marks total weightage being 15 marks.	
Question 2: This will consist of one medium answer question with answer upto three pages in length. This question will be compulsory. This question will carry 10 marks.	
Question 3: This will consist of two long answer questions with answer to each question upto 5 pages in length. Two questions will be set by the examiner and the candidate will be required to attempt any one	

and the question will carry 15 marks.

Section B:

Same as in Section A.

COURSE OBJECTIVES& LEARNING OUTCOMES:

1. To make the students aware of basic biomechanical principles in relation to human body, Newtonian mechanics, Linear kinetics of Human motion, various kinematics and kinetic concepts.
2. To make students understand mechanical and material properties, characteristics, adaptation potential of biological tissues.
3. To make students appreciate the muscular system along with different types and work of muscles.
4. To make students acquaint with characteristics ,various gait patterns and applied Biomechanics

At the end of this module, the students will be:

1. Will learn about the biomechanical measures of the human movement like stability, equilibrium, laws of physics , vectors, displacement, gait analysis.
2. Will be able to apply and describe the biomechanical principles as related to the movement
3. Will be able to recognize the factors responsible for determining the rehabilitation protocol
4. Will be able to appreciate the osteokinematics and arthokinematics of the skeletal system.

Section A

Unit–I:Mechanics

- a) Introduction to mechanics including motion, forces, parallel forces system.
- b) Newton's law of motion, concurrent force systems – composition forces, muscle action line etc.
- c) Centre of Gravity, line of gravity, stability and equilibrium.
- d) Introduction of Bio-Mechanics and terminology.

Unit–II:Joint Structure and Function:

- a) Basic principles of Joint design and a human joint.
- b) Tissues present in human joint including fibrous tissue, bone cartilage and connective tissue.
- c) Classification of joints.
- d) Joint function, Kinematics chains and range of motion.
- e) Recall anatomy and study the biomechanics of the spine, Biomechanics of shoulder girdle and joints of upper extremity, Biomechanics of pelvic girdle and joints of lower extremity.

Section B

Unit-III: Muscle Structure and Function:

- a) Mobility and stability functions of muscle.
- b) Elements of muscle structure and its properties.
- c) Types of muscles contractions and muscle work.
- d) Classification of muscles and their functions.
- e) Group action of muscles, Co-ordinated movement.

Unit – IV: Posture & Gait

- a) Posture – Definition, factors responsible for posture, relationship of gravity on posture.
- b) Postural imbalance – factors responsible for imbalance in Static and dynamic positions including ergonomics.

c)	Description of Normal gait, determinants of gait, spatio temporal features and analysis.
d)	Gait deviations – Types, Causative factors and analysis.
BIOMECHANICS AND KINESIOLOGY PRACTICAL	
Scheme of Practical Exams in Biomechanics and Kinesiology	
Biomechanics of Upper limb : 10 Marks Biomechanics of Lower limb : 10 Marks Biomechanics of Vertebral Column, Posture and Gait: 20 Marks Viva: 30 Marks Practical Record: 10 marks	
1.	To study the effects of forces on objects.
2.	To find out the C.G. of an object.
3.	To identify axis and planes of motion at the joints of spine, shoulder, girdle, joints of upper extremity, Pelvic girdle and joints of lower extremity.
4.	To study the different types of muscle contraction, muscle work, group action of muscles of co-ordinated movements.
5.	Analysis of Normal posture respect to L.O.G. and the optimal position of joints in Antero-posterior and lateral views.
6.	Analysis of normal gait and measurement of spatial temporal features.
Recommended Reading:	
1.	Joint Structure and Function – A Comprehensive Analysis – Norkins&Levangie – F.A. Davis.
2.	Measurement of Joint Motion – A Guide to Goniometry – Norkins& White - F.A. Davis.
3.	Brunnstrom's Clinical Kinesiology – Smith et al – F.A. Davis.
4.	Basic Biomechanics explained – Low & Reed – Butterworth Heinmann.
5.	Kinesiology: Applied to Pathological Motion Soderberg -Lippincott.
BPT 207: Sociology & Psychology	
Teaching Hours:	Theory = 150 (75+75), Practical/ Lab = Nil
Theory Exam Time:	03 Hours
MARKS	Theory: 80 + 20 Int. Assessment = 100 Marks
	Practical: NIL
Instructions for theory paper setting:	
The question paper covering the entire course shall be divided into two sections. Both sections will be attempted on a single answer sheet and to be evaluated by a single examiner.	
Section A: SOCIOLOGY	
Question1: This will consist of Five short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 3 marks total weightage being 15 marks.	
Question 2: This will consist of one medium answer question with answer upto three pages in length. This question will be compulsory. This question will carry 10 marks.	
Question 3: This will consist of two long answer questions with answer to each question upto 5 pages in length. Two questions will be set by the examiner and the candidate will be required to attempt any one and the question will carry 15 marks.	

Section B:PSYCHOLOGY

Same as in Section A.

COURSE OBJECTIVES& LEARNING OUTCOMES:

The OBJECTIVES of the course is that after the specified hours of lectures and demonstrations the student will be able to-

1. Define the term sociology and its importance in the health delivery system, understand the concept of Socialization, Social Groups, Family Influence, CommUnity Influence, Cultural Influence and Caste system.
2. To understand the role of social worker, develop, build and maintains rapport, trust, and ethical professional relationships through effective communication.
3. Establish and maintain inter professional relationships, socio-Economic and Cultural issues related to morbidity
4. Understand the OBJECTIVES methods of family planning.
5. Understand the significance of social interactions in the process of rehabilitation and appreciate the role of therapist as a member of society and the interdependence between individuals and society.
6. Understand that, Psychology has a key role to play in physiotherapy treatment and highlighted extensive use of psychological approaches such as listening skills, empathy, verbal and non verbal communication in practice.
7. Motivate the patient to managing well their emotions, relations and help them to improve their coping skills
8. Learning Psychology help them to fulfill the role of physiotherapist up to the expectation of the patients.
9. Different Counseling techniques enable them to deal effectively with the patient of chronic illnesses, e.g., stroke, limb impairment in young age due to accident.
10. Can deal with the stresses of the patients other then the illness, like, loosing job, family relationship, social stigmas, etc.

SECTION –A Sociology

1. Introduction: Definitions of sociology, sociology as a science of society, uses of the study of sociology, application of knowledge of sociology in physiotherapy and occupational therapy.
2. Sociology & Health: Social factors affecting health status, social consciousness and perception of illness, social consciousness and meaning of illness, decision making in taking treatment. Institutions of health, their role in the improvement of the health of the people.
3. Socialization: Meaning of socialization, int1uence of social factor on personality, socialization in hospitals, socialization in the rehabilitation of patients.
4. Social groups: Concept of social groups, influence of formal and informal groups on health and sickness, the role of primary groups and secondary groups in the hospitals and rehabilitation settings.
5. Family: Influence of family on human personality, discussion of changes in the functions of a family, influence of family on the individual's health, family and nutrition, the effects of sickness on family, and psychosomatic disease.
6. Community: Concept of community, role of rural and urban communities in public health role of community in determining beliefs, practice and home remedies in treatment.
7. Culture: Components of culture. Impact of culture on human behaviour, cultural meaning of sickness, response & choice of treatment (role of culture as social consciousness in moulding the perception of reality), culture induced symptoms and disease, sub - culture of medical workers.
8. Caste system: Features of modern caste system and its trends.

9. Social change: Meaning of social change, factors of social change, human adaption and social change, social change and stress, social change and deviance, social change and health programmes, the role of social planning in the improvement of health and in rehabilitation.
10. Social Control: Meaning of social control, role of norms, folkways, customs, morals, religion, law and other means of social control in the regulation of human behaviour, social deviance and disease.
11. Social Problems of the 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 Beggary
 - c. Juvenile delinquency
 - d. Prostitution
 - e. Alcoholism
 - f. Problems of women in employment
12. Social Security: Social security and social legislation in relation to the disabled.
13. Social Worker: The role of medical social worker.

Recommended Reading:

1. Textbook of Sociology BA Part 1 by S. Kapila
2. Megee - Sociology - Drydon Press, Illinois
3. Kupuswamy – Social Changes in India - Vikas, Delhi
4. Ahuja - Social Problems - Bookhive, Delhi
5. Ginnsberg - Principles of Sociology - Sterling publications.
6. Parter & Alder - Psychology & Sociology applied to medicine - W.B. Saunders.
7. Julian -Social Problems - Prentice Hall.

SECTION-B: Psychology

General Psychology

1. Definition of psychology, information in relation to following schools, methods and branches:
 - a) Schools : Structuralism, functionalism, behaviourism, psychoanalysis, gestalt psychology
 - b) Methods: Introspection, observation, inventory and experimental method.
 - c) Branches: General, child, social, abnormal, industrial, clinical.
2. **Heredity and Environmental:** Twins, Relative importance of heredity and environmental, their role in relation to physical characteristics, intelligence and personality, nature - nature controversy.
3. **Development and Growth Behaviour:-** Infancy, childhood, adolescence, adulthood, middle age, old age.
4. **Intelligence:** Definitions, IQ, Mental Age, List of various intelligence tests- WAT, WISC, Bhatia's performance test, Raven's Progressive Matrices test.
5. **Motivation:** Definitions: Motive, drive, incentive and reinforcement, Basic information about primary needs: hunger thirst, sleep, elimination activity, air, avoidance of pain, attitude to sex.
Psychological needs: Information, security, self-esteem, competence, love and hope.
6. **Emotions:** Definitions: Differentiate from feelings, psychological changes of emotion, Role of RAS, hypothalamus, cerebral cortex, sympathetic nervous system, adrenal gland, heredity and emotion, Nature and control of anger, fear and anxiety.
7. **Personality :**
 - a) Definitions: List of components: Physical characteristics, character, abilities, temperament, interest and attitudes.
 - b) Discuss briefly the role of heredity, nervous system, physical characteristics, abilities, family and

- culture of personality development.
- c) Basic concepts of Freud: unconscious, conscious, Id, ego and superego, List and define the oral, anal and phallic stages of personality development list and define the 8 stages as proposed by Erickson, 4 concepts of learning as proposed by Dollard and Miller; drive, cue, response and reinforcement.
 - d) Personality assessment: interview, standardized, non-standardized. Exhaustive and stress interviews, list and define inventories BAI, CPI and MMPI, projective test Rorschach, TAT and sentence completion test.
 8. **Learning** : Definition : List the laws of learning as proposed by Thorndike. Types of learning : Briefly describe, classical conditions, operant conditioning, insight, observation and Trial and Error type list the effective ways to learn : Massed Vs. Spaced, Whole Vs. Part, Recitation Vs. Reading; Serial Vs. Free Recall, knowledge of results, Association Organization, Mnemonic methods, incidental Vs. Intentional learning, role of language.
 9. **Thinking** : Definition, concepts, creativity, steps in creative thinking, list of traits of creative people, delusions.
 10. **Frustration** : Definition, sources, solution, Conflict ; Approach – approach, Avoidance – avoidance, and approach – avoidance solution.
 11. **Sensation, Attention and Perception.**
 - a) List of senses : Vision, Hearing, Olfactory, Gustatory and cutaneous sensation, movement, equilibrium and visceral sense. Define attention and list factors that determine attention : nature of stimulus intensity, colour, change, extensity, repetition, movement, size, curiosity, primary motives.
 - b) Define perception and list the principles of perception : Figure ground, constancy, similarity, proximity, closure, continuity values and interest, past experience context, needs, moods, religion, sex and age, perceived susceptibility, perceived seriousness, perceived benefits and socioeconomic status.
 - c) Define illusion and hallucination.
 - d) List visual, auditory, cutaneous, gustatory and olfactory hallucination.
 12. **Democratic and Authoritarian Leadership** : Qualities of leadership : Physical factors, intelligence, self-confidence, sociability, will and dominance. Define attitude, Change of attitude by: Additional information, changes in-group- affiliation, enforced modification by law and procedures that affect personality (Psychotherapy, Counseling and religious conversion).
 13. **Defence Mechanisms of the Ego:** Denial, rationalization, projection, reaction formation, identification, repression, emotional insulation, undoing, interjection, acting out depersonalization.
- Health Psychology**
1. **Psychological Reactions of a Patient** : Psychological reactions of a patient during admission and treatment anxiety, shock, denial, suspicion, questioning, loneliness, regression, shame, guilt, rejection, fear, withdrawal, depression, egocentricity, concern about small matters, narrowed interests, emotional over reactions, perpetual changes, confusion, disorientation, hallucinations, delusions, illusions, anger, hostility, loss of hope.
 2. **Reactions to Loss** : Reactions to loss, death and bereavement shock and disbelief, development of awareness, restitution, resolution : Stages of acceptance as proposed by Kubler – Ross.
 3. **Stress** : Physiological and Psychological relation to health and sickness : psychosomatic, professional stress burnout.
 4. **Communications** :
 - a) Types verbal, non-verbal, elements in communication, barriers to good communication, developing effective communication, specific communication techniques.
 - b) Counseling : Definition, Aim, differentiate from guidance, principles in counseling and personality qualities of counselors.
 5. **Compliance** :- Nature, factors, contributing to non-compliance, improving compliance.

6.	Emotional Needs :- Emotional needs and psychological factors in relation to unconscious patients, handicapped patients, bed-ridden patients, chronic pain, spinal cord injury, paralysis, cerebral palsy, burns, amputations, disfigurement, head injury, degenerative disorders, parkinsonism, leprosy, incontinence and mental illness.
7.	Geriatric Psychology : Specific psychological reactions and needs of geriatric patients.
8.	Paediatric Psychology : Specific psychological reactions and needs of pediatric patients.
9.	Behaviour Modifications : Application of various conditioning and learning principles to modify patient behaviours.
10.	Substance Abuse : Psychological aspects of substance abuse : smoking, alcoholism and drug addiction.
11.	Personality Styles : Different personality styles of patients.
Recommended Reading:	
1.	Introduction to Psychology – Mums – I.D.P. Co.
2.	Foundation of Psychology – Weld – Publishing House, Bombay.
3.	Introduction to social psychology – Akolkar – Oxford Publishing House.
4.	Psychology and Sociology – Applied to Medicine – Porter & Adler – W.B. Saunders.
5.	Behavioural Sciences for Medical Undergraduates – Manju Mehta – Jaypee Brothers.
6.	Elementary Psychology – Mohsin – Moti Lal BanarsiDass, Delhi.
BPT THIRD Prof (Total Theory + Practical/Clinical = 1100 hours)	
BPT 301: Orthopaedics	
Teaching Hours:	Theory = 100 Practical/ Clinical Training = 100
Theory Exam Time:	03 Hours
MARKS	Theory: 80 + 20 Int. Assessment = 100 Marks
	Practical: 80 + 20 Int. Assessment = 100 Marks
Instructions for theory paper setting:	
The question paper covering the entire course shall be divided into two sections. Both sections will be attempted on a single answer sheet and to be evaluated by a single examiner.	
Section A:	
Question 1: This will consist of Five short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 3 marks total weightage being 15 marks.	
Question 2: This will consist of one medium answer question with answer upto three pages in length. This question will be compulsory. This question will carry 10 marks.	
Question 3: This will consist of two long answer questions with answer to each question upto 5 pages in length. Two questions will be set by the examiner and the candidate will be required to attempt any one and the question will carry 15 marks.	
Section B:	
Same as in Section A.	
COURSE OBJECTIVES& LEARNING OUTCOMES:	
The OBJECTIVES of the course is that after the specified hours of lectures and demonstrations the student will be able to-	
1. The student will learn common orthopedic terminology, clinical examination, common	

investigations such as X-ray and imaging techniques and conservative management of orthopedic conditions

2. The student will be able to understand common surgical procedures, soft tissue injuries, bone and joint tumors and peripheral nerve injuries

3. The student will be able to understand the types of fractures, displacement and recurrent dislocations, methods of immobilization, fracture healing, complications of fractures of upper limb, lower limb and vertebral column.

4. The student will have a good understanding of definition, types, indications, level of amputation for upper and lower limb, clinical examination of stump, its care and bandaging, Principles of prosthetic fitting, pre and post prosthetic management.

5. The student will understand the etiology, clinical features, management and complications of septic arthritis, osteomyelitis and tuberculosis specially spinal tuberculosis.

6. The student will understand common sports injuries, its classification, diagnosis and management.

Section A

UNIT I : Orthopaedic basics

1. **Introduction to Orthopaedics** – Introduction to orthopaedic terminology. Types of pathology commonly dealt with, clinical examination, common investigations X-rays & imaging techniques and outline of non-operative management.
2. **Principles of operative treatment:-** List indications, contraindication and briefly outline principles of : Athrodesis, Arthroplasty, Osteotomy, Bone grafting and Tendon Transfers.
3. **Sprains, Strains & Contractures:-** List common sites of sprain, strains & contractures and describe the clinical manifestations and treatment. Viz. tennis elbow, golfer's elbow. De Quervain's disease, tenovaginitis, trigger, finger, carpal tunnel syndrome and plantar fasciitis etc.
4. **Sports Injuries:-** Injuries related to common sports their classification and management
5. **Basic First aid Management**

UNIT – II: Traumatology

1. **Fractures and Dislocations** : General Principles, outline the following :
 - i) Types of Fractures including patterns. Open & closed fractures and fracture dislocations.
 - ii) Differences between dislocation & subluxation.
 - iii) General & Local signs & symptoms of fractures & dislocation.
 - iv) Principle of management of fractures & dislocations.
 - v) Prevention & treatment of complication including. Fracture – disease, Volkmann's ischaemic contracture, Sudeck's Atrophy, Myositis ossificans, Fracture healing.
2. Upper Limb Fractures & Dislocations
 - a) Enumerate major long bone fractures and joint injuries.
 - b) Briefly describe their clinical features, principles of management and complications.
 - c) **Hand Injuries:-** Outline of clinical features, management and complications of : Skin and soft tissue injury, tendon injury, bone and joint injury.
3. Lower Limb Fractures & Dislocations.

a) Enumerate major long bone fractures and joint injuries. b) Briefly describe their clinical features, principles of management and complication. 4. Spinal Fractures and Dislocations: Outline the mechanism, clinical features, principles of management and complications of spinal injuries. 5. Recurrent Dislocations: Outline the mechanism, clinical features, principles of management and complications of recurrent dislocation of the shoulder and patella.
Section B
UNIT III 1. Amputations a) Classify amputations, List indication for surgery. b) Outline pre-operative, operative and prosthetic management. c) Outline prevention and treatment of complications. 2. Bone & Joint Infections : Outline the aetiology, clinical features, management and complications of septic arthritis osteomyelitis, Tuberculosis (including spinal T.B.). 3. Bones Joint Tumours :- Classify the outline the clinical features, management and complications of the following (benign / malignant bone and joint tumours, osteomas, osteosarcomas, osteoclastomas, Ewing's sarcoma, multiple myeloma. UNIT- IV 1. Chronic Arthritis :- Outline of pathology : clinical features, mechanism of deformities, management and complications of : Rheumatoid arthritis. Osteoarthritis of major joints and spine, Ankylosing spondylitis. 2. Neck & Back Pain, Painful Arc Syndrome, Tendonitis, Fasciitis & Spasmodic Torticollis. Outline the above including clinical features and management. 3. Spinal Deformities :- Classify spinal deformities and outline the salient clinical features, management and complications of Scoliosis, Kyphosis and Lordosis. 4. Congenital Deformities:- Outline the clinical features and management of CTEV, CDH, Flat foot, vertical talus, limb deficiency (radial club hand and femoral, tibia and fibula deficiencies meningocele, Arthrogryphosis multiplex congenita and Osteogenesis imperfecta, Cerebral palsy.
Orthopaedics Practical
Osteology/ Instrument: 20 Marks Radiographs : 20 Marks Case Based Discussion: 20 Marks Viva:20 Marks
Recommended Reading: 1. Watson-Jones, Fractures and Joint Injuries – Wilson – Churchill Livingstone. 2. Clinical Orthopaedic Examination – McRae – Churchill Livingstone. 3. Concise System of Orthopaedics and Fractures – Apley – Butterworth Heinmann. 4. Outline of Fractures – Adam – Churchill Livingstone. 5. Outline of Orthopaedics – Adam - Churchill Livingstone. 6. Physical examination in orthopaedics – Apley – Butterworth Heinmann. 7. Clinical Orthopaedics Diagnosis – Pandey & Pandey – Jaypee Brothers.

BPT 302: General Medicine	
Teaching Hours:	Theory = 100 Practical/ Clinical Training = 100
Theory Exam Time:	03 Hours
MARKS	Theory: 80 + 20 Int. Assessment = 100 Marks
	Practical: 80 + 20 Int. Assessment = 100 Marks
Instructions for theory paper setting: The question paper covering the entire course shall be divided into two sections. Both sections will be attempted on a single answer sheet and to be evaluated by a single examiner.	
Section A:	
Question1: This will consist of Five short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 3 marks total weightage being 15 marks.	
Question 2: This will consist of one medium answer question with answer upto three pages in length. This question will be compulsory. This question will carry 10 marks.	
Question 3: This will consist of two long answer questions with answer to each question upto 5 pages in length. Two questions will be set by the examiner and the candidate will be required to attempt any one and the question will carry 15 marks.	
Section B:	
Same as in Section A.	
COURSE OBJECTIVES& LEARNING OUTCOMES: Learning and understanding the involvement of the various body systems by the diseases and their management is very important for any medical student. Following are the OBJECTIVESs and learning outcomes of Medicine in Physiotherapy.	
1. 1 Introduction and Brief outline of subject of medicine - a medical patient, common signs & symptoms of disease involving different organ systems. 2. Understanding the common symptoms and how to do General physical examination, importance of examining vitals like Pulse, Blood pressure, Respiratory rate, Temperature and their co-relation with various diseases. 3. Understanding the etiology, pathogenesis, pathology, Clinical symptoms of various diseases of Cardiac, Renal, Respiratory, Gastric systems and the drugs used to treat the diseases involving the organ systems. 4. Learning various investigation procedures to diagnose the diseases and substantiating the findings of examination of various body organs 5. Understanding the role of Physiotherapy in treating some of the diseases e.g Post Myocardial infarction, Lung abscess, Bronchiectasis etc. 6. Understanding the role of physiotherapy in preventing complications and management of these complications in certain chronic diseases like Diabetes and other metabolic disorders. 7. Learning Paediatrics to understand the diseases in newborns, infants and children	

esp. the congenital diseases, infections in them, immunisation for prevention of certain diseases

8. Able to educate their patients regarding the prevention of diseases and helping them by providing physiotherapy care.

Section A

UNIT I :

1. Introduction to modes of transfer of communicable diseases & general preventive measures.
2. Bacterial Diseases: Rheumatic fever, Leprosy, Tetanus, Diphtheria, Bacillary Dysentery and Measles.
3. Viral Diseases: Herpes – simplex and zoster Measles, Mumps, Hepatitis B and C, AIDS and influenza. **Poliomyelitis**
4. Metabolic and Deficiency Diseases: Diabetes, Anaemia, Vitamin & Nutritional Deficiency diseases, diseases of the endocrine glands.

UNIT II :

1. **Common Diseases of Respiratory System** :Asthma, Bronchitis, Massive collapse of lungs, Bronchiectasis Bronchial Pneumonia, lung abscess, Emphysema, Empyema, Paralysis of diaphragm and vocal cords, chronic infection of larynx and trachea. Abnormalities of tracheal infract of lungs, chronic passive congestion, chronic obstructive pulmonary disease, chest wall deformities.
2. **Common Diseases of Circulatory System :-**
Diseases of vessels - Thrombosis, Embolism, Gangrene, Valvular disease, Haemorrhage, various diseases of arteries,
Diseases of blood - Anaemia ,**Haemophilia, Thalessemia**
Diseases of the heart – Hypertension, Hypotension, Aortic aneurysm. Endocarditis, Pericarditis, Cardiac failure, coronary heart diseases, congenital heart malformation and its manifestation.

Section B

UNIT III:

1. **Skin Conditions** –
Leprosy, Acne, Boil, Carbuncles, Impetigo.
Infections of skin- Herpes, Urticaria, Psoriasis
Skin disorders associated with circulatory disturbances - Warts, Corn
Defects in Pigmentation - Leukoderma
Fungal infections -Alopecia, Dermatitis, Eczema
2. **Diseases of Digestive Systems:-** Pharyngitis, Gastric ulcer, Duodenal ulcer, Hematemesis, Dyspepsia, Vomiting, Diarrhoea.
3. **Diseases of Liver:-**Jaundice, Cirrhosis of liver, Abscess of liver, Ascitis.
4. **Diseases of Kidney:** Polyuria, Haematuria, Uraemia, Anuria, Nephritis, Urinary infections, Urinary calculi.

UNIT-IV: Paediatrics& Geriatrics

1. Review normal foetal development & child birth, including assessment of a neonate.
2. Development of a normal child – neuro-motor, physical growth, cognitive, intellectual, social etc.
3. The examination and assessment of a paediatric patient.
4. Congenital & acquired musculoskeletal disorders – aetiogenesis, clinical manifestation & principles of management.
5. Congenital & acquired Cardio-pulmonary disorders – aetiogenesis, clinical manifestation & principles of management.

6. Congenital & acquired neurological disorders (CNS & PNS) – aetogenesis, clinical manifestation & principles of management.
7. Hereditary disorders – aetogenesis, clinical manifestation & principles of management.
8. Nutritional Vitamins – Deficiency & development disorders – aetogenesis, clinical manifestation & principles of management.

Geriatrics

1. Normal aging – definition the anatomical, physiological and cognitive changes related to aging.
2. Epidemiology and socio-economic impact of aging.
3. The examination and assessment of a geriatric patient.
4. Diet & Nutritional requirement of the elderly. Nutritional disorders & their management.

General Medicine Practical

Case study & assessment- paediatrics: 20 marks

Case study & assessment - geriatrics: 20 marks

Internal Viva: 20 Marks

External Viva: 20 Marks

Recommended Reading:

1. Davidson's Principles and Practices of Medicine – Edward – Churchill Livingstone.
2. Hutchinson's Clinical Methods – Swash – Bailliere Tindall.
3. A Short Textbook of Medicine – Krishna Rao – Jaypee Brothers.
4. The Short Textbook of Paediatrics – Gupte – Jaypee.
5. A Short Textbook of Psychiatry – Ahuja Niraj – Jaypee Brothers.
6. Textbook of Paediatrics – Parsarthy – Jaypee.
7. Geriatric Physical Therapy – Guccione – Mosby.
8. Motor Assessment of the Developing infant – Piper & Davrah – W.B. Saunders

BPT 303: Physiotherapy in Orthopaedic Conditions

Teaching Hours: Theory = 125 Practical / Clinical Training = 175

Theory Exam Time: 03 Hours

MARKS Theory: 80 + 20 Int. Assessment = 100 Marks

Practical: 80 + 20 Int. Assessment = 100 Marks

Instructions for theory paper setting:

The question paper covering the entire course shall be divided into two sections. Both sections will be attempted on a single answer sheet and to be evaluated by a single examiner.

Section A:

Question 1: This will consist of Five short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 3 marks total weightage being 15 marks.

Question 2: This will consist of one medium answer question with answer upto three pages in length. This question will be compulsory. This question will carry 10 marks.

Question 3: This will consist of two long answer questions with answer to each question upto 5 pages in length. Two questions will be set by the examiner and the candidate will be required to attempt any one and the question will carry 15 marks.

Section B:

Same as in Section A.

COURSE OBJECTIVES& LEARNING OUTCOMES:

The OBJECTIVES of the course is that after the specified hours of lectures and demonstrations the student will be able to-

1. The students will have the basic knowledge of common orthopedic surgeries
2. The students will apply knowledge to demonstrate the applications of various Physiotherapeutic modalities following orthopedic surgeries.
3. The student will understand the types of fractures and displacement, methods of immobilization, fracture healing and factors affecting it, complications of fractures of upper limb, lower limb and vertebral column along with their Physiotherapeutic management.
4. The student will learn Physiotherapy management following common surgical procedures, soft tissues injuries, congenital and acquired deformities and various degenerative conditions.
5. The student will have a good understanding of definition, types, indications, level of amputation for upper and lower limb, clinical examination of stump, its care and bandaging, Principles of prosthetic fitting, pre and post prosthetic management.
6. The student will understand the etiology, clinical features, management and complications of septic arthritis, osteomyelitis and tuberculosis especially spinal tuberculosis.
7. The student will understand common sports injuries, its classification, and diagnosis along with Physiotherapy management.

Section A

Brief review of the following surgical condition and various physiotherapeutic modalities, aims, means and technique of physiotherapy should be taught.

1. Injuries: Soft tissue injuries, synovitis, capsulitis volkman's ischemic contracture etc. tear of semilunar cartilage and cruciate ligaments of knee, internal derangement of knee.
2. Traumatology General physiotherapeutic approach for the following conditions:
 - a. Fracture and dislocations; Classification and type of displacement, method of immobilization, healing of fractures and factors affecting union, delayed union etc. common sites of fractures.
 - b. Specific fractures and their complete physiotherapeutic management.

Upper Limb: Clavicle, humerus, ulna, radius, crush injuries of hand.

Lower Limb: fracture neck of femur, shaft of femur patella tibia fibula, Pott's fracture, fracture of tarsal and metatarsals.

Spine: fracture and dislocations of cervical, thoracic and lumbar vertebrae with and without neurological

deficits. 3. Surgical procedures: Pre and post-operative management Common corrective procedures like arthroplasty, arthrodesis, osteotomy, meniscectomy, patellectomy, tendon transplants. Soft tissue release and grafting for correction of deformities of cerebral palsy, leprosy and post-polio residual paralysis.
Section B
Brief review of the following surgical condition and various physiotherapeutic modalities, aims, means and technique of physiotherapy should be taught. 1. Amputation; level of amputation of upper limb and lower limb, stump care, stump bandaging, pre and post prosthetic management including check out of prosthesis, training etc. 2. Congenital Deformities; congenital torticollis and cervical rib, CTEV, Pescausus, pesplanus and other common deformities. 3. Acquired deformities – Scoliosis, kyphosis, lordosis, coxa vara, genu valgum, genu varum and recurvatum. 1. Degenerative and infective conditions : osteoarthritis of major joints, spondylosis, spondylitis spondylolisthesis, PIVD, Periarthritis of shoulder, Tuberculosis of spine, bone and major joint, Perthe's disease Rheumatoid arthritis, Ankylosing spondylitis etc. and other miscellaneous orthopaedic conditions treated by physiotherapy. 2. Principles of sports physiotherapy – causes of sports injury, prevention of sports injuries, management of acute sports injury, common occurred injuries. Role of physiotherapist in sports, principle & advanced rehabilitation of the injured athlete.
Physiotherapy In Orthopaedic Conditions - Practical
Internal Viva:15 Marks External Viva: 15 Marks Regional Musculoskeletal Assessment: 10 marks Case Study Musculoskeletal / Sports Injury: 20 Marks Case study Degenerative condition/ Deformity: 20 Marks
Various physiotherapy modalities and treatment techniques for the above mentioned conditions to be demonstrated and practiced by the students in clinical setup.
Recommended Reading: 1. Cash's Textbook of Orthopaedics and Rheumatology for Physiotherapists – Downie – Jaypee Brothers. 2. Tidy's Physiotherapy – Thomson et al – Butterworth Heinmann. 3. Essentials of Orthopaedics and applied physiotherapy – Joshi and Kotwal – B.L. Churchill Livingstone. 4. Tetraplegia & Paraplegia – Bromley – W.B. Saunders. 5. Orthopaedic Physiotherapy – Donatelli & Wooden – W.B. Saunders. 6. Rheumatological Physiotherapy – David – Mosby. 7. Orthopaedic Physiotherapy - Tidswell – Mosby. 8. Physiotherapy for Amputee – Engstrom & Van de van – Churchill Livingstone. 9. Sports Injuries: Diagnosis and Management: Norris Butterworth Heinmann.
BPT 304: Physiotherapy in Medical Conditions

Teaching Hours:	Theory = 125, Practical / Clinical Training = 175
Theory Exam Time:	03 Hours
MARKS	Theory: 80 + 20 Int. Assessment = 100 Marks
	Practical: 80 + 20 Int. Assessment = 100 Marks
Instructions for theory paper setting: The question paper covering the entire course shall be divided into two sections. Both sections will be attempted on a single answer sheet and to be evaluated by a single examiner.	
Section A: Question 1: This will consist of Five short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 3 marks total weightage being 15 marks. Question 2: This will consist of one medium answer question with answer upto three pages in length. This question will be compulsory. This question will carry 10 marks. Question 3: This will consist of two long answer questions with answer to each question upto 5 pages in length. Two questions will be set by the examiner and the candidate will be required to attempt any one and the question will carry 15 marks. Section B: Same as in Section A.	
COURSE OBJECTIVES & LEARNING OUTCOMES: The OBJECTIVES of the course is that after the specified hours of lectures and demonstrations the student will be able to- 1. Acquire the knowledge of Etiology, Patho-physiology, signs and symptoms and management in brief of the infectious diseases, diseases of metabolism especially obesity and other related medical conditions. 2. Acquire knowledge in structure, function of the skin and about various primary, secondary and special skin lesions related to systemic disorders 3. Acquire knowledge of etiology, clinical features and management of bacterial, fungal, viral, allergic, autoimmune skin diseases, sexually transmitted diseases, psychiatric conditions and leprosy. 4. Describe aetiology, pathophysiology, sign and symptoms, clinical evaluation and management of the various cardio-vascular and respiratory disorders with interpretation of investigations: chest x-ray, Echocardiography, blood gas analysis, blood investigations and pulmonary function test 5. Acquire the knowledge of auto-immune & rheumatological conditions with special emphasis to those involving Musculoskeletal system and skin, with regards to etiology, pathophysiology, signs and symptoms, differential diagnosis and medical management of same 6. Identify, discuss and analyse cardio vascular and pulmonary dysfunction based on pathophysiological principles and arrive at the diagnosis 7. Describe normal development and growth of a child, importance of immunization and breast feeding and psychological aspect of development 8. Acquired skill of clinical examination of a neonate/child with respect to neurological function. 9. Describe and manage the various musculoskeletal, cardiopulmonary and neurological disorders in elderly.	
Section A	

Unit I :PT in General Medicine

Review of the Pathological and principles of management by Physiotherapy to the following conditions :

1. Inflammation – acute, chronic and suppurative.
2. Oedema – Traumatic, obstructive, Paralytic, Oedema due to poor muscle and laxity of the fascia.
3. Arthritis and Allied Conditions (in details) :
 - a) Osteo – arthritis – generalized, Degenerative and traumatic, spondylosis and disorders.
 - b) Rheumatoid Arthritis, Still's disease, infective Arthritis.
 - c) Spondylitis, Ankylosing Spondylitis.
 - d) Nonarticular Rheumatism – Fibrositis, Myalgia, bursitis, Periarthritis etc.
4. Common conditions of Skin – Acne, Psoriasis, Alopecia, Leucoderma, Leprosy, Sexually transmitted diseases.
5. Deficiency diseases – Rickets, Diabetes, Obesity, Osteoporosis and other deficiency disorders related to Physiotherapy.
6. Psychiatric Disorders – Psychosis, Psychoneurosis, Senile dementia.

Unit II: PT in Respiratory Conditions

1. Review of mechanism of normal respiration.
2. Chest examination, including auscultation, percussion.
3. Knowledge of various procedures (invasive and non-invasive) used in the diagnosis and management of various respiratory disorders.
Review of pathological changes and principle of management by physiotherapy of the following conditions:
 - 1) Bronchitis, Asthma, Lung abscess, Bronchiectasis, Emphysema, COPD.
 - 2) Pleurisy and Empyema, Pneumonia.
 - 3) Bacterial Disease.
 - 4) Rheumatic fever, carcinoma of respiratory tract.
 - 5) Paralysis of diaphragm and vocal cords.
 - 6) Chest wall deformities.

Unit III :PT in Cardiovascular conditions

1. Review of anatomy and physiology of the cardiovascular system.
2. Knowledge of various investigative procedures (invasive and noninvasive) used in the diagnosis of various cardiovascular disorders.
3. Review of the pathological changes and principle of management by physiotherapy of the following conditions :
Thrombosis, Embolism, Buerger's diseases, Arteriosclerosis, Thrombophlebitis, Phlebitis, Gangrene, Congestive Cardiac failure. Hypertension, Hypotension, aneurysm.

SECTION-B**Unit IV :PT in Paediatric conditions**

- A. Review of the examination & assessment of a Paediatric patient.
- B. Review of pathological changes and principle of management by physiotherapy of the following conditions. :
 - 1) Common congenital & acquired musculo skeletal disorders.
 - 2) Common congenital & acquired neurological disorders (CNS & PNS).
 - 3) Common heredity disorders.
 - 4) Common nutritional, ,metabolic and vitamin deficiency disorders.
 - 5) Cerebral palsy, myopathy and muscular dystrophies.

Unit V: PT in Geriatric conditions

- A. Review of the examination & assessment of a Geriatric patient.
- B. Review of pathological changes and principle of management by physiotherapy of the following conditions :

1) Musculoskeletal disorders 2) Cardiopulmonary disorders. 3) Neurological disorders (CNS & PNS). 4) Injuries & accidents specific to the aged.
PT in Medical Conditions Practical
Internal Viva:20 Marks External Viva: 20 Marks Case Study 1- Paediatric Conditions: 20 marks Case Study 2- Geriatric Conditions: 20 Marks
Recommended Reading: 1. Cash's Textbook of general medical and surgical conditions for Physiotherapists -Downie – Jaypee Brothers. 2. Essentials of Cardiopulmonary physical therapy – Hillegass&Sadowsky – W.B. Saunders. 3. Cash's Textbook of Chest, Heart and Vascular Disorders for Physiotherapists – Downie – J.F. Brothers. 4. The Brompton Guide to Chest Physical Therapy. 5. Cardiopulmonary Physical Therapy – Irwin and Tecklin – Mosby. 6. Cardiovascular / Respiratory Physiotherapy – Smith & Ball – Mosby. 7. ACSM Guidelines for Exercise testing and Prescription – ACSM – Williams and Wilkins. 8. Chest Physiotherapy in Intensive Care Unit – Mackenzie et al – Williams and Wilkins. 9. Motor Assessment of Developing Infant – Piper & Darrah – W.B., Saunders.
BPT 305: Research Methodology and Biostatistics
Teaching Hours: Theory = 100 Practical/ Clinical Training = Nil
Theory Exam Time: 03 Hours
MARKS Theory: 80 + 20 Int. Assessment = 100 Marks
Practical: Nil
Instructions for theory paper setting: The question paper covering the entire course shall be divided into two sections. Both sections will be attempted on a single answer sheet and to be evaluated by a single examiner. Section A: Question1: This will consist of Five short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 3 marks total weightage being 15 marks. Question 2: This will consist of one medium answer question with answer upto three pages in length. This question will be compulsory. This question will carry 10 marks. Question 3: This will consist of two long answer questions with answer to each question upto 5 pages in length. Two questions will be set by the examiner and the candidate will be required to attempt any one and the question will carry 15 marks.

Section B: Same as in Section A.
COURSE OBJECTIVES& LEARNING OUTCOMES: On completion of this subject, the students will be able to- 1. Apply the principles of research and biostatistics to health practice including the design and implementation of health related research studies. 2. Plan and execute a research study, including clinical trials. 3. Use / organize bio-statistical analysis using computers and software and prepare reports / papers. 4. Critically evaluate research activities. 5. Make recommendations on policy and procedures. 6. Plan and conduct an educational session / programme.
Section A: Research Methodology
UNIT I : 1. Introduction to Research methodology: Meaning of research, OBJECTIVESs of research, Motivation in research, Types of research & research approaches, Research methods vs methodology, Criteria for good research. 2. Research problem: Statement of research problem, Statement of purpose and OBJECTIVESs 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. UNIT II : 1. 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. 2. Methods of data collection: collection of primary data, collection data through questionnaires & schedules, Difference between questionnaires & schedules. 3. Computer technology: Introduction to Computers, computer application in research computers & researcher.
Section B: BIOSTATISTICS
UNIT III: 1. Introduction: Meaning, definition, characteristics of statistics. Importance of the study of statistics, Branches of statistics, Statistics and health science, Parameters and Estimates, 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. Measures of Central Tendency: Need for measures of central Tendency, Definition and calculation of Mean – ungrouped and grouped, interpretation and calculation of Median- ungrouped and grouped, Meaning and calculation of Mode, Geometric mean & Harmonic mean, Guidelines for the use of various measures of central tendency. 4. Measures of Dispersion: Range, mean deviation, standard deviation & variance. 5. Probability and Standard Distributions: Meaning of probability of standard distribution, the binominal distribution, the normal distribution, Divergence from normality – skewness, kurtosis. UNIT IV: 1. Correlation & regression: Significance, correlation coefficient, linear regression & regression equation. 2. Testing of Hypotheses, Level of significance, Degrees of freedom.

3. **Chi-square test, test of Goodness of fit & student t-test.**
4. **Analysis of variance & covariance:** Analysis of variance (ANOVA), what is ANOVA? Basic principle of ANOVA, ANOVA technique, Analysis of Co variance (ANACOVA)
5. **Sampling:** Definition, Types- simple, random, stratified, cluster and double sampling. Need for sampling - Criteria for good samples, Application of sampling in community, Procedures of sampling and sampling designs errors.

Recommended Reading:

1. Methods in Biostatistics – Mahajan – J.P.
2. Statistics in Medicine – Colton – Little Brown, Boston.
3. Research for Physiotherapist : Project Design and Analysis – Hicks – Churchill Livingstone.
4. Biostatistics : The manual for statistics methods for use in health and nutrition – K.V. Rao.
5. Research methods in Behavioural Sciences – Mohsin – Orient Publications.

BPT Fourth Year

(Total Theory + Practical/Clinical = 1100 hours)

BPT 401: General Surgery

Teaching Hours: Theory = 100, Practical / Clinical Training = 100

Theory Exam Time: 03 Hours

MARKS Theory: 80 + 20 Int. Assessment = 100 Marks

Practical: 80 + 20 Int. Assessment = 100 Marks

Instructions for theory paper setting:

The question paper covering the entire course shall be divided into two sections. Both sections will be attempted on a single answer sheet and to be evaluated by a single examiner.

Section A:

Question 1: This will consist of Five short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 3 marks total weightage being 15 marks.

Question 2: This will consist of one medium answer question with answer upto three pages in length. This question will be compulsory. This question will carry 10 marks.

Question 3: This will consist of two long answer questions with answer to each question upto 5 pages in length. Two questions will be set by the examiner and the candidate will be required to attempt any one and the question will carry 15 marks.

Section B:

Same as in Section A.

COURSE OBJECTIVES& LEARNING OUTCOMES:

The OBJECTIVES of the course is that after the specified hours of lectures and demonstrations the student will be able to -

1. Understand & describe pre operative evaluation of various surgical indications in abdominal thoracic, Neuro Surgical & Peripheral vascular conditions.
2. Understand the anatomy, physiology and various conditions in Obstetrics and Gynaecological conditions relevant to Physiotherapy.
3. Discuss various complications during pregnancy, labor, puerperium and postnatal stage, pre and post-menopausal stage and various aspects of urogenital dysfunction and the management in brief.
4. Understand surgical steps & approaches in short & should be able to describe components of soft tissues cut to reach target tissue & complications.
5. Assess post operative complications & its implications in ward treatment, prognosis, morbidity & mortality.
6. Describe effects of surgical trauma & Anaesthesia in post operative course.
7. Understand classify, clinically assess, evaluate & describe surgical management in brief in.
 - a) Wounds and Ulcers
 - b) Burns
 - c) Head Injuries.
8. Understand the anatomy, physiology and various conditions in Obstetrics and Gynaecological conditions relevant to Physiotherapy.
9. Acquire the knowledge of various conditions of Eye and ENT.

Section A

Unit I:

1. Introduction to principles of surgery and its procedure.
2. Shock – definition, types, clinical, feature, pathology & management.
3. Haemorrhage – common sites, complication, clinical features & management.
4. Blood Transfusion – Blood group matching, indication & complication.
5. Anaesthesia – Principles of anaesthesia, types & procedure.

Unit II:

1. Wounds, Tissue repair, Classification – Acute Wounds, Chronic wounds, Scars & their Management.
2. Wound infections: Physiology & manifestation, Types of infections & their management.
3. Tumors and Ulcers:
 - (a) Tumors- Types of Management
 - (b) Ulcers- Types of Management
4. Burn: Causes, Classification, Clinical Features and Management.
5. Skin Grafting- Indications, Types & Procedures.
6. Hand Infections- Types & Management.
7. General Injuries- Types & Management.

Unit III: Obstetrics & Gynaecology:

1. Pregnancy, stages of labor and its complications, Indications and types of surgical procedures.
2. Gynaecological disorders – Salpingitis, parametritis, Retro-uterus, prolapse of uterus, pelvic inflammatory Diseases, urinary incontinence.

SECTION B

Unit IV:

1. Complications of Surgery
2. Abdominal Surgery- Types of Incision & common surgical procedures.
3. Thoracic and Cardiac Surgery – Types of Incision and common surgical procedures.

Unit V: Ophthalmology:

1. Common conditions of eye: Cataract, Glaucoma, Diabetic complications of eye, injuries, inflammations and other infections of eye.
2. Ptosis.
3. Blindness – common causes & management.
4. Refractions – testing, errors & remedies.
5. Strabismus – types, features & corrective measures.

Unit VI: Otorhinolaryngology (ENT):

1. Introduction – Outline mechanism of audition, olfaction & speech.
2. Classify causes of hearing impairment, assessment techniques, conservative & surgical management.
3. Hearing Aids – types & indications.
4. Outline common ENT infections & lesions, which affect hearing, breathing, speech & their management.
5. Outline the function of vestibular organ, its common disorders & their management.

General Surgery Practical

Identification and description of common surgical items: 20 marks

Viva External: 30 marks

Viva Internal: 30 marks

Recommended Reading:

1. Baily and Love – Short Practice of Surgery – Mann and Rains – H.K. Levis Publications, London.
2. Undergraduate Surgery – Nan – Academic Publishers, Calcutta.
3. Textbook of Surgery – Gupta R.L. – Jaypee.
4. Principles and Practices of trauma care – Kocher – Jaypee.
5. Clinical Methods – S. Das – Calcutta.

BPT 402: Neurology

Teaching Hours: Theory = 100, Practical/ Clinical Training = 100

Theory Exam Time: 03 Hours

MARKS	Theory: 80 + 20 Int. Assessment = 100 Marks
	Practical: 80 + 20 Int. Assessment = 100 Marks
Instructions for theory paper setting:	
The question paper covering the entire course shall be divided into two sections. Both sections will be attempted on a single answer sheet.	
Section A:	
Question1: This will consist of Five short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 3 marks total weightage being 15 marks.	
Question 2: This will consist of one medium answer question with answer upto three pages in length. This question will be compulsory. This question will carry 10 marks.	
Question 3: This will consist of two long answer questions with answer to each question upto 5 pages in length. Two questions will be set by the examiner and the candidate will be required to attempt any one and the question will carry 15 marks.	
Section B:	
Same as in Section A.	
COURSE OBJECTIVES& LEARNING OUTCOMES:	
1. To make students aware of parts of brain and spinal cord and the related clinical anatomy. 2. To make them understand basic examination and assessment of neurological system in adults. 3. Know the aetiology, classification , pathology, clinical features, relevant investigations, complications, surgical and non surgical management of various Neurological conditions : congenital and childhood disorders, Head Injury, Spinal Cord Injury, Transverse Myelitis, Multiple Sclerosis, infections of Brain and Spinal Cord, Peripheral Nerve Disorders, Tumours , Neuropsychological Disorders 4. Demonstration of working knowledge of neuro-anatomical features and physiology and pathophysiology of sensori -neuro- motor systems. On completion of this course, the students will be able to: 1. Comprehend the structure and function of parts of Nervous System. 2. Correlate the knowledge gained in understanding neurological dysfunction. 3. Correlate the clinical manifestations to the organ of dysfunction of the Nervous System. 4. Understand clinical reasoning skills and an evidence based approach to decision making in neurological conditions. 5. Appreciate the role of the client and health care professionals in holistic management of neurological patient.	
Section A	
Unit I :	
1. Neuroanatomy : Review the basic anatomy of the brain and spinal cord including Blood supply of the brain and spinal cord, anatomy of the visual pathway, connections of the cerebellum and extra pyramidal system, relationship of the spinal nerves to the spinal cord segments, long tracts of the spinal cord, the brachial and lumbar plexus and cranial nerves. 2. Neurophysiology: Review in brief the Neurophysiological basis of tone and disorders of the tone and posture, bladder control, muscle contraction, movement and pain.	

3. Assessment and evaluate procedures for the neurological patient.
4. Review of the principles of the management of a neurological patient.

Unit II

Briefly outline the aetogenesis, clinical features and management of the following Neurological disorders

1. Congenital and childhood disorders – Cerebral palsy, Hydrocephalus and Spina Bifida.
2. Cerebrovascular accidents – General classification, thrombotic, embolic, haemorrhagic and inflammatory, strokes, gross localization and sequelae.
3. Trauma – localization, first aid and management of sequelae of head injury and spinal cord injury.
4. Diseases of the spinal cord – Craniovertebral junction Anomalies, Syringomyelia, Cervical and lumbar disc lesions, Tumors and Spinal arachnoiditis.
5. Demyelinating diseases (central and peripheral) – Guillain – Bane syndrome, Acute disseminated encephalomyelitis, Transverse myelitis and Multiple sclerosis.

SECTION B

Unit III:

Briefly outline the aetogenesis, clinical features and management of the following Neurological disorders :

1. Degenerative disorders – Parkinson's disease and dementia.
2. Infections – Pyogenic Meningitis sequelae, Tuberculous infection of central nervous system and Poliomyelitis.
3. Diseases of the muscle – Classification, signs, symptoms, progression and management.
4. Peripheral nerve disorders – Peripheral nerve injuries, Entrapment neuropathies and Peripheral neuropathies.

Unit IV:

1. Epilepsy – Definition, classification and management.
2. Myasthenia Gravis – Definition, course and management.
3. Intracranial Tumors – Broad classifications, signs and symptoms.
4. Motor neuron disease – Definition, classification and management.
5. Cranial nerve – Types of Disorders, clinical manifestation & management.

Unit V: Psychiatry

1. Introduction to neuropsychology: Definition, defense mechanism, symptomatology, types, causes, assessment of mental disorders, psychosomatic disorders.

2. Disorders :
- Psychosis – Schizophrenia (including paranoid) maniac depressive psychosis, involvement psychosis.
 - Psychoneurosis – Anxiety, hysteria, anxiety states, neurasthesis, reactive depression, obsessive compulsive neurosis.
 - Organic reaction to – toxins, trauma & infection.
 - Senile dementia.
3. Mental retardation – definition, causes manifestation and management.
4. Therapies :
- Psychotherapy – Group therapy, Psychodrama, behavior, modification, family therapy, play therapy, psychoanalysis, hypnosis.
 - Drug therapy.
 - Electro convulsive therapy.

Neurology Practical

Neurological Assessment: 20 marks

Case study: 20 Marks

External Viva: 20 Marks

Internal Viva: 20 Marks

Recommended Reading:

- Davidson's Principles and practices of medicine – Edward – Churchill Livingstone.
- Brain's Diseases of the Nervous System – Nalton – ELBS.
- Guided to clinical Neurology – Mohn&Gaectier – Churchill Livingstone.
- Principles of Neurology – Victor – McGraw Hill International edition.

BPT 403: Physiotherapy in Neurological Conditions

Teaching Hours: Theory = 100 Practical/ Clinical Training = 150

Theory Exam Time: 03 Hours

MARKS Theory: 80 + 20 Int. Assessment = 100 Marks

Practical: 80 + 20 Int. Assessment = 100 Marks

Instructions for theory paper setting:

The question paper covering the entire course shall be divided into two sections. Both sections will be attempted on a single answer sheet.

Section A:

Question1: This will consist of Five short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 3 marks total weightage being 15 marks.

Question 2: This will consist of one medium answer question with answer upto three pages in length.

This question will be compulsory. This question will carry 10 marks.

Question 3: This will consist of two long answer questions with answer to each question upto 5 pages in length. Two questions will be set by the examiner and the candidate will be required to attempt any one and the question will carry 15 marks.

Section B:

Same as in Section A.

COURSE OBJECTIVES& LEARNING OUTCOMES:

The OBJECTIVES of the course is that after the specified hours of lectures and demonstrations the student will be able to-

1. Identify disabilities due to neurological dysfunction, plan and set treatment goals and apply the skills gained in exercise therapy and electrotherapy in these clinical situations to restore neurological function.
2. Understand the basic concepts, etiology, Classification, Pathology, Clinical Features, Relevant Investigations, Complications, Surgical & Non Surgical Management of various Neurological Conditions.
3. Perform as a competent physiotherapist and assess, identify, analyze neuro-motor & psychosomatic dysfunction in adults & pediatrics and co-relate the finding with provisional diagnosis, interpretation of routine neurological investigations & arrive at functional diagnosis with clinical reasoning.
4. Evaluate patients for abnormalities in neurodevelopment and functional limitations and execute all routine physiotherapeutic procedures as per the evaluation to restore neurological function.
5. Able to operate the physiotherapy equipment used in the treatment of patient, physiotherapy treatment planning (both electrotherapy and exercise therapy), execute short term & long-term goals with appropriate therapeutic interventions & modify treatment techniques according to stage of disease.
6. Able to provide patient education about various physiotherapeutic interventions to the patient and care givers.

Section A

1. Examination of Neurological disorders and principles of treatment.
2. Review of pathological changes and principle of management & physiotherapy of the following conditions:
 - a) Peripheral Nerve and cranial Nerve lesions.
 - b) Neuritis and Neuralgia - Brachial, sciatic etc.
 - c) Infections – Poliomyelitis, meningitis, Encephalitis, Polyneuritis Transverse myelitis.
 - d) Traumatic head injuries and spinal cord injury.

SECTION B

1. Knowledge of various investigative procedures (invasive & noninvasive) used in the diagnosis of various

neurological disorders.

2. Review of pathological changes and principle of management & physiotherapy of the following conditions :

a) Hemiplegia, Paraplegia, Tabesdoraslis, cerebellar ataxia, extra pyramidal lesions, Gullian Barre Syndrome, Parkinsonism.

b) Disseminated sclerosis, Amyotrophic lateral sclerosis, Symgomyela subacute combined degeneration of cord motor neuron disease.

PT in Neurological Conditions Practical

Assessment in Neuro Conditions: 20 Marks

Case Study: 20 Marks

External Grand Viva: 20 Marks

Internal Grand Viva: 20 Marks

Various Physiotherapy modalities and treatment techniques for above mentioned conditions should be demonstrated and practiced by the students.

Recommended Reading:

1. Cash's textbook of neurology & physiotherapists – Downi – J.P. Brothers.
2. Adult Hemiplegia – Evaluation & treatment – Bobath – Oxford Butterworth Heinmann.
3. Neurological Rehabilitation – Carr & Shepherd – Butterworth Heinmann.
4. Tetraplegia & Paraplegia – A guide for physiotherapist – Bromley – Churchill Livingstone.
5. Neurological Physiotherapy – A problem solving approach – Susan Edwards – Churchill Livingstone.
6. Neurological Rehabilitation – Umpherd- Mosby.
7. Motor Assessment of Developing Infant – Piper & Darrah – W.B., Saunders.
8. Treatment of Cerebral Palsy and Motor Delay – Levitts – Blackwell Scientific Publications, London.

BPT 404: Physiotherapy in Surgical, Cardio Thoracic and Vascular Surgical Conditions

Teaching Hours: Theory = 100, Practical/ Clinical Training = 150

Theory Exam Time: 03 Hours

MARKS Theory: 80 + 20 Int. Assessment = 100 Marks

Practical: 80 + 20 Int. Assessment = 100 Marks

Instructions for theory paper setting:

The question paper covering the entire course shall be divided into two sections. Both sections will be attempted on a single answer sheet.

Section A:

Question1: This will consist of Five short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 3 marks total weightage being 15 marks.

Question 2: This will consist of one medium answer question with answer upto three pages in length. This question will be compulsory. This question will carry 10 marks.

Question 3: This will consist of two long answer questions with answer to each question upto 5 pages in length. Two questions will be set by the examiner and the candidate will be required to attempt any one and the question will carry 15 marks.

Section B:

Same as in Section A.

COURSE OBJECTIVES& LEARNING OUTCOMES:

The OBJECTIVES of the course is that after the specified hours of lectures and demonstrations the student will be able to-

1. Discuss and analyze cardio vascular and pulmonary dysfunction based on pathophysiological principles and arrive at the appropriate diagnosis
2. Apply knowledge of rationale of basic investigative approaches in the surgical intervention regimes related to cardio vascular and pulmonary impairment
3. Apply 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 surgical conditions
4. Understand the 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. Execute the skill of evaluation and interpretation of functional capacity using simple exercise testing procedure.
6. Acquire the knowledge of evaluation and physiotherapy treatment for obstetrics and gynecological conditions
7. Acquire the skill of clinical examination of the pelvic floor dysfunction and its rehabilitation.
8. Acquire the knowledge of various conditions where physiotherapy plays a vital role in the rehabilitation (eye and ENT conditions)
9. Assess the various degrees of burns, plan and implement physiotherapy techniques for the rehabilitation of a burn and wound patient.
10. Understand the pathophysiological changes, principles, pre &post operative management of the brain, vertebral column and peripheral nerve surgeries.

Section A**UnitI : General Surgery, Eye & ENT**

Review of pathological changes and principle of pre and post operative management by physiotherapy of the following conditions :

1. Common abdominal surgeries, including GIT, liver, spleen, kidney, bladder & Endoscopy etc.

2. Common organ transplant surgeries – heart, liver, bone marrow etc.

3. Common operations of the ear, nose, throat & jaw as related to physiotherapy.

UnitII : Thoracic Surgery

Review of pathological changes and principle of pre and post operative management by physiotherapy of the following conditions :

1. Lobectomy, Pneumonectomy, Thoracotomy, Thoracoplasty & Key hole surgeries.

2. Corrective surgeries of congenital heart defects, angioplasties, blood vessel grafting, open heart surgeries & heart transplant.

SECTION B

Section III: Gynaecology and Obstetrics

Common operation of reproductive system, including surgical intervention for child delivery Ante natal & post natal, physiotherapy.

Section IV - Wounds, Burns & Plastic Surgery

Review of pathological changes and principle of pre and post operative management by physiotherapy of the following conditions :

1. Wounds, ulcers, pressure sores.

2. Burns & their complications.

3. Common reconstructive surgical proceedings of the management of wounds, ulcers, burns & consequent contractures & deformities.

Section V - Neurosurgery

Review of pathological changes and principle of pre and post operative management by physiotherapy of the following conditions :

1. Common surgeries of the cranium & brain.

2. Common surgeries of vertebral column & spinal cord.

3. Common surgeries of peripheral nerves.

4. Surgical interventions in traumatic head injuries.

PT in Surgical, Cardiothoracic and Vascular Surgical Conditions Practical	
Assessment of Cardiovascular and Respiratory Status: 20 Marks Case Study: 20 Marks External Viva: 20 Marks Internal Viva: 20 Marks	
Recommended Reading: 1. Cash's Textbook of general medical and surgical conditions for physiotherapists – Downie – Jaypee Brothers. 2. Cash's textbook of heart, chest and vascular disorders for physiotherapists – Downie – Jaypee Brothers. 3. Principles and practices of cardiopulmonary physical therapy – Frown Felter – Mosby. 4. Chest physiotherapy in intensive care Unit – Mackenzie – Williams & Wilkins. 5. Restoration of Motor Functions in stroke patient : A Physiotherapist Approach – Johnstone Churchill Livingstone. 6. Physiotherapy in obstetrics and gynaecology – Polden – F.A. Davis.	
BPT 405: Physiotherapy Ethics, Administration & Rehabilitation	
Teaching Hours:	Theory = 100 Practical / Clinical Training= 100
Theory Exam Time: 03 Hours	
MARKS	Theory: 80 + 20 Int. Assessment = 100 Marks
	Practical: 80 + 20 Int. Assessment = 100 Marks
Instructions for theory paper setting: The question paper covering the entire course shall be divided into two sections. Both sections will be attempted on a single answer sheet.	
Section A: Question1: This will consist of Five short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 3 marks total weightage being 15 marks. Question 2: This will consist of one medium answer question with answer upto three pages in length. This question will be compulsory. This question will carry 10 marks. Question 3: This will consist of two long answer questions with answer to each question upto 5 pages in length. Two questions will be set by the examiner and the candidate will be required to attempt any one and the question will carry 15 marks. Section B: Same as in Section A.	
COURSE OBJECTIVES&LEARNING OUTCOMES:	
The OBJECTIVES of the course is that after the specified hours of lectures and demonstrations the student will be able to- 1. Comprehend the concept and models of Disability and Rehabilitation. 2. Recount the history & development of Physiotherapy as a profession. 3. Have a good understanding of his role in a multidisciplinary team and the ethical guidelines to be	

followed in the profession of Physiotherapy.

4. Understand the laws and rights of Disabled persons and government policies and provisions for their welfare.

5. Understand the processes involved in human resources and financial management.

6. Identify and judiciously prescribe suitable orthosis or prosthesis required for management of disability.

7. Apply knowledge of wheelchairs and activities of daily living in the process of rehabilitation of persons with physical/ locomotor disabilities

Section A

Unit I : Physiotherapy Ethics

1. History of Physiotherapy.
2. Philosophy and Philosophical statements.
3. Major Ethical principles applied to moral issue in health care.
4. Rules of Professional conduct.
5. Scope of practice.
6. Relationships with patients.
7. Relationships with medical colleagues.
8. Relationships between professionals.
9. Relationships with in the profession.
10. Sale of goods.
11. Personnel and professional standard.
12. Professional standard.

Unit II: Physiotherapy Administration

1. Responsibility and Confidentiality.
2. Provision of services and advertising.
3. Professional and government licensing, Accreditation and Education standards.
4. Laws and Legal concepts:
 - Protection from Malpractice claims, Consumer Protection Act
 - Liability and Documentations.

Unit III:

1. Conceptual framework of rehabilitation, roles of rehabilitation team members, definitions and various models of rehabilitation.
2. Epidemiology of disability with emphasis on locomotor disability, its implications – individual, family, social, economic and the state.
3. Preventive aspects of disability and organizational skills to manage it.
4. Community Based Rehabilitation and outreach programmes to rehabilitate persons with disabilities living in rural areas.
5. Statutory provisions, Schemes of assistance to persons with disability.
6. Role of NGOs in rehabilitation of the persons with disabilities.
7. Basic principles of administration and finance including personnel management and budget preparation and procurement etc.

SECTION B

Unit IV

1. Principles of Orthotics – types, indications, contra-indications, assessment (check out) uses and fitting – region wise.
2. Fabrication of simple splints and self-help devices for upper and lower extremity – indications and application.
3. Principles of Prosthetics – types, indications, contra-indications, assessment (check out), uses and fitting – upper and lower extremity.

Unit V

1. Principles and mechanisms of Communication including speech and hearing.
2. Common disorders of speech and hearing – aetio genesis, clinical features, assessment and principles of management.
3. Principles in the management of vocational problems, including evaluation and vocational goals for people with disability.
4. Principles of rehabilitation Nursing, including function of Nursing personnel and Nursing practice in rehabilitation.

Unit VI

1. Identification, assessment and classification of mentally subnormal.
2. Aetio genesis and principles of management including prevention.
3. Rehabilitation of the mentally subnormal, including vocational training & home education programme.

Unit VII

1. Definition, scope & importance of Activities of Daily Living (ADLs).
2. The teaching and training of (a) wheel chair activities, (b) bed activities (c) transfer activities (d) Locomotor activities (e) Self care activities, such as toilet, eating, dressing etc.

PRACTICALS

Identification & Description of Orthoses: 20 Marks
Identification & Description of Prostheses: 20 Marks
External Viva: 20 Marks
Internal Viva: 20 Marks

1. Introduction, Identification & Indications for the application of various aids & appliances like

common splints, orthotics & prosthetic devices.

2. Visit to some NGO's dealing with persons with disabilities.
3. Learning basic principles of pre-vocational evaluation & occupational therapy.
4. Learning basic principles of vocational training.
1. Demonstration and learning of transfers in and out of bed, wheelchair etc.
2. Demonstration and learning of ADL activities.

Recommended Reading:

1. Physical Rehabilitation – assessment & Treatment – Sullivan & Schmitz – F.A. Davis.
2. Occupational Therapy and Physical dysfunction : Principles, Skills & Practices – Turner, Foster & Johnson – Churchill Livingstone.
3. Hand Splitting – Wilson – W.B. Saunders.
4. Orthotics in Rehabilitation : Splinting the hand and the body – Mckee& Morgan – F.A. Davis.
5. Atlas of Limb Prosthetics – American Academy of Orthopaedic Surgeon - Mosby.
6. Atlas of Orthotics – American Academy of Orthopaedic Surgeon – Mosby.
7. Krusen's Handbook of Physical Medicine & Rehabilitation – Kottke& Lehmann – W.B. Saunders.
8. Willard and Speckman's occupational therapy – Neistadt&Crepeau – Lippincott.