

3/4/2016

Jamia Millia Islamia Mail - (no subject)



Ejaz Husain (Director, CPRS) <ehusain@jmi.ac.in>

(no subject)
2 messages

Fri, Mar 4, 2016 at 2:38 PM

Ejaz Husain (Director, CPRS) <ehusain@jmi.ac.in>
To: Khanna Gulshan <glkhanna@gmail.com>, Mohammad Fahim <vpciphysiology@yahoo.com>, Luqman Khan <lkhan@jmi.ac.in>, Zubia Veqar <veqar.zubia@gmail.com>, Jamal Moiz <jmoiz@jmi.ac.in>, majumi noohu <majuminooHu@gmail.com>, saurabh14332003@yahoo.com, Shahid Raza <shahid_raza107@yahoo.com>, moazzam khan <drmhk5881@gmail.com>, Adila Parveen <adilaprvn@gmail.com>, "Prof. S.M. Haider (D/o Mathematics)" <shaider@jmi.ac.in>
Bcc: Samsher Ahmad <jmi.samsher@gmail.com>, akhlaque33@yahoo.com

Dear Colleagues,

1.3.2015

An ordinary meeting of "Committee of Studies" will be held on 11.3.2015 at 3.30 PM in the Office of the Director, CPRS :

Agenda :

1. Confirmation of last COS meeting held on 10.9.2015
2. New MPT (Sports,Ortho,Neuro & Cardio) Syllabus 2015-16
5. Approval of panel of examiners for Annual exa.2015 of BPT 1-4
6. Approval of panel of examiners for MPT Semester II/IV exam 2015
7. Any other item

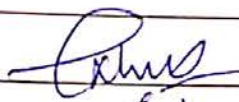


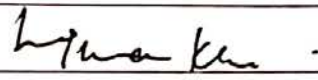


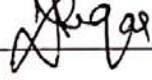
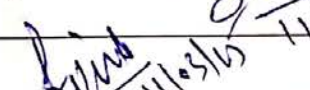

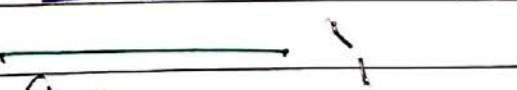

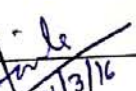
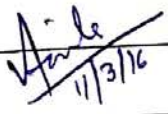
1. Prof.G.L.Khanna, MRIU
2. Prof.M.Fahim, HIMSAR, Jamia Hamdard
3. Prof.Sharif Ahmad, Advisor/Dean, FNS,JMI
4. Prof.Luqman A.Khan, Dept. Of Biosciences ,JMI
5. Prof.khursheed Haider, Dept. Of Mathematics, JMI
6. Dr Zubia Veqar , CPRS
7. Dr.Jamal A.Moiz (PT), CPRS
8. Dr Saurabh Sharma (PT), CPRS
9. Dr.Majumi Noohu (PT), CPRS
10. Dr Shahid Raza (PT), CPRS
11. Dr Moazzam H. Khan (PT), CPRS
12. Dr Adila Perveen ,CPRS

[Handwritten signatures and dates]
 08/03/16
 04/3/16

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 11/3/16

An ordinary meeting of "C.O.S" was held on 11.03.2016 at 3:30 P.M. in the office of the Director, CPRS.

Following were present :-

1. Prof. G.L. Khanna,  (Present).
2. Prof. M. Fahim 
3. Prof. Sharif Ahmad 
4. Prof. Luqman A Khan 
5. Prof. Khurshid Haider 
6. Prof. M. Ejaz Hussain 
7. Dr. Zubia Veqar 
8. Dr. Jamal A. Moiz 
9. Dr. Majumi Noohu 
10. Dr. Shahid Raza 
11. Dr. Saurabh Sharma 
12. Dr. MOazzam H. Khan 
13. Dr. Adila Parveen. 

2

Minutes of the "Committee of Studies" Meeting (11.3.2016 at 3.30 PM)

2

An ordinary meeting of the "Committee of the studies" was held on 11.3.2016 at 3.30 PM in the office of the Director, CPRS to discuss the following :

Agenda :

1. Confirmation of last COS meeting held on 10.9.2015
2. New MPT (Sports, Ortho, Neuro & Cardio) Syllabus 2015-16
3. Approval of panel of examiners for Annual exam. 2015 of BPT 1-4
4. Approval of panel of examiners for MPT Semester II/IV exam 2015
5. Approval of panel of examiners for B.Voc. MLS/MEP Sem-I exam 2016
6. Any other item

Following were present :

1. Prof.G.L.Khanna, MRIU
2. Prof.M.Fahim, HIMSAR, Jamia Hamdard
3. Prof.Luqman A.Khan, Dept. Of Biosciences ,JMI
4. Dr Zubia Veqar , CPRS
5. Dr.Jamal A.Moiz (PT), CPRS
6. Dr Saurabh Sharma (PT), CPRS
7. Dr.Majumi Noohu (PT), CPRS
8. Dr Shahid Raza (PT), CPRS
9. Dr Moazzam H. Khan (PT) ,CPRS
10. Dr Adila Perween ,CPRS
11. Prof.M.Ejaz Hussain, CPRS

*Prof. Sharif Ahmad and Prof.Khursheed Haider could not attend the meeting due to their prior engagement.

The Committee approved the following:

1. Confirmed the minutes of the meeting held on 10.9.2015.
2. Committee discussed and approved the panel of examiners for BPT , Par.I to IV Annual exam 2016 (Annexure-I)
3. Committee Approved the panel of examiners for MPT Sem-II & IV (Sports, Orthopedics, Neuro & Cardio &) Semester exam 2016 (Annexure-II A/B/C/D/E) .
4. Committee discussed and approved the panel of examiners for B.Voc. MLS/MEP Se.I Exam.2016 (Annexure-III)
5. Committee discussed in detail the New Syllabus of MPT Sports, Orthopedics, Neuro & Cardio and approved to offered in the Academic session 2015-16 (Annex-IV A/B/C/D-


outline):

- Syllabus of Semester-I and IV to remain common in all stream except the Project code will be speciality wise
- Sem-II will have only one common paper MPT201 Techniques in Physiotherapy instead of two common papers as earlier(MPT201 and MPT202)
- One new paper MPT401 Physiotherapy in Life Style disorder of 4 credits was introduced for students admitted in MPT 2015-16.

5.Under any other item :

- The progress report of Ph.D. students Shalini Verma, Irshad Ahmad, Deepika Singla and Kamran Ali was reported. These Ph.D. students also requested COS to allow them to submit their annual fee., which they could not do on time and accounts Dept had asked them to take COS permission. The committee approved their request and allowed them to submit the annual fee with advisory to submit the fee on time in future.

The meeting ended at 6PM PM.


Prof.M.Ejaz Hussain
Chairman,COS &
Director,CPRS

17/5/16
Prof. & Director
Centre for Physiotherapy &
Rehabilitation Science
Jamia Millia Islamia, New Delhi-25

Minutes of COS Meeting held on 06.09.2017

An ordinary meeting of "Committee of Studies" was held on 6.9.2017 at 11.30 AM in the Office of the Director, CPRS.

Agenda:

1. Confirmation of last COS meeting held on 13.4.2017
2. Approval of Syllabus of B.Voc.MLS & MEP Sem. V and VI
3. Approval of Panel of examiners for MLS/MEP Semester III, V & I exam, December 2017
4. Approval of panel of examiners for MPT Semester III & I exam., December 2017
5. Approval of new MPT syllabus w.e.f 2017-18
6. Change of Ph.D. supervisor and approval of Ph.D. topic of Pooja Bhati
7. Any other item

Following persons attended the meeting :

1. Prof.M.Fahim, IHMSAR, Jamia Hamdard	Ext Member
2. Prof. Amir Azam, Officiating Dean ,FNS, JMI	Int. Member
3. Prof.Luqman A.Khan, Dept. Of Biosciences ,JMI	
4. Prof.M.Ejaz Hussain,	Member
5. Dr. Jamal A.Moiz (PT),	""
11. Dr. Saurabh Sharma (PT),	""
12. Dr. Shahid Raza (PT),	""
13. Dr. Moazzam H Khan (PT),	""
14. Dr. Adila Parveen	""
15. Dr Nisar Ahmad (PT)	Spl invitee
15. Dr. Mohd . Rizwan Alam	Spl initees from, DDUKK
16. Dr. Monis Khan	""
17. Dr. Hina Kauser	""
18. Dr. Shahnaaz Parveen	""

The Committee approved the following:

1. Confirmed the minutes of the meeting held on 13.4.2017
2. Committee discussed and approved the Syllabus of Syllabus of B.Voc.MLS & MEP Sem. V and VI
3. Approval of Panel of examiners for MLS/MEP Semester III & V exam 2017 to be held in December/January 2017. (**Annexure-I**)
4. Committee Approved the panel of examiners for MPT Sem-I (common papers) & Sem.-III (Sports, Orthopedics, Neuro & Cardio &) Semester exam 2017 (**Annexure-II**)



5. Approved the new BPT syllabus w.e.f 2017-18 as per following details :

Course Code	Subject	IA	AE	Marks
BPT 101	Human Anatomy	30	90	120
BPT 102	Human Physiology	30	90	120
BPT 103	Biochemistry and Microbiology	25	75	100
BPT 104	Psychology and Sociology	25	75	100
BPT 105	Exercise Therapy I	25	75	100
BPT 106	Electrotherapy I	25	75	100
BPT 107	Computer Application and Communicative English	25	75	100
BPT 108P	Anatomy Practical	25	25	50
BPT 109P	Physiology Practical	25	25	50
BPT 110P	Biochemistry and Microbiology Practical	25	25	50
BPT 111P	Exercise Therapy I Practical	50	50	100
BPT 112P	Electrotherapy I Practical	50	50	100
Grand Total		360	730	1090

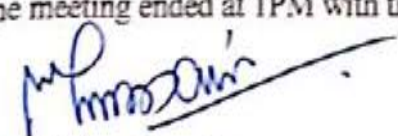
6. The committee was apprised of sudden repatriation of **Prof. Shweta Shinoy (on deputation) to her parent University GNDU, Amritsar**. One of the Ph.D. student Ms Pooja Bhati, admitted in 2016 was registered under her, as guide and Prof.M.Ejaz Hussain as Co-guide. However after Prof Shinoy left, Ms Pooja has requested COS to provide a guide and approve her revised Ph.D. topic. The committee decided to **transfer Ms Pooja Bhati under the guidance of Director, Prof.M.Ejaz Hussain as guide instead of co guide** and also approved her revised Ph.D. topic after interviewing the candidate, as per following details

Name of Scholar	Ph.D. topic	Supervisor
Pooja Bhati	"Modulation of cardiac autonomic control by resistance training in Type -2 Diabetes Mellitus" w.e.f 7.11.2016	Prof.M.Ejaz Hussain

7. The committee authorized the Director to appoint suitable examiners for the compartmental exam.2017for MPT/BPT spl.

8. Any other item : The committee discussed the request of Ph.D. Scholars **Saurabh Sharma** for one year extension of his PhD tenure in order to complete his research work in the light of progress report submitted by him. Committee granted extension to Saurabh Sharma of one year w.e.f 20.9.2017.

The meeting ended at 1PM with thanks to chair.


Prof.M.Ejaz Hussain
Chairman,COS/Director, CPRS

6/11/17



Notice COS Meeting

An ordinary meeting of "Committee of Studies" (COS) will be held on **20.03.2018** (Tuesday) at **02:30pm** in the office of director, CPRS:

Agenda:

1. Confirmation of last COS meeting held on 19.12.2017
2. Approval of panel of examiners for Semester exam 2018 of MPT 2nd and 4th
3. Approval of panel of examiners for Semester exam 2018 of MLS/MEP 4th, 6th and MLS 2nd Semester Special Exams
4. **New BPT Syllabus (2nd yr. – 4th yr.)**
5. Any other item.
 - i. Prof. G.L. Khanna, MRIU
 - ii. Prof. M. Fahim, HIMSAR, Jamia Hamdard
 - iii. Prof. Sharif Ahmad, Dean, FNS, JMI(Spl. Invited)
 - iv. Prof. Khursheed Haider, Dept. of Mathematics, JMI
 - v. Prof. Luqman A. Khan, JMI
 - vi. Prof. M. Ejaz Hussain
 - vii. Dr. Zubia Veqar *Zubia*
 - viii. Dr. Jamal Ali Moiz *Jamal*
 - ix. Dr. Majumi Mohammad Noohu (PT) *Majumi*
 - x. Dr. Saurabh Sharma (PT) *Saurabh*
 - xi. Dr. Shahid Raza (PT) *Shahid*
 - xii. Dr. Moazzam Hussain Khan (PT)
 - xiii. Dr. Adila Parveen
 - xiv. Dr. Shahnaz Parveen *Shahnaz*
 - xv. Dr. Md Monis Khan *Monis*
 - xvi. Dr. MD Rizwan Alam, *Rizwan*
 - xvii. Dr. Hina Kauser *Hina*

----- Special Invitee
"
"
"

Kindly make it convenient to attend.

M. Ejaz Hussain
Prof. M. Ejaz Hussain
Director

Committee of Studies (COS)

A meeting was held on 20.03.2018 (Tuesday) at 02:30pm in the office of director CPRS. Following members were present.

Members

1. Prof. G.L. Khanna, MRIU
2. Prof. M. Fahim, HIMSAR, Jamia Hamdard
3. Prof. Sharif Ahmad, Dean, FNS, JMI (Spl. Invited)
4. Prof. Khursheed Haider, Dept. of Mathematics, JMI
5. Prof. Luqman A. Khan, JMI
6. Prof. M. Ejaz Hussain
7. Dr. Zubia Veqar
8. Dr. Jamal Ali Moiz
9. Dr. Majumi Mohammad Noohu (PT)
10. Dr. Saurabh Sharma (PT)
11. Dr. Shahid Raza (PT)
12. Dr. Moazzam Hussain Khan (PT)
13. Dr. Adila Parveen
14. Dr. Shahnaz Parveen
15. Dr. Md Monis Khan
16. Dr. Md Rizwan Alam
17. Dr. Hina Kauser

Signature

Fahim
Sharif Ahmad
2013

Majumi
20.03.2018

Minutes of COS Meeting held on 20.03.2018

An ordinary meeting of "Committee of Studies" was held on 20.3.2018 at 2.30 PM in the Office of the Director, CPRS :

Agenda:

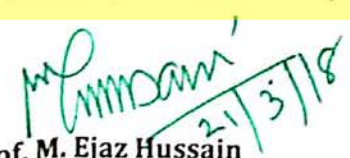
1. Confirmation of last COS meeting held on 19.12.2017
2. Approval of panel of examiners for Semester exam 2018 of MPT 2nd and 4th
3. Approval of panel of examiners for Semester exam 2018 of MLS/MEP 2nd, 4th, 6th
4. New BPT Syllabus (2nd yr. - 4th yr.)
5. Any other item.

Following were present:

1. Prof. M. Fahim, HIMSAR, Jamia Hamdard
2. Prof. Sharif Ahmad, Dean, FNS, JMI(Spl. Invited)
3. Prof. M. Ejaz Hussain
4. Dr. Zubia Veqar
5. Dr. Jamal Ali Moiz
6. Dr. Majumi Mohammad Noohu (PT)
7. Dr. Saurabh Sharma (PT)
8. Dr. Shahid Raza (PT)
9. Dr. Moazzam Hussain Khan(PT)
10. Dr. Adila Parveen
11. Dr. Shahnaz Parveen
12. Dr. Md Monis Khan
13. Dr. Md Rizwan Alam
14. Dr. Hina Kauser

The Committee approved the following:

1. Confirmed the minutes of the meeting held on 19.12.2017
2. Committee discussed and approved the panel of examiners for MPT 2nd & 4th Semester exams 2018. (Annexure-I A-H)
3. Committee discussed and approved the panel of examiners for MLS/MEP 2nd, 4th & 6th Semester exams 2018. (Annexure-II A-F)
4. Committee discussed and approved the panel of examiners for MPT - Neuro., Sem. - III Special Exam. May 2018. (Annexure-III)
5. Committee discussed and approved the panel of examiners for M.Phil/Ph.D examiner Sem-I 2018. (Annexure-IV)
6. The committee discussed at length and approved the revised BPT syllabus of 2nd, 3rd and 4th year. (1st year revised syllabus was already approved by COS dt 19.12.2017) - (Annexure-V)


Prof. M. Ejaz Hussain
Director

Minutes of the "COS" meeting held on 19.7.2019

A meeting was held on 19.7.2019 (Friday) at 03:00pm in the office of Director, Centre for Physiotherapy and Rehabilitation Sciences.

Agenda :

1. Confirmation of last COS meeting held on 5.3.2019
2. Revision of syllabus of BPT/MPT in the light of advisory from the university
3. Revision of Syllabus of B.Voc. MLS/MEP in the light of advisory from the university
4. Any other item

Following members were present:

1. Prof. G.L. Khanna, MRIU
2. Prof. M. Fahim, HIMSAR, Jamia Hamdard
3. Prof. Luqman Khan , Dept. of BioSciences, JMI
5. Prof. M. Ejaz Hussain , CPRSDr. Zubia Veqar , CPRS
6. Dr. Jamal Ali Moiz , CPRS
7. Dr. Majumi Mohammad Noohu , CPRS
8. Dr. Saurabh Sharma , CPRS
9. Dr. Shahid Raza (PT) , CPRS
10. Dr. Moazzam Hussain Khan (PT), , CPRS
11. Dr. Adila Parveen , CPRS
12. Dr. Shahnaz Parveen , DDUKK ----- Special Invitee
13. Dr. Md Monis Khan , DDUKK ----- ""
14. Dr. MD Rizwan Alam , DDUKK ----- ""

The Committee approved the following:

1. The committee confirmed the minutes of the meeting held on 5.3.2019.
2. The committee discussed at length and approval the revised syllabus of **Bachelor of Physiotherapy (BPT)** as per guidelines provided by the Advisor (Academics & Research) to Vice Chancellor, JMI vide email dated 1.6.2019 to be implemented w.e.f. 2019-20 session and to be uploaded on JMI website.
3. The committee discussed at length and approval the revised syllabus of **Master in Physiotherapy, MPT** (with specializations in Sports, Orthopedics, Neurology & Cardiopulmonary) as per guidelines provided by the Advisor (Academics & Research) to Vice Chancellor, JMI vide email dated 1.6.2019 to be implemented w.e.f. 2019-20 session and to be uploaded on JMI website.
4. The committee authorized the Director, CPRS to forward the panel of experts for regular selection committee to the university as per email request by Prof. Khursheed Haider, Professor Incharge, RPS.

The meeting ended at 5.30 PM.


Prof. M. Ejaz Hussain 19/7/19.

Chairman, COS/Director, CPRS

Prof. M. Ejaz Hussain
Director
Centre for Physiotherapy
& Rehabilitation Sciences
Jamia Millia Islamia
New Delhi-110025

Introduce new programme MPT - Cardiopulmonary (2015-16)

SEMESTER - I

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT101	ABMS(Advanced Topics in Biomed Science) [®]	56	4	4	25	75	100
MPT 102	Exercise Physiology testing & prescription	56	4	4	25	75	100
MPT 103	Research Methodology, Biostatistics & EBP	56	4	4	25	75	100
MPT 104	Biomechanics & Kinesiology	56	4	4	25	75	100
MPT 105	Advanced therapeutics	56	4	4	25	75	100
MPT 106P	Practical- I Exercise Physiology ,Testing, Prescription & ABMS	84	6	3	25	75	100
MPT 107P	Practical- II Biomechanics. & Kinesiology	28	2	1	10	40	50
MPT 108P	Practical – III- Evaluative Clinical Practice-I	140	10	5	50	150	200
Total		532	38	29	210	640	850
UCC-I	Critical Research Appraisal & Presentation	28	2	1	50	-	50
Grand Total		560	40	30	260	640	900

IA: internal Assessment Marks , SE: Semester Exam Marks, EBP: evidence based practice

SEMESTER - II

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT201	Diagnostic Tools in Physiotherapy [®]	56	4	4	25	75	100
MPT 241	Pulmonary Medicine and Surgery	56	4	4	25	75	100
MPT 242	Cardiopulmonary Physiotherapy Techniques	70	5	5	25	75	100
MPT 243	Pulmonary Physiotherapy and Rehabilitation	70	5	5	25	75	100
MPT 244	Cardiopulmonary Physiotherapy Examination and Evaluation	56	4	4	25	75	100
MPT 245P	Practical – IV Cardiopulmonary Examination Evaluation and Technique	28	2	1	10	40	50
MPT 246P	Practical – V Evaluative Clinical Practice -	168	12	6	50	150	200
Total		504	36	29	185	565	750
UCC-II	Project Development	28	2	1	50	-	50
UCC-III	Seminar Presentation	28	2	1	50	-	50
Grand Total		560	40	31	285	565	850

SEMESTER - III

Introduce new programme MPT - Cardiopulmonary (2015-16)

Course Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT 341	Cardiovascular Medicine and Surgery	56	4	4	25	75	100
MPT 342	Cardiovascular Physiotherapy and Rehabilitation	70	5	5	25	75	100
MPT 343	Intensive care Management	56	4	4	25	75	100
MPT 344	Geriatric and Palliative Care®	56	4	4	25	75	100
MPT 345 P	Practical – VI Cardiovascular Pulmonary Medicine and Surgery	28	2	1	10	40	50
MPT 346 P	Practical – VII Evaluative Clinical Practice	210	15	8	50	150	200
MPT 347 P	Research Work	56	4	2	10	40	50
	Total	532	38	28	170	530	700
UCC-IV	Seminar Presentation	28	2	1	50	-	50
	Grand Total	560	40	29	220	530	750

SEMESTER - IV

Course Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT401	Physiotherapy in Lifestyle medicine	56	4	4	25	75	100
MPT402	* Pedagogy, Ethics and Hospital management	70	5	5	25	75	100
MPT441P	Dissertation	408	29	15	150	150	300
	Grand Total	534	38	24	200	300	500

Course summary

Total theory Credit (I-IV Sem.) : 114

UCC: - University Compulsory Clearance (Not to be considered for credit calculation)

*: Choice based credit system (CBCS) paper

SEMESTER I

Introduce new programme MPT - Cardiopulmonary (2015-16)

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT101	ABMS(Advanced Topics in Biomed Science®)	56	4	4	25	75	100

SECTION – I

I. Applied Anatomy and Histology

- a) Functional Anatomy of upper limb, lower limb, spine, head, neck and face.
- b) Surface Anatomy, Markings and determinations.
- c) Pathoanatomy of peripheral nerve injuries, various bone pathologies etc.
- d) Pathoanatomy of PIVD, hernias, Hand infections, Common dislocations
- e) General Histology- Anatomy of cell membrane, types of epithelium and its anatomical location, histological appearance and fine details of bone, cartilage, muscle, ligament, peripheral nerves and spinal cord

II. Applied General Physiology

1. Cardiovascular system

- a) Physical characteristics of systemic circulation, Pressure pulses
- b) Oxygen demand theory of local blood flow circulation,
- c) Nervous control of blood circulation, Humorous control of blood circulation , Mechanisms of arterial pulse regulation, Hypertension,
- d) Cardiac output and its regulation, Cardiac output in normal stress conditions, Methods of measuring cardiac output
- e) Normal coronary blood flow along with variations, Physiological basis of ischemic heart disease, Physiological causes of shock

2. Neuromuscular System and Endocrine System

- a) Basic physics of membrane potentials, Recording of membrane potentials and action potentials with basics of electromyogram
- b) Mechanism of muscle contraction, Sources of energy for muscle contraction, Neural control of movement
- c) Role of hormones in sports, fitness and exercise

3. Respiratory System

- a) Review of mechanics of respiration
- b) Pulmonary volumes and capacities
- c) Composition of Alveolar air, Transport of oxygen & Carbon dioxide in blood
- d) Methods of studying respiratory abnormalities

SECTION – II

(Clinical Biochemistry)

I. Review Of Metabolism

- a) Carbohydrates: Glycogenesis , glycogenolysis, glycolysis ,TCA, ETS, Lactate Metabolism
- b) Lipids: Beta oxidation , synthesis of lipids
- c) Proteins: Nitrogen balance ,Urea cycle
- d) Water: Fluid and electrolyte balance, Water and sodium balance

II. Enzymes And Markers In Blood

Introduce new programme MPT - Cardiopulmonary (2015-16)

- a) Cardiovascular Markers: Troponin, Creatine Kinase, Lactate Dehydrogenase, Myoglobin, Aspartate transaminase.
- b) Neuromuscular Markers: Acetylcholine, Dopamine, GABA.
- c) Inflammatory Markers and Free Radicals: TNF alpha, Interleukins, NO, H₂O₂, Superoxides.

III. Biochemical And Genetic Basis Of Diseases

- a) Cardiovascular Disorders: Myocardial Infarction, Cardiomyopathy, Diabetes, Artherosclerosis
- b) Neuromuscular Disorders: Epilepsy, Parkinson Disease, Alzheimer, Schizophrenia.
- c) Muscular Disorders: Cystis Fibrosis, Congenital muscular dystrophy, Duchenne muscular dystrophy,
- d) Biochemical, physiological & anatomical change in Ability, Disabilities, Ageing, Osteoporosis & Osteoporosis

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 102	Exercise Physiology testing & prescription	56	4	4	25	75	100

I Energy Transfer For Physical Activity

- a) Energy transfer in body
- b) Energy transfer in exercise
- c) Energy expenditure during various activities
- d) Fatigue
- e) Biochemical responses and molecular mechanisms to endurance training
- f) Introduction to effects of training and detraining

II Cardiovascular System And Exercise

- a) Cardiovascular regulation and integration during exercise
- b) Functional capacity of the cardiovascular system during exercise
- c) Cardiovascular adaptations to sustained aerobic exercises
- d) Athletes heart and sudden cardiac death in sports
- e) Lipids and sports, protection from coronary heart disease, exercise and optimization of lipid profile

III Respiratory System And Exercise

- a) Regulation of respiration during exercise
- b) Acid-Base regulation during exercise
- c) Respiratory adaptations to sustained aerobic exercise
- d) Air Conditioning
- e) Second wind
- f) Oxygen debt

IV Skeletal System And Exercise

- a) Growth and exercise
- b) Repair and adaptation during exercise
- c) Pathophysiology of back
- d) Training adaptations for muscular strength and endurance

V Gastrointestinal Tract And Endocrine System And Exercise

- a) Effect of exercise on GIT and liver
- b) Hormone regulation of fluid and electrolytes during exercise
- c) Exercise and menstrual cycle
- d) Stress hormones in exercise
- e) Effects of exercise on various hormones in the body
- f) Opioids and Runners High
- g) Oxygen debt

VI Exercise Testing Prescription And Aging

- a) Aging and physiological function

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- b) Exercise and longevity
- c) Exercise stress testing for diagnosis of CHD
- d) Exercise prescription for healthy aged
- e) Exercise prescription for sedentary adults
- f) Cost and benefits of exercise prescription in Osteoporosis
- g) Exercise for mood and enhancement and anxiety

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 103	Research Methodology, Biostatistics & EBP	56	4	4	25	75	100

SECTION- I (RESEARCH METHODOLOGY & EBP)

I Research In Physiotherapy

- a) Introduction
- b) Research for Physiotherapist: Why, how and when?
- c) Research – Definition, concept, purpose, approaches
- d) Web Source for physiotherapists

II Research Fundamentals

- a) Define measurement
- b) Measurement framework
- c) Scales of measurement
- d) Pilot study
- e) Types of variables
- f) Reliability & Validity
- g) Drawing tables, graphs, master chart etc.

III Writing A Research Proposal, Critiquing A Research Article

- a) Defining a problem
- b) Review of literature
- c) Formulating a question, operational definition
- d) Inclusion and Exclusion criteria
- e) Forming groups
- f) Data collection & analysis
- g) Results, Interpretation, Conclusion, Discussion
- h) Informed consent
- i) Limitations

IV Research Design

- a) Principle of designing
- b) Design, instrumentation & analysis for qualitative research
- c) Design, instrumentation & analysis for quantitative research
- d) Design, instrumentation & analysis for quasi-experimental research
- e) Design models utilized in Physiotherapy

V Research Ethics

- a) Importance of Ethics in Research
- b) Main ethical issues in human subjects' research
- c) Main ethical principles that govern research with human subjects
- d) Components of an ethically valid informed consent for research

VI Evidence Based Practice

Concept of evidence based practice by addressing topics related to

- a) Research design and measurement
- b) Measurement error,
- c) Case design studies and

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- d) Interpretation of clinical research

SECTION -II (BIOSTATISTICS)

I Introduction to Biostatistics

- Introduction- Definition and Application in Physiotherapy
- Data Presentation
- Methods of Sampling
- Sampling distribution
- Standard error
- Types I & II error
- Hypothesis Testing
- Null Hypothesis
- Alternative hypothesis
- Acceptance & rejection of null hypothesis
- Level of significance

II Measures Of Central Value & Measures Of Dispersion

- Arithmetic mean, median mode, Relationship between them
- Partitioned values – Quartiles, Deciles, Percentiles
- Graphical determination
- Range
- Mean Deviation
- Standard Deviation
- Normal Distribution Curve- Properties of normal distribution, Standard normal distribution
- Transformation of normal random variables.
- Inverse transformation
- Normal approximation of Bioaxial distribution.

III Correlations & Regression Analysis

- Bivariate distribution
- Scatter diagram
- Coefficient of correlation
- Calculation & interpretation of correlational coefficient
- T-test, Z-test, P-value
- Lines of regression
- Calculation of Regression Coefficient

IV Probability (In Brief)

- Basic Definition: Events, sample space and probabilities
- Basic rules for probability
- The range of values
- The Rule of complement
- Mutually exclusive events
- Conditional probability
- Independence of events
- Combinatorial concepts
- Law of Total probability and Baye's theorem

V Analysis And Evaluation

- Parametric & Non Parametric Tests- Chi square test, Mann-Whitney U test, Wilcoxon Signed test, Kruskal-Wallis test, Friednam test, T-test/student T test, Analysis of variance
- Agreement Analysis
- Software Used in Statistical Analysis and research

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 104	Biomechanics & Kinesiology	56	4	4	25	75	100

**SECTION I
(BIOMECHANICS)**

I Introduction

- a) Nature and importance of Biomechanics in Physiotherapy
- b) Principle of Biomechanics

II Movement Analysis

- a) Biomechanics of shoulder and shoulder complex, elbow complex, wrist and hand complex
- b) Biomechanics of pelvic, hip, knee, ankle & foot complex
- c) Biomechanics of spine
- d) Neuro biomechanics
- e) Posture and Gait analysis
- f) Biomechanical Analysis & Techniques – Force platforms

**Section II
(Kinesiology)**

I Introduction To Kinematics

- a) Definition, aims, objectives and role of Kinesiology in sports physiotherapy.
- b) Review of fundamental concepts (applied aspect), Centre of gravity, Line of gravity, Planes, Lever system in Body, Fundamental starting positions.
- c) Review of linear and angular kinematics

II Mechanics Of Musculoskeletal System

- a) Tissue loads, response of tissues to forces- Stress, Strain, Stiffness and mechanical strength, visco elasticity
- b) Physical Properties of bone, cartilage, tendon and ligaments, functional adaptation under pathological conditions.
- c) Impaired neuromuscular control, muscular force regulation in
- d) Frame work and joints of the body: Influence of trauma and classification of the muscles, Relation of structure, functions, role of muscles, types of Muscle, contractions (Static, Concentric and Eccentric), Two joint Muscles, Angle of pull, Role of Gravity affecting muscular action.

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 105	Advanced therapeutics	56	4	4	25	75	100

I. Exercise Therapy Intervention & Practice

- a) Exercise therapy intervention & practice in: Pain management Endurance impairment Impaired mobility Impaired neuromuscular control Impaired Gait & posture
- b) Specific exercise interventions: Isokinetic, Plyometric, Open & closed kinetic chain , PNF, Core stabilization , Aquatic therapy, Home programme& its adherence
- c) Specific consideration in exercise therapy: Female, Paediatric, Amputation

II Electrotherapy Intervention & Practice

- a) Pain management
- b) Wound management
- c) Oedema management
- d) Muscular impairment

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- e) Specific deep heat interventions: Laser Microwave, Shortwave, Russian current
Didynamic current Iontophoresis, Phonophoresis, Biofeedback
- f) Special consideration for deep heat modalities: Pregnant women, Menstruating women,
Paediatric, Geriatric, Neurologically impaired, Mentally impaired

III. Taping techniques for joints, muscles and various pathological conditions : therapeutic and prophylactic

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 106P	Practical- I Exercise Physiology ,Testing, Prescription & ABMS	84	6	3	25	75	100

- Lab-1 Energy expenditure and exercise
- Lab-2 Energy metabolism
- Lab-3 Cardiovascular effect of exercise
- Lab-4 Respiratory air flow and volume
- Lab -5 Respiratory gas analysis
- Lab -6 Blood pressure in humans
- Lab -7Electromyogrames (EMG)
- Lab -8 Oxygen concentration (O₂ measurements)
- Lab -9 Sensory and motor nerve responses in humans

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 107P	Practical- II Biomechanics. & Kinesiology	28	2	1	10	40	50

On completion of the study of this subject the student should be able to

- a) Perform thorough biomechanical evaluation
- b) Qualitative and quantitative analyses of range of motion
- c) Calculation of impulse and take off velocity and height of jump during take off in a standing vertical jump
- d) Calculate and infer Angular kinetics of exercise
- e) Perform and analyze endurance testing during concentric and eccentric actions to review the Force-Velocity Relationship
- f) Detection of scapular position in rotation of spinous process
- a) Measurement of functional limb varus under bilateral and unilateral stance
- b) Subtalar neutral joint positioning
- c) Determination of Q-angle
- d) Measurement of eversion and inversion ranges at subtalar joint
- e) Measurement of popliteal angle
- f) Measurement of calcaneal inversion and eversion in non weightbearing and weightbearing stance

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 108P	Practical – III- Evaluative Clinical Practice-I(MPT 105 & Clinical Training)	140	10	5	50	150	200

On completion of the study of this subject the student should be able to:

- a) To formulate a rationalized treatment plan for the patient
- b) Implement physiotherapy treatment
- c) Compare & contrast the outcome of various treatment approaches

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d) Document the status to the patient as written records

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
UCC-I	Critical Research Appraisal & Presentation	28	2	1	50	-	50

On completion of the study of this subject the student should be able to critically analyze five published research papers and present the same.

SEMESTER - II

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT201	Diagnostic Tools in Physiotherapy®	56	4	4	25	75	100

SECTION -I

(RADIOLOGY: Marks. 25)

1. Basics of Imaging Techniques
 - a) Fluoroscopic Examination
 - b) CT Scan
 - c) Radionuclide Scanning
 - d) MRI/Functional MRI
 - e) Ultrasonography/Doppler
 - f) X-Ray
 - g) Bone Scan
 - h) DEXA Scan
 - i) PET and SPECT scans
 - j) Angiography
2. Regional imaging with X-ray, MRI, CT, ultrasonography
 - a) Head and Neck
 - b) Chest
 - c) Spine
 - d) Pelvis, hip and thigh
 - e) Knee complex
 - f) Lower leg, foot and ankle
 - g) Foot

SECTION -II

(Human Performance Analysis: Marks. 50)

1. Body composition, strength and endurance testing
 - a) Body composition analysis
 - b) Muscle strength: Physiological and chemical factors
 - c) Dynamo metery: Hand held dynamo meters
 - d) Hand grip measurement
 - e) Back and leg dynamometry
 - f) 1 RM Measurement
 - g) Isokinetics

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- h) Endurance testing: Muscle and cardiovascular endurance testing
- i) Assessment of muscle damage & fatigue
- 2. Applied Movement Analysis
 - a) Introduction to 2 and three dimensional movement analysis
 - b) Instrumentation and methods of movement analysis
 - c) Electro goniometry and accelerometer
- 3. Electromyography and NCV in Rehabilitation
 - a) EMG : Concepts, clinical and kinesiological EMG
 - b) NCV: Concepts and method of recording

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 241	Pulmonary Medicine and Surgery	56	4	4	25	75	100

Course description: This course provides the student with information on the epidemiology, pathomechanics, clinical presentation, relevant diagnostic tests and medical and surgical management of disorders of the pulmonary system. An overview of diagnostic imaging techniques is presented, with special emphasis on the role of the physiotherapist in using imaging within the scope of physiotherapy and to plan physiotherapy care. Students will be able to use this information in planning and tailoring effective, specific, safe Physiotherapy treatment programmes. Following are the topics to be included but not limited to:

SECTION I (PULMONARY MEDICINE)

Epidemiology, Pathomechanics, Clinical Presentation, Relevant Diagnostic Tests (PFT, ABG, CXR, CT-scan, Labs, Etc.) And Medical Management of Disorders Of The Pulmonary System.

1. Applied anatomy: Chest wall, diaphragm, trachea, bronchi, lungs, pleura, mediastinum, oesophagus etc.
2. Applied physiology: ventilation, diffusion, blood flow and metabolism, ventilation-perfusion relationships, mechanics of breathing, control of ventilation, respiratory system under stress, oxygen transport pathways, pulmonary function tests, assisted ventilation, breath sounds, acid base as well as fluid and electrolyte balance.
3. Assessment of symptoms of respiratory diseases
4. Obstructive pulmonary diseases
5. Sleep apnoea
6. Infections of the respiratory system
7. Interstitial and infiltrative pulmonary disorders
8. Pulmonary disorders due to exposure to organic and inorganic pollutants
9. Pulmonary disorders due to systemic inflammatory disease
10. Pulmonary vascular diseases
11. Diseases of the pleura
12. Respiratory failure
13. Supplemental oxygen and oxygen delivery devices in chronic respiratory disease
14. Neuromuscular and skeletal disorders leading to global alveolar hypoventilation
 - 1.1 Myopathies
 - 1.2 Spinal muscular atrophies
 - 1.3 Poliomyelitis
 - 1.4 Motor neuron disease
 - 1.5 HSMN
 - 1.6 Kyphoscoliosis
 - 1.7 Pectus carinatum
 - 1.8 Pectus excavatum

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15. Pathophysiology of paralytic-restrictive pulmonary syndromes
16. Conventional approaches to managing neuromuscular ventilator failure
17. Post -tubercular sequelae
18. Acute respiratory distress syndrome

SECTION II (PULMONARY SURGERY)

1. Incisions for procedures in thoracic surgery: incisions on sternum, anterior and lateral chest wall, thoraco-abdominal, abdominal including for procedures on diaphragm, mediastinum oesophagus.
2. General Thoracic Surgery: Surgery of chest wall, diaphragm, mediastinum, trachea and bronchus, pleura and lungs, Oesophagus, Chest Trauma, Neonatal cardiovascular –thoracic emergencies.
3. Inter costal drainage (ICD)
4. VATS (Video assisted thoracic surgery) Basics : diagnostic and therapeutic Procedures
5. Complications of pulmonary surgery

SECTION III (ANAESTHESIOLOGY)

1. Anaesthesia: types, benefits, effects on cardiopulmonary system, complications.
2. Post-operative atelectasis: types, pathogenesis, and management.
3. Ventilation-perfusion mismatch, shunting of blood in lungs, dead space ventilation.
4. Respiratory Mechanics:
 - 1.1. Normal mechanics
 - 1.2. Under influence of Anaesthesia
 - 1.3. In Respiratory pathological conditions
5. Artificial airways: types, benefits, indications, contraindications, effects on cardiopulmonary system, complications.
6. Intubation: Methods, Indications, Complications, Instrumentation
7. Bronchoscopy – Principle, method, use and complication.
8. Haemodynamic monitoring: Methods, Instrumentation, Clinical Application.
9. Oxygen Therapy: Methods, Oxygen Delivery Devices, Oxygen toxicity, Clinical Application.
10. Mechanical Ventilation: Modes, Physiological Effects, Indications, Contraindications, Benefits, Complications, Weaning from Ventilator.
11. Mechanical Ventilation in Respiratory disorders and under influence of Anaesthesia.
12. CPR and emergency management strategies in the ICU.

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 242	Cardiopulmonary Physiotherapy Techniques	70	5	5	25	75	100

Course description: The central theme of this course is developing wellness plans for individuals or families in the community.

1. Airway Clearance Techniques: physiological basis, Procedure, Indications, Contraindications, procedure, Physiological effects, Mechanism of action of the following.
 - 1.1. Percussion, Vibration, Shaking
 - 1.2. Postural Drainage
 - 1.3. Huffing and coughing

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- 1.4. Active Cycle of Breathing Technique
- 1.5. Autogenic Drainage
2. Airway Clearance Technologies: Procedure, Indications, Contraindications, procedure, Physiological effects, Mechanism of action of the following.
 - 2.1 Vibratory PEP Devices : Acapella, Flutter,
 - 2.2 Non-Vibratory PEP Devices: Thera PEP
 - 2.3 High- Frequency chest wall oscillation
3. PNF respiration
4. Breathing Exercises and Ventilator Training
 - 4.1 Diaphragmatic Breathing Exercise
 - 4.2 Segmental breathing exercise
 - 4.3 Pursed lip breathing
 - 4.4 Respiratory resistance training
 - 4.5 Glossopharyngeal Breathing
 - 4.6 Relaxation positions to control dyspnoea
5. Exercises to mobilize chest
 - 5.1 To mobilize one side of chest
 - 5.2 To mobilize upper chest and stretch the pectoralis muscles
 - 5.3 To mobilize upper chest and thorax
6. Ventilatory facilitatory techniques
 - 6.1 Positioning concerns
 - 6.2 Ventilatory and movement strategies
 - 6.3 Manual facilitation techniques
 - 6.4 Enhancing phonation skills
7. Exercise testing and training for cardiopulmonary dysfunctions
 - 7.1 Primary cardiopulmonary dysfunctions
 - 7.2 Secondary cardiopulmonary dysfunctions
8. Mobilisation and exercise
 - 8.1 Hazards of bed rest
 - 8.2 Oxygen transport and metabolic demand of patient
 - 8.3 Effects of mobilisation and exercise on oxygen transport
 - 8.4 Acute and long term effect of prescription of mobilization and exercise
 - 8.5 Mobilisation testing, monitoring and prescription
9. Body positioning
 - 9.1 Prescriptive versus routine body positioning
 - 9.2 Physiological effects of various body positions
 - 9.3 Physiological effects of frequent changes in body position
 - 9.4 Prescription of therapeutic body positions and body position changes
 - 9.5 Mechanical body positioning
10. Heart rate variability: introduction, Measurement of heart rate variability: time domain method; frequency domain methods, stability & reproducibility of HRV measurements, recording requirements, , physiological correlate of HRV, clinical use of HRV, changes of HRV related to specific pathologies.
11. Heart rate recovery: methods of recording heart rate recovery after various exercise, interpretation and clinical use

Recommended book

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Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 243	Pulmonary Physiotherapy and Rehabilitation	70	5	5	25	75	100

SECTION I: THERAPEUTIC PRINCIPLES AND PRACTICE IN PULMONARY REHABILITATION

1. Oxygen therapy: indications, hazards and complication, compressed gas cylinders, liquid oxygen system, gas flow- regulating devices (flow-meter), oxygen delivery devices, oxygen analysis, long term oxygen therapy (LTOT).
2. Humidity and aerosol therapy including drug inhalation: isothermic saturation boundary, clinical indications for humidity therapy, normal airway heat and humidity, consequences of inadequate humidification, humidification devices, meter-dose inhaler (MDI) and dry powder inhalers, nebulizers, drug delivery.
3. Assessment of pulmonary function test: Spirometry; Lung volumes; Diffusing capacity for carbon monoxide
4. Functional performance assessment: muscle strength and endurance, joint ROM, postural abnormalities, Oxygen requirement, subjective endurance and work tolerance, balance abnormalities, pain level and location, ability to do household activities.
5. Exercise testing: incremental shuttle walk test, endurance shuttle walk test, six minute walk test, Step test, treadmill tests.(i.e. Balke, Bruce, Noughton, Modified Bruce protocol), interval bike test, sub maximal GXT, symptom limited GXT, exercise testing using cycle ergometer, oxygen uptake (VO₂)
6. Scales used in pulmonary rehabilitation: Becks Depression Inventory (BDI) and Hamilton Anxiety Scale (HAS); mni- mental state examination, SGRQ, CRQ,SF-36, CAT, Activities-specific balance scale (ABC) etc.

SECTION II: PULMONARY REHABILITATION

1. Overview of pulmonary rehabilitation
Definition and scope of pulmonary rehabilitation, the burden of chronic respiratory disease, a brief history of pulmonary rehabilitation, essential components of pulmonary rehabilitation: prevention; patient goals; program goals; philosophy, code of ethics for the pulmonary rehabilitation specialist
2. Selection and assessment of the pulmonary rehabilitation candidate
Patient selection, patient assessment, goal development, rehabilitation potential
3. Outcome measures in pulmonary rehabilitation
4. Patient education and skills training
5. Exercise assessment and training
6. Exercise assessment, functional performance assessment, exercise training, emergency procedures, psychosocial assessment and intervention, outcome assessment
7. Disease-specific approaches in pulmonary rehabilitation
COPD, asthma, cystic fibrosis, interstitial lung disease, post TB, obesity-related respiratory disorders, pulmonary hypertension, neuromuscular and chest wall disorders, lung volume reduction surgery, lung transplantation, lung cancer and thoracoabdominal, surgery, mechanical ventilated patients, paediatric patients with respiratory disease, patients with coexisting respiratory and cardiac disease
8. Program management
Medical director, program coordinator, Physiotherapist, interdisciplinary team structure, staff competencies, core staff responsibilities, continuing education, minimum staffing

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requirements, program components and structure, duration of program, policies and procedures, facilities and equipment, emergency procedures

9. Pulmonary rehabilitation location: general issues
Documentation, conferences, reimbursement, strategies for program success, post rehabilitation maintenance programs, continuous quality improvement

Reference books

1. Pulmonary Rehabilitation - by Casaburi
2. Guidelines for Pulmonary Rehabilitation Programs-3rd Edition AACVPR
3. Principles And Practice Of Cardiopulmonary Physiotherapy. D Frownfelter, E Dean
4. Cardiopulmonary Rehabilitation. S Irwin
5. Physiotherapy For Respiratory And Cardiac Problems. J Pryor, A Prasad
6. Rehabilitation Of The Patient With Respiratory Diseases - N.S. Cherniack And M. D. Altose
7. Exercise Prescription – Shankar

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 244	Cardiopulmonary Physiotherapy Examination and Evaluation	56	4	4	25	75	100

Course description: The purpose of this course is to teach the student the basic elements of assessment that apply to cardiovascular and pulmonary patients with a potential need for physical therapy services. Students will learn the basics of examination and evaluation, selection of appropriate tests and measures, use of validity, reliability, and best evidence to select tests and measures, and the use of critical thinking and decision-making to determine the most appropriate intervention and outcomes for all patients with cardiovascular & pulmonary disorders. This also includes proper documentation with the use of SOAP format.

Course objective: Demonstrate evaluation methods for patients with cardiopulmonary disease, and set appropriate goals and prepare prescriptions for the patients

1. Assessment of pulmonary system and diseases
 - 1.1. History taking
 - 1.2. General appearance of the patient
 - 1.3. Physical examination of chest
 - 1.4. Topographical and anatomical land marks
 - 1.5. Visual inspection
 - 1.6. Analysis of chest shape and dimensions
 - 1.7. Posture or preferred positioning
 - 1.8. Breathing pattern
 - 1.9. Chest mobility
 - 1.9.1. Symmetry of chest movement
 - 1.9.2. Chest wall excursion
 - 1.9.3. Diaphragmatic excursion
 - 1.10. Tracheal deviation
 - 1.11. Palpation
 - 1.12. Chest wall pain
 - 1.13. Mediastinal shift
 - 1.14. Mediated percussion
 - 1.15. Auscultation of breath sounds
 - 1.16. Cough and cough production
 - 1.17. Assessment of functional status: questionnaires and performance-based tests;
 - 1.17.1. Generic questionnaires: Functional Status Questionnaire, Extended Activities of Daily Living scale, SF-36.

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- 1.17.2. Disease specific questionnaires: Chronic Respiratory Questionnaire, St. George's Respiratory Questionnaire, Pulmonary Functional Status and Dyspnoea Questionnaire.
- 1.17.3. Performance-based tests: 6 minute walk test, shuttle walk test
2. Assessment of cardiac system and diseases
 - 2.1. Determination of chief complaint
 - 2.2. Review of patient history
 - 2.3. Physical examination
 - 2.3.1. Temperature
 - 2.3.2. Heart rate
 - 2.3.3. Respiratory rate
 - 2.3.4. Blood pressure
 - 2.4. Observation
 - 2.4.1. General appearance
 - 2.4.2. Oedema
 - 2.4.3. Peripheral oedema
 - 2.5. Inspection and palpation
 - 2.5.1. Landmarks
 - 2.5.2. Abnormal pulsation
 - 2.6. Auscultation of the heart
 - 2.6.1.1. Abnormal heart sound
 - 2.6.1.2. Murmurs
 - 2.7. Laboratory investigations
 - 2.7.1. Chest x-ray
 - 2.7.2. Electrocardiogram
 - 2.7.3. Serum enzymes and MB bands
 - 2.8. Physiological tests
 - 2.8.1. Echocardiography
 - 2.8.2. Graded exercise testing
 - 2.8.3. Radionuclide studies
 - 2.8.4. Cardiac catheterization
 - 2.8.5. Coronary angiography
3. Assessment of patients with cardiothoracic surgeries
 - 3.1. Chief complaints
 - 3.2. History
 - 3.2.1. History of present illness
 - 3.2.2. Past medical history
 - 3.2.3. Past surgical history
 - 3.2.4. Medication history
 - 3.3. Associated co-morbidities
 - 3.4. Investigation
 - 3.4.1. Chest x-ray
 - 3.4.2. ECG
 - 3.4.3. Electrocardiography findings
 - 3.4.4. Auscultation
 - 3.5. Operative procedure
 - 3.5.1. Date incision
 - 3.5.2. Type of surgery
 - 3.5.3. Grafting
 - 3.5.4. Any special event
 - 3.5.5. Medication
4. Assessment of Peripheral vascular diseases
 - 4.1. Personal information from patient
 - 4.2. Duration of onset of problem
 - 4.3. Medical/ social history
 - 4.4. Medications

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- 4.5. Allergic history
- 4.6. Subjective assessment
 - 4.6.1. Pain assessment
 - 4.6.2. Wound history
- 4.7. Other objective tests
 - 4.7.1. Temperature
 - 4.7.2. Girth
 - 4.7.3. Volumetrics
 - 4.7.4. Pulse
 - 4.7.4.1. Dorsalis pedis
 - 4.7.4.2. Posterior tibial
 - 4.7.4.3. Popliteal
 - 4.7.4.4. Femoral
 - 4.7.4.5. Other
 - 4.7.5. Bruits
 - 4.7.6. Percussion test
 - 4.7.7. Trendelenburg test
 - 4.7.8. Cuff test
 - 4.7.9. Doppler index
 - 4.7.10. Rubor of dependency
 - 4.7.11. Venous filling time
 - 4.7.12. Claudication time
 - 4.7.13. Semmes-Weinstein monofilament testing
 - 4.7.14. Other findings

Recommended books:

1. Irwin S, Techlin JS. Cardiopulmonary Physical Therapy: a guide to practice. St. Louis, Mo. : Mosby Co., 2004.
2. Hillegass E, Sadowsky HS. Essentials of Cardiopulmonary Physical Therapy. W.B. Saunders Co., 2001.
3. Hodgkin JE, Connors GL, Celli BR. Pulmonary rehabilitation : guidelines to success. Philadelphia : Lippincott Williams & Wilkins Co., 2001.
4. Watchie J. Cardiopulmonary Physical Therapy: a clinical manual. Philadelphia: W.B. Saunders Co., 1995.
5. Frownfelter D, Dean E. Principles and Practice of Cardiopulmonary Physical Therapy. St. Louis: Mosby-Year Book, Inc., 1996.
6. Pryor JA, Webber BA. Physiotherapy for Respiratory and Cardiac Problems. Adults and Paediatrics. 3rd ed., London: Churchill Livingstone, 2002.
7. Tecklin JS. Pediatric Physical Therapy. 2nd ed., 1994; pp249-282.
8. Symposium: Respiratory Care. Phys Ther 1981; 61: 1711~1781.
9. Symposium: Focus on Ventilatory Muscle Training. Phys Ther 1995;75:971-1014.

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 245P	Practical – IV Cardiopulmonary Examination Evaluation and Technique (MPT 242, MPT 243, MPT 244)	28	2	1	10	40	50

Course description: This course involves a description of the assessment, skill development and treatment of patients with cardiopulmonary conditions

Course objective: the students will be able to conduct a safe effective treatment of patients with cardiopulmonary conditions.

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1. Activity -1 :The students will be shown patients of relevant disease and disorders for:
 - 1.1. History taking of the cardiovascular and pulmonary conditions of patients.
 - 1.2. All the basic physiotherapeutic intervention pertaining to the subjects.
 - 1.3. Evaluation and physiotherapy treatment: its presentation and documentation of all the techniques listed in MPT 242
2. Activity-2 : Demonstration , application and interpretation of ECG
3. Activity-3 : Interpretation of arterial blood gas disorders
4. Activity-4 : Demonstration , application and interpretation of pulmonary function test
5. Activity-5 : Demonstration interpretation and application of chest X-ray
6. Activity-6: Demonstration and interpretation of auscultation: breath sounds added sounds, vocal resonance, heart sounds.
7. Activity-7 : Demonstration and application of airway clearance techniques
8. Activity-8 : Demonstration and application of airway clearance devices
9. Activity-9 : Demonstration and application techniques of breathing exercises
10. Activity-10 : Demonstration and application of ventilatory facilitatory techniques
11. Activity-11 : Demonstrations and practice of various cardiopulmonary exercise testing
12. Activity-12 : Demonstration and application of mobilization and exercise
13. Activity-12 : Demonstration and application of heart rate variability
14. Activity-12 : Demonstration and application of heart rate recovery

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 246P	Practical – V Evaluative Clinical Practice - (MPT 201,MPT 242, MPT 243, MPT 244)	168	12	6	50	150	200

1. Interpret and differentiate between various diagnostic tools used for therapeutic plan
2. Demonstration and practice of assessment and exercise prescription in pulmonary rehabilitation
3. Evaluation and physiotherapy treatment: its presentation and documentation of all the conditions. The topics and management will be as discussed in MPT 201, MPT 243, MPT 244

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
UCC-II	Project Development	28	2	1	50	-	50

On completion of the study of this subject the student will:

1. Prepare a formal research proposal on the chosen topic for the dissertation under the guidance of supervisor
2. Present the topic before research committee for approval with suggested changes

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
UCC-III	Seminar Presentation	28	2	1	50	-	50

On completion of the study of this subject the student will:

1. Present a formal presentation on the topics allocated as per the guidelines given when required during the course of the semester.

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SEMESTER – III

Course Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT 341	Cardiovascular Medicine and Surgery	56	4	4	25	75	100

SECTION I CARDIOVASCULAR MEDICINE

Epidemiology, pathomechanics, clinical presentation, relevant diagnostic tests (ECG, Echocardiography, Cardiac Catheterisation, Radionuclide Scanning, Stress Testing, ABG, Labs, etc.) and medical management of disorders of the cardiac system.

1. Assessment of Symptoms of Heart Disease
2. Disorders Of Cardiac Rate, Rhythm And Conduction
3. Cardiac Arrest
4. Cardiac Failure
5. Shock
6. Rheumatic Fever
7. Congenital Heart Disease
8. Diseases of The Heart Valves
9. Infective Endocarditis
10. Ischemic Heart Disease
11. Hypertension
12. Orthostatic Hypotension
13. Cardiac arrest and resuscitation
14. Pericarditis
15. Heart Disease In Pregnancy
16. Degenerative Arterial Disease
17. Inflammatory Arterial Disease
18. Raynaud's Disease
19. Venous Thrombosis
20. Peripheral Vascular Disease
21. Cardiomyopathy
22. Diseases of The Pericardium
23. ECG interpretation.

SECTION II CARDIOVASCULAR SURGERIES

Surgical Management Of The Above Conditions, Indications, Contra-Indications for Surgery, Precautions After Surgery. Also Included:

1. Haemodynamic Performance Of CTVS Patients
2. A-V Shunt
3. Procedures on Sternum, Chest Wall, Diaphragm, Mediastinum, Oesophagus.
4. Cardiopulmonary Bypass
5. CTVS Procedures: Outline and Definition of Procedures,
6. Differences in Open and Closed Heart Surgery, Recent Advances Like MIDCAB, OPCAB, Heart-Port, Etc.
7. Incisions For Procedures In Cardio-Thoracic And Vascular Surgery (Incisions On Sternum, Anterior And Lateral Chest Wall, Abdominal Including for Procedures On Diaphragm, Mediastinum, Oesophagus And Aorta)
8. Extra-Corporeal Circulation: Techniques
9. Cardiopulmonary Bypass: Pathophysiology and Introduction to OPCAB

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10. Emergencies in CTVS
11. LV Assist Devices
12. Heart Transplant
13. Complications of Cardiac Surgery (thrombo-embolism In Brain, Lungs and Distal Vessels, phrenic nerve Injuries, Unstable Sternum And Implication Of Procedures Like Omentoplasty, etc.)
14. Preoperative Assessment of Patients
15. Haemodynamic Monitoring In CTVS Patients
16. Respiratory Physiology In Relation To Concept of Shunt And Dead Space and Exchange Of Gases.
17. Interpretation of Arterial Blood Gases
18. Peripheral Vascular Disease
19. Oncology – Cardiovascular and respiratory system conditions.

Course Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 342	Cardiovascular Physiotherapy and Rehabilitation	70	5	5	25	75	100

1. Overview: major manifestations of heart disease & cardiac rehabilitation
 - 1.1. Coronary heart disease
 - 1.2. Valvular heart disease
 - 1.3. Peripheral vascular disease
 - 1.4. Definition of cardiac rehabilitation
 - 1.5. Phases of cardiac rehabilitation
 - 1.6. Outcome measures in cardiac rehabilitation
2. Development, intervention, and prevention of coronary artery disease.
3. Efficacy of Secondary Prevention and Risk Factor Reduction
4. Psychosocial Issues and Strategies
5. Role of Exercise in heart disease
6. Exercise and the coronary heart disease connection
 - 6.1. Cardio-respiratory fitness and coronary death
 - 6.2. Exercise training in established coronary disease
 - 6.3. Risks of acute exercise
 - 6.4. Potential mechanisms of exercise benefit
7. Exercise prescription for cardiac rehabilitation
 - 7.1. General guidelines and preliminary Considerations
 - 7.2. Phase I: Inpatient cardiac rehabilitation
 - 7.3. Phase II: Outpatient cardiac rehabilitation
 - 7.4. Phase III and IV: community-based cardiac rehabilitation program
 - 7.5. Considerations for special populations
8. Patient education: guidelines in cardiac rehabilitation
9. Outcome measures in cardiac rehabilitation
10. Special Considerations
 - 10.1. Older patients
 - 10.2. Hypertension
 - 10.3. Diabetes Mellitus
 - 10.4. Chronic Heart Failure
 - 10.5. Heart Transplantation
 - 10.6. Patient Compliance
 - 10.7. Drug Effects
 - 10.8. Women
 - 10.9. Young Adults

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- 10.10. Revascularization and valve surgery
- 10.11. Ventricular arrhythmias, pacemakers and ICDs
- 10.12. Patients with Left Ventricular Assist devices
- 10.13. Pulmonary disease
- 10.14. Peripheral arterial disease

Course Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT 343	Intensive care Management	56	4	4	25	75	100

Subject Overview: This subject is designed to build on existing theoretical knowledge in the areas of acute cardiopulmonary pathophysiology, diagnostic and investigative procedures and physiotherapy techniques used in the management of acute complex patients. Current management issues in the areas of adult, paediatric and neonatal critical care, major surgery and complex medical patients will be covered. Evaluation of current clinical practice and the reliability and validity of cardiopulmonary outcome measures used in the acute care area will be explored. In addition, practical and equipment based skills will be extended, including non-invasive ventilation. Students will have the opportunity to practice these both at the centre and in the clinical setting.

Section I: Physiotherapeutic principle and techniques in intensive care

1. Extracorporeal membrane oxygenation (ECMO)
2. Mobilization of critically ill patients
3. Intensive care unit-acquired weakness (ICUAW)
4. Continuous rotational therapy
5. Management of Airway Secretions Mechanically ventilated patients in the ICU
6. Intrapulmonary percussive ventilation (IPV)
7. Positive expiratory pressure (PEP)
8. Manual hyperinflation (MHI)
9. Ventilator hyperinflation(VHI)
10. Insufflation-exsufflation

Section II: Intensive care for critically ill patients

1. Assessment of critically ill patient :introduction, medical and chart interview with patients and family, physical examination, neurological system; cardiovascular system; respiratory system; renal system; haematological/ immunological system; gastrointestinal system; musculoskeletal system
2. Treatment of acute respiratory conditions: airway clearance techniques; weaning from mechanical ventilation; positioning; breathing exercises; patient education; paediatric consideration
3. Non-invasive ventilation: berating sleep and respiratory failure; indication for non invasive ventilation; practical issues in the application of non invasive ventilation; non-invasive ventilation in children
4. Physiotherapy intervention during non-invasive ventilation
5. Implication for physiotherapy in mechanically ventilated patients: intubation weaning
6. Musculoskeletal problems
7. Patient groups with specific needs: e.g. systemic inflammatory syndrome, sepsis ,ARDS, inhalation burn, trauma, neurological conditions requiring intensive care

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8. Physiotherapy techniques used in intensive care: gravity assisted, manual or mechanical hyperinflation, suctioning of intubated patients, manual techniques, intermittent positive pressure berating, periodic continuous positive pressure ventilation
9. Cardiopulmonary resuscitation

Course Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT 344	Geriatric and Palliative Care®	56	4	4	25	75	100

Unit I: Geriatric Care

1. Describe and discuss changes that occur in the physiological systems of aging adults.
2. Describe and discuss basic cardiopulmonary changes that occur in aging adults.
3. Explain the effects of exercise and activity on physiological cardiopulmonary systems of aging adults.
4. Interpret basic clinical evaluation data and develop effective treatment programs for elders
5. Health promotion and body maintenance in elderly

Unit II: Palliative Care

1. Context and principle of palliative care
2. Palliative care in the community
3. Public and patient involvement in palliative care
4. Palliative care: choice equity and diversity
5. Ethical issues in palliative care
6. Communication skill in palliative care
7. Adapting to death, dying and bereavement
8. Pain and its management
9. Management of respiratory symptom in advance heart disease
10. Management of complications of cancer
11. Management of complications of renal failure
12. Management of respiratory symptoms and advance respiratory conditions
13. Terminal case and dying

Textbook:

1. Spirduso, WW. Physical Dimensions of Aging (Second Edition). Human Kinetics. 2005

Course Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT 345 P	Practical – VI Cardiovascular Pulmonary Medicine and Surgery	28	2	1	10	40	50

On completion of the study of this subject the student should be able to:

1. Understand and apply principles of topics covered in MPT 241 Ns 341

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Course Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT 346 P	Practical – VII Evaluative Clinical Practice	210	15	8	50	150	200

The students will be allocated patients of relevant diseases and disorders for:

1. History taking of the conditions of patients.
2. All the physiotherapeutic intervention pertaining to the subject
3. Evaluation and physiotherapy treatment: its presentation and documentation of all the conditions as discussed in MPT 342, MPT 343, MPT 344

Course Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT 347 P	Technical writing	56	4	2	10	40	50

On completion of this technical writing the student will be trained in literature survey, writing a scientific report and make a presentation which will help them to pursue their research work in the next semester.

Course Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
UCC-IV	Seminar Presentation	28	2	1	50	-	50

On completion of the study of this subject the student will:

Present a formal presentation on the topics allocated as per the guidelines given when required.

SEMESTER IV

Subject Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT401	Physiotherapy in Lifestyle medicine	56	4	4	25	75	100

1. Introduction to lifestyle medicine
 - a. Definition and importance
 - b. incidence of chronic illness and the contribution of healthy lifestyle to the prevention and treatment of diseases
 - c. Definition of health and the foundations for good health
 - d. Physiotherapist's health – self -evaluation, personal goals, the importance of being a role model
2. Physical activity
 - a. Relationship between physical activity and health
 - b. Prescribed healthy physical activity, according to age and gender in different illness situations
 - c. Evaluating fitness, evaluating and approving physical activity
3. Tools for promoting health change
 - a. The challenge of change
 - i. Factors that promote change and factors that impede processes of change
 - ii. The emotional aspects of change processes
 - iii. Fostering and materializing resources for change processes
 - iv. Creating a new balance in processes of change
 - b. The trans-theoretical model / the theory of the 6 stages of change

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- c. Patient compliance
 - d. Health coaching
4. Prevention and Treatment of Obesity
 - a. Introduction to nutrition
 - b. Nutrition for a healthy individual.
 - c. Obesity – epidemiology, environmental and genetic factors, paediatric obesity, regulation of food consumption, complications, prevention and treatments
5. Coping with stress
 - a. Introduction
 - i. The history and definition of "stress"
 - ii. anatomy and physiology of stress
 - iii. The characteristics of stressors
 - iv. Clinical implications of stress
 - v. Coping with stress – styles of coping, recruiting resources for coping
 - vi. Acute and chronic stress damage
 - b. Self management
 - c. Tools to manage stress
6. Smoking cessation
 - a. The physiological, psychological and behavioral components of cigarette addiction and its treatment.
 - b. Evidence based possibilities for treatment
 - c. Treatment for smoking cessation
7. Sleep Medicine
 - a. Acquaintance with basic concepts in sleep medicine, the structure and physiology of sleep
 - b. International classification of sleep disorders
 - c. Understanding the clinical implications of sleep disturbance
 - d. Physiotherapeutic interventions for improving sleep
8. Lifestyle Medicine for Older Adults
9. Diabetes: Exercise testing and prescription
10. Hypertension : Exercise testing and prescription

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT402	* Pedagogy, Ethics and Hospital management	70	5	5	25	75	100

SECTION - A

1. Administration
 - a) Functions of management
 - b) Fundamentals of hospital administration
 - c) Management Process – Planning, Organization, Direction, Controlling, Decision making
 - d) Personnel Management – Staffing, Recruitment Selection, Performance appraisal, Collective bargaining, Job Satisfaction.
 - e) Total Quality management – basics, quality control, quality assurance programme in hospitals and medical audit, International Quality System, Six Sigma approach, Just in Time approach

SECTION - B

1. Ethics & legal issues
 - a) Rules of Professional conduct
 - b) Legal responsibility
 - c) Code of ethics
 - d) Functions of Physiotherapy associations
 - e) Role of International health agencies
 - f) Standards of practice for Physiotherapists
 - g) Liability and obligations in the case of medical legal action
 - h) Law of disability and discrimination
 - i) Confidentiality of the Patient's status
 - j) Consumer Protection Law, Health law, MCI, DCPTOT
 - k) Laws and Ethics governing fair play in sports
 - l) Regulations of State Professional Councils (DCPTOT, MCPTOT)
2. Hospital management
 - a) History of hospital Administration, Planning and designing supportive services
 - b) Planning and designing ancillary and medical services
 - c) Financial / Management of a hospital
 - d) Planning and designing administrative services
 - e) Marketing of a hospital
 - f) Management of the hospital
 - g) Planning and developing a hospital (emphasis on physiotherapy department)
 - h) Administrative running of a hospital
 - i) Organization of a hospital

SECTION - C

1. Concept of teaching and learning
 - a) Meaning and scope of Educational Psychology
 - b) Meaning and Relationship between teaching and learning
 - c) Learning theories
 - d) Dynamics of behavior
 - e) Individual differences
2. Curriculum
 - a) Meaning and concept
 - b) Basis of curriculum formulation
 - c) Framing objectives for curriculum
 - d) Process of curriculum development and factors involve
 - e) Evaluation of curriculum
3. Teaching methodology & teaching aids
 - a) Methods of teaching- Lecture, Demonstration, Discussion, Seminar, Assignment, Project, Case study
 - b) Planning for teaching- Bloom's taxonomy of instructional objectives, Writing instructional objectives I behavioral terms, Unit planning, Lesson planning
 - c) Teaching Aids- Types of teaching aids, Principles of selection, preparation and use of audio-visual aids
4. Measurement and evaluation
 - a) Nature of educational measurement: meaning, process, types of tests
 - b) Construction of an achievement test and its analysis

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- c) Standardized test-Introduction of some standardized tools, important tests of intelligence, aptitude and personality
- d) Continuous and comprehensive evaluation

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT441P	Dissertation	322	31	16	150	150	300

On completion of the study of this subject the student will be able to:

1. Compile all the chapters of the dissertation in the prescribed format
2. Appear before the research committee for the final presentation of their respective work.

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SEMESTER –I

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT101	*ABMS(Advanced Topics in Biomed Science)	56	4	4	25	75	100
MPT 102	Exercise Physiology testing & prescription	56	4	4	25	75	100
MPT 103	Research Methodology, Biostatistics& EBP	56	4	4	25	75	100
MPT 104	Biomechanics & Kinesiology	56	4	4	25	75	100
MPT 105	Advanced therapeutics	56	4	4	25	75	100
MPT 106P	Practical- I- Exercise Physiology, Testing, Prescription & ABMS	84	6	3	25	75	100
MPT 107P	Practical- II – Biomechanics& Kinesiology	28	2	1	10	40	50
MPT 108P	Practical – III- Evaluative Clinical Practice-I	140	10	5	50	150	200
	Total	532	38	29	210	640	850
UCC-I	Critical Research appraisal & Presentation	28	2	1	50	-	50
	Grand Total	560	40	30	260	640	900

SEMESTER –II

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT201	Diagnostic tools in Physiotherapy	56	4	4	25	75	100
MPT 231	Neurology and Neurosurgery	56	4	4	25	75	100
MPT 232	Neurological Physiotherapy : Assessment & Techniques	70	5	5	25	75	100
MPT 233	Physiotherapy in Neurological Disorders	70	5	5	25	75	100
MPT 234	Principles of Neurological Physiotherapy	56	4	4	25	75	100
MPT 235P	Practical IV: Neurological Physiotherapy Assessment & Techniques	28	2	1	10	40	50
MPT 236P	Practical V: Evaluative Clinical Practice - II	168	12	6	50	150	200
	Total	504	36	29	185	565	750
UCC-II	Project Development	28	2	1	50	-	50
UCC-III	Seminar Presentation	28	2	1	50	-	50
	Grand Total	560	40	31	285	565	850

SEMESTER -III

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 331	Pediatric Neurology and Neurosurgery	56	4	4	25	75	100
MPT 332	Pediatric Neurological Physiotherapy	70	5	5	25	75	100
MPT 333	Geriatric and Palliative Care	56	4	4	25	75	100
MPT 334	Assistive Technology	56	4	4	25	75	100
MPT 335 P	Practical VI :Pediatric and adult Neurology and Neurosurgery	28	2	1	10	40	50
MPT 336 P	Practical VII :Evaluative Clinical Practice -III	210	15	8	50	150	200
MPT 337 P	Technical Writing	56	4	2	10	40	50
	Total	532	38	28	170	530	700
UCC-IV	Seminar Presentation	28	2	1	50	-	50
	Grand Total	560	40	29	220	530	750

SEMESTER -IV

Course Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT401	Physiotherapy in Lifestyle medicine	56	4	4	25	75	100
MPT402	* Pedagogy, Ethics and Hospital management	70	5	5	25	75	100
MPT431P	Dissertation	408	29	15	150	150	300
	Grand Total	534	38	24	200	300	500

Course summary

Total theory Credit (I-IV Sem.) : 114

UCC: - University Compulsory Clearance (Not to be considered for credit calculation)

*: Choice based credit system (CBCS) paper

IA: Internal Assessment Marks , SE: Semester Exam Marks;

Semester I

Subject Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT101	*ABMS(Advanced Topics in Biomed Science)	56	4	4	25	75	100

Section - I

I. Applied Anatomy and Histology

- a) Functional Anatomy of upper limb, lower limb, spine, head, neck and face.
- b) Surface Anatomy, Markings and determinations.
- c) Pathoanatomy of peripheral nerve injuries, various bone pathologies etc.
- d) Pathoanatomy of PIVD, hernias, Hand infections, Common dislocations
- e) General Histology- Anatomy of cell membrane, types of epithelium and its anatomical location, histological appearance and fine details of bone, cartilage, muscle, ligament, peripheral nerves and spinal cord

II. Applied General Physiology

1. Cardiovascular system

- a) Physical characteristics of systemic circulation, Pressure pulses
- b) Oxygen demand theory of local blood flow circulation,
- c) Nervous control of blood circulation, Humorous control of blood circulation , Mechanisms of arterial pulse regulation, Hypertension,
- d) Cardiac output and its regulation, Cardiac output in normal stress conditions, Methods of measuring cardiac output
- e) Normal coronary blood flow along with variations, Physiological basis of ischemic heart disease, Physiological causes of shock

2. Neuromuscular System and Endocrine System

- a) Basic physics of membrane potentials, Recording of membrane potentials and action potentials with basics of electromyogram
- b) Mechanism of muscle contraction, Sources of energy for muscle contraction, Neural control of movement
- c) Role of hormones in sports, fitness and exercise

3. Respiratory System

- a) Review of mechanics of respiration
- b) Pulmonary volumes and capacities
- c) Composition of Alveolar air, Transport of oxygen & Carbon dioxide in blood
- d) Methods of studying respiratory abnormalities

Section – II
(Clinical Biochemistry)

I. Review Of Metabolism

- a) Carbohydrates: Glycogenesis ,glycogenolysis, glycolysis ,TCA, ETS, Lactate Metabolism
- b) Lipids: Beta oxidation , synthesis of lipids
- c) Proteins: Nitrogen balance ,Urea cycle
- d) Water: Fluid and electrolyte balance, Water and sodium balance

II. Enzymes And Markers In Blood

- a) Cardiovascular Markers: Troponin, Creatine Kinase, Lactate Dehydrogenase ,Myoglobin, Aspartate transaminase.
- b) Neuromuscular Markers: Acetylcholine, Dopamine, GABA.
- c) Inflammatory Markers and Free Radicals: TNF alpha, Interleukins, NO, H₂O₂, Superoxides

III. Biochemical And Genetic Basis Of Diseases

- a) Cardiovascular Disorders: Myocardial Infarction, Cardiomyopathy, Diabetes, Artherosclerosis
- b) Neuromuscular Disorders: Epilepsy , Parkinson Disease, Alzheimer, Schizophrenia.
- c) Muscular Disorders: Cystis Fibrosis, Congenital muscular dystrophy, Duchenne muscular dystrophy,
- d) Biochemical, physiological& anatomical change in Ability , Disabilities, Ageing, Osteoporosis & Osteoporosis

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 102	Exercise Physiology testing & prescription	56	4	4	25	75	100

I Energy Transfer for Physical Activity

- a) Energy transfer in body
- b) Energy transfer in exercise
- c) Energy expenditure during various activities
- d) Fatigue
- e) Biochemical responses and molecular mechanisms to endurance training
- f) Introduction to effects of training and detraining

II Cardiovascular System And Exercise

- a) Cardiovascular regulation and integration during exercise
- b) Functional capacity of the cardiovascular system during exercise
- c) Cardiovascular adaptations to sustained aerobic exercises
- d) Athletes heart and sudden cardiac death in sports
- e) Lipids and sports, protection from coronary heart disease, exercise and optimization of lipid profile

III Respiratory System And Exercise

- a) Regulation of respiration during exercise
- b) Acid-Base regulation during exercise
- c) Respiratory adaptations to sustained aerobic exercise
- d) Air Conditioning
- e) Second wind
- f) Oxygen debt

IV Skeletal System And Exercise

- a) Growth and exercise
- b) Repair and adaptation during exercise
- c) Pathophysiology of back
- d) Training adaptations for muscular strength and endurance

V Gastrointestinal Tract And Endocrine System And Exercise

- a) Effect of exercise on GIT and liver
- b) Hormone regulation of fluid and electrolytes during exercise
- c) Exercise and menstrual cycle
- d) Stress hormones in exercise
- e) Effects of exercise on various hormones in the body
- f) Opioids and Runners High
- g) Oxygen debt

VI Exercise Testing Prescription And Aging

- a) Aging and physiological function
- b) Exercise and longevity
- c) Exercise stress testing for diagnosis of CHD
- d) Exercise prescription for healthy aged
- e) Exercise prescription for sedentary adults
- f) Cost and benefits of exercise prescription in Osteoporosis
- g) Exercise for mood and enhancement and anxiety

Subject Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT 103	Research Methodology, Biostatistics& EBP	56	4	4	25	75	100

SECTION- I
(RESEARCH METHODOLOGY & EBP)

I Research In Physiotherapy

- a) Introduction
- b) Research for Physiotherapist: Why, how and when?
- c) Research – Definition, concept, purpose, approaches
- d) Web Source for physiotherapists

II Research Fundamentals

- a) Define measurement
- b) Measurement framework
- c) Scales of measurement

- d) Pilot study
- e) Types of variables
- f) Reliability & Validity
- g) Drawing tables, graphs, master chart etc.

III Writing A Research Proposal, Critiquing A Research Article

- a) Defining a problem
- b) Review of literature
- c) Formulating a question, operational definition
- d) Inclusion and Exclusion criteria
- e) Forming groups
- f) Data collection & analysis
- g) Results, Interpretation, Conclusion, Discussion
- h) Informed consent
- i) Limitations

IV Research Design

- a) Principle of designing
- b) Design, instrumentation & analysis for qualitative research
- c) Design, instrumentation & analysis for quantitative research
- d) Design, instrumentation & analysis for quasi-experimental research
- e) Design models utilized in Physiotherapy

V Research Ethics

- a) Importance of Ethics in Research
- b) Main ethical issues in human subjects' research
- c) Main ethical principles that govern research with human subjects
- d) Components of an ethically valid informed consent for research

VI Evidence Based Practice

Concept of evidence based practice by addressing topics related to

- a) Research design and measurement
- b) Measurement error,
- c) Case design studies and
- d) Interpretation of clinical research

SECTION -II (BIOSTATISTICS)

I Introduction to Biostatistics

- a) Introduction- Definition and Application in Physiotherapy
- b) Data Presentation
- c) Methods of Sampling
- d) Sampling distribution
- e) Standard error
- f) Types I & II error
- g) Hypothesis Testing
- h) Null Hypothesis

- i) Alternative hypothesis
- j) Acceptance & rejection of null hypothesis
- k) Level of significance

II Measures Of Central Value & Measures Of Dispersion

- a) Arithmetic mean, median mode, Relationship between them
- b) Partitioned values – Quartiles, Deciles, Percentiles
- c) Graphical determination
- d) Range
- e) Mean Deviation
- f) Standard Deviation
- g) Normal Distribution Curve- Properties of normal distribution, Standard normal distribution
- h) Transformation of normal random variables.
- i) Inverse transformation
- j) Normal approximation of Bioaxial distribution.

III Correlations & Regression Analysis

- a) Bivariate distribution
- b) Scatter diagram
- c) Coefficient of correlation
- d) Calculation & interpretation of correlational coefficient
- e) T-test, Z-test, P-value
- f) Lines of regression
- g) Calculation of Regression Coefficient

IV Probability (In Brief)

- a) Basic Definition: Events, sample space and probabilities
- b) Basic rules for probability
- c) The range of values
- d) The Rule of complement
- e) Mutually exclusive events
- f) Conditional probability
- g) Independence of events
- h) Combinatorial concepts
- i) Law of Total probability and Baye's theorem

V Analysis And Evaluation

- a) Parametric & Non Parametric Tests- Chi square test, Mann-Whitney U test, Wilcoxon Signed test, Kruskal-Wallis test, Friednam test, T-test/student T test, Analysis of variance
- b) Agreement Analysis
- c) Software Used in Statistical Analysis and research

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
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MPT 104	Biomechanics & Kinesiology	56	4	4	25	75	100
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SECTION I
(BIOMECHANICS)

I Introduction

- a) Nature and importance of Biomechanics in Physiotherapy
- b) Principle of Biomechanics

II Movement Analysis

- a) Biomechanics of shoulder and shoulder complex, elbow complex, wrist and hand complex
- b) Biomechanics of pelvic, hip, knee, ankle & foot complex
- c) Biomechanics of spine
- d) Neuro biomechanics
- e) Posture and Gait analysis
- f) Biomechanical Analysis & Techniques – Force platforms

Section II
(Kinesiology)

I Introduction To Kinematics

- a) Definition, aims, objectives and role of Kinesiology in sports physiotherapy.
- b) Review of fundamental concepts (applied aspect), Centre of gravity, Line of gravity, Planes, Lever system in Body, Fundamental starting positions.
- c) Review of linear and angular kinematics

II Mechanics Of Musculoskeletal System

- a) Tissue loads, response of tissues to forces- Stress, Strain, Stiffness and mechanical strength, visco elasticity
- b) Physical Properties of bone, cartilage, tendon and ligaments, functional adaptation under pathological conditions.
- c) Impaired neuromuscular control, muscular force regulation in
- d) Frame work and joints of the body: Influence of trauma and classification of the muscles, Relation of structure, functions, role of muscles, types of Muscle, contractions (Static, Concentric and Eccentric), Two joint Muscles, Angle of pull, Role of Gravity affecting muscular action.

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 105	Advanced therapeutics	56	4	4	25	75	100

I. Exercise Therapy Intervention & Practice

- a) Exercise therapy intervention & practice in: Pain management Endurance impairment Impaired mobility Impaired neuromuscular control Impaired Gait & posture
- b) Specific exercise interventions: Isokinetic, Plyometric, Open & closed kinetic chain , PNF, Core stabilization , Aquatic therapy, Home programme& its adherence

- c) Specific consideration in exercise therapy: Female, Paediatric, Amputation

II. Electrotherapy Intervention & Practice

- a) Pain management
- b) Wound management
- c) Oedema management
- d) Muscular impairment
- e) Specific deep heat interventions: Laser Microwave, Shortwave, Russian current
Didynamic current Iontophoresis, Phonophoresis, Biofeedback
- f) Special consideration for deep heat modalities: Pregnant women, Menstruating women,
Paediatric, Geriatric, Neurologically impaired, Mentally impaired

III. Taping techniques for joints, muscles and various pathological conditions : therapeutic and prophylactic

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 106P	Practical- I- Exercise Physiology, Testing, Prescription & ABMS	84	6	3	25	75	100

- Lab-1 Energy expenditure and exercise
- Lab-2 Energy metabolism
- Lab-3 Cardiovascular effect of exercise
- Lab-4 Respiratory air flow and volume
- Lab -5 Respiratory gas analysis
- Lab -6 Blood pressure in humans
- Lab -7 Electromyogrammes (EMG)
- Lab -8 Oxygen concentration (O₂ measurements)
- Lab -9 Sensory and motor nerve responses in humans

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 107P	Practical- II – Biomechanics& Kinesiology	28	2	1	10	40	50

On completion of the study of this subject the student should be able to

- a) Perform thorough biomechanical evaluation
- b) Qualitative and quantitative analyses of range of motion
- c) Calculation of impulse and take off velocity and height of jump during take off in a standing vertical jump
- d) Calculate and infer Angular kinetics of exercise
- e) Perform and analyze endurance testing during concentric and eccentric actions to review the Force–Velocity Relationship
- f) Detection of scapular position in rotation of spinous process
- a) Measurement of functional limb varus under bilateral and unilateral stance

- b) Subtalar neutral joint positioning
- c) Determination of Q-angle
- d) Measurement of eversion and inversion ranges at subtalar joint
- e) Measurement of popliteal angle
- f) Measurement of calcaneal inversion and eversion in non weightbearing and weightbearing stance

Subject Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT 108P	Practical – III- Evaluative Clinical Practice-I	140	10	5	50	150	200

On completion of the study of this subject the student should be able to:

- a) To formulate a rationalized treatment plan for the patient
- b) Implement physiotherapy treatment
- c) Compare & contrast the outcome of various treatment approaches
- d) Document the status to the patient as written records

Subject Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
UCC-I	Critical Research appraisal & Presentation	28	2	1	50	-	50

On completion of the study of this subject ,the student should be able to critically analyze five published research papers and present the same.

SEMESTER – II

Subject Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT201	Diagnostic tools in Physiotherapy	56	4	4	25	75	100

SECTION A

(RADIOLOGY: Marks. 25)

- I. Basics of Imaging Techniques
 - a) Fluoroscopic Examination
 - b) CT Scan
 - c) Radionuclide Scanning
 - d) MRI/Functional MRI
 - e) Ultrasonography/Doppler
 - f) X-Ray
 - g) Bone Scan
 - h) DEXA Scan
 - i) PET and SPECT scans

- j) Angiography
- II. Regional imaging with X-ray, MRI, CT, ultrasonography
 - a) Head and Neck
 - b) Chest
 - c) Spine
 - d) Pelvis, hip and thigh
 - e) Knee complex
 - f) Lower leg, foot and ankle
 - g) Foot

SECTION B

(Human Performance Analysis :Marks. 50)

- I. Body composition, strength and endurance testing
 - a) Body composition analysis
 - b) Muscle strength: Physiological and chemical factors
 - c) Dynamo metery: Hand held dynamo meters
 - d) Hand grip measurement
 - e) Back and leg dynamometry
 - f) 1 RM Measurement
 - g) Isokinetics
 - h) Endurance testing: Muscle and cardiovascular endurance testing
 - i) Assessment of muscle damage & fatigue
- II. Applied Movement Analysis
 - a) Introduction to 2 and three dimensional movement analysis
 - b) Instrumentation and methods of movement analysis
 - c) Electro goniometry and accelerometer
- III. Electromyography and NCV in Rehabilitation
 - a) EMG : Concepts, clinical and kinesiological EMG
 - b) NCV: Concepts and method of recording

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 231	Neurology and Neurosurgery	56	4	4	25	75	100

Pathophysiology, clinical manifestation, conservative and surgical management of following -

1. Disorders of cerebral circulation.
 - a. Stroke
2. Movement Disorders
 - a. Parkinson's Disease
 - b. Multiple system atrophy
 - c. Dystonia
3. Disorders of cerebellum
 - a. Genetic
 - b. Acquired
4. Disorders of peripheral &cranial nerves.
 - a. Demyelinating neuropathies

- b. Diabetic neuropathies
- c. Trigeminal neuralgia
- d. Bell's and Facial palsy
- e. other cranial nerves
- 5. Demyelinating disorders of central nervous system
 - a. Multiple sclerosis
- 6. Myelopathy
 - a. Traumatic myelopathy.
 - b. Infections
- 7. Neuronopathies
 - a. Motor neuron diseases
 - b. Amyotrophic lateral sclerosis
- 8. Degenerative disorders
 - a. Dementia
 - b. Alzheimer's disease
- 9. Disorders of Muscles
 - a. Adult onset genetic myopathies
 - b. Inflammatory
- 10. Infectious disorders
 - a. Bacterial
 - b. Viral
- 11. Epilepsy
- 12. Nervous system malformation.
 - a. Spina bifida
 - b. cranio- vertebral junction anomalies
- 13. Traumatic brain injury
- 14. Neoplasm.
- 15. ICU management of neurologically ill

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 232	Neurological Physiotherapy : Assessment & Techniques	70	5	5	25	75	100

- I. Neurological assessment
 - a) Frameworks of assessment
 - b) Review of general neurological assessment
 - c) Disability evaluation
 - d) Functional assessment
 - e) Pain Assessment
 - f) Gait analysis in neurological disorders
- II. Assessment with specialized tools and assessment in various set ups
 - a) Questionnaires, functional performance scales and scales in neurological disorders
 - b) Assessment in :Acute care, wards/ Rehab units, OPD and community
- III. Neurological Physiotherapy techniques

- a) NDT/Boabth Approach
- b) Rood's Approach
- c) PNF
- d) Motor relearning programme
- e) Sensory integration therapy
- f) Neural Mobilization
- g) Biofeedback.
- h) Mental Imagery
- i) Functional electrical stimulation

IV. Special issues in neurological rehabilitation

- a) Assessment & management of cognitive perceptual and sensory dysfunction.
- b) Psychosocial and community based rehabilitation

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 233	Physiotherapy in Neurological Disorders	70	5	5	25	75	100

Physiotherapy assessment and management of

- 1. Disorders of cerebral circulation.
 - a. Stroke
- 2. Movement Disorders
 - a. Parkinson's Disease
 - b. Multiple system atrophy
 - c. Dystonia
- 3. Disorders of cerebellum
 - a. Genetic
 - b. Acquired
- 4. Disorders of peripheral &cranial nerves.
 - a. Demyelinating neuropathies
 - b. Diabetic neuropathies
 - c. Trigeminal neuralgia
 - d. Bell's and Facial palsy
 - e. other cranial nerves
- 5. Demeylinating disorders of central nervous system
 - a. Mutilpe sclerosis
- 6. Myelopathy
 - a. Traumatic myelopathy.
 - b. Infections
- 7. Neuronopathies
 - a. Motor neuron diseases
 - b. Amyotrophic lateral sclerosis

8. Degenerative disorders
 - a. Dementia
 - b. Alzheimer's disease
9. Disorders of Muscles
 - a. Adult onset genetic myopathies
 - b. Inflammatory
10. Infectious disorders
 - a. Bacterial
 - b. Viral
11. Nervous system malformation.
 - a. Spina bifida
 - b. cranio vertebral junction anomalies
12. Traumatic brain injury
13. Vestibular disorders.
14. Physiotherapy management in neurological ICU
15. Analysis of exercise testing and prescription in pediatric neurological disorders

Subject Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT 234	Principles of Neurological Physiotherapy	56	4	4	25	75	100

- I. Motor control and motor learning
 - a) Theories of motor control , motor learning and its application
 - b) Issues related with motor control
 - c) Physiological and genetic basis of neurological disorders
 - d) Neural injury and repair
- II. Postural Control
 - a) Development of postural control
 - b) Normal postural control
 - c) Abnormal postural control
 - d) Postural control disorder and their management
- III. Mobility & Stability
 - a) Control of normal mobility & stability
 - b) Coordinated movements
 - c) Abnormal mobility & stability
 - d) Management of mobility, stability and coordination issues
- IV. Reach, grasp and manipulation
 - a) Normal reach, grasp and manipulation
 - b) Changes across life span in reach, grasp & manipulation
 - c) Abnormal reach, grasp & manipulation
 - d) Management of reach, grasp & manipulation problems.
- V. Disorders of Muscle

- a) Muscle weakness
- b) Altered muscle tone

Subject Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT 235P	Practical IV: Neurological Physiotherapy Assessment & Techniques	28	2	1	10	40	50

On completion of the study of this subject the student should be able to:

- a) Understand and apply various neurological physiotherapy techniques
- b) Understand and apply principles of topics covered in MPT 232

Subject Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT 236P	Practical V: Evaluative Clinical Practice - II	168	12	6	50	150	200

The students will be allocated patients of relevant diseases and disorders for:

1. Interpret and differentiate between various diagnostic tools used for therapeutic plan
2. History taking of the conditions of patients.
3. All the physiotherapeutic intervention pertaining to the subject
4. Evaluation and physiotherapy treatment: its presentation and documentation of all the conditions. The topics and management will be as discussed in MPT 201, MPT 232, MPT 234

Subject Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
UCC-II	Project Development	28	2	1	50	-	50

On completion of the study of this subject the student should:

1. Prepare a formal research proposal on the chosen topic for the dissertation under the guidance of supervisor
2. Present the topic before research committee for approval with suggested changes

Subject Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
UCC-III	Seminar Presentation	28	2	1	50	-	50

On completion of the study of this subject the student will:

1. Present a formal presentation on the topics allocated as per the guidelines given when required during the course of the semester.

Subject Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT 331	Pediatric Neurology and Neurosurgery	56	4	4	25	75	100

- I. Introduction to:
 - a) Neonatal care; risk babies and management
 - b) Genetic basis of pediatric disorders
 - c) Embryology & genetic counseling
- II. Clinical presentation, management & complications of the following clinical conditions
 - a) Central nervous system malformations
 - b) Traumatic brain injury
 - c) Down's syndrome
 - d) Cerebral Palsy
 - e) Anterior Poliomyelitis & post Polio syndrome
 - f) Muscular Dystrophy
 - g) Infections of CNS – Bacterial & Viral infections
 - h) Infantile Hemiplegia
 - i) Peripheral nerve injuries - Brachial Plexus Injuries, etc
 - j) Malformations of the spine and spinal cord
 - k) General Principles of neurosurgery in children
 - l) Disorders of CSF Fluid & circulation
 - m) Spasticity management
 - n) Neoplasm

Subject Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT 332	Pediatric Neurological Physiotherapy	70	4	5	25	75	100

- I. Normal human development
 - a) Growth and development during prenatal, infancy, and child hood including deviations from normal
 - b) Nervous system and musculoskeletal development.
 - c) Components of a newborn examination.
 - d) Developmental reflexes
 - e) Fine motor, vision and perception development

- II. Atypical Development
- Identify potential problem signs, soft signs, or “red flags” of development.
 - Discuss the sequence of atypical motor development including missing components, compensations, habit, possible contractures and deformities.
 - Describe how atypical motor development can lead to problem areas.
 - Analyze movement of a child in clinic setting prioritizing key areas that interfere with typical movements.
- III. Pediatric neurologic assessment and management
- Early intervention- high risk babies, neonatal care and management.
 - Central nervous system malformations
 - Traumatic brain injury
 - Cerebral Palsy
 - Anterior Poliomyelitis & post Polio syndrome
 - Muscular Dystrophy
 - Infections of CNS – Bacterial & Viral infections
 - Infantile Hemiplegia
 - Peripheral nerve injuries - Brachial Plexus Injuries,etc
 - Malformations of the spine and spinal cord
 - Neoplasm
 - post-operative management
 - Analysis of exercise testing and prescription in pediatric neurological disorders
 - CBR in pediatric conditions.

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 333	Geriatric and Palliative Care	56	4	4	25	75	100

Section I

- I. Basic of Geriatrics
- Biology of aging, Genetic theories of aging, Physiology of aging Microscopic Theories, Changes in Ageing scenario, interactions between Biological, psychological, physiological and social processes in ageing
 - Describe philosophy, development & scope of geriatric rehabilitation in India
- II. Principles of Geriatric Rehabilitation
- Principles of rehabilitation in older people and importance of comprehensive geriatric assessment (CGA)

- b) Different measures (assessment scales) used to assess functional status and outcome of rehabilitation and their limitations: to include objective evaluation of ADL ability and level of activity limitation and participation restriction, cognitive status, and mood
- c) Quantity and Quality of Life - Individual Differences
- d) Physical Development and Decline

III. Assessment and management in geriatric care

- a) Physical Function of Older Adults
- b) Assessment of cardiopulmonary Function, Muscle Strength, fatigue and power in the elderly
- c) Balance evaluation/fall risk assessment
- d) General approaches to strengthening and reconditioning the elderly – PT, group exercises in the elderly
- e) Cognitive Function/ Quality of Life
- f) Perception and cognitive impairments in the elderly
- g) Evaluation and management of acute and chronic pain in the elderly
- h) Non-operative management of degenerative and other arthritides
- i) Prescription of walking aides and other assistive devices

Section II

I. Introduction to palliative care

- a) Concepts of hospice care, terminal illness/care, end of life care, palliative care
- b) The concept of dying with dignity
- c) Understanding that goals of treatment will be different
- d) Euthanasia and other such issues of terminal illness
- e) Bereavement/ Grief and its management
- f) Importance of support systems in managing terminal illness
- g) Identifying common needs and preferences of patients with terminal illness
- h) Communication Skills and their importance in physiotherapy management
- i) Role and members of the multidisciplinary team

II. Pain and Physical symptoms management

- a) Physiology and anatomy of pain
- b) Types and mechanism of pain
- c) Assessment of pain and its various tools
- d) General principles of pain management
- e) Various physiotherapeutic methods of pain management
- f) Role of Opioid, non Opioid and NSAID's
- g) Treating co morbidities
- h) Respiratory physiotherapy
- i) Exercise principles in P. C

III. Physiotherapy in palliative care

- a) Introduction to tumors- types, pathology, staging, conservative and surgical management.
- b) Management of cancer pain
- c) Conservative, Pre and post operative assessment and management of common tumors
- d) Palliative management in other conditions like neurodegenerative disorders, spinal cord and brain injuries etc
- e) AIDS and HIV Positive patients

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 334	Assistive Technology	56	4	4	25	75	100

I. Orthotics

- a) Biomechanical principles
- b) Material & its properties
- c) Assessment
- d) Ideal orthotics/splints & its properties

II. Orthotics in neurological rehabilitation

- a) Regional orthotics
 - i. Upper limb
 - ii. Lower limb
 - iii. Neck and spine
- b) Wheel Chairs
- c) Gadgets in various neurological disorders

III. Environmental barriers

- a. Universal accessibility
- b. Methods of evaluation
- c. Modification of Environment

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 335 P	Practical VI :Pediatric and adult Neurology and Neurosurgery	28	2	1	10	40	50

The students will be observing patients of relevant diseases and disorders for:

1. History taking of the conditions of patients.
2. Evaluation and treatment planning: its presentation and documentation of all the conditions listed in MPT 231 and MPT 331.

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 336 P	Practical VII :Evaluative Clinical Practice -III	210	15	8	50	150	200

The students will be allocated patients of relevant diseases and disorders for:

1. History taking of the conditions of patients.
2. All the physiotherapeutic intervention pertaining to the subject
3. Evaluation and physiotherapy treatment: its presentation and documentation of all the conditions as discussed in MPT 332, MPT 333, MPT 334

Subject Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT 337 P	Technical Writing	56	4	2	10	40	50

On completion of this technical writing the student will be trained in literature survey, writing a scientific report and make a presentation which will help them to pursue their research work in the next semester.

Subject Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
UCC-IV	Seminar Presentation	28	2	1	50	-	50

On completion of the study of this subject the student will:

1. Present a formal presentation on the topics allocated as per the guidelines given when required

SEMESTER – IV

Subject Code	Subject	Total Hours	Hours/week	Credits	IA Marks	SE Marks	Total Marks
MPT401	Physiotherapy in Lifestyle medicine	56	4	4	25	75	100

- I. Introduction to lifestyle medicine
 - a) Definition and importance
 - b) incidence of chronic illness and the contribution of healthy lifestyle to the prevention and treatment of diseases
 - c) Definition of health and the foundations for good health
 - d) Physiotherapist's health – self -evaluation, personal goals, the importance of being a role model
- II. Physical activity
 - a) Relationship between physical activity and health
 - b) Prescribed healthy physical activity, according to age and different illness situations
 - c) Evaluating fitness, evaluating and approving physical activity
- III. Tools for promoting health change
 - a) The challenge of change
 - i. Factors that promote change and factors that impede processes of change
 - ii. The emotional aspects of change processes
 - iii. Fostering and materializing resources for change processes
 - iv. Creating a new balance in processes of change

- b) The trans-theoretical model / the theory of the 6 stages of change
 - c) Patient compliance
 - d) Health coaching
- IV. Prevention and Treatment of Obesity
- a) Introduction to nutrition
 - b) Nutrition for a healthy individual.
 - c) Obesity – epidemiology, environmental and genetic factors, paediatric obesity, regulation of food consumption, complications, prevention and treatments
- V. Coping with stress
- a) Introduction
 - v. The history and definition of "stress"
 - vi. anatomy and physiology of stress
 - vii. The characteristics of stressors
 - viii. Clinical implications of stress
 - ix. Coping with stress – styles of coping, recruiting resources for coping
 - x. Acute and chronic stress damage
 - b) Self management
 - c) Tools to manage stress
- VI. Smoking cessation
- a) The physiological, psychological and behavioral components of cigarette addiction and its treatment.
 - b) Evidence based possibilities for treatment
 - c) Treatment for smoking cessation
- VII. Sleep Medicine
- a) Acquaintance with basic concepts in sleep medicine, the structure and physiology of sleep
 - b) International classification of sleep disorders
 - c) Understanding the clinical implications of sleep disturbance
 - d) Physiotherapeutic interventions for improving sleep
- VIII. Lifestyle Medicine for Older Adults
- IX. Diabetes: Exercise testing and prescription
- X. Hypertension : Exercise testing and prescription

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT402	* Pedagogy, Ethics and clinic management	56	4	4	25	75	100

SECTION - A

- I. Administration
- a) Functions of management
 - b) Fundamentals of hospital administration

- c) Management Process – Planning, Organization, Direction, Controlling, Decision making
- d) Personnel Management – Staffing, Recruitment Selection, Performance appraisal, Collective bargaining, Job Satisfaction.
- e) Total Quality management – basics, quality control, quality assurance programme in hospitals and medical audit, International Quality System, Six Sigma approach, Just in Time approach

SECTION - B

I. Ethics & legal issues

- a) Rules of Professional conduct
- b) Legal responsibility
- c) Code of ethics
- d) Functions of Physiotherapy associations
- e) Role of International health agencies
- f) Standards of practice for Physiotherapists
- g) Liability and obligations in the case of medical legal action
- h) Law of disability and discrimination
- i) Confidentiality of the Patient's status
- j) Consumer Protection Law, Health law, MCI, DCPTOT
- k) Laws and Ethics governing fair play in sports
- l) Regulations of State Professional Councils (DCPTOT, MCPTOT)

II. Hospital management

- a) History of hospital Administration, Planning and designing supportive services
- b) Planning and designing ancillary and medical services
- c) Financial / Management of a hospital
- d) Planning and designing administrative services
- e) Marketing of a hospital
- f) Management of the hospital
- g) Planning and developing a hospital (emphasis on physiotherapy department)
- h) Administrative running of a hospital
- i) Organization of a hospital

SECTION - C

1. Concept of teaching and learning

- a) Meaning and scope of Educational Psychology
- b) Meaning and Relationship between teaching and learning
- c) Learning theories
- d) Dynamics of behavior
- e) Individual differences

2. Curriculum

- a) Meaning and concept
- b) Basis of curriculum formulation
- c) Framing objectives for curriculum
- d) Process of curriculum development and factors involve
- e) Evaluation of curriculum

3. Teaching methodology & teaching aids

- a) Methods of teaching- Lecture, Demonstration, Discussion, Seminar, Assignment, Project, Case study
- b) Planning for teaching- Bloom's taxonomy of instructional objectives, Writing instructional objectives I behavioral terms, Unit planning, Lesson planning
- c) Teaching Aids- Types of teaching aids, Principles of selection, preparation and use of audio-visual aids

4. Measurement and evaluation

- a) Nature of educational measurement: meaning, process, types of tests
- b) Construction of an achievement test and its analysis
- c) Standardized test-Introduction of some standardized tools, important tests of intelligence, aptitude and personality
- d) Continuous and comprehensive evaluation

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT431P	Dissertation	322	31	16	150	150	300

On completion of the study of this subject the student will be able to:

- 1. Compile all the chapters of the dissertation in the prescribed format
Appear before the research committee for the final presentation of their respective work

SEMESTER – I

IA: Internal Assessment Marks , SE: Semester Exam Marks;

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT101	*ABMS(Advanced Topics in Biomed Science)	56	4	4	25	75	100
MPT 102	Exercise Physiology testing & prescription	56	4	4	25	75	100
MPT 103	Research Methodology, Biostatistics& EBP	56	4	4	25	75	100
MPT 104	Biomechanics & Kinesiology	56	4	4	25	75	100
MPT 105	Advanced therapeutics	56	4	4	25	75	100
MPT 106P	Practical- I- Exercise Physiology, Testing, Prescription & ABMS	84	6	3	25	75	100
MPT 107P	Practical- II – Biomechanics& Kinesiology	28	2	1	10	40	50
MPT 108P	Practical – III- Evaluative Clinical Practice-I	140	10	5	50	150	200
	Total	532	38	29	210	640	850
UCC-I	Critical Research appraisal & Presentation	28	2	1	50	-	50
	Grand Total	560	40	30	260	640	900

SEMESTER – II

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT201	Diagnostic tools in Physiotherapy	56	4	4	25	75	100
MPT 221	Orthopedics Medicine & Surgery-I	56	4	4	25	75	100
MPT 222	Assessment, techniques and special issues in orthopedic Physiotherapy	70	5	5	25	75	100
MPT 223	Physiotherapy in Orthopedic Trauma	70	5	5	25	75	100
MPT 224	Disability and Rehabilitation	56	4	4	25	75	100
MPT 225P	Practical – IV – Assessment, techniques and special issues in orthopaedic Physiotherapy	28	2	1	10	40	50
MPT 226P	Practical – V –Evaluative Clinical Practice - II	168	12	6	50	150	200
	Total	504	36	29	185	565	750
UCC-II	Project Development	28	2	1	50	-	50
UCC-III	Seminar Presentation	28	2	1	50	-	50
	Grand Total	560	40	31	285	565	850

SEMESTER – III

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 321	Orthopedic Medicine & Surgery - II	56	4	4	25	75	100
MPT 322	Physiotherapy in Regional Orthopedics -I	70	5	5	25	75	100
MPT 323	Physiotherapy in Regional Orthopedics-II	56	4	4	25	75	100
MPT 324	Geriatric, Palliative and Rheumatological physiotherapy	56	4	4	25	75	100
MPT 325P	Practical – VI Orthopedic Med. Surg. – II	28	2	1	10	40	50
MPT 326P	Practical – VII Evaluative Clinical Practice – III	210	15	8	50	150	200
MPT 327 P	Technical Writing	56	4	2	10	40	50
	Total	532	38	28	170	530	700
UCC-IV	Seminar Presentation	28	2	1	50	-	50
	Grand Total	560	40	29	220	530	750

SEMESTER – IV

Course Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT401	Physiotherapy in Lifestyle medicine	56	4	4	25	75	100
MPT402	* Pedagogy, Ethics and Hospital management	70	5	5	25	75	100
MPT421 P	Dissertation	408	29	15	150	150	300
	Grand Total	534	38	24	200	300	500

Course summary

Total theory Credit (I-IV Sem.) : 114

UCC: - University Compulsory Clearance (Not to be considered for credit calculation)

*: Choice based credit system (CBCS) paper

Semester - I

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT101	*ABMS(Advanced Topics in Biomed Science)	56	4	4	25	75	100

Section - I**I. Applied Anatomy and Histology**

- a) Functional Anatomy of upper limb, lower limb, spine, head, neck and face.
- b) Surface Anatomy, Markings and determinations.
- c) Pathoanatomy of peripheral nerve injuries, various bone pathologies etc.
- d) Pathoanatomy of PIVD, hernias, Hand infections, Common dislocations
- e) General Histology- Anatomy of cell membrane, types of epithelium and its anatomical location, histological appearance and fine details of bone, cartilage, muscle, ligament, peripheral nerves and spinal cord

II. Applied General Physiology**1. Cardiovascular system**

- a) Physical characteristics of systemic circulation, Pressure pulses
- b) Oxygen demand theory of local blood flow circulation,
- c) Nervous control of blood circulation, Humorous control of blood circulation , Mechanisms of arterial pulse regulation, Hypertension,
- d) Cardiac output and its regulation, Cardiac output in normal stress conditions, Methods of measuring cardiac output
- e) Normal coronary blood flow along with variations, Physiological basis of ischemic heart disease, Physiological causes of shock

2. Neuromuscular System and Endocrine System

- a) Basic physics of membrane potentials, Recording of membrane potentials and action potentials with basics of electromyogram
- b) Mechanism of muscle contraction, Sources of energy for muscle contraction, Neural control of movement
- c) Role of hormones in sports, fitness and exercise

3. Respiratory System

- a) Review of mechanics of respiration
- b) Pulmonary volumes and capacities
- c) Composition of Alveolar air, Transport of oxygen & Carbon dioxide in blood
- d) Methods of studying respiratory abnormalities

Section – II
(Clinical Biochemistry)

I. Review Of Metabolism

- a) Carbohydrates: Glycogenesis ,glycogenolysis, glycolysis ,TCA, ETS, Lactate Metabolism
- b) Lipids: Beta oxidation , synthesis of lipids
- c) Proteins: Nitrogen balance ,Urea cycle
- d) Water: Fluid and electrolyte balance, Water and sodium balance

II. Enzymes And Markers In Blood

- a) Cardiovascular Markers: Troponin, Creatine Kinase, Lactate Dehydrogenase ,Myoglobin, Aspartate transaminase.
- b) Neuromuscular Markers: Acetylcholine, Dopamine, GABA.
- c) Inflammatory Markers and Free Radicals: TNF alpha, Interleukins, NO, H₂O₂, Superoxides .

III. Biochemical And Genetic Basis Of Diseases

- a) Cardiovascular Disorders: Myocardial Infarction, Cardiomyopathy, Diabetes, Artherosclerosis
- b) Neuromuscular Disorders: Epilepsy , Parkinson Disease, Alzheimer, Schizophrenia.
- c) Muscular Disorders: Cystis Fibrosis, Congenital muscular dystrophy, Duchenne muscular dystrophy,
- d) Biochemical, physiological& anatomical change in Ability , Disabilities, Ageing, Osteoporosis & Osteoporosis

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 102	Exercise Physiology testing & prescription	56	4	4	25	75	100

I Energy Transfer For Physical Activity

- a) Energy transfer in body
- b) Energy transfer in exercise
- c) Energy expenditure during various activities
- d) Fatigue
- e) Biochemical responses and molecular mechanisms to endurance training
- f) Introduction to effects of training and detraining

II Cardiovascular System And Exercise

- a) Cardiovascular regulation and integration during exercise
- b) Functional capacity of the cardiovascular system during exercise
- c) Cardiovascular adaptations to sustained aerobic exercises
- d) Athletes heart and sudden cardiac death in sports
- e) Lipids and sports, protection from coronary heart disease, exercise and optimization of lipid profile

III Respiratory System And Exercise

- a) Regulation of respiration during exercise
- b) Acid-Base regulation during exercise
- c) Respiratory adaptations to sustained aerobic exercise
- d) Air Conditioning
- e) Second wind
- f) Oxygen debt

IV Skeletal System And Exercise

- a) Growth and exercise
- b) Repair and adaptation during exercise

- c) Pathophysiology of back
- d) Training adaptations for muscular strength and endurance
- V Gastrointestinal Tract And Endocrine System And Exercise
 - a) Effect of exercise on GIT and liver
 - b) Hormone regulation of fluid and electrolytes during exercise
 - c) Exercise and menstrual cycle
 - d) Stress hormones in exercise
 - e) Effects of exercise on various hormones in the body
 - f) Opioids and Runners High
 - g) Oxygen debt
- VI Exercise Testing Prescription And Aging
 - a) Aging and physiological function
 - b) Exercise and longevity
 - c) Exercise stress testing for diagnosis of CHD
 - d) Exercise prescription for healthy aged
 - e) Exercise prescription for sedentary adults
 - f) Cost and benefits of exercise prescription in Osteoporosis
 - g) Exercise for mood and enhancement and anxiety

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 103	Research Methodology, Biostatistics& EBP	56	4	4	25	75	100

**SECTION- I
(RESEARCH METHODOLOGY & EBP)**

- I Research In Physiotherapy
 - a) Introduction
 - b) Research for Physiotherapist: Why, how and when?
 - c) Research – Definition, concept, purpose, approaches
 - d) Web Source for physiotherapists
- II Research Fundamentals
 - a) Define measurement
 - b) Measurement framework
 - c) Scales of measurement
 - d) Pilot study
 - e) Types of variables
 - f) Reliability & Validity
 - g) Drawing tables, graphs, master chart etc.
- III Writing A Research Proposal, Critiquing A Research Article
 - a) Defining a problem
 - b) Review of literature
 - c) Formulating a question, operational definition
 - d) Inclusion and Exclusion criteria
 - e) Forming groups
 - f) Data collection & analysis
 - g) Results, Interpretation, Conclusion, Discussion
 - h) Informed consent
 - i) Limitations
- IV Research Design
 - a) Principle of designing
 - b) Design, instrumentation & analysis for qualitative research
 - c) Design, instrumentation & analysis for quantitative research
 - d) Design, instrumentation & analysis for quasi-experimental research

- e) Design models utilized in Physiotherapy

V Research Ethics

- a) Importance of Ethics in Research
- b) Main ethical issues in human subjects' research
- c) Main ethical principles that govern research with human subjects
- d) Components of an ethically valid informed consent for research

VI Evidence Based Practice

Concept of evidence based practice by addressing topics related to

- a) Research design and measurement
- b) Measurement error,
- c) Case design studies and
- d) Interpretation of clinical research

**SECTION -II
(BIOSTATISTICS)**

I Introduction to Biostatistics

- a) Introduction- Definition and Application in Physiotherapy
- b) Data Presentation
- c) Methods of Sampling
- d) Sampling distribution
- e) Standard error
- f) Types I & II error
- g) Hypothesis Testing
- h) Null Hypothesis
- i) Alternative hypothesis
- j) Acceptance & rejection of null hypothesis
- k) Level of significance

II Measures Of Central Value & Measures Of Dispersion

- a) Arithmetic mean, median mode, Relationship between them
- b) Partitioned values – Quartiles, Deciles, Percentiles
- c) Graphical determination
- d) Range
- e) Mean Deviation
- f) Standard Deviation
- g) Normal Distribution Curve- Properties of normal distribution, Standard normal distribution
- h) Transformation of normal random variables.
- i) Inverse transformation
- j) Normal approximation of Bioaxial distribution.

III Correlations & Regression Analysis

- a) Bivariate distribution
- b) Scatter diagram
- c) Coefficient of correlation
- d) Calculation & interpretation of correlational coefficient
- e) T-test, Z-test, P-value
- f) Lines of regression
- g) Calculation of Regression Coefficient

IV Probability (In Brief)

- a) Basic Definition: Events, sample space and probabilities
- b) Basic rules for probability
- c) The range of values
- d) The Rule of complement
- e) Mutually exclusive events

- f) Conditional probability
- g) Independence of events
- h) Combinatorial concepts
- i) Law of Total probability and Baye’s theorem

V Analysis And Evaluation

- a) Parametric & Non Parametric Tests- Chi square test, Mann-Whitney U test, Wilcoxon Signed test, Kruskal-Wallis test, Friednam test, T-test/student T test, Analysis of variance
- b) Agreement Analysis
- c) Software Used in Statistical Analysis and research

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 104	Biomechanics & Kinesiology	56	4	4	25	75	100

**SECTION I
(BIOMECHANICS)**

I Introduction

- a) Nature and importance of Biomechanics in Physiotherapy
- b) Principle of Biomechanics

II Movement Analysis

- a) Biomechanics of shoulder and shoulder complex, elbow complex, wrist and hand complex
- b) Biomechanics of pelvic, hip, knee, ankle & foot complex
- c) Biomechanics of spine
- d) Neuro biomechanics
- e) Posture and Gait analysis
- f) Biomechanical Analysis & Techniques – Force platforms

**Section II
(Kinesiology)**

I Introduction To Kinematics

- a) Definition, aims, objectives and role of Kinesiology in sports physiotherapy.
- b) Review of fundamental concepts (applied aspect), Centre of gravity, Line of gravity, Planes, Lever system in Body, Fundamental starting positions.
- c) Review of linear and angular kinematics

II Mechanics Of Musculoskeletal System

- a) Tissue loads, response of tissues to forces- Stress, Strain, Stiffness and mechanical strength, visco elasticity
- b) Physical Properties of bone, cartilage, tendon and ligaments, functional adaptation under pathological conditions.
- c) Impaired neuromuscular control, muscular force regulation in
- d) Frame work and joints of the body: Influence of trauma and classification of the muscles, Relation of structure, functions, role of muscles, types of Muscle, contractions (Static, Concentric and Eccentric), Two joint Muscles, Angle of pull, Role of Gravity affecting muscular action.

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 105	Advanced therapeutics	56	4	4	25	75	100

I. Exercise Therapy Intervention & Practice

MPT - Ortho. (2015-16)

- a) Exercise therapy intervention & practice in: Pain management Endurance impairment Impaired mobility Impaired neuromuscular control Impaired Gait & posture
- b) Specific exercise interventions: Isokinetic, Plyometric, Open & closed kinetic chain , PNF, Core stabilization , Aquatic therapy, Home programme& its adherence
- c) Specific consideration in exercise therapy: Female, Paediatric, Amputation

II Electrotherapy Intervention & Practice

- a) Pain management
- b) Wound management
- c) Oedema management
- d) Muscular impairment
- e) Specific deep heat interventions: Laser Microwave, Shortwave, Russian current Didynamic current Iontophoresis, Phonophoresis, Biofeedback
- f) Special consideration for deep heat modalities: Pregnant women, Menstruating women, Paediatric, Geriatric, Neurologically impaired, Mentally impaired

III. Taping techniques for joints, muscles and various pathological conditions : therapeutic and prophylactic

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 106P	Practical- I- Exercise Physiology,Testing, Prescription & ABMS	84	6	3	25	75	100

- Lab-1 Energy expenditure and exercise
- Lab-2 Energy metabolism
- Lab-3 Cardiovascular effect of exercise
- Lab-4 Respiratory air flow and volume
- Lab -5 Respiratory gas analysis
- Lab -6 Blood pressure in humans
- Lab -7Electromyogrames (EMG)
- Lab -8 Oxygen concentration (O₂ measurements)
- Lab -9 Sensory and motor nerve responses in humans

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 107P	Practical- II – Biomechanics& Kinesiology	28	2	1	10	40	50

On completion of the study of this subject the student should be able to

- a) Perform thorough biomechanical evaluation
- b) Qualitative and quantitative analyses of range of motion
- c) Calculation of impulse and take off velocity and height of jump during take off in a standing vertical jump
- d) Calculate and infer Angular kinetics of exercise
- e) Perform and analyze endurance testing during concentric and eccentric actions to review the Force-Velocity Relationship
- f) Detection of scapular position in rotation of spinous process
- a) Measurement of functional limb varus under bilateral and unilateral stance

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- b) Subtalar neutral joint positioning
- c) Determination of Q-angle
- d) Measurement of eversion and inversion ranges at subtalar joint
- e) Measurement of popliteal angle
- f) Measurement of calcaneal inversion and eversion in non weightbearing and weightbearing stance

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 108P	Practical – III- Evaluative Clinical Practice-I	140	10	5	50	150	200

On completion of the study of this subject the student should be able to:

- a) To formulate a rationalized treatment plan for the patient
- b) Implement physiotherapy treatment
- c) Compare & contrast the outcome of various treatment approaches
- d) Document the status to the patient as written records

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
UCC-I	Critical Research appraisal & Presentation	28	2	1	50	-	50

On completion of the study of this subject the student should be able to critically analyze five published research papers and present the same.

SEMESTER - II

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT201	Diagnostic tools in Physiotherapy	56	4	4	25	75	100

SECTION A (RADIOLOGY: Marks. 25)

1. Basics of Imaging Techniques

- a) Fluoroscopic Examination
- b) CT Scan
- c) Radionuclide Scanning
- d) MRI/Functional MRI
- e) Ultrasonography/Doppler
- f) X-Ray
- g) Bone Scan
- h) DEXA Scan

- i) PET and SPECT scans

- j) Angiography

2. Regional imaging with X-ray, MRI, CT, ultrasonography

- a) Head and Neck
- b) Chest
- c) Spine
- d) Pelvis, hip and thigh
- e) Knee complex

- f) Lower leg, foot and ankle
- g) Foot

SECTION B

(Human Performance Analysis : Marks. 50)

1. Body composition, strength and endurance testing
 - a) Body composition analysis
 - b) Muscle strength: Physiological and chemical factors
 - c) Dynamo metery: Hand held dynamo meters
 - d) Hand grip measurement
 - e) Back and leg dynamometry
 - f) 1 RM Measurement
 - g) Isokinetics
 - h) Endurance testing: Muscle and cardiovascular endurance testing
 - i) Assessment of muscle damage & fatigue
2. Applied Movement Analysis
 - a) Introduction to 2 and three dimensional movement analysis
 - b) Instrumentation and methods of movement analysis
 - c) Electro goniometry and accelerometer
3. Electromyography and NCV in Rehabilitation
 - a) EMG : Concepts, clinical and kinesiological EMG

NCV: Concepts and method of recording

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 221	Orthopedics Medicine & Surgery-I	56	4	4	25	75	100

1. Pediatric orthopedics
 - a. Clinical examination
 - b. Abnormal gait in children and their causes
 - c. Contracture in pediatric
 - d. Osteogenesisimperfecta
 - e. Dysplasia of bone
 - f. Myopathies
 - g. Deformities of spine
 - i. Kyphosis
 - ii. Scoliosis
 - iii. Hyper spinal disorders
 - h. Congenital dislocation of hip
 - i. Displaced capital femoral epiphysis
 - j. Developmental coxavara
 - k. Congenital talipusequinovarus
 - l. Foot deformities, disease & disorders
 - m. Knee deformities, disease & disorders
 - n. Shoulder girdle deformities ,disease& disorders
2. Peripheral nerve injuries
 - a. Brachial plexus injuries
 - b. Obstetrical palsy
 - c. Upper limb nerve injuries
 - d. Lower limb nerve injuries

3. Fracture & Dislocation
 - a. General consideration: Fracture healing ,type, complications and management of fractures & dislocations
 - b. Soft tissue injury management
 - c. Surgical orthopedic methods –
 - i. IM nailing
 - ii. External fracture
 - iii. Internal fracture
 - iv. Illizarov
 - v. Plates & screen
 - vi. Closed reduction
 - vii. Open reduction
4. Fractures, dislocation and other trauma to Lower limb
5. Fractures, dislocation and other trauma to spine
6. Fracture, dislocation & other trauma to UL
7. Orthopedics surgery
 - a. Arthroscopic
 - b. Arthroplasty
 - c. Amputation
 - d. Arthrorodesis
 - e. Tendon transfer & transplant & releases
 - f. Bone & tissue grafting

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 222	Assessment, techniques and special issues in orthopaedic Physiotherapy	70	5	5	25	75	100

Section I

1. Basic musculoskeletal science and its application
 - a. Normal structure, function and biomechanical behavior of musculoskeletal tissues
 - b. Reaction of musculoskeletal tissues to aeging, injury, disease and disorders.
2. Assessment
 - a. Review of general assessment
 - b. Pain assessment
 - c. Joint assessment techniques
 - d. Special tests for all the joints
 - e. Motor assessment
 - f. Balance & coordination assessment
 - g. Posture & gait assessment
 - h. Functional assessment
 - i. Disability evaluation
 - j. Quality of life assessment
3. Pediatric orthopaedicconditions

Physiotherapy examination and managementof:

 - a. Congenital conditions of the upper limb
 - b. Congenital conditions of the lower limb

- c. Congenital conditions of the spine
- 4. Special issues in orthopaedic physiotherapy
 - a. Musculoskeletal issues in women
 - b. Pathobiological mechanisms of pain:
 - i. Recent advances in pain evaluation and management
 - ii. Psychological components of chronic pain
 - c. Occupational medicine :
 - i. Ergonomic processes: elements, success factors for implementation, psychosocial works factors.
 - ii. Principles of assessment of industrial fitness and assessment & management of musculoskeletal dysfunctions related to various industries.
 - iii. Ergonomics assist and safety equipments.
 - iv. Ergonomic advice: keyboard, computers, laptop etc
- 5. Cryotherapy and Body Composition
 - a. Physiological & therapeutic effects
 - b. Various techniques
 - c. Recent advances in cryotherapy application
 - d. Body composition :Composition of human body , Somatotyping
 - e. Various methods to estimate body composition
- 6. Stretching
 - a. Concept &Types
 - b. Advantages & disadvantages
 - c. Various techniques
 - d. Muscle specific technique

Section – II

- 1. Segmental Stabilization Concepts Of Spine
 - a. Muscle function in spinal stabilization
 - b. Contribution of various muscles to spinal stabilization
 - c. Local Muscle dysfunction in Low back pain
 - d. Principles of clinical management of deep muscle system for segmental stabilization
- 2. Manual Therapy Intervention
 - a. Joint Techniques
 - i. Mckenzie
 - ii. Mulligan
 - iii. Maitland
 - iv. Kaltenborn
 - b. Soft tissue techniques
 - i. Butler
 - ii. Positional release
 - iii. MET

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 223	Physiotherapy in Orthopedic Trauma	70	5	5	25	75	100

Orthopedic physiotherapy assessment and management of the following conditions but not limited to.

- 1. Trauma

- a. General physiotherapy management of soft tissue injuries
 - b. General physiotherapy management of fractures
 - c. General physiotherapy management of dislocation
2. Physiotherapy management post Conservative and pre and post surgical management of Trauma of Lower limb
 - a. General consideration of Lower limb trauma
 - b. Trauma of hip complex & associated bones
 - c. Trauma of knee complex & associated bones
 - d. Trauma of foot & ankle complex & associated bones
3. Physiotherapy management post Conservative and pre and post surgical management of Trauma of upper limb
 - a. General consideration of upper limb trauma
 - b. Trauma of shoulder complex & associated bones
 - c. Trauma of elbow & associated bones
 - d. Trauma of wrist and hand & associated bones
4. Physiotherapy management post Conservative and pre and post surgical management of Trauma of spine
 - a. General consideration of spinal trauma
 - b. Trauma of cervical spine and skull
 - c. Trauma of thoracic spine
 - d. Trauma lumbosacral spine
5. Physiotherapy management post Peripheral nerve injuries
 - a. Upper limb
 - b. Lower limb
 - c. Spine
6. Amputation
 - a. Upper limb
 - b. Lower limb

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 224	Disability and Rehabilitation	56	4	4	25	75	100

Section 1 Disability studies

1. Introduction to disability studies
 - a. Meaning and scope of disability studies and its relationship to other field
 - b. History of disability studies
 - c. Contemporary concepts and issues in disability studies
 - d. International and national scenario of disability.
2. Understanding disability
 - a. Define: Disability, Handicap, Functional Limitation and Rehabilitation;
 - b. ICDH and ICF tools
 - c. Exploration of the psychological and social aspects of disability
 - d. Cultural perpetuation of disability
3. Legal and ethical issues in disability studies
 - a. The equal opportunities for persons with disability (UN general assembly)
 - b. Indian laws regarding persons with disabilities
 - c. Inclusive education in India

Section 2 Rehabilitation

1. Rehabilitation fundamentals
 - a. Performance analysis
 - b. Physical and optimal function
 - c. Functional independence
 - d. Quality of life
2. Mobility for patients with disability
 - a. Functional ambulation
 - b. Wheelchair assessment and transfers
 - c. Transportation and community mobility
 - d. Strategies for promoting physical activity among persons with disabilities in community settings.
 - e. Family-centered intervention approaches for families of persons with disabilities.
 - f. Environmental barriers
3. Amputation
 - a. General considerations of upper and lower limb amputations
 - b. Upper limb prosthesis
 - i. Evaluation & management
 - ii. Check out
 - iii. Shoulder prosthesis
 - iv. Elbow prosthesis
 - v. Wrist & hand prosthesis
 - c. Lower limb prosthesis
 - i. Evaluation & management
 - ii. Check out
 - iii. Hip & pelvic prosthesis
 - iv. Knee prosthesis
 - v. Foot & ankle prosthesis
4. Orthotics for orthopaedic physiotherapist
 - a. Upper limb orthosis
 - i. Evaluation & management
 - ii. Shoulder girdle and associated orthotics
 - iii. Elbow orthotics
 - iv. Wrist and hand orthotics
 - b. Lower limb orthosis
 - i. Evaluation & management
 - ii. Hip orthosis
 - iii. Knee orthosis
 - iv. Foot & ankle orthosis
 - c. Spinal orthosis
 - i. Evaluation & management
 - ii. Cervical orthosis
 - iii. Thoracic orthosis
 - iv. Lumbosacral orthosis
5. Assistive technology in orthopaedic physiotherapist
 - a. Principles of assistive technology
 - b. Rehabilitation technology
 - c. Assistive technology
 - d. Universal design

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- e. Electronic aids to daily living
- f. Applications for orthopaedic patients

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 225P	Practical – IV – Assessment, techniques and special issues in orthopaedic Physiotherapy	28	2	1	10	40	50

On completion of the study of this subject the student should be able to:

- a) Practice different joint mobilization and soft tissue mobilization techniques
- b) Understand and apply principles of topics covered in MPT 222

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 226P	Practical – V –Evaluative Clinical Practice - II	168	12	6	50	150	200

The students will be allocated patients of relevant diseases and disorders for:

- 1. Interpret and differentiate between various diagnostic tools used for therapeutic plan
- 2. History taking of the conditions of patients.
- 3. All the physiotherapeutic intervention pertaining to the subject
- 4. Evaluation and physiotherapy treatment: its presentation and documentation of all the conditions.

The topics and management will be as discussed in MPT 201, MPT 222, MPT 223, MPT 224

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
UCC-II	Project Development	28	2	1	50	-	50

On completion of the study of this subject the student will:

- 1. Prepare a formal research proposal on the chosen topic for the dissertation under the guidance of supervisor
- 2. Present the topic before research committee for approval with suggested changes

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
UCC-III	Seminar Presentation	28	2	1	50	-	50

On completion of the study of this subject the student will:

- 1. Present a formal presentation on the topics allocated as per the guidelines given when require during the subject of the semester.

SEMESTER - III

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 321	Orthopedic Medicine & Surgery - II	56	4	4	25	75	100

1. Metabolic and endocrine bone diseases
 - a. Osteoporosis
 - b. Osteopenia
 - c. Gout
 - d. Rickets & osteomalacia
 - e. Endocrine disorders
 - f. Hypo & hyperthyroidism
2. Bone & its infections
 - a. Osteomyelitis
 - b. Septic arthritis. & gonococcal arthritis
 - c. Congenital syphilis
 - d. Surgical site infection
 - e. AIDS
3. Tuberculosis of bone joints
4. Poliomyelitis
5. Leprosy
6. Diseases of joint
 - a. Tumors of bone & joint
 - b. Rheumatoid arthritis
 - c. Osteoarthritis
 - d. Gouty arthritis
 - e. Seronegativespondylo-arthropathies
7. Disorders & disease of shoulder girdle
8. Disorders & disease of elbow
9. Disorders & diseases of wrist
10. Disorders & diseases of hand
11. Disease & disorders of cervical spine
12. Disease & disorder of thoracic spine
13. Disease & disorders of lumbosacral spine
14. Disease & disorders of hip & pelvis
15. Diseases & disorders of knee
16. Disease & disorders of foot and ankle

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 322	Physiotherapy in Regional Orthopedics -I	70	5	5	25	75	100

Orthopedic physiotherapy assessment and management of the following conditions but not limited to:

1. Diseases & Disorder the cervical spine
 - a. Clinical examination & special considerations
 - b. Conditions affecting the inert structure of the Cervical spine
 - c. Conditions affecting the contractile structure of the cervical spine
2. Diseases & Disorder affecting the thoracolumbosaral spine
 - a. Clinical examination & special consideration
 - b. Conditions affecting the inert structures of thoraco lumbosacral spine

- c. Conditions affecting the contractile structures of the thoracolumbosacral spine
- 3. Diseases & disorders of sacroiliac joint
 - a. Clinical examination & special considerations
 - b. Conditions affecting the inert structure of the SI joint
 - c. Conditions affecting the contractile structures of the SI joint
- 4. Diseases & disorders of the hip joint
 - a. Clinical examination & special considerations
 - b. Disease & disorder affecting the inert structures of hip
 - c. Disease & disorder affecting the contractile structure hip
- 5. Diseases & disorders of the knee joint
 - a. Clinical examination & special consideration
 - b. Disease & disorder affecting the inert structures of knee.
 - c. Disease & Disorder affecting the contractile Structure of the knee
- 6. Disease & Disorder of the foot ankle
 - a. Clinical examination & special consideration
 - b. Disease & Disorder affecting the inert structure of the foot and ankle
 - c. Disease & Disorder affecting the contractile structures of the foot and ankle.

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 323	Physiotherapy in Regional Orthopaedic-II	56	4	4	25	75	100

Orthopedic physiotherapy assessment and management of the following conditions but not limited to:

- 1. General orthopedics
 - a. Metabolic diseases and conditions
 - i. Osteomyelitis
 - ii. Gout
 - iii. Rickets & Osteomalacia
 - iv. Endocrinal disorders
 - b. Tuberculosis of bone & joint
 - i. Upper limb
 - ii. Lower limb
 - iii. Spine
 - c. Post polio residual paralysis (PPRP)
 - i. Upperlimb
 - ii. Lowerlimb
 - iii. Spine
- 2. Diseases & Disorders of the shoulder
 - a. Clinical examination & special considerations
 - b. Shoulder instability
 - c. Rotator cuff lesion and impingement
 - d. Biceps lesion & rupture
 - e. Scapular dyskinesis
 - f. Adhesive capsulitis
 - g. Thoracic inlet syndrome
 - h. AC joint dysfunctions

3. Diseases & Disorders of elbow
 - a. Clinical examination & special consideration
 - b. Condition affecting the inert structures of elbow
 - c. Conditions affecting the contractile structures
4. Diseases & Disorder of wrist & hand
 - a. Clinical examination & special consideration
 - b. Condition affecting the inert structures of elbow
 - c. Conditions affecting the contractile structures

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 324	Geriatric, Palliative and Rheumatological physiotherapy	56	4	4	25	75	100

Section I

1. Geriatric care
 - a. Theories of ageing
 - b. Physiological and anatomical changes associated with ageing
 - c. Functional assessment of elderly
 - d. Muscle fatigue and impaired muscle endurance in elderly
 - e. Postural impairment and its management
 - f. Exercise consideration for elderly
 - g. Management of pain in elderly
 - h. Arthritis
 - i. Fall & its prevention
 - j. Perspectives on ageing and disability
 - k. Management of frail and institutional elderly
 - l. Health Promotion and Disease Prevention for the gerontological Population
2. Degenerative joint disease
 - a. Osteoarthritis
 - b. Degenerative joint diseases of cervical spine
 - c. Degenerative diseases of thoracic and lumbar spine
 - d. Neuropathic joint disease(Charcot's disease)
3. Nonarticular rheumatism
 - a. Fibromyalgia
 - b. Myofascial pain syndrome
4. Rheumatoid arthritis
 - a. Juvenile rheumatoid arthritis
 - b. Rheumatoid arthritis in extremities
 - c. Rheumatoid arthritis of the spine
5. Seronegativespondyloarthropathies

Section II

1. Introduction to palliative care
 - a. Concepts of hospice care, terminal illness/care, end of life care, palliative care
 - b. The concept of dying with dignity
 - c. Understanding that goals of treatment will be different
 - d. Euthanasia and other such issues of terminal illness
 - e. Ethics in palliative care

- f. Bereavement/ Grief and its management
 - g. Importance of support systems in managing terminal illness
 - h. Identifying common needs and preferences of patients with terminal illness
 - i. Communication Skills and their importance in physiotherapy management
 - j. Role and members of the multidisciplinary team
 - k. Alternative treatments
2. Pain and Physical symptoms management in palliative care
- a. General principles of pain management
 - b. Various physiotherapeutic methods of pain management
 - c. Role of opioid, non opioid and NSAID's
 - d. Treating co morbidities
 - e. Respiratory physiotherapy
 - f. Exercise principles in P. C
3. Physiotherapy in palliative care
- a. Introduction to tumors- types, pathology, staging, conservative and surgical management.
 - b. Conservative, Pre and postoperative assessment and management of common tumors
 - c. Palliative care in other conditions like AIDS and HIV Positive patients etc
 - d. Palliative care in Neurodegenerative disorders, Spinal cord and brain injury etc.
 - e. Palliative care in Critical illness and Respiratory diseases

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 325P	Practical – VI Orthopedic Med. Surg. – II	28	2	1	10	40	50

The students will be observing patients of relevant diseases and disorders for:

1. History taking of the conditions of patients.
2. Evaluation and treatment planning: its presentation and documentation of all the conditions listed in MPT 221 and MPT 331.

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 326P	Practical – VII Evaluative Clinical Practice – III	210	15	8	50	150	200

The students will be allocated patients of relevant diseases and disorders for:

1. History taking of the conditions of patients.
2. All the physiotherapeutic intervention pertaining to the subject
3. Evaluation and physiotherapy treatment: its presentation and documentation of all the conditions as discussed in MPT 332, MPT 333, MPT 334

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT 327 P	Technical Writing	56	4	2	10	40	50

On completion of this technical writing the student will be trained in literature survey, writing a scientific report and make a presentation which will help them to pursue their research work in the next semester.

MPT - Ortho. (2015-16)

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
UCC-IV	Seminar Presentation	28	2	1	50	-	50

On completion of the study of this subject the student will present a formal presentation on the topics allocated as per the guidelines given when required.

SEMESTER - IV

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT401	Physiotherapy in Lifestyle medicine	56	4	4	25	75	100

1. Introduction to lifestyle medicine
 - a. Definition and importance
 - b. incidence of chronic illness and the contribution of healthy lifestyle to the prevention and treatment of diseases
 - c. Definition of health and the foundations for good health
 - d. Physiotherapist's health – self -evaluation, personal goals, the importance of being a role model
2. Physical activity
 - a. Relationship between physical activity and health
 - b. Prescribed healthy physical activity, according to age and gender in different illness situations
 - c. Evaluating fitness, evaluating and approving physical activity
3. Tools for promoting health change
 - a. The challenge of change
 - i. Factors that promote change and factors that impede processes of change
 - ii. The emotional aspects of change processes
 - iii. Fostering and materializing resources for change processes
 - iv. Creating a new balance in processes of change
 - b. The trans-theoretical model / the theory of the 6 stages of change
 - c. Patient compliance
 - d. Health coaching
4. Prevention and Treatment of Obesity
 - a. Introduction to nutrition
 - b. Nutrition for a healthy individual.
 - c. Obesity – epidemiology, environmental and genetic factors, paediatric obesity, regulation of food consumption, complications, prevention and treatments
5. Coping with stress
 - a. Introduction
 - i. The history and definition of "stress"
 - ii. anatomy and physiology of stress
 - iii. The characteristics of stressors
 - iv. Clinical implications of stress
 - v. Coping with stress – styles of coping, recruiting resources for coping
 - vi. Acute and chronic stress damage
 - b. Self management
 - c. Tools to manage stress

6. Smoking cessation
 - a. The physiological, psychological and behavioral components of cigarette addiction and its treatment.
 - b. Evidence based possibilities for treatment
 - c. Treatment for smoking cessation
7. Sleep Medicine
 - a. Acquaintance with basic concepts in sleep medicine, the structure and physiology of sleep
 - b. International classification of sleep disorders
 - c. Understanding the clinical implications of sleep disturbance
 - d. Physiotherapeutic interventions for improving sleep
8. Lifestyle Medicine for Older Adults
9. Diabetes: Exercise testing and prescription
10. Hypertension : Exercise testing and prescription

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT402	* Pedagogy, Ethics and Hospital management	70	5	5	25	75	100

SECTION - A

1. Administration
 - a) Functions of management
 - b) Fundamentals of hospital administration
 - c) Management Process – Planning, Organization, Direction, Controlling, Decision making
 - d) Personnel Management – Staffing, Recruitment Selection, Performance appraisal, Collective bargaining, Job Satisfaction.
 - e) Total Quality management – basics, quality control, quality assurance programme in hospitals and medical audit, International Quality System, Six Sigma approach, Just in Time approach

SECTION - B

1. Ethics & legal issues
 - a) Rules of Professional conduct
 - b) Legal responsibility
 - c) Code of ethics
 - d) Functions of Physiotherapy associations
 - e) Role of International health agencies
 - f) Standards of practice for Physiotherapists
 - g) Liability and obligations in the case of medical legal action
 - h) Law of disability and discrimination
 - i) Confidentiality of the Patient’s status
 - j) Consumer Protection Law, Health law, MCI, DCPTOT
 - k) Laws and Ethics governing fair play in sports
 - l) Regulations of State Professional Councils (DCPTOT, MCPTOT)
2. Hospital management
 - a) History of hospital Administration, Planning and designing supportive services

- b) Planning and designing ancillary and medical services
- c) Financial / Management of a hospital
- d) Planning and designing administrative services
- e) Marketing of a hospital
- f) Management of the hospital
- g) Planning and developing a hospital (emphasis on physiotherapy department)
- h) Administrative running of a hospital
- i) Organization of a hospital

SECTION - C

1. Concept of teaching and learning

- a) Meaning and scope of Educational Psychology
- b) Meaning and Relationship between teaching and learning
- c) Learning theories
- d) Dynamics of behavior
- e) Individual differences

2. Curriculum

- a) Meaning and concept
- b) Basis of curriculum formulation
- c) Framing objectives for curriculum
- d) Process of curriculum development and factors involve
- e) Evaluation of curriculum

3. Teaching methodology & teaching aids

- a) Methods of teaching- Lecture, Demonstration, Discussion, Seminar, Assignment, Project, Case study
- b) Planning for teaching- Bloom's taxonomy of instructional objectives, Writing instructional objectives I behavioral terms, Unit planning, Lesson planning
- c) Teaching Aids- Types of teaching aids, Principles of selection, preparation and use of audio-visual aids

4. Measurement and evaluation

- a) Nature of educational measurement: meaning, process, types of tests
- b) Construction of an achievement test and its analysis
- c) Standardized test-Introduction of some standardized tools, important tests of intelligence, aptitude and personality
- d) Continuous and comprehensive evaluation

Subject Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT421P	Dissertation	408	29	15	150	150	300

On completion of the study of this subject the student will be able to:

- 1. Compile all the chapters of the dissertation in the prescribed format

2. Appear before the research committee for the final presentation of their respective work.

SEMESTER - I

IA: Internal Assessment Marks, SE: Semester Exam Marks

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT101	*ABMS(Advanced Topics in Biomed Science	56	4	4	25	75	100
MPT 102	Exercise Physiology testing & prescription	56	4	4	25	75	100
MPT 103	Research Methodology, Biostatistics & EBP	56	4	4	25	75	100
MPT 104	Biomechanics & Kinesiology	56	4	4	25	75	100
MPT 105	Advanced therapeutics	56	4	4	25	75	100
MPT 106p	Practical- II- Exercise Physiology ,Testing, Prescription & ABMS	84	6	3	25	75	100
MPT 107p	Practical- I – Biomech. & Kinesiology	28	2	1	10	40	50
MPT 108p	Practical – III- Evaluative Clinical Practice-I	140	10	5	50	150	200
	Total	532	40	29	210	640	850
UCC-I	Critical Research appraisal & Presentation	28	2	1	50	-	50
	Grand Total	560	40	30	260	640	900

SEMESTER - II

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 201	Diagnostic Tools in Physiotherapy	56	4	4	25	75	100
MPT 211	Sports Injury Diagnosis and Medical Management-I	56	4	4	25	75	100
MPT 212	Sports Injury Diagnosis and PT Management-I	70	5	5	25	75	100
MPT 213	*Sports Physiology & Biochemistry	70	5	5	25	75	100
MPT 214	Sports Biomechanics and Manual Therapy	56	4	4	25	75	100
MPT 215 P	Practical –V Sports Biomechanics and Manual Therapy	28	2	1	10	40	50
MPT 216 P	Practical IV- Evaluative Clinical Practice-II	168	12	6	50	150	200
	Total	504	36	29	185	565	750
UCC II	Project Development	28	2	1	50	-	50
UCC III	Seminar Presentation	28	2	1	50	-	50
	Grand Total	560	40	31	285	565	850

SEMESTER - III

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 311	Sports Injury Diagnosis and Medical Management-II	56	4	4	25	75	100
MPT 312	Sports Injuries Diagnosis And PT Management-II	70	5	5	25	75	100
MPT 313	Sports Training	56	4	4	25	75	100
MPT 314	*Sports Psychology and Nutrition	56	4	4	25	75	100
MPT 315 P	Practical VI- Sports Inj. Diag. Med. Management-I and II	28	2	1	10	40	50
MPT 316 P	Practical- VII -Evaluative Clinical Practice-III	210	15	8	50	150	200
MPT 317 P	Technical Writing	56	4	2	10	40	50
	Total	532	38	28	170	530	700
UCC IV	Seminar Presentation	28	2	1	50	-	50
	Grand Total	560	40	29	220	530	750

SEMESTER – IV

Course Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT401	Physiotherapy in Lifestyle medicine	56	4	4	25	75	100
MPT402	* Pedagogy, Ethics and Hospital management	70	5	5	25	75	100
MPT411P	Dissertation	408	29	15	150	150	300
	Grand Total	534	38	24	200	300	500

Course summary

Total theory Credit (I-IV Sem.) : 114

UCC: - University Compulsory Clearance (Not to be considered for credit calculation)

*: Choice based credit system (CBCS) paper

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT101	*ABMS(Advanced Topics in Biomed Science	56	4	4	25	75	100

Section - I

- I. Applied Anatomy and Histology
 - a) Functional Anatomy of upper limb, lower limb, spine, head, neck and face.
 - b) Surface Anatomy, Markings and determinations.
 - c) Pathoanatomy of peripheral nerve injuries, various bone pathologies etc.
 - d) Pathoanatomy of PIVD, hernias, Hand infections, Common dislocations
 - e) General Histology- Anatomy of cell membrane, types of epithelium and its anatomical location, histological appearance and fine details of bone, cartilage, muscle, ligament, peripheral nerves and spinal cord

- II. Applied General Physiology
 1. Cardiovascular system
 - a) Physical characteristics of systemic circulation, Pressure pulses
 - b) Oxygen demand theory of local blood flow circulation,
 - c) Nervous control of blood circulation, Humorous control of blood circulation , Mechanisms of arterial pulse regulation, Hypertension,
 - d) Cardiac output and its regulation, Cardiac output in normal stress conditions, Methods of measuring cardiac output
 - e) Normal coronary blood flow along with variations, Physiological basis of ischemic heart disease, Physiological causes of shock

 2. Neuromuscular System and Endocrine System
 - a) Basic physics of membrane potentials, Recording of membrane potentials and action potentials with basics of electromyogram
 - b) Mechanism of muscle contraction, Sources of energy for muscle contraction, Neural control of movement
 - c) Role of hormones in sports, fitness and exercise

 3. Respiratory System
 - a) Review of mechanics of respiration
 - b) Pulmonary volumes and capacities
 - c) Composition of Alveolar air, Transport of oxygen & Carbon dioxide in blood
 - d) Methods of studying respiratory abnormalities

Section – II

(Clinical Biochemistry)

- I. Review Of Metabolism
 - a) Carbohydrates: Glycogenesis ,glycogenolysis, glycolysis ,TCA, ETS, Lactate Metabolism

b) Lipids: Beta oxidation , synthesis of lipids

MPT - Sports

c) Proteins: Nitrogen balance ,Urea cycle

d) Water: Fluid and electrolyte balance, Water and sodium balance

II. Enzymes And Markers In Blood

a) Cardiovascular Markers: Troponin, Creatine Kinase, Lactate Dehydrogenase ,Myoglobin, Aspartate transaminase.

b) Neuromuscular Markers: Acetylcholine, Dopamine, GABA.

c) Inflammatory Markers and Free Radicals: TNF alpha, Interleukins, NO, H₂O₂, Superoxides .

III. Biochemical And Genetic Basis Of Diseases

a) Cardiovascular Disorders: Myocardial Infarction, Cardiomyopathy, Diabetes, Artherosclerosis

b) Neuromuscular Disorders: Epilepsy , Parkinson Disease, Alzheimer, Schizophrenia.

c) Muscular Disorders: Cystis Fibrosis, Congenital muscular dystrophy, Duchenne muscular dystrophy,

d) Biochemical, physiological& anatomical change in Ability , Disabilities, Ageing, Osteoporosis & Osteoporosis

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 102	Exercise Physiology testing & prescription	56	4	4	25	75	100

I Energy Transfer for Physical Activity

a) Energy transfer in body

b) Energy transfer in exercise

c) Energy expenditure during various activities

d) Fatigue

e) Biochemical responses and molecular mechanisms to endurance training

f) Introduction to effects of training and detraining

II Cardiovascular System And Exercise

a) Cardiovascular regulation and integration during exercise

b) Functional capacity of the cardiovascular system during exercise

c) Cardiovascular adaptations to sustained aerobic exercises

d) Athletes heart and sudden cardiac death in sports

e) Lipids and sports, protection from coronary heart disease, exercise and optimization of lipid profile

III Respiratory System and Exercise

a) Regulation of respiration during exercise

b) Acid-Base regulation during exercise

c) Respiratory adaptations to sustained aerobic exercise

d) Air Conditioning

e) Second wind

f) Oxygen debt

IV Skeletal System and Exercise

a) Growth and exercise

b) Repair and adaptation during exercise

c) Pathophysiology of back

d) Training adaptations for muscular strength and endurance

V Gastrointestinal Tract and Endocrine System and Exercise

a) Effect of exercise on GIT and liver

b) Hormone regulation of fluid and electrolytes during exercise

c) Exercise and menstrual cycle

d) Stress hormones in exercise

- e) Effects of exercise on various hormones in the body
- f) Opioids and Runners High
- g) Oxygen debt

VI Exercise Testing Prescription and Aging

- a) Aging and physiological function
- b) Exercise and longevity
- c) Exercise stress testing for diagnosis of CHD
- d) Exercise prescription for healthy aged
- e) Exercise prescription for sedentary adults
- f) Cost and benefits of exercise prescription in Osteoporosis
- g) Exercise for mood and enhancement and anxiety

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 103	Research Methodology, Biostatistics & EBP	56	4	4	25	75	100

**SECTION- I
(RESEARCH METHODOLOGY & EBP)**

I Research In Physiotherapy

- a) Introduction
- b) Research for Physiotherapist: Why, how and when?
- c) Research – Definition, concept, purpose, approaches
- d) Web Source for physiotherapists

II Research Fundamentals

- a) Define measurement
- b) Measurement framework
- c) Scales of measurement
- d) Pilot study
- e) Types of variables
- f) Reliability & Validity
- g) Drawing tables, graphs, master chart etc.

III Writing A Research Proposal, Critiquing A Research Article

- a) Defining a problem
- b) Review of literature
- c) Formulating a question, operational definition
- d) Inclusion and Exclusion criteria
- e) Forming groups
- f) Data collection & analysis
- g) Results, Interpretation, Conclusion, Discussion
- h) Informed consent
- i) Limitations

IV Research Design

- a) Principle of designing
- b) Design, instrumentation & analysis for qualitative research
- c) Design, instrumentation & analysis for quantitative research
- d) Design, instrumentation & analysis for quasi-experimental research
- e) Design models utilized in Physiotherapy

V Research Ethics

- a) Importance of Ethics in Research
- b) Main ethical issues in human subjects' research
- c) Main ethical principles that govern research with human subjects
- d) Components of an ethically valid informed consent for research

VI Evidence Based Practice

Concept of evidence based practice by addressing topics related to

- a) Research design and measurement
- b) Measurement error,
- c) Case design studies and
- d) Interpretation of clinical research

MPT - Sports

SECTION -II (BIOSTATISTICS)

I Introduction to Biostatistics

- a) Introduction- Definition and Application in Physiotherapy
- b) Data Presentation
- c) Methods of Sampling
- d) Sampling distribution
- e) Standard error
- f) Types I & II error
- g) Hypothesis Testing
- h) Null Hypothesis
- i) Alternative hypothesis
- j) Acceptance & rejection of null hypothesis
- k) Level of significance

II Measures of Central Value & Measures of Dispersion

- a) Arithmetic mean, median mode, Relationship between them
- b) Partitioned values – Quartiles, Deciles, Percentiles
- c) Graphical determination
- d) Range
- e) Mean Deviation
- f) Standard Deviation
- g) Normal Distribution Curve- Properties of normal distribution, Standard normal distribution
- h) Transformation of normal random variables.
- i) Inverse transformation
- j) Normal approximation of Bioaxial distribution.

III Correlations & Regression Analysis

- a) Bivariate distribution
- b) Scatter diagram
- c) Coefficient of correlation
- d) Calculation & interpretation of correlational coefficient
- e) T-test, Z-test, P-value
- f) Lines of regression
- g) Calculation of Regression Coefficient

IV Probability (In Brief)

- a) Basic Definition: Events, sample space and probabilities
- b) Basic rules for probability
- c) The range of values
- d) The Rule of complement
- e) Mutually exclusive events
- f) Conditional probability
- g) Independence of events
- h) Combinatorial concepts
- i) Law of Total probability and Baye's theorem

V Analysis and Evaluation

- a) Parametric & Non Parametric Tests- Chi square test, Mann-Whitney U test, Wilcoxon Signed test, Kruskal-Wallis test, Friednam test, T-test/student T test, ANOVA, Sports variance
- b) Agreement Analysis
- c) Software Used in Statistical Analysis and research

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 104	Biomechanics & Kinesiology	56	4	4	25	75	100

**SECTION I
(BIOMECHANICS)**

I Introduction

- a) Nature and importance of Biomechanics in Physiotherapy
- b) Principle of Biomechanics

II Movement Analysis

- a) Biomechanics of shoulder and shoulder complex, elbow complex, wrist and hand complex
- b) Biomechanics of pelvic, hip, knee, ankle & foot complex
- c) Biomechanics of spine
- d) Neuro biomechanics
- e) Posture and Gait analysis
- f) Biomechanical Analysis & Techniques – Force platforms

**Section II
(Kinesiology)**

I Introduction To Kinematics

- a) Definition, aims, objectives and role of Kinesiology in sports physiotherapy.
- b) Review of fundamental concepts (applied aspect), Centre of gravity, Line of gravity, Planes, Lever system in Body, Fundamental starting positions.
- c) Review of linear and angular kinematics

II Mechanics Of Musculoskeletal System

- a) Tissue loads, response of tissues to forces- Stress, Strain, Stiffness and mechanical strength, visco elasticity
- b) Physical Properties of bone, cartilage, tendon and ligaments, functional adaptation under pathological conditions.
- c) Impaired neuromuscular control, muscular force regulation in
- d) Frame work and joints of the body: Influence of trauma and classification of the muscles, Relation of structure, functions, role of muscles, types of Muscle, contractions (Static, Concentric and Eccentric), Two joint Muscles, Angle of pull, Role of Gravity affecting muscular action.

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 105	Advanced therapeutics	56	4	4	25	75	100

I. Exercise Therapy Intervention & Practice

- a) Exercise therapy intervention & practice in: Pain management Endurance impairment Impaired mobility Impaired neuromuscular control Impaired Gait & posture

- b) Specific exercise interventions: Isokinetic, Plyometric, Open & closed kinetic chain , PNF, Core stabilization , Aquatic therapy, Home programme& its adherence **MPT - Sports**
- c) Specific consideration in exercise therapy: Female, Paediatric, Amputation

II. Electrotherapy Intervention & Practice

- a) Pain management
- b) Wound management
- c) Oedema management
- d) Muscular impairment
- e) Specific deep heat interventions: Laser Microwave, Shortwave, Russian current Didynamic current Iontophoresis, Phonophoresis, Biofeedback
- f) Special consideration for deep heat modalities: Pregnant women, Menstruating women, Paediatric, Geriatric, Neurologically impaired, Mentally impaired

III. Taping techniques for joints, muscles and various pathological conditions: therapeutic and prophylactic

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 106p	Practical- II- Exercise Physiology ,Testing, Prescription & ABMS	84	6	3	25	75	100

This paper include the topics covered in: MPT 101, MPT 102

- Lab-1 Energy expenditure and exercise
- Lab-2 Energy metabolism
- Lab-3 Cardiovascular effect of exercise
- Lab-4 Respiratory air flow and volume
- Lab -5 Respiratory gas analysis
- Lab -6 Blood pressure in humans
- Lab -7 Electromyogrames (EMG)
- Lab -8 Oxygen concentration (O₂ measurements)
- Lab -9 Sensory and motor nerve responses in humans

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 107p	Practical- I – Biomech. & Kinesiology	28	2	1	10	40	50

On completion of the study of this subject the student should be able to

- a) Perform thorough biomechanical evaluation
- b) Qualitative and quantitative analyses of range of motion
- c) Calculation of impulse and take off velocity and height of jump during takeoff in a standing vertical jump
- d) Calculate and infer Angular kinetics of exercise
- e) Perform and analyze endurance testing during concentric and eccentric actions to review the Force–Velocity Relationship
- f) Detection of scapular position in rotation of spinous process
- a) Measurement of functional limb varus under bilateral and unilateral stance
- b) Subtalar neutral joint positioning
- c) Determination of Q-angle
- d) Measurement of eversion and inversion ranges at subtalar joint
- e) Measurement of popliteal angle

- f) Measurement of calcaneal inversion and eversion in non weight bearing and weight bearing stance

MPT - Sports

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 108p	Practical – III- Evaluative Clinical Practice-I	140	10	5	50	150	200

On completion of the study of this subject the student should be able to:

- To formulate a rationalized treatment plan for the patient
- Implement physiotherapy treatment
- Compare & contrast the outcome of various treatment approaches
- Document the status to the patient as written records

This is based on mpt 105 & Clinical Training

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
UCC-I	Critical Research appraisal & Presentation	28	2	1	50	-	50

On completion of the study of this subject the student should be able to critically analyze five published research papers and present the same.

SEMESTER - II

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 201	Diagnostic Tools in Physiotherapy	56	4	4	25	75	100

SECTION A

(RADIOLOGY: Marks. 25)

- Basics of Imaging Techniques
 - Fluoroscopic Examination
 - CT Scan
 - Radionuclide Scanning
 - MRI/Functional MRI
 - Ultrasonography/Doppler
 - X-Ray
 - Bone Scan
 - DEXA Scan
 - PET and SPECT scans
 - Angiography
- Regional imaging with X-ray, MRI, CT, ultrasonography
 - Head and Neck
 - Chest
 - Spine
 - Pelvis, hip and thigh
 - Knee complex
 - Lower leg, foot and ankle
 - Foot

(Human Performance Analysis: Marks. 50)

1. Body composition, strength and endurance testing
 - a) Body composition analysis
 - b) Muscle strength: Physiological and chemical factors
 - c) Dynamo metery: Hand held dynamo meters
 - d) Hand grip measurement
 - e) Back and leg dynamometry
 - f) 1 RM Measurement
 - g) Isokinetics
 - h) Endurance testing: Muscle and cardiovascular endurance testing
 - i) Assessment of muscle damage & fatigue

2. Applied Movement Analysis
 - a) Introduction to 2 and three dimensional movement analysis
 - b) Instrumentation and methods of movement analysis
 - c) Electro goniometry and accelerometer

3. Electromyography and NCV in Rehabilitation
 - a) EMG : Concepts, clinical and kinesiological EMG
NCV: Concepts and method of recording

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 211	Sports Injury Diagnosis and Medical Management-I	56	4	4	25	75	100

1. Trauma Management
 - a) Cardio Pulmonary Resuscitation with practical hands on training; Shock management, Internal and External bleeding, Splinting, Stretcher use-Handling and transfer, Management of Cardiac arrest, Acute asthma, Epilepsy, Drowning, Burn, Medical management of mass participation. Heat stroke and Heat illness.
 - b) Sports specific injuries, with special emphasis on the specific risk factor, nature of sports, kind of medical intervention anticipated and prevention with respect to individual sports- Individual events: Field & Track, Team events: Hockey, Cricket, Football
 - c) Contact and Non-contact sports, Water sports
 - d) Chest and abdominal injuries: Rib fractures, abdominal wall contusions, sports hernia etc.
 - e) Injuries in Upper extremities: Acromioclavicular joint dislocation, anterior shoulder dislocation, biceps rupture, frozen shoulder, impingement syndrome, rotator cuff tears, Labral lesions, Lateral epicondylitis, medial epicondylitis, stress fractures of radial epiphysis, Carpal tunnel syndrome, fractures and dislocations of hand and wrist etc.
 - f) Injuries to Lower extremities and Spine: Hip joint labral tears, soft tissue ruptures involving rectus femoris, groin pain, nerve entrapment, stress fractures of femoral neck, knee ligament injuries, patellar injuries and dislocations, ITB friction syndrome, Muscle strains, ankle sprains, nerve entrapments at ankle, rupure of achillis tendon, stress fractures etc. soft tissue injuries, Spinal deformities and fractures of thoracic and lumbosacral spine etc.

1. Emergency Medical Planning And Cover For Sports Events
 - a) Emergency Situations, Primary and secondary emergency assessment, emergency plan, transportation of an injured participant
 - b) Treatment of collapsed athlete- Severe head injury, Athlete with spinal injury
 - c) Causes of Collapse

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 212	Sports Injury Diagnosis and PT Management-I	70	5	5	25	75	100

1. Cryotherapy and Body Composition
 - a. Physiological & therapeutic effects
 - b. Various techniques
 - c. Recent advances in cryotherapy application
 - d. Body composition :Composition of human body , Somatotyping
 - e. Various methods to estimate body composition
2. Stretching
 - a. Concept &Types
 - b. Advantages & disadvantages
 - c. Various techniques
 - d. Muscle specific techniques
3. Pre-Participation Examination
 - a) Components of preparticipation evaluation
 - b) Scope and implementation of preparticipation program
3. Causes And Mechanism Of Injury
 - a) General Aetiological factors of sports injury
 - b) Common mechanisms of injury
 - c) Preventive aspects of sports injury
4. Sports Traumatology And Physiotherapy Management (Upper Extremity)
 - I. Shoulder Complex
 - a) Background: General Principles of rehabilitation, Intake evaluation, clinical examination of overhead athlete
 - b) Impingement Syndrome, Rotator cuff tendinitis in overhead athletes
 - c) Rotator Cuff tear
 - d) Shoulder Instability: Unidirectional and Multidirectional
 - e) Biceps tendon disorders
 - f) Acromioclavicular Joint Injuries
 - g) Scapular Dyskinesias and fractures
 - II. Wrist And Hand
 - a) Background: General Principles of rehabilitation, Intake evaluation, clinical examination of an athlete
 - b) Fractures and dislocations of Metacarpals and phalanges- metacarpal fractures, Thumb Metacarpal fracture, Proximal Interphalangeal fractures
 - c) Ulnar Collateral Injuries, avulsion of FDP, Boutonniere deformity and Pseudo Boutonnaire Deformity
 - d) Proximal Interphalangeal Injuries: Acute dorsal PIP dislocation, PIP joint collateral injuries, Mallet finger
 - e) Wrist Injuries: Scaphoid Fracture, fracture of hamate, lunate dislocation, keinovck disease
 - f) Soft tissue Overuse Injuries: Tendinitis, Dequervein's Disease, tenosynovitis of other dorsal compartment, recurrent subluxation of extensor tendon of ulnar side, flexor tendinitis of ulnar wrist

- g) Rehabilitation of Overuse Injuries
- h) Nerve Compression Syndromes: Median Nerve, Ulnar Nerve, **MPT - Sports**

III. Elbow Complex

- a) Background: General Principles of rehabilitation, Intake evaluation, clinical examination of an athlete
- b) Pathomechanics of humeral epicondylitis: valgus extension overload syndrome
- c) Ulnar Collateral Injuries
- d) Rehabilitation of elbow injuries
- e) Nerve Compression Syndromes- Cubital Tunnel Syndrome, Radial Nerve compression
- f) Fractures and dislocations at the elbow and their management

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 213	*Sports Physiology & Biochemistry	70	5	5	25	75	100

1. Sports Specific Physiology

- a) Soccer
- b) Swimming
- c) Weight lifting
- d) Tennis
- e) Cricket

2. Temperature Regulation And Sports

- a) Heat balance
- b) Methods of assessing heat balance
- c) Effects of climate
- d) Effects of exercise on temperature regulation
- e) Limit of tolerance of Heat
- f) Acclimatization
- g) Avoidance in heat illness during exercise
- h) Exercise in cold

3. Deep-Sea Diving, High Altitude And Space Physiology

- a) Effect of high partial pressures of gases on the body
- b) Breath hold and SCUBA diving
- c) Special problems with breathing gases at high pressure
- d) Physiologic adaptations to microgravity
- e) Physiologic responses to space flight
- f) Stress of altitude and acclimatization
- g) Metabolic, physiologic and exercise capacities at altitude
- h) High altitude training

4. Miscellaneous Topics

- a) Ergogenic aids
- b) Sex and performance
- c) Assessment of age
- d) MORA
- e) Sleep and its role in sports

5. Biochemical Basis of Exercise in Sports

- a) Sources of Energy and various Body Organs
- b) Individual sports event & their metabolism in endurance and strength events

c) **Exercise & Gene Expression: Nucleic Acids, Eukaryotic Gene Organization, Gene Therapy, Gene Doping, Control** **MPT - Sports**

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 214	Sports Biomechanics and Manual Therapy	56	4	4	25	75	100

Section- I
Sports Biomechanics

1. Aspects of biomechanical analysis of sports movements
 - a. Movement descriptors
 - b. Structural analysis of movements, temporal and phase analysis
2. Principles and Application in Sports
 - a. Biomechanics of running: Kinematic and kinetic phases, mechanical principles to study running mechanics, pathomechanical errors etc.
 - b. Biomechanics of rowing: Phases of rowing, mechanical factors to improve rowing performance, rowing as exercise for fitness etc.
 - c. Biomechanics of throwing and swimming: Kinematic and kinetic phases of throwing, mechanical factors to improve throwing performance, pathomechanical errors etc. basic principles of fluid mechanics, phases of swimming mechanics, pathomechanical errors etc.
 - d. Biomechanics of jumping: Biomechanical components of jumping, factors to improve jump performance etc.
 - e. Biomechanics of cycling

Section - II
Manual Therapy

1. Segmental Stabilization Concepts Of Spine
 - a) Muscle function in spinal stabilization
 - b) Contribution of various muscles to spinal stabilization
 - c) Local Muscle dysfunction in Low back pain
 - d) Principles of clinical management of deep muscle system for segmental stabilization
2. Manual Therapy Intervention
 - I. Joint Techniques
 - a) Mckenzie
 - b) Mulligan
 - c) Maitland
 - d) Kaltenborn
 - II. Soft tissue techniques
 - a) Butler
 - b) Positional release
 - c) MET

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 215 P	Practical IV- Evaluative Clinical Practice-II	168	12	6	50	150	200

This paper include the topics covered in: MPT201,212

On completion of the study of this subject the student should be able to:

- a) Interpret and differentiate between various diagnostic tools used for therapeutic plan
- b) Compare & contrast the outcome of various treatment approaches
- c) To formulate a rationalized treatment plan for the patient
- d) To interpret movement descriptors and analyze mechanical factors affecting sports performance

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 216 P	Practical –V Sports Biomechanics and Manual Therapy	28	2	1	10	40	50

On completion of the study of this subject the student should be able to:

- a) Practice different joint mobilization and soft tissue mobilization techniques
- b) Understand and apply principles of topics covered in MPT 202

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
UCC II	Project Development	28	2	1	50	-	50

On completion of the study of this subject the student will:

- a) Prepare a formal research proposal on the chosen topic for the dissertation under the guidance of supervisor
- b) Present the topic before research committee for approval with suggested changes

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
UCC III	Seminar Presentation	28	2	1	50	-	50

On completion of the study of this subject the student will:

- a) Choose their areas of interest in physiotherapy and
- b) Present a formal presentation as per the guidelines given when required.

SEMESTER – III

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 311	Sports Injury Diagnosis and Medical Management-II	56	4	4	25	75	100

1. Infections And Other Medical Conditions

- a) Illness, Infections, Hypertension, Urine abnormalities; Venereal Diseases; Exercise induced Asthma; Anemia, Delayed onset muscle soreness (DOMS), Runner’s high & exercise addiction.
- b) G.I.T. Diseases, Exercises and congestive heart failure, exercise for post coronary & bye-pass patients, exercise for diabetics.

- c) Diagnosis and management of skin conditions of Athletes, Bacterial infections, Fungal infections, Viral infections, boils and cellulitis. **MPT - Sports**
 - d) Common Diseases: Common Cold, Diarrhea, Dysentery, Typhoid, Cholera, Amoebiasis, Food Poisoning, Tuberculosis, Malaria, Hepatitis etc
 - e) AIDS in athletes
2. Female Athlete and Their Concerns
- a) Sports Amenorrhea
 - b) Injury to female reproductive tract
 - c) Menstrual Synchrony
 - d) Sex determination
 - e) Exercise and pregnancy
 - f) Eating disorders in athletes
3. Miscellaneous Topics
- a) Hazards of cold water
 - b) Time zone shift and sleep deprivation problems
 - c) Doping In Sports
 - d) Banned drugs
 - e) Procedure of dope testing
 - f) Control of doping abuse

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 312	Sports Injuries Diagnosis And PT Management-II	70	5	5	25	75	100

Sports Traumatology And Physiotherapy Management (Lower Extremity, Spine, Head and Neck)

1. Hip And Thigh
- a) Background: General Principles of rehabilitation, Intake evaluation, clinical examination of an athlete
 - b) Fractures and dislocations: Stress fracture, traumatic avulsion, Avulsion fractures, traumatic subluxation and hip dislocation
 - c) Muscle Strains: Gluteus Medius, Adductor strain, hamstring strain, Quadriceps strain
 - d) Contusions: Hip pointer, Quadriceps contusion, Myositis ossificans, Acute compartmental syndrome
 - e) Snapping hip
 - f) Other conditions: Apophysitis, Osteitis Pubis, transient synovitis of hip
 - g) Nerve Compression syndrome
2. Knee Complex
- a) Background: General Principles of rehabilitation, Intake evaluation, clinical examination of an athlete
 - b) Review of functional anatomy and biomechanics and role of knee proprioception
 - c) Foundations for surgical and non surgical management of meniscal and ligamentous injuries
 - d) Straight plane vs. rotational knee instability
 - e) Knee dislocations and multiple ligament injuries at knee
 - f) Fractures of knee joint complex
 - g) Patellofemoral Pain Syndrome, patellar ruptures, articular cartilage procedure of knee, baker's cyst
3. Foot And Ankle Joint

- a) Background: General Principles of rehabilitation, Intake evaluation, clinical examination of an athlete
 - b) Review of functional anatomy and biomechanics
 - c) Ankle Sprain, chronic lateral ankle instability-Rehabilitation considerations following lateral ankle ligament reconstruction
 - d) Planar fasciitis- Pathomechanics, aetiology and management
 - e) Achilles tendon dysfunction, Posterior tibial tendon insufficiency
 - f) Metatarsalgia, Hallux rigidus, turf toe
 - g) Nerve Compression syndrome- Morton’s Neuroma
4. Spine And Pelvis
- a) Background: General Principles of rehabilitation, Intake evaluation, clinical examination of an athlete
 - b) Review of functional anatomy and biomechanics
 - c) Traumatic injuries to cervical spine
 - d) Injuries to thoracolumbar spine and pelvis- Injuries to sternum, rib injuries, thoracic disc lesions, Scheurmann’s disease
 - e) Injuries to lumbar spine: Muscle Strains, ligament sprains, Spondylolysis, spondylolesthesis, lumbar disc lesions, lumbar facet injuries, spinal fracture, lateral spinal stenosis, central canal stenosis
 - f) Post surgical rehabilitation interventions for lumbar surgeries
 - g) Pelvis injuries: Sacroiliac joint sprain, pelvic stress fractures, avulsion fractures
5. Head
- a) Background: General Principles of rehabilitation, Intake evaluation, clinical examination of an athlete
 - b) Review of functional anatomy and biomechanics
 - c) Clinical Injuries: Skull fracture, epidural hematoma, subdural hematoma, subdural hematoma, cerebral contusions
 - d) Concussion: Classification system, post concussion syndrome and its management
 - e) Punch drunk syndrome
 - f) Post concussion syndrome
6. Maxillofacial Region
- a) Background: General Principles of rehabilitation, Intake evaluation, clinical examination of an athlete
 - b) Initial Management priorities
 - c) Airway Management
 - d) Soft tissue injuries
 - e) Lacerations and its types
 - f) **Ocular and facial injuries: Lefort Classification**

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 313	Sports Training	56	4	4	25	75	100

1. Sports Training
- Importance and definition of sports training: Aims and objectives of sports training
Characteristics of sports training, principles of sports Training
2. Parameters And Methods Of Sports Training
- a) Training Load, Adaptation and Recovery: Relationship of load and recovery, physiotherapeutic and psychological means of Recovery, Variables of Training: Volume, Intensity, Density, Complexity
 - b) Relationship between volume and intensity
 - c) Fatigue and overtraining: Diagnosis, Monitoring and preventing overtraining.
 - d) Training Methods: Interval training, Continuous training, Circuit training, Fartlek training, Weight training, Plyometric method, Cross training
3. Bio Motor Abilities And Program Design

- a) Anaerobic Exercise Training & Prescription: Prerequisites, types and Factors affecting the training variables: Strength Development, Plyometric - Sports Speed, Agility and Speed Endurance Development
 - b) Aerobic Exercise Training & Prescription: Prerequisites, types and Factors affecting the training variables
 - c) Coordination Training: Definition, Classification of coordinative abilities, factors affecting coordination and Methods to develop coordination
4. Periodization
- a) Planning: Principles, need and importance of planning
 - b) Types of plan (training conception, macro, micro, meso and training session plan)
 - c) Annual Training Program, phases and characteristics
 - d) Periodization, psychological supercompensation, Periodization of strength training, speed and endurance, Periodization for Injury Prevention and Surveillance
 - e) Peaking for Competitions, Factors facilitating peaking during competition
 - f) Technical preparation: Definition and meaning of technique, skill and style
Technique training & its implication in various phases; methods employed for technique training, causes of technical fault and their correction, Definition and meaning of tactics, aim of tactics according to sport
 - g) Long Term Athlete Development: Stages of Athletic Development: Generalized and Specialized training, Olympic Cycle: classification of Olympic cycle plan and compiling an Olympic cycle Plan Talent Identification: Methods, Criteria, Factors and Phases of Talent Identification
5. Precision Heart Rate Training
- a) Heart rate monitoring and training
 - b) Training in heart zones
 - c) Precision heart rate training for specific sports
 - d) Multi Activity training
 - e) Monitoring of training effects
6. Protective Equipments, Youth and Special Population
- a) Principles of protective equipment, Protective Equipment for: Head & Face, Upper & Lower Extremity
 - b) Cardiac Adaptations
 - c) Exercise and the skeleton
 - d) Respiratory adaptations of athletes to exercise
 - e) Training induced adaptation in skeletal muscles
 - f) Exercises for Special Populations: Older Athletes- Special problems of older athletes
Osteoarthritis and other geriatric conditions, Child and adolescent athlete's problems
 - g) Special concerns for handicapped athletes: Wheel chair skills, type advantages & disadvantages, Various skills of wheel chair for effective rehabilitation
7. Sports Management
- a) History of Sports
 - b) sports and Recreational Events
 - c) Financial and Corporate Management in Sports – clubs, events
 - d) Marketing and Management
 - e) International Relations and Business
 - f) Organizational Behavior and Culture
 - g) Sports Economics

Course	Subject	Total	Hours	Credits	IA	SE	Total
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Code		Hours	/week		Marks	Marks	Marks
MPT 314	*Sports Psychology and Nutrition	56	4	4	MPT	Sports	100

Section I (Sports Psychology)

1. Introduction To Sports Psychology
 - a) History, definition and scope of sports psychology
 - b) Methods of studying behavior
 - c) Personality and its relevance in sports
2. Attention Perception And Emotion In Sports
 - a) Precompetitive Anxiety-Sources and effects on performance
 - b) Aggression –Theories and handling aggression in sports
 - c) Emotion- an introduction, Characteristics of emotion, meaning of controlling and training of emotions and its importance
 - d) Contribution of sports to emotional health
 - e) Meaning of sentiment, its type, importance and formation.
3. Group Behaviors And Leadership
 - a) Nature of group behavior and group
 - b) Types of group
 - c) Educational implication of group behavior
 - d) Meaning of leadership, types of leadership quality of leadership, training and functioning of leadership
4. Psychology Of Sports Injuries
 - a) Psychological Aspects Of Sports Injuries
 - b) Goal Setting- Principles and importance in sports
 - c) Eating disorders- Types, etiology and effects on sports performance
 - d) Motivation- Principles in Sports
5. Psychological Preparation Of Elite Athletes
 - a) Concept of psychological preparation
 - b) Stress, Arousal and Anxiety: effects on sports and intervention strategies
 - c) Concentration training
 - d) Biofeedback training
 - e) Cognitive stress and somatic stress management techniques
 - f) Relaxation training

Section II (Nutrition)

1. Role Of Nutrition In Sports
 - a) General Considerations for the physically active individual
 - b) Macronutrient needs for the physically active individual
 - c) Exercise and food intake
 - d) Vitamins and exercise performance
 - e) Minerals and exercise performance: Mineral Loss in sweat, trace minerals and exercise
2. Special Nutritional Considerations For Heavy Training And Competition
 - a) Carbohydrate Requirement & Glycemic Index
 - b) Carbohydrate: Needs of Strength & Endurance Athletes
 - c) Pre & Post Exercise Carbohydrate Intake
 - d) Protein and fats requirement and needs of Athlete
 - e) Water and Electrolyte Loss and Replacement in Exercise

- f) Pre competition Meal and Carbohydrate Loading
3. Measurement Of Human Energy Expenditure
- Energy produced by the body
 - Indirect and direct calorimetry
 - Respiratory quotient for CHO, protein, lipid and mixed diet
 - Respiratory Exchange Ratio

MPT - Sports

4. Nutrition And Performance
- Nutritional Ergogenic Aids and Supplements
 - Sports Specific Nutrition: Sprinting, running, cycling, swimming, weight lifting, power sports and team Sports
 - Eating disorders and management : Anorexia and bulimia Nervosa, Binge eating disorder

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 315 P	Practical VI- Sports Inj. Diag. Med. Management-I and II	28	2	1	10	40	50

On completion of the study of this subject the student should be able to:

- Understand the medical aspects of sports injuries
- Perform an on field emergency care to injured athlete
- Compare the outcome of various treatment approaches

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 316 P	Practical- VII -Evaluative Clinical Practice-III	210	15	8	50	150	200

This paper include the topics covered in: MPT312,313

On completion of the study of this subject the student should be able to:

- Perform training assessment
- Design training prescription plan for different sports
- Measure and analyze descriptors of training and performance

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
MPT 317 P	Technical Writing	56	4	2	10	40	50

On completion of this technical writing the student will trained in literature survey, writing a scientific report and make a presentation which will help them to pursue their research work in the next semester.

Course Code	Subject	Total Hours	Hours /week	Credits	IA Marks	SE Marks	Total Marks
UCC IV	Seminar Presentation	28	2	1	50	-	50

On completion of the study of this subject the student will:

- a) Present a clinical case study with complete assessment plan and therapeutic plan and
 b) Present a formal presentation on recent advances in specific areas of interest in sports physiotherapy

SEMESTER – IV

Course Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT401	Physiotherapy in Lifestyle medicine	56	4	4	25	75	100

1. Introduction to lifestyle medicine
 - a. Definition and importance
 - b. incidence of chronic illness and the contribution of healthy lifestyle to the prevention and treatment of diseases
 - c. Definition of health and the foundations for good health
 - d. Physiotherapist's health – self -evaluation, personal goals, the importance of being a role model
2. Physical activity
 - a. Relationship between physical activity and health
 - b. Prescribed healthy physical activity, according to age and gender in different illness situations
 - c. Evaluating fitness, evaluating and approving physical activity
3. Tools for promoting health change
 - a. The challenge of change
 - i. Factors that promote change and factors that impede processes of change
 - ii. The emotional aspects of change processes
 - iii. Fostering and materializing resources for change processes
 - iv. Creating a new balance in processes of change
 - b. The trans-theoretical model / the theory of the 6 stages of change
 - c. Patient compliance
 - d. Health coaching
4. Prevention and Treatment of Obesity
 - a. Introduction to nutrition
 - b. Nutrition for a healthy individual.
 - c. Obesity – epidemiology, environmental and genetic factors, paediatric obesity, regulation of food consumption, complications, prevention and treatments
5. Coping with stress
 - a. Introduction
 - i. The history and definition of "stress"
 - ii. anatomy and physiology of stress
 - iii. The characteristics of stressors
 - iv. Clinical implications of stress
 - v. Coping with stress – styles of coping, recruiting resources for coping
 - vi. Acute and chronic stress damage
 - b. Self management
 - c. Tools to manage stress
6. Smoking cessation
 - a. The physiological, psychological and behavioral components of cigarette addiction and its treatment.
 - b. Evidence based possibilities for treatment
 - c. Treatment for smoking cessation
7. Sleep Medicine

- a. Acquaintance with basic concepts in sleep medicine, the structure and physiology of sleep
 - b. International classification of sleep disorders
 - c. Understanding the clinical implications of sleep disturbance
 - d. Physiotherapeutic interventions for improving sleep
8. Lifestyle Medicine for Older Adults
9. Diabetes: Exercise testing and prescription
10. Hypertension : Exercise testing and prescription

MPT - Sports

Course Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT402	* Pedagogy, Ethics and Hospital management	70	5	5	25	75	100

SECTION - A

1. Administration
 - a) Functions of management
 - b) Fundamentals of hospital administration
 - c) Management Process – Planning, Organization, Direction, Controlling, Decision making
 - d) Personnel Management – Staffing, Recruitment Selection, Performance appraisal, Collective bargaining, Job Satisfaction.
 - e) Total Quality management – basics, quality control, quality assurance programme in hospitals and medical audit, International Quality System, Six Sigma approach, Just in Time approach.

SECTION - B

1. Ethics & legal issues
 - a) Rules of Professional conduct
 - b) Legal responsibility
 - c) Code of ethics
 - d) Functions of Physiotherapy associations
 - e) Role of International health agencies
 - f) Standards of practice for Physiotherapists
 - g) Liability and obligations in the case of medical legal action
 - h) Law of disability and discrimination
 - i) Confidentiality of the Patient's status
 - j) Consumer Protection Law, Health law, MCI, DCPTOT
 - k) Laws and Ethics governing fair play in sports
 - l) Regulations of State Professional Councils (DCPTOT, MCPTOT)
2. Hospital management
 - a) History of hospital Administration, Planning and designing supportive services
 - b) Planning and designing ancillary and medical services
 - c) Financial / Management of a hospital
 - d) Planning and designing administrative services
 - e) Marketing of a hospital
 - f) Management of the hospital
 - g) Planning and developing a hospital (emphasis on physiotherapy department)
 - h) Administrative running of a hospital
 - i) Organization of a hospital

SECTION - C

1. Concept of teaching and learning

- a) Meaning and scope of Educational Psychology
 - b) Meaning and Relationship between teaching and learning
 - c) Learning theories
 - d) Dynamics of behavior
 - e) Individual differences
2. Curriculum
- a) Meaning and concept
 - b) Basis of curriculum formulation
 - c) Framing objectives for curriculum
 - d) Process of curriculum development and factors involve
 - e) Evaluation of curriculum
3. Teaching methodology & teaching aids
- a) Methods of teaching- Lecture, Demonstration, Discussion, Seminar, Assignment, Project, Case study
 - b) Planning for teaching- Bloom's taxonomy of instructional objectives, Writing instructional objectives I behavioral terms, Unit planning, Lesson planning
- c) Teaching Aids- Types of teaching aids, Principles of selection, preparation and use of audio-visual aids
4. Measurement and evaluation
- a) Nature of educational measurement: meaning, process, types of tests
 - b) Construction of an achievement test and its analysis
 - c) Standardized test-Introduction of some standardized tools, important tests of intelligence, aptitude and personality
 - d) Continuous and comprehensive evaluation

Course Code	Subject	Total Hours	Hours/ week	Credits	IA Marks	SE Marks	Total Marks
MPT411P	Dissertation	408	29	15	150	150	300

On completion of the study of this subject the student will be able to:

1. Compile all the chapters of the dissertation in the prescribed format
2. Appear before the research committee for the final presentation of their respective work.

SYLLABUS AND BYELAWS GOVERNING
BACHELOR OF PHYSIOTHERAPY PROGRAMME

BPT

(I- IV YEAR)

(2017-2018)



CENTRE FOR PHYSIOTHERAPY AND REHABILITATION
SCIENCES

JAMIA MILLIA ISLAMIA
(A CENTRAL UNIVERSITY)
New Delhi-110025

OBJECTIVES

To prepare highly skilled and efficient physiotherapists who have a thorough knowledge of the theoretical and practical aspects of the field.

THE PROGRAMME

- a. Name : Bachelor of Physiotherapy
- b. Nature : Regular full time
- c. Duration: Four and half years course (four year course followed by six months compulsory intern ship)
- d. Pattern: Annual system
- e. Eligibility criteria for Admission:
Educational: A candidate seeking admission to the BPT programme must have passed from board of school examination Jamia/ CBSE or equivalent (recognized by Jamia Millia Islamia) with biology, physics, chemistry securing at least 50 % marks in aggregate of PCB
- f. Commencement: July/ August
- g. Mode of admission: Written test (10+2 standard physics, chemistry and biology)
- h. Total seats: 40
- i. Span period: Not more than seven years

THE CURRICULUM

- a. Total theory papers: 25
- b. Total practical : 17
- c. Total Research project: 01

Bachelor in Physiotherapy (BPT) Programme

About the BPT Programme

The Bachelor in Physiotherapy shall be a regular full-time programme. The total duration of the programme shall be of four and half years, which includes four years of teaching, practicals, community/field visits and research project, followed by six months compulsory Internship.

Examination Rules - BPT

Annual examination of theory and practical shall be conducted at the end of each session as outlined below:

- a) Mode: Theory paper : Written only
Practical : Written, Demonstration and viva-voce
- b) Duration: Theory : 03 hours
- c) Examiners:
Theory : 01 (either internal or external. However, if in any paper two different subject are covered, more than one examiner may be appointed)
Practical/viva-voce : 2 (one internal and one external)

Evaluation

The BPT programme will comprise the following: Theory Courses, Practical, Research Projects, Clinical Training, and Community and Field Visits. For various components, the weightage of marks for evaluation will be as follows:

For Theory Courses

Internal Assessment: 25% of allocated marks and Annual Examination 75% of allocated marks

For Practicals/Research Project

Internal Assessment: 50% of allocated marks and Annual Examination 50% of allocated marks

There will be no evaluation for Clinical Training, and Community and Field Visits.

Pass Percentage

A candidate will be declared to have passed a course if he/she has secured the minimum percentage of marks in each of the courses, as specified hereunder:

- (i) 40% in Internal Assessment,
- (ii) 50% in Annual Examination,
- (iii) 50% in the aggregate of Internal Assessment and Annual Examination.

Promotion

- a. For a student of the 1st year, who is detained due to shortage of attendance, the provisions of Ordinance 5 (V) (academic) Para No. 5.1 and 5.2 shall apply respectively.
- b. A student will be promoted from the 1st year to 2nd year if he/she has cleared at least two-third ($2/3$ rd) of the total number of the Theory and Practical Courses combined of the 1st year.
- c. A student will be promoted from the 2nd year to 3rd year if he/she has cleared all Practical Courses and $4/5$ th of the Theory Courses of the 1st year and at least two-third ($2/3$ rd) of the total number of the Theory and Practical Courses combined of the 2nd year.
- d. A student will be promoted from the 3rd year to 4th year if he/she has cleared all the Practical Courses of the 1st year and 2nd year, $4/5$ th of the Theory Courses of the 2nd year, and two-third ($2/3$ rd) of the total number of the Theory and Practical Courses combined of the 3rd year.
- e. If a candidate is unable to clear the required number of courses in the 1st year/2nd year/3rd year, as the case may be, he/she shall be declared as failed. However, such a student may appear as an ex-student in the ensuing annual examination.
- f. An ex-student will be required to appear only in such courses in which he/she has failed to obtain the minimum passing marks.

Note: In case the value of $2/3$ rd or $4/5$ th of the number of courses in the above comes out to be a non-integer, it will be rounded off. For example, if the value comes out as 3.4, the rounded value will be 3. On the other hand, if the value is 2.5 or more, it will be rounded to 3.

**Revised Syllabus of BPT w.e.f 2017-2018
YEAR- I**

IA: Internal Assessment Marks; AE: annual examination Marks

Course Code	Subject	IA	AE	Marks	Hours
BPT 101	Human Anatomy	30	90	120	125
BPT 102	Human Physiology	30	90	120	125
BPT 103	Biochemistry and Microbiology	25	75	100	100
BPT 104	Psychology and Sociology	25	75	100	100
BPT 105	Exercise Therapy I	25	75	100	100
BPT 106	Electrotherapy I	25	75	100	100
BPT 107	Computer Application and Communicative English	25	75	100	100
BPT 108P	Anatomy Practical	25	25	50	50
BPT 109P	Physiology Practical	25	25	50	50
BPT 110P	Biochemistry and Microbiology Practical	25	25	50	75
BPT 111P	Exercise Therapy I Practical	50	50	100	100
BPT 112P	Electrotherapy I Practical	50	50	100	100
Grand Total		360	730	1090	1125

Total 1125 Hours

YEAR - II

Course Code	Subjects	IA	AE	Marks	Hours
BPT 201	Pathology	25	75	100	75
BPT 202	Pharmacology	25	75	100	75
BPT 203	General Medicine and Surgery	25	75	100	100
BPT 204	Neuroscience & Psychiatry	25	75	100	100
BPT 205	Orthopedics and Sports Medicine	25	75	100	100
BPT 206	Biomechanics and Kinesiology	25	75	100	100
BPT 207	Exercise Therapy II	25	75	100	100
BPT 208	Electrotherapy II	25	75	100	100
BPT 209P	Clinical Viva I (BPT 201,203,204)		100	100	
BPT 210P	Clinical Viva II (BPT 205)		50	50	
BPT 211P	Exercise Therapy II Practical	100	100	200	175
BPT 212P	Electrotherapy II Practical	100	100	200	175
Grand Total		400	950	1350	1100

Total 1100 Hours

YEAR - III

Course Code	Subject	IA	AE	Marks	Hours
BPT 301	Cardiopulmonary Medicine and Surgery	25	75	100	100
BPT 302	Physiotherapy in Orthopedics and Rheumatology	30	90	120	125
BPT 303	Physiotherapy in General Medicine and Surgery	25	75	100	100
BPT 304	Physiotherapy in Sports Medicine and fitness	25	75	100	100
BPT 305	Bioengineering and Business Administration	25	75	100	100
BPT 306P	Physiotherapy in Orthopedics and Rheumatology Practical	100	100	200	100
BPT 307P	Physiotherapy in General Medicine and Surgery Practical	100	100	200	100
BPT 308P	Physiotherapy in Sports Medicine and Fitness Practical	100	100	200	100
BPT 309P	Clinical Viva III (BPT 301)		50	50	
	Total	430	740	1170	825
	Clinical Training I				300
Grand Total Hours					1125

Total 1125 Hours

YEAR - IV

Course Code	Subject	IA	AE	Marks	Hours
BPT 401	Research Methodology , Biostatistics and Ethics	25	75	100	75
BPT 402	Physiotherapy in Cardiopulmonary conditions	25	75	100	100
BPT 403	Physiotherapy in Neurological conditions	25	75	100	100
BPT 404	Physiotherapy in Community based Rehabilitation	25	75	100	100
BPT405	Environmental Sciences	10	40	50	50
BPT406P	Physiotherapy in Cardiopulmonary conditions Practical	100	100	200	100
BPT407P	Physiotherapy in Neurological conditions Practical	100	100	200	100
BPT408P	Physiotherapy in community based Rehabilitation practical	50	50	100	100
BPT409P	Project Work	50	50	100	100
	Total	410	640	1050	825
	Clinical Training II				500
Grand Total Hours					1325

Total 1325 Hours

INTERNSHIP

A candidate shall undergo full time (950 hours) supervised Physiotherapy clinical practice for not less than six months in institutions/ hospitals / centre recognized by Jamia Millia Islamia

BPT 101 - HUMAN ANATOMY

Course Description: This course involves detail study of microscopic, macroscopic and surface anatomy of various systems of the body with particular emphasis on the musculoskeletal, neurological and cardiopulmonary system

Course Objective: The students should be able to describe the structure and function of various system of the body with emphasis on musculoskeletal neurological and cardiopulmonary systems as they relate to physiotherapy

Unit I

1. Introduction:

1. Definition of anatomy and its sub-divisions 2. Names, regions, cavities and systems of the body. 3. Anatomical positions and anatomical terms.

2. Cell & Tissue (Histology), Anatomical Nomenclature, Structure of Cell, Reproduction of Cell, Tissue & its types and functions.

3. Osteology (in detail)

1. Terminology, 2. Development and growth of bone (ossification), 3. Blood & nerve supply, 4. Bones: type & structure, 5. Surface anatomy

4. Arthrology

1. Definition and classification. 2. General features of all the type of joints.

3. General description about movements at all the joints.

5. Myology

1. Muscle and its classification, 2. Tendon, ligament, aponeurosis & fascia

3. Features and description of all the muscle types. 4. Anatomical space anterior and posterior triangle of the neck, popliteal triangle etc, scalene triangle

6. Embryology

1. Ovum, spermatozoa, fertilization and formation of the germ layers & their derivations.

2. Formation of all the structure (brief)

Unit II

1. Osteology

1. Mandible 2. Bones of the skull 3. Spine

2. Soft parts

1. Muscle of the face and neck with their nerve and blood supply and action

2. Intraocular muscle

3. Salient features of eye & internal ear,

4. Prepara vertebral muscle, muscles of anterior abdominal wall disc

3. Neuro & Anatomy

1. Classification of nervous systems & its parts 2. Gross & minute structure of nerve tissue

3. Cranial nerves

4. Central nervous system

1. Position, structure & blood supply of Brain, Cerebral hemispheres, cortical areas, Basal ganglia, Thalamus & hypothalamus, Internal capsule & corpus callosum, Brainstem, Cerebellum

2. Pyramidal & extra pyramidal tracts

3. Ventricles, CSF & its circulation

4. Blood circulation in the brain

5. Meninges

6. Limbic system

7. Spinal cord & its blood supply

8. Ascending & descending tracts

5. Peripheral Nervous System

1. Illustration & formation of different plexus (in detail)

- 2 Description of Course, Branches, Relation & Distribution of each,
- 3 Nerve including muscle & continuous innervations,
4. Autonomic Nervous System

Unit III

Upper limb anatomy

1. Osteology
Scapula, Clavicle, Humerus, Radius, Ulna, Carpal bones, Metacarpal Bones, Phalanges
2. Soft Parts
Pectoral Region, Axilla, Front of arm, Back of Arm, Cubital Fossa, Front of Forearm, Back of forearm, Palm and Dorsum of Hand, Fascia, Nerve Vessel & Lymphatic Drainage of Upper Limb, Arches of Hand, Skin of Palm & Dorsum
3. Arthrology
Shoulder Girdle, Elbow Joint, Radio ulnar Joint, Wrist, and Joints of Hand.

Unit IV

Lower limb anatomy

1. Osteology
Pelvis, Femur, Tibia, Fibula, Tarsal bones, Metatarsal Bones, Phalanges
2. Soft Part
Gluteal Region, Front And Back of Thigh, Medial Side Of Thigh, Anterior & Posterior Compartment of Leg, Sole of The Foot, Fascia, Nerve, Vessel & Lymphatic Drainage of Lower Limbs, Venous Drainage & Arterial Supply of Lower Limb, Arches of Foot, Skin of Foot
3. Arthrology
Pelvic Girdle, Knee Complex, Superior & Inferior Tibiofibular Joint, Ankle Complex, Joints of the Foot.

Unit V

1. Cardiovascular System

1. Heart - Position, relationship, covering, description of external & internal structure.
2. Blood & nerve supply of the heart.
3. Position, distribution and branches of principle vessels from & to the heart.
4. Structure of blood vessels, position, general distribution and branches of major arteries and veins
5. Lymphatic Systems (brief)

2. Respiratory System

1. Position, gross & fine structure of lungs & pleurae & respiratory passages.
2. Broncho pulmonary segments.
3. Blood & nerve supply of lungs.
4. Various principles involved in the respiration

3. Thorax.

1. Osteology – sternum & ribs
2. Soft parts – muscle, ligaments etc of the thorax.

4. Digestive Systems (Brief)

5. Endocrines Systems (Brief)

6. Urogenital Systems (Brief)

Books recommended

1. Gray's Human anatomy
2. Human anatomy vol 1&2 -B.D Chaurasia
3. Clinical anatomy for medical students-Snell
4. Clinically oriented anatomy-LKeith, Moorie
5. Textbook of anatomy with colour atlas Vol-I, II&III-Inderbir singh
6. Cunningham's manual of Practical anatomy-G J Romanes
7. Handbook of General Anatomy- B.D. Chaurasiya
8. Surface Anatomy – Derek'o Field
9. Anatomy and Physiology for Physiotherapist – Inderbir Singh

BPT 102- HUMAN PHYSIOLOGY

Course Description: This course involves detail study of physiology of various system of the body at a Microscopic, macroscopic level with particular emphasis on the musculoskeletal, neurological, cardiopulmonary and endocrine system

Course Objective: The students should be able to describe the structure and function of various system of the body with emphasis on musculoskeletal neurological and cardiopulmonary systems as they relate to physiotherapy

Unit I

1. Functional system of the cell
Cell and its function, functional morphology of cell, Extracellular fluid, intracellular fluid, cell differentiation
2. Gastrointestinal System
Motility, nervous control, blood circulation. Propulsion and mixing of food, Secretary Functions, Digestion and absorption

Unit II

1. Membrane, Nerve & Muscle Physiology:
 1. Transport of substances through the cell membrane; diffusion, active transport.
 2. Membrane potentials and action potentials: resting membrane potential of nerves, nerve action potential propagation of AP signal transmission in nerve trunks.
 3. Contraction of skeletal muscle: Molecular mechanics of muscle contraction, energetic of muscle contraction, characteristics of whole muscle contraction,
 4. Neuro Muscular junction in muscle, Action Potential excitation-contraction coupling
 5. Contraction and excitation of smooth muscles. Hormonal control of smooth muscle contraction
2. Cardiovascular System:
 1. Cardiac muscle, cardiac cycle, regulation of heart pumping Rhythmical excitation of the heart: specialized excitatory and conductive systems of the heart control of excitation and conduction in the heart, Normal ECG lead, methods of recording ECG,
 2. Basic theory of circulatory function, interrelationships among pressure, flow and resistance, vascular distensability, arterial pressure pulsation, veins another function, lymphatic system, microcirculation, capillary system, local control of blood flow, humoral and nervous regulation of circulation, cardiac output
 3. Venous return arterial pressure and their regulations.
 4. Muscle blood flow cardiac output during exercise, coronary circulation.

Unit III

1. Blood Cells, Immunity and blood clotting:
RBC, destruction of RBC, Anaemia & Polycythemia, resistance of body to infection, properties of different types of WBC's, Innate & acquired immunity, Lymphocytes, blood groups, Blood clotting
2. Kidney and Body Fluids
 1. Body fluid compartment: ECF, ICF, interstitial fluid and edema,
 2. Urine formation by the kidneys: nephron, glomerular filtration, renal blood flow, tubular reabsorption.
 3. Integration of renal mechanisms for control of blood volume and ECF volume.

4. Renal regulation of potassium, calcium, phosphate and magnesium, regulation of acid-base balance.

3. Respiration:

1. Mechanics of pulmonary ventilation, pulmonary volumes and capacities,
2. Alveolar ventilation, functions, of the respiratory passageways.
3. Pulmonary circulation, pulmonary edema, pleural fluid.
4. Principles of gas exchange transport of oxygen and carbon dioxide in the blood and tissue.
5. Regulation of respiration.

Unit IV

Endocrinology and reproduction

1. Hormone types, secretion, transport and clearance from blood, mechanism of Hormone action
2. Pituitary, thyroid, adrenal cortex, insulin, parathyroid, reproductive hormone
3. Puberty, menarche, menopause, pregnancy, lactation

Unit V

Nervous System

1. Sensory receptors, neuronal circuits for processing information.
2. Somatic sensations: touch, pain, thermal, Proprioception.
3. Cortical sensation.
4. Motor function of the spinal cord: spinal cord reflexes, spinal cord transection,
5. Cortical and brain stem control of motor function: the motor cortex, corticospinal tract, vestibular sensations and maintenance of equilibrium.
6. Cerebellum, basal ganglia, motor control integration of the many parts of the total motor control system
7. Intellectual function of the Brain, Learning and Memory
8. Behavioural and Motivational Mechanisms of the Brain: The Limbic System, Hypothalamus
9. States of brain activity: sleep, brain waves, epilepsy
10. Autonomic nervous system
11. Cerebral blood flow, CSF and Brain Metabolism

Unit VI

Aviation, space and deep sea diving physiology:

1. Effect of Low oxygen pressure on the Body, Mountain Sickness,
2. Effects of Acceleratory Forces, Artificial climate, Weightlessness in Space,
3. Effects of High Partial Pressure of Gases on the Body, Hyperbaric Oxygen Therapy.

Books Recommended

1. Concise Medical Physiology, Chaudhari, S.K, New Central Agency Calcutta
2. Guyton and Hall Textbook of Medical Physiology 12th Edition **Authors:** John Hall John Hall
3. Ganong's Review of Medical Physiology, 24th Edition Kim E. Barrett Susan M. Barman Scott Boitano Heddwen Brooks ISBN: 9780071780032 / 0071780033
4. Principles of Anatomy and Physiology, 15th Edition, Gerard J. Tortora, Bryan H. Derrickson
5. Vander's Human Physiology 14th Edition By Eric Widmaier and Hershel Raff and Kevin Strang
6. Essentials of Medical Physiology Sixth Edition by K Sembulingam
7. Textbook of Physiology (Set of 2 Volumes) 6th Edition A. K. Jain

Course Description: This course involves a study of the basic principles of the metabolism of carbohydrate, protein, fat minerals, vitamins and essential enzymes. The role of these in the functioning of human body will be discussed

Course Objective: At the end of course the students should be able to describe basic principles of genetics and normal functioning of different components of food, enzymes, describe biochemical aspects of muscle contraction in brief the biochemical and genetical basis of some common lab test

SECTION A: BIOCHEMISTRY

1. Living Matter and cell ultra structure
 1. Biochemical characteristics of living matter
 2. Review of sub cellular organelles and cell types
2. Vitamin and Mineral Metabolism
Water soluble vitamins, Fat soluble vitamins, Hypo and hyper vitaminosis, Macro minerals, Essential trace elements,
3. Enzymes
Defination and classification with examples, Factors affecting enzyme action, Brief study of enzyme, Inhibition, clinical importance of enzymes
4. Carbohydrates
Classification, physiologically important carbohydrates and derivatives, Metabolism
5. Lipids
Classification, physiologically important lipids and derivatives, Metabolism, fatty acids
6. Metabolic homeostasis
Metabolic role of organs, Homeostasis of carbohydrates, lipids and nitrogen, Regulation of appetite, energy expenditure and body weight, biochemical mediators of obesity, hypothalamic integration of hormonal signals
7. Nucleic acids Brief overview of the structure of RNA and DNA including nucleotides
8. Techniques in biochemistry
Principle and applications of gel, ion exchange, Affinity, Thin layer and Gas chromatography, HPLC, Electrophoresis

Books Recommended

1. Murray- Harper's biochemistry
2. Das- biochemistry
3. Delvin-Biochemistry with clinical correlations
4. Genetics: A molecular approach. T. A. brown. 3rd ed. Bios scientific publication.
5. Genetics: M.W. srickberger.3rd ed. Printice-hall India ltd.Thomson & Thomson.
6. Genetics in Medicine: 6th ed. Nassbaun et al. W.B.

SECTION B: MICROBIOLOGY

1. Basic concepts and tools in Microbiology:
 - History of microbiology
 - Spontaneous generation
 - Biogenesis
 - Germ theory of diseases
 - Koch's postulates
 - The microscope
 - Microscopy (Light and electron)
 - Preparation & staining of specimens
2. Bacterial morphology, taxonomy, nutrition, growth and control:
 1. Bacterial size, shape, arrangement,
 2. Structures- structure external to cell wall,

3. Structure and chemical composition of cell wall.
4. Bacteriological media,
5. Physical conditions required for growth, mode of cell division, and growth curve.
6. Physical agents: heat, radiations, filtration, desiccation.
7. Chemical agents: phenolics, halogens, alcohols, aldehydes, heavy metals, and gaseous sterilizing agents.
8. Diseases caused by aerobic bacteria: diphtheria, tuberculosis and leprosy etc.
9. Diseases caused by anaerobic bacteria: tetanus, gas gangrene and botulism etc.
10. Diseases caused by fungi: Candidiasis and Ringworm etc.
11. Diseases caused by viruses: Poliomyelitis, Rabies and AIDS etc.
12. Immunology:
 - a. Immunity
 - b. antigen
 - c. antigen- antibody interaction
13. Complement systems, Immune response and hypersensitivity.

Books Recommended

1. Pelczar, M.J., Chan, E.C.S. and Kreig, N.R. Microbiology. 5th ed New Delhi, Tata Mc Graw Hill Publishing Co, Ltd. 1998.
2. Joanne Willey, Linda Sherwood, Chris Woolverton. Prescott/Harley/Klein's Microbiology. McGraw Hill professional, 2007 (ISBN0073302082 / 9780073302089)
3. R. Ananthanarayan C.K. Jayaram Paniker. Text book of microbiology. 4th ed. Orient Longman. 1990. (ISBN: 0863111947 / 0-86311-194-7)
4. James C.E Underwood, Simon S Cross. General and Systematic Pathology. 5th Revised ed, London Churchill Livingstone, 2009 (ISBN-10: 0443068887, ISBN-13: 9780443068881)
5. Edward C. Klatt, Vinay Kumar. Robbins and Cotran Review of Pathology 2nd Revised ed, London, Saunders, 2004 (ISBN-10: 0721601944, ISBN-13: 9780721601946)
6. Harsh Mohan. Text book of pathology. 6th ed. New Delhi, Jaypee Brothers Medical Publishers (P) Ltd. 2010. (ISBN: 978-81-8448-702-2).
7. Coleman, R.M. Fundamental Immunology. Mc Graw-Hill. 1992

BPT 104 - PSYCHOLOGY AND SOCIOLOGY

SECTION A: PSYCHOLOGY

Course Description: the course involves a description of some psychological parameters especially as they relate to physiotherapeutic practice

Course Objective: the students will be able to apply some general psychological principles when dealing with patients

Unit I

1. Introduction to Psychology: Nature, Branches, Methods
2. Learning: Nature, Theories- classical and operant conditioning, insight learning.
3. Emotions: Nature and relationship with autonomic nervous systems, Theories of emotions. James-Lange, Cannon-Bard theory, Schachter- Singer theory
4. Memory: Types, Forgetting, Causes, Attention and perception, Nature, Principles of grouping, Depth perception.
5. Stress: Meanings, Physiological response to stress, Coping strategies.
6. Intelligence: Nature, Factor theories, Process theory
7. Altered state of consciousness: Dream, Hypnosis, Sleep

Unit II

1. Introduction

Difference between normal and abnormal behavior, Paradigms- biological, psychoanalytical learning, cognitive, humanistic, Existential

2. Anxiety Disorders
Phobias, Panic disorder, generalized anxiety disorder, Obsessive- Compulsive Disorder
3. Somatoform Disorders
Conversion disorder, Somatomization disorder
4. Dissociative Disorders
Depersonalization disorder, Dissociative amnesia, Dissociative fugu, Dissociative identity disorder
5. Mood Disorders
Unipolar disorder, Bipolar disorder
6. Schizophrenias and Delusional Disorders
7. Disorders of Childhood:
Attention deficit / hyperactivity disorders, Learnig disabilities, Mental retardation.
8. Substance Abuse:
Etiology of substance abuse and dependence, Alcohol abuse, Nicotine and Cigarette smoking, Marijuana, Sedatives, Stimulants.
9. Old age and Brain Disorders: Delirium dementia
10. Psychologically based therapies:
Psychodynamic, Behavior therapy, Cognitive behavior, Emotion therapy, Humanistic-existential therapy.

Books Recommended

1. Morgan C.T. And King R.A.(1986) Introduction to Psychology 7 Edn. (Tata Mc. Grew Hill Publication
2. Davison, G.E. Neal. J.M. & Kring, A.M. (2004). Abnormal Psychology. New York: John Wiley & Sons,
3. Alloy, L.B., Riskind, J.H. & Minoy, M.J. (2006) Abnormal Psychology: Current Perspectives. New Delhi; Tata McGraw Hill.
4. Baron, R.A. (2001). Psychology. New Delhi; Pearson Edveation Aisc.
5. Carson, R.C. Butcher, J.N & K. Mineka S. (1998). Abnormal Psychology & Modern Life. New York: Longman.

SECTION B: SOCIOLOGY

Course Description: This course will introduce students to the basic sociological concepts, principles and social process, social institutions and the various social factors affecting the family in rural and urban communities will be studied.

Course Objectives: The students will be able to demonstrate and understanding of the role of sociocultural factors on health and disease and related to physiotherapy.

Unit I

The discipline of Sociology

- a. Definition, sociology as a science
- b. Basic concepts and social structure
- c. Institutions and Agencies

Unit II

Society, Culture and Health

- a. Defining the concepts and approaches to health
- b. Society, Culture and health Care System
- c. Major determinants of health, home treatment, beliefs and practices affecting therapy

Unit III

Health and Disability

- a. Disability- a social perspective

- b. Gender and disability
- c. Access to public health care and livelihood

Unit IV

Development and Social problems

- a. Concepts and models of social developments
- b. Social problems of development

Books Recommended:

1. Social Problems in India by Ram Ahuja
2. Ram Ahuja. Social Problems in India, 2nd Edition
3. Sachdeva, & Bhushan – An Introduction to Sociology – Allahabad, Kitab Mahal Ltd.
4. Madan – India Social Problem Vol. 1. – Madaras Allied Publication – 1973
5. Megre – Sociology Drydon Press Illinois.
6. Kupuswamy-Social Changes in India – Vikas Delhi
7. Aggarwal KC-Environmental biology, nidhi publications
8. Bharucha Erach-The Biodiversity of India, Mapin publishers
9. Cunningham WP-Environmental Encyclopedia ,Jaico paul house

BPT 105 - EXERCISE THERAPY- I

Course Description: This course involves a study of the basic physical principles as they relate to the application of exercise therapy

Course Objective: The students should be able to explain the rationale for prescription of safe and effective exercises

Unit I

The control of human movement

(All the topics will be covered with suitable examples from physiotherapy)

1. Mechanical Basis of Movement

Motion and its laws, Force and force systems, torque and angle of pull, Work, energy and power, Friction,

1. Elasticity: Definition, Stress and strain, Hooke's law, springs and their properties, Application of springs
2. Simple machine and its types and application
3. Fluid mechanics

Hydrostatics and dynamics (definition and characteristics), Archimedes's principle, Properties of water Pressure, buoyancy & trust (definition, characteristics and effects on motion under water) Laws of flotation, apparent loss of weight, Movement of body in water and its equilibrium Bernoulli's theorem

4. Gravity:

Centre of gravity, Line of gravity, Role in human body and movement, Effect of all of them

5. Equilibrium: Types & effects. Supporting bases, Factors affecting equilibrium, Stability and its effect

2. Skeletal Basis of Movement:

Planes and axis, Joints and their classification, Degree of freedom, Link segment mode, Range of movement, Surface anatomy of joints

3. Musculoskeletal Basis of Movement

Macro and Microscopic Structure of Muscle and its classification, Muscle tension, Classification and characteristics of muscle fiber, Group action of Muscles

Types and mechanism of Muscle contraction, ranges of Muscle work, Pattern and rhythm of Movements, Muscular weakness and paralysis, Prevention of muscle wasting

4. Neuro Physiological basis of Movement (Brief overview of all the topics)

Structure of nervous system, Stretch Reflex, Muscle spindle, Role of vestibular system in movement, Sensory aspects of motor system, Plastic adaptation of nervous system

Unit II

1. Classification of Exercise

Describe in brief the exercises which are classified according to the following::

Movement performed, Muscle contraction produced, Muscle work undertaken, Source of energy, Kinetic chain

2. Fundamental and derived positions

Definition and classification, Description and muscle work, Effects and uses, Importance, advantages and disadvantages

3. Active movement

Principle and classification, Indication and contraindication, Advantages and disadvantages Effects, uses and Precautions, Home programme of exercises for various joints and muscles, various types of resistance and resisted exercise

4. Passive movements

Principle and classification, Indication and contraindication, Advantages and disadvantages Effects, uses and Precautions

5. Flexibility

Properties of contractile tissue Definition, classification and factors affecting flexibility, Principles of flexibility training, Advantages and disadvantage of flexibility training, Passive stretching- definition, classification and factors affecting, Indications, goals, procedures, precautions and contraindications of stretching ,Relaxation and inhibition in preparation for stretching, Techniques of stretching, The modified sit and reach test

6. Relaxation

Muscle spasm and describe relaxation, muscle fatigue, tension, Techniques of relaxation (local and general) ,Effects, uses and clinical application, Indication and contraindication.

7. Biomechanical modalities

Introduction, Brief outline about their application

Unit III

1. Goniometry

Goniometry and its type, Principles, techniques & applications of goniometry, Testing positions & measurement of ROM of the joints of upper limb, lower limb Trunk & head & neck

2. Suspension Therapy

Principle, Techniques of application, Indication, contraindication and use of suspension therapy, Precautions, Effects & uses

3. Hydrotherapy

1. Basic principles of fluid mechanics.

2. Principles, techniques and application.3.Physiological and therapeutic effects.

3. Physiological and therapeutic effects.

4. Indications and contraindications.

5. Operational skills and patient preparation.

Books Recommended

1. Practical Exercise therapy- Hollis- Blackwell Scientific Publications
2. Therapeutic exercises Foundations and Techniques- Kisner & Colby-F. A. Davis
3. Therapeutics Massage by A.G. Sinha, Jay Pee Publications, New Delhi
4. Principles of Exercise Therapy-Gardiner-CBS Delhi.
5. Practical Massage Therapy-Hollis-Blackwell Scientific Publication

BPT 106- ELECTROTHERAPY-I

Course Description: This course involves a study of the basic electro-physical principles as they relate to the application of physical agents and electrotherapy

Course Objective: The students should be able to explain the rationale for the use of safe and effective physical agents and modalities

Unit I

1. Electrical activities In the human body; Muscles , Nerves
2. Application of energy to the human body
3. Basic guidelines of application of electrotherapy
4. Thermal regulation & its mechanism in human body

Unit II

1. Current

- Electrical phenomenon & electrical field
- Current, voltage, resistance, amplitude, frequency, phase, impedance, static electricity, electromotive force (emf)
- Electrical circuit
- Types of current: a.c, p.c & d.c. current
- Conductors, semi conductor, insulators, rheostats, potentiometers, ammeters, oscilloscopes.
- Mains supply, fuses, power plugs, switches.
- Electric shock & it's management

2. Electromagnetism:

- Magnetism.
Magnetic field, magnetic field line, magnetic flux, magnetic flux density, e.m.f., properties of a magnet, electro magnetron effects of electrical current
- Electromagnetic spectrum
Laws governing radiation, electromagnetic field, environmental currents and field, risk factors on prolonged exposure to e.m. field
- Electromagnetic induction

Conduction, lenz's law, electronic circuits- oscillators, pulse generators

3. Mechanical waves

Ultrasound, intensity, reflection attenuation

4. Thermal energy

Specific heat, modes of heat transfer, latent heat, conductors and non conductors, physical effects of heat, energy conversions, thermometer & thermography

5. Basic electrical components

- Transformer: types, construction, working, functions
- Capacitor: capacitance of a capacitor, types, electric field of a capacitor, charging & discharging of a capacitor,
- Thermionic valve
- Semi-conductors: types, transistor

6. Devices for regulation of current

Rheostat- construction, types

Unit III

1. Introduction

1. Definition and classification of physical agents
2. History of use of physical agents
3. Role in patient care of physical agents
4. General effects of physical agents
5. General contraindication and guidelines of physical agents

2. Superficial Thermal Agents

1. Cryotherapy
Effects & uses, Indications & contraindications, Methods of application, Dangers & Precautions
2. Superficial Heat (paraffin wax bath, hot packs, contrast bath,) Types, Effects & uses, Indications & Contraindications, Methods of application, Dangers & Precaution

3. Electro Magnetic Radiations

1. LASER
Physical properties, Production, Effects & uses, Indications & contraindications, Dosimetry, Methods of application, Selection, Dangers & precautions, Documentation
2. Infrared therapy
 1. Principle and classification
 2. Physiological and therapeutic effects and uses
 3. Indication, contraindication
 4. Dangers and Precautions
 5. Techniques
3. Ultraviolet therapy
 1. Principle and classification
 2. Physiological and therapeutic effects and uses
 3. Indication, contraindication
 4. Dangers and Precautions
 5. Techniques

Books Recommended

1. Kandhpur -Handbook of Biomedical instrumentation
2. Cromwell-Physical therapy instrumentation
3. Sedha-Applied Electronics
4. Bhargava- Basic Electronics
5. Clayton's Electrotherapy
6. Hillary Wordsworth and App Shanmugham-Electrophysical agents in physiotherapy-Therapeutic and diagnostic
7. Cameroon-Physical agents in rehabilitation
8. Low and reed-Electrotherapy explained

BPT-107- COMPUTER APPLICATION AND COMMUNICATIVE ENGLISH

SECTION A: COMPUTER APPLICATION

Unit I

Computer Systems as Information Processing System, Different Type of Computer Hardware; CPU, Input Devices, Storage Devices Communication Devices Configuration of hardware devices and their applications.

Unit II

1. Basic idea of Local Area Network (LAN) and Wide Area Network (WAN), E-mail Internet browsing, Multimedia.
2. Introduction to Operating System:

Software needs, operating systems, application software, programming language

3. Windows

Windows explorer, print manager, control panel, paint brush, calculator, desktop, my computer, setting, find, Run.

Unit III

Introduction and working with Ms- Word in Ms-office: Word basic commands, Formatting-text and documents, sorting and tables, working with graphics; Introduction to mail merge

Unit IV

Working with excel-formatting, Functions, chart features, workings with graphics in excel, using worksheets a database.

Unit V

Presentation with Power Point: Power point Basics, creating presentation the easy way; working with graphics in power-point; show tie, sound effects and animation effect. MS-Access: Creating Table, Query, Report, establish relation among various table.

Books Recommended:

1. Mansfield, Ron: the Compact Guide to Microsoft office: BPB Publication, Delhi
2. O'Brian, J.A: Management Information System, Tata McGraw Hill, New Delhi

SECTION- B: COMMUNICATIVE ENGLISH

Unit I

1. English grammar

1. Articles, Preposition, Tenses, Voice, Direct and Reported Speech

2. Vocabulary

1. Common Vocabulary, Word Often Confused, Some Common Errors

Unit II

Paragraph Writing – Process Writing, Descriptions Summarizing and Writing in brief of Medical passages, Note- taking Exercise, Formal Correspondence (Letter and application)-Application for job, for higher studies- Letter to The Editor, Ordering Equipments, and Requesting for Information

Unit III

Spoken English: Communicative Skills, Discussion Sessions, Dialogue Sessions

Books Recommended

1. Wren and Martin- Grammar and composition
2. A.S Meyers- Letters for all occasions

BPT 108P-HUMAN ANATOMY PRACTICAL

1. Surface Anatomy; To Study, Identify and Mark the Surface Landmark on Human Body
 2. Demonstration and learning of the Muscles of Trunk, Lower and Upper Intermitted and Face on A dissected Human Body.
 3. Demonstration and learning of the Muscle & Bones of the Human Body with Special Emphasis on Origin & Insertion of Muscle and Ligaments.
 4. Demonstration and practice of Anatomy of Joints of Upper and Lower Extremities And Vertebral Column on a Dissected Human Body.
 5. Demonstration and learning of Anatomy of CNS & ANS on A Dissected Human Body.
 6. Demonstration and learning of The Gross Anatomy of Respiratory, Digestive, Endocrine, Urinary and Genital Systems on a Dissected Human Body
- Students will be assessed by viva & practical demonstration based upon learning in theory and practical classes

BPT 109P - PHYSIOLOGY PRACTICAL

1. Identification of blood cells and differential counts.
2. Total WBC count.
3. Total R.B.C. count
4. Haemoglobin estimation
5. Blood group
6. Bleeding time and clotting time.
7. Graphic analysis of a) skeletal muscle properties- pre after load- fatigue- sterling law
b) Cardiac muscle properties: effect of acetylcholine & adrenaline.
8. Pulse Rate, Heart Rate and Measurement of Blood Pressure: Effects of change in posture and exercises.

BPT 110 P - BIOCHEMISTRY AND MICROBIOLOGY PRACTICAL

Biochemistry Practical:

1. Carbohydrate metabolism, testing, disorders
2. Kidney function, testing, disorders
3. Protein nitrogen substances, testing, disorders
4. Liver function, testing, disorders
5. Lipid metabolism, testing, disorders

Students will be assessed by viva & practical demonstration based upon learning in theory and practical classes

Microbiology Practical

1. Media, sterilisation and disinfection
2. Preparation of culture media, Pouring a plate
3. Storage of media, Sterilisation vs disinfection
4. Sterilisation using the autoclave/pressure cooker
5. Sterilisation of equipment and materials
6. Inoculation and other aseptic procedures Essential points, Using a wire loop
7. Using a pipette, Flaming the neck of bottles and test tubes
8. Working with bacteria and yeast Streak plate
9. Pour plate, Using a spreader, Spread plate,
10. Testing sensitivity to antimicrobial substances

BPT 111P- EXERCISE THERAPY-I PRACTICAL

1. Demonstration and practice of the mechanical principles applied in physiotherapy like the force, torque and centre of gravity e.t.c
2. Demonstration and practice of different types of levers in human body.
3. Demonstration and practice of different types of levers and pulleys used in physiotherapy
4. Demonstration and practice of various planes and axis in human body with movement descriptors
5. Demonstration and practice of various types of muscle contraction in human body
6. Demonstration of various biomechanical modalities used in the physiotherapy clinic
7. Demonstration and practice of various relaxation techniques.
8. Demonstration and practice of various Goniometry techniques for all the joints of the human body.
9. Demonstration and practice of various suspension therapy techniques

Students will be assessed by viva & practical demonstration based upon learning in theory and practical classes

BPT 112P- ELECTROTHERAPY I - PRACTICAL

1. Demonstration and application of diode and triode valves, transistors, ammeter, Voltmeter, Galvanometer, Rheostat, Resistance box, Transformer, e.t.c
2. Demonstrations and learning of circuits in electrotherapy modalities.
3. Demonstration of safety devices used in physiotherapy clinics. E.g. fuse, switches, earthings
4. Demonstration of ultrasound equipment testing, functioning and usage
5. Introduction to the Physical agents in a physiotherapy clinic
6. Demonstration and practice of application of following superficial heating Modalities
Hydrocollator pack, paraffin wax bath,
7. Demonstration and practice of the application of Cryotherapy used in the Physiotherapy clinics
8. Demonstration and application of contrast bath
9. Demonstration and application of fluidotherapy
10. To study and practice the application of LASER used in the physiotherapy clinics

Students will be assessed by viva & practical demonstration based upon learning in theory and practical classes

BPT 201- PATHOLOGY

Course Description: The course introduces to general and systemic pathology.

Course Objective: The course enables the students to understand about underlying pathology of various disorders in human beings.

Unit I

General Pathology:

1. Introduction: Concepts of disease, Classification of lesions, Definition & Branches.
2. Inflammation: General features, Vascular changes & cellular events, Chronic & acute inflammation Mediators of inflammation (Including AIDS),
3. Cell Injury, death & adaptation : Definition & etiology (Irritants), Mechanisms of cell injury, death and adaptation, Classification, Cellular aging, Cellular adaptation to growth & its indicators, Apoptosis
4. Tissue & cell Repair: Normal growth, Repair of bone, Repair of wound, Repairs of others structures
Pathology in Repair

5. Haemodynamic disorders: Odema, Thrombosis, Embolism, Infarction, Shock, Hyperemia & congestion.
6. Blood & Lymph Disorders: Anemia- Definition, classification and types Leukemia- Definition, classification, etiology, lab investigations- blood & marrow Pictures, Hemorrhagic disorder, Splenomegaly, Deficiency of Factor VIII & IX, Polycythemia, Lymphangitis & lymph edema
7. Neoplasm: Definition, classification, nomenclature and characteristics, Aetiology & agents causing neoplasm, Biology of neoplastic growth & neoplasm immunology.

Unit II

Systemic Pathology

1. Cardiovascular system; Rheumatic Heart Disease, Myocardial Infarction, Pericardial Heart Disease, Congenital Heart Disease, Ischemic Heart Disease, Response Of Vascular Walls To Injury, Hypertension, Varicose vein
2. Respiratory system: Restrictive Lung Diseases, Pulmonary Infections, Pleural Disorders – Pneumothorax, haemothorax, pleural Effusion etc.Carcinomas, Congenital anomalies, Pulmonary vascular diseases – ARDS, embolism, hemorrhage and infarction, Hypertension Pulmonary.
3. Nervous system: Meningitis, Encephalitis, Neoplasm's (Brief), Cerebrovascular disease, Demyelinating Disease, Alzheimer's Disease, Muscular Dystrophy, Disorders of Neuromuscular Junction.,G.B. Syndrome.
4. Endocrine System: Hypo & Hyperpituitarism, Hypo & Hyperthyroidism, Casing's Syndrome, Diabetes
5. Alimentary system: Peptic Ulcer, Carcinoma of Stomach, Celebrative Lesion of Intenstine, Liver, biliary system & pancreas, Cirrhosis, Hepatitis, Jaundice, Hepatic Failure, Pancreatitis
6. Urinary system: Glomerular Diseases, Nephritis, Renal Failure, Cholilithiasis.
7. Skeletal and Integumentary System: Polymyositis, VIC, Bones & Joints, Osteomyelitis, Arthritis, Gout, Vitiligo, Psoriasis, SLE, Acne

Books Recommended

1. James C.E Underwood, Simon S Cross. General and Systematic Pathology. 5th Revised ed, London Churchill Livingstone , 2009 (ISBN-10: 0443068887,ISBN-13: 9780443068881)
2. Edward C. Klatt, Vinay Kumar. Robbins and Cotran Review of Pathology 2nd Revised ed, London, Saunders, 2004 (ISBN-10: 0721601944,ISBN-13: 9780721601946)
3. Harsh Mohan .Text book of pathology. 6th ed. New Delhi, Jaypee Brothers Medical Publishers (P) Ltd.2010. (ISBN: 978-81-8448-702-2).

BPT 202- PHARMACOLOGY

Course Description: The course introduces to general and systemic pharmacology,

Course Objective: The course enables the students to understand about various drugs used in different medical condition, its mechanism of action and adverse reactions.

Unit I

A. General pharmacology: Introduction, Pharmacokinetics, Routes of administration, dosage forms and new drug delivery systems, Mechanism of drug action, Bioassay, Drug toxicity, Therapeutic index., Factors modifying drug response, Pharmacogenetics and teratogenicity, Drug interaction, Clinical examination of drugs, rational drug use and essential drugs, Adverse drug reactions, Drug dependence

Unit II

A. Systemic Pharmacology

1. Drugs acting on autonomic nervous system: Adrenergic drugs, Adrenergic blockers, Cholinergic drugs and blockers.

2. Drugs acting on central nervous system: General anaesthetics and preanaesthetic medication, Sedatives and hypnotics, Antiepileptic drugs, Opioid analgesics, Local anaesthetics, Skeletal muscle relaxants, Psychedelic agents
3. Drugs acting on respiratory System: Pharmaco-therapy of CHF, Pharmaco-therapy of bronchial asthma.
4. Drugs acting on cardio vascular system: Pharmaco- therapy of CHF, Pharmaco-therapy of hypertension, Antiarrhythmic drugs, Anti-anginal and vasodilators drugs, Pharmacotherapy of shock., Hypolipidaemic agents
5. Drugs acting on renal system: Diuretics and anti diuretics
6. Drugs acting on gastro-intestinal tract: Drugs acting on Gastro-intestinal tract
7. Nonsteroidal anti inflammatory drugs

Unit III

A. Antibiotics and chemotherapeutic agents: Introduction to chemotherapeutic agents.

1. Antibiotics
2. Antifungal antibiotics.
3. Antiviral agents
4. Chemotherapy of: TB and Leprosy, Malaria, amoebiasis and helminthiasis, Cancer, STD

Unit IV

1. Antacids: Histamine and antihistamine, 5 HT and its antagonists, Angiotensin, kinin and prostaglandins.
2. Hormones and related drugs, Thyroid and anti thyroid drugs, Insulin and oral hypoglycemic agents, Adrenal and cortical hormones, Androgens and anabolic steroids
3. Miscellaneous: Drugs for gout and rheumatoid arthritis, Heavy metals and antagonists, Immunosuppressants, Blood and blood forming agents, Antiseptics and disinfectants.

Books Recommended

1. K.D. Tripathi. Essentials of Medical Pharmacology. 6st ed. New Delhi, Jaypee Brothers Medical Publishers (P) Ltd.2008. (ISBN:978-81-8448-085-6).
2. Udayakumar. Text book of pharmacology for physiotherapy. 1st ed. New Delhi, Jaypee Brothers Medical Publishers (P) Ltd.2004. (ISBN:81-8061-278-3).
3. Ramesh. Pharmacology for physiotherapist. 1st ed. New Delhi, Jaypee Brothers Medical Publishers (P) Ltd.2004. (ISBN:81-8061-343-7).
4. Harold Kalant, Denis Grant. Principles of Medical Pharmacology. 7th ed. Canada, Saunders, 2007 (ISBN: 978-0-7796-9945-2)
5. Laurence Brunton, John Lazo, Keith Parker, Goodman & Gilman's The Pharmacological Basis of Therapeutics. 11th ed. McGraw Hill publications.
6. J. H. Gaddum. Gaddum's Pharmacology. Oxford University Press. 1985.
7. John Christian Krantz. Krantz and Carr's Pharmacologic principles of medical practice. 8th ed. Baltimore Williams & Wilkins (ISBN 10: 0683002929)

BPT203 - GENERAL MEDICINE AND SURGERY

SECTION A: GENERAL MEDICINE

Course Description: The course introduces to principles of general medicine and Surgery with emphasis medical and surgical management of common disorders of systems of body.

Course Objective: The course enables the students to understand about the causes of disorders of different systems of body and enable to understand the principles behind the management of disorders related to above said areas.

Unit I

A. Etiology, symptoms and signs along with management of the following diseases.

1. Infections: Bacterial – tetanus, typhoid, rheumatic fever, diphtheria etc.

Viral – herpes simplex and zoster, measles, hepatitis, HIV, varicella and influenza. .

Protozoal – Filariasis, malaria and amoebiasis etc.

2. Disease of blood

3. Diseases of liver.

4. Diseases of alimentary tract.

5. Diseases of renal and reproductive system

6. Nutritional and metabolic diseases: Balanced diet, Protein caloric malnutrition, Avitaminosis, Diabetes Mellitus, Obesity, Hyper and Hypothyroidism, Calcium homoeostasis, Gigantism and acromegaly, Disturbances in water, electrolyte and acid base balance.

Unit II

A. Dermatology: Environmental hazards, immunologically mediated skin disorders, Psoriasis, Leprosy, HIV and syphilis, Acne, Trophic ulcers, Local, fungal, parasitic and viral infections, Rheumatology related skin diseases

B. Oncology. Classification and characteristics of common tumors- their complications and management.

C. Emergency medicine: Coma, Cerebral hypoxia, Drug overdose, Poisoning, Tetanus, Renal failure, Choking

D. AIDS

Unit III

A. Paediatrics: General growth pattern, Paediatric assessment and its normal parameters, learning disorders (brief), Problems in emotional development – nail biting, thumb sucking, bed wetting, aggressive and harmful behaviour, bleeding disorders.

SECTION B: GENERAL SURGERY

Unit I

A. General Surgery.: General scheme of case taking, Wound healing and wound management, Incision and its types, Anaesthesia and its complication (brief overview), Burns- classification, complication, management and reconstructive surgery, Skin grafts, flaps and cosmetic surgery, Arterial and venous disorders, Hernia – its types and managements, Abdominal surgery.

Unit II

A. Ophthalmology

B. ENT.

Unit III

A. Obstetrics and gynaecology.

1. Anatomy and physiology of female reproductive system,

2. Pregnancy and labor.

3. Menstruation and its disorder.

4. Prenatal and postnatal care.

5. MTP and birth control techniques.

6. Prolapsed uterus and incontinence
7. Term, newborn and low birth weight baby.
8. PID
9. Neoplasm
10. Surgical treatment of obstetric and gynecological conditions.

Books recommended.

1. Nicki R. Colledge, Brian R. Walker, Stuart H. Ralston. Davidson's Principles and Practice of Medicine. 21th ed Churchill Livingstone, 2010 (ISBN: 9780702030857)
2. Anthony S. Fauci, Eugene Braunwald, Dennis L. Kasper, Stephen L. Hauser, Dan L. Longo, J. Larry Jameson, Joseph Loscalzo. Harrison's Principles of Internal Medicine, 17th ed. McGraw Hill Professional, 2008. (ISBN: 0071466339 / 9780071466332)
3. Michael Swash, Michael Glynn. Hutchinson's Clinical Methods. An Integrated Approach to Clinical Practice. Saunders, 2007 (ISBN-13: 978-0-7020-2799-4, ISBN-10: 0-7020-2799-5)
4. Krishna Das. Text book of medicine. 5 ed New Delhi, Jaypee Brothers Medical Publishers (P) Ltd. 2009. (ISBN: 81-8061-615-0)
5. Thappa. Essentials in Dermatology. 2nd ed, New Delhi, Jaypee Brothers Medical Publishers (P) Ltd. 2005. (ISBN: 978-81-84448-558-5).
6. Agarwal. Emergency Medicine. 1st ed, New Delhi, Jaypee Brothers Medical Publishers (P) Ltd. 2005. (ISBN: 81-8061-558-8).
7. S. Das. A concise textbook of surgery. 5th ed. S Das Publications.
8. Norman S. Williams, Christopher J.K. Bulstrode, P. Ronan O'Connell. Bailey and Love's Short Practice of Surgery 25th ed, Hodder Arnold, 2008 (ISBN13: 9780340939321, ISBN10: 034093932X)
9. Madhuri. Textbook of physiotherapy for obstetrics and gynaecological conditions, 1st ed, New Delhi, Jaypee Brothers Medical Publishers (P) Ltd. 2007. (ISBN: 81-8061-813-7).
10. Ahamed. Essentials of ophthalmology, 1st ed, New Delhi, Jaypee Brothers Medical Publishers (P) Ltd. 1995. (ISBN: 81-7179-390-8).
11. Tuli. Text book of ear, nose and throat diseases. 1st ed. New Delhi, Jaypee Brothers Medical Publishers (P) Ltd. 2005. (ISBN: 81-8061-446-8).

BPT 204 - NEUROSCIENCE & PSYCHIATRY

Course Description: The course introduces to principles of clinical neurosciences and psychiatry with emphasis on surgical and medical management of common disorders of nervous system and psychiatric disorders.

Course Objective: The course enables the students to understand about the causes of nervous system and psychiatric disorders and enables to understand the medical and surgical management of nervous system and psychiatric disorders.

Unit I

1. Introduction to psychiatry; Brief history, Psychotherapeutic team, Causes of mental disturbance and its gross system, Psychiatric examination, Normal mental health.
2. Methods of treatment: Drug therapy, Psychotherapy, Biofeedback, Behavior therapy, ECT.
3. Clinical syndromes: Psychoneurosis- its type and their management, Psychosis, Organic brain syndrome, Drug dependence and alcoholism, psychosomatic illness, Pediatric psychiatry (Brief)

Unit II

1. Introduction to neurosciences: Overview of neuroanatomy and neurophysiology, Neurological assessment, Principles of clinical and differential diagnosis and prognosis of neurological disorders, First aid and management of head and spinal cord trauma.

2. CNS.

- A. Aetiopathogenesis, clinical and surgical management of the following conditions: Cerebral palsy, CVA and TIA, TBI, Cerebellar disorders
- B. Infections: Meningitis, Encephalitis, Poliomyelitis.
- C. Movement disorders: Parkinsonism, Dystonia, Chorea, Tremors and writer's cramp, Ataxia.
- D. Congenital anomalies: Hydrocephalus, Spina bifida.

3. Neoplasm.

4. Diseases of blood vessels.

5. Spinal cord and roots: Compressive, Non-compressive, Trauma.

6. Dementia.

Unit III

1. Multifocal neurological diseases: Infections, Demyelinating diseases, Drug induced neurological syndromes Metabolic Encephalitis, Nutritional disorders, Non metastatic manifestation of neoplasm, Degenerative disorders, Neurocutaneous syndrome.

2. Peripheral nerve and muscle: Neuropathies including GB syndrome, Plexus syndromes Myopathies. Myasthenia gravis, Mitochondrial disorders, Disorders of autonomic nervous system, Polymyositis, Localization and management of peripheral nerve injuries, Pain management, Bladder, bowel and sexual dysfunctions

Books Recommended

1. Brain.Aids to the Examination of the Peripheral Nervous System, 4th Revised ed,London,Saunders(W.B.)2000 (ISBN-10: 0702025127 ,ISBN-13: 9780702025129)
2. Geraint Fuller, Neurological Examination Made Easy, 4th Revised ed, London, Churchill Livingstone,2008 (ISBN-10: 0443069646,ISBN-13: 9780443069642).
3. Allan Ropper,Daryl R Gress. Neurological and Neurosurgical Intensive Care, 4th Revised ed Philadelphia, Lippincott Williams and Wilkins, 2003(ISBN-10: 0781731968 ISBN-13: 9780781731966)
4. Roger Barker, S Barasi,. Neuroscience at a Glance, 2nd Revised ed, Oxford ,Blackwell Publishing Ltd 2003(ISBN-10: 1405111240, ISBN-13: 9781405111249)
5. Michael Donaghy, Brain's Diseases of the Nervous System,11th ed,Oxford university press,2001 (ISBN-10: 0192626183 ,ISBN-13: 9780192626189)
6. Nicki R. Colledge, Brian R. Walker, Stuart H. Ralston. Davidson's Principles and Practice of Medicine. 21th ed Churchill Livingstone, 2010(ISBN: 9780702030857)
7. Kenneth W. Lindsay, Ian Bone, Geraint Fuller. Neurology and Neurosurgery Illustrated, 5ed, Churchill Livingstone,2010(ISBN:9780443069574)
8. Kumar.Neurosurgery review.1st ed,New Delhi, Jaypee Brothers Medical Publishers(P) Ltd.2009.(ISBN:978-81-8448-652-0).
9. Ahuja.A short text book of psychiatry, 6st ed,New Delhi, Jaypee Brothers Medical Publishers(P) Ltd.2009.(ISBN:81-8061-871-4).
10. Ananth.Psychopharmacologic treatment of psychiatric disorders. 1st ed,New Delhi, Jaypee Brothers Medical Publishers(P) Ltd.2007.(ISBN:81-71779-649-4)
11. Michael Gelder, Nancy Andreasen, Juan Lopez-Ibor,John Geddes. New Oxford Textbook of Psychiatry2nd ed,Oxford University press, 2009(ISBN: 978-0-19-920669-8)
12. Hadi Manji, Sean Connolly, Neil Dorward, Neil Kitchen, Amrish Mehta, Adrian Wills. Oxford Handbook of Neurology. Oxford university press,2006(ISBN: 978-0-19-850973-8)
13. Roger Bannister, Brain and Bannister's Clinical Neurology.7th ed,Oxford University press,1999(ISBN: 9780195647068)

BPT 205 - ORTHOPEDICS AND SPORTS MEDICINE

Course Description: The course introduces to general orthopedics, traumatology and sports medicine, with emphasis on medical and surgical management of the above said fields.

Course Objective: The course enables the students to understand about the mechanism of injuries in orthopedics and should be able to understand the management orthopedics, traumatology and sports related injuries, with emphasis on medical and surgical management.

Unit- I

A. Introduction to Orthopaedics

- a) Introduction to orthopedic terminologies.
- b) Clinical Orthopaedic examination.
- c) Radiological and imaging techniques.
- d) Devices used in Orthopaedic surgery.

B. Traumatology

- a) Definition, classification, pathogenesis, investigation, differential diagnosis, treatment and complication of the following.
 1. Fractures and dislocations.
 2. Fracture and soft tissue healing.
 3. Clinical features of Orthopaedic injury.
 4. Principles of treatment and management of complication of fractures and dislocations.
 5. Upper limb trauma: Soft tissue injury, Bony injuries, Joint injuries.
 6. Lower limb trauma: Soft tissue injury, Bony Injury, Joint Injury
 8. Spinal trauma
 9. Polytrauma
 1. Nerve injury
 2. Vascular injury

Unit- II

A. Principles, indication and contraindication of following surgical procedures.

1. Arthrodesis and arthroplasty.
2. Osteoplasty
3. Spinal stabilizations.
4. Limb lengthening and reattachments.
5. Tendon surgeries.
6. Muscle surgeries.
7. Nerve surgeries.
8. Joint replacement.

Unit- III

A. Developmental disorders of bone.

1. Congenital deformities: CTEV, CDH, Foot arch deformities, Limb deficiency, Arthrogryposis multiplex congenital, Spinal bifida, Sprengel's shoulder, Torticollis, Osteogenesis imperfect, Spinal deformities, Coxavara
2. Bone and joint neoplasm: Osteoma, Osteosarcoma, Osteoclastoma, Ewing's tumor, Multiple myeloma, Secondary tumors
 3. Bone and joint infections: Osteomyelitis, Tuberculosis, Leprosy, Septic arthritis
4. Arthritis: Osteoarthritis, Rheumatoid arthritis, Psoriatic arthritis, miscellaneous arthritis conditions
Gout, Pseudo gout

Unit- IV

Regional Orthopaedics

1. Shoulder: Rotator cuff injury, Periarthritis, Adhesive capsulitis, Bursitis, etc
2. Elbow: Tennis and Golfers elbow, recurrent ulnar nerve slipping, Pulled elbow, etc
3. Wrist and hand: Ganglion, Dequervians syndrome, Trigger thumb and finger , CTS, Dupuytren's contracture, Flexor and extensor tendon injuries, RA hand, Burned hand, Mallet finger
4. Hip: Slipped epiphysis, AVN, Hip OA
5. Knee Deformities: Osgood schlatter's disease, loose bodies, Anterior knee pain, Chondromalacia patella, Bursitis, Plica, OA Knee
6. Foot and Ankle: Anterior foot pain, Child foot pain, Heel pain , Tarsal tunnel syndrome, Trophic ulcers ,OA Foot
7. Spine; Thoracic inlet syndrome, Torticollis, PIVD, Sponylolsthesis, Strain, Lumbar canal stenosis, Spondylitis, Pott's spine, Ankylosing spondylitis

Unit- V

1. Peripheral nerve injury: Classification of nerve injury, Brachial plexus Musculocutaneous nerve injury, Radial nerve injury, Medial nerve injury, Ulnar nerve injury, Femoral nerve injury, Sciatic nerve injury.
- 2 .Neuromuscular disorders: Poliomyelitis, Myopathies , Leprosy, Cerebral palsy

Books Recommended

1. Jayant Joshi and P Kothwal.Essential Orthopaedics and applied physiotherapy – India,Elsevier, 1999 (Reprint-2008,ISBN-978-81-8147-215-1)
2. David Hamblen, Hamish Simpson. Adams's outline of fractures- 12th ed, Philadelphia. Churchill Livingstone, 2007(ISBN-13: 978-0-443-10297-4, ISBN-10: 0-443-10297-X)
3. David Hamblen , Hamish Simpson Adams's outline of orthopaedics. Churchill Livingstone, 2009, (ISBN-13: 978-0-7020-3061-1,ISBN-10: 0-7020-3061-9)
4. J. Maheswari. Essential Orthopaedics, 3rd ed,New Delhi,Mehta Publishers,2002(ISBN:81-88039-00-04)
5. David J. Magee, Orthopedic Physical Assessment,; 5th Revised ed, London, Saunders, 2008, (ISBN-10: 0721605710 ,ISBN-13: 9780721605715)
6. Ebnezar.Text book of orthopaedics with clinical exam.Methods in orthopaedics.4th ed, New Delhi, Jaypee Brothers Medical Publishera(P) Ltd.2010.(ISBN:978-81-8448-7442).
7. Ebnezar.Essentials of orthopaedics for physiotherapists. 1st ed,New Delhi, Jaypee Brothers Medical Publishers (P) Ltd.2004.(ISBN:81-8061-114-0).
8. Stuart L Weinstein,Joseph A Buckwalter MD Turek's orthopaedics Principles and Their Application,6th ed,Lippincott Williams and Wilkins,2005(ISBN-10: 0-7817-4298-6,ISBN-13: 978-0-7817-4298-6)
9. Jay Parvizi. Orthopaedic Examination Made Easy. London, Churchill Livingstone.2006(ISBN-10: 0443100012,ISBN-13: 9780443100017)
10. Louis Solomon, David J Warwick. Apley's Concise System of Orthopaedics and Trauma, 3rd Revised ed, London, Hodder Arnold.2003(ISBN-10: 0340809841,ISBN-13: 9780340809846)
11. Fred R.T Nelson, Carolyn Taliaferro Blauvelt.A Manual of Orthopaedic Terminology. 7th Revised ed, St Louis, Mosby, 2007(ISBN-10: 0323045030 ,ISBN-13: 9780323045032)
12. Terry Malone, Thomas McPoil. Orthopedic and Sports Physical Therapy.St.Louis,3rd Revised ed, Mosby ,1997(ISBN-10: 0815158866,ISBN-13: 9780815158868)
13. Ronald McRae. Clinical Orthopaedic Examination, 6e, Churchill Livingstone,2010(ISBN:9780702033933)
14. Graham Apley,Louis Solomon. Physical Examination in Orthopaedics, Hodder Arnold Publications ,1997(ISBN: 13: 9780750617666)
15. Chad Starkey, Jeff Ryan. Evaluation Of Orthopedic And Athletic Injuries ,2nd ed.FA Davis, 2003(ISBN: 13: 978-0-8036-1129-0 ,ISBN-10: 0-8036-1129-3)
16. Pandey .Clinical Orthopaedics Diagnosis, 3rd ed,New Delhi, Jaypee Brothers Medical Publishers(P) Ltd.2009.(ISBN:978-81-8448-7442).
17. Natarajan,Mayilvahanan. Text Book Of Orthopaedics And Traumatology.New Delhi,All India publishers and distributors.

18. Das. Text book of sports medicine. 1st ed, New Delhi, Jaypee Brothers Medical Publishers (P) Ltd. 2009. (ISBN: 81-8061-861-7).

BPT 206 - BIOMECHANICS AND KINESIOLOGY

Course Description: The course introduces to the biomechanical principles related to human movements and causes of movements.

Course Objective: The course enables the students to understand the causes of normal and abnormal movements in human beings.

Unit I

1. Mechanics

1. Definition and general principles.
2. Force, axis, planes, equilibrium, various laws, friction, etc.
3. Introduction to kinesiology
4. Kinetics and kinematics.
5. Human movements and their significance-Analysis, body links, chain system.
6. Mechanics: Laws, simple mechanics, applications etc.
7. Determination of:
 - a. Centre of gravity.
 - b. Resultant force
 - c. Magnitude of friction
 - d. Mechanical advantage of machines.
8. Correlation of muscle and joint with laws of mechanics, force and simple mechanics, force and simple mechanics (levers etc)

2. Gait and posture.

1. Gait

1. Definition and description of normal gait.
2. Determinants of gait.
3. Spatial – temporal parameters.
4. Gait deviations.

2. Posture

1. Definition, types of posture and factors responsible for postural control.
2. Factors responsible for static and dynamic posture.
3. Analysis of posture
4. Abnormal posture.

Unit II

1. Muscle structure and function.

1. Elements of muscle.
2. Types of muscle- Spurt, shunt, tonic and phasic muscles.
3. Factors affecting muscle functions- location, types of joint, sensory receptors etc.
4. Muscle function- mobility and stability
5. Muscle contraction- process, types, load, angular velocity, voluntary control and torque.
Isokinetic exercises

2. Joint structure and function

1. Principles of joint design of human joint. Tissues present in a joint.
2. Description, classification, function, chains, range of motion, injury and disease of joint
3. Axis of motion, plane of movement, degree of freedom, distinguishing features and stability factors of joint.

3. Ligament and tendon mechanics.

1. Structure, composition, and mechanical properties.
2. Muscle tendon properties.

3. Changes with aging, exercise and immobilization in ligaments and tendons.
4. Bone mechanics.
 1. Structure, composition and mechanical properties
 2. Changes with ageing, exercise, and immobilization in bones.

Unit III

1. The shoulder complex.
 1. Structural components and their significance.
 2. Articular surface, ligaments, accessory joint structures and range of motions,
 3. Contributions of each joint in mobility of shoulder complex
 4. Articulation – mobility and stability factors.
 5. Scapulthoracic rhythm
 6. Muscles and movements.
 7. Restriction, limitations and deficits and their effects on shoulder functions.
2. The elbow complex
 1. Articulations, joint capsules, ligaments, muscles etc.
 2. Axis of motion, range of motion, muscle action.
 3. Mobility and stability of elbow complex.
 4. Effects of injury and resistance to forces.
3. The wrist and hand complex.
 1. Joints and ligaments of the wrist and hand.
 2. Muscles, movements, range of motion, axis and plane of all movements.
 3. Functional positions of wrist and hand
 4. Prehensions, power, cylindrical, spherical and hook grasp.
 5. Precision, handling, pad to pad, tip to tip, and pad to side prehension.
4. The hip complex.
 1. Articulation, ligaments, movements.
 2. Axis, plane and range of movement.
 3. Tilt, rhythm and contribution of each joint of hip complex.
 4. Pelvic motions rotation, tilt etc.
 5. Reduction of weight on shifting- using cane in weakness and bony deformities
5. The knee complex.
 1. Structural description in details.
 2. Movement- axis, plane, freedom, range etc
 3. Articulations and their contribution in mobility and stability of knee complex.
 4. Weight transfer in normal and abnormal conditions
 5. Effect of injury and other pathological conditions on the knee efficiency.
6. The ankle joint.
 1. Articulations, joint capsules, ligaments, muscles etc.
 2. Axis of motion, range of motion, muscle action.
 3. Mobility and stability of ankle joint.
 4. Effects of injury and resistance to forces.
7. The vertebral column:
 1. Articulations, ligaments, muscles, vertebrae, I.V. disc etc.
 2. Factors of stability and mobility of vertebral column.
 3. Regional structure of cervical, dorsal, lumbar and sacral vertebrae.
 4. Effect of injury or developmental anomalies of vertebrae.
 5. Regional characteristics- curves, rhythms, movements, rotations etc.
 6. Biomechanics of spine.

Books Recommended

1. Pamela K Levangie ,Cynthia C Norkin.Joint structure and Function:A comprehensive analysis .1th ed. Philadelphia F.A. Davis.2206(ISBN:81-8061-693-2)

2. Laura K. Smith, Elizabeth Lawrence Weiss, L. Don Lehmkuhl. Brunnstrom's Clinical Kinesiology, 5th ed, F.A. Davis 1996 (ISBN-13: 978-0-8036-7916-0, ISBN-10: 0-8036-7916-5).
3. Nancy Hamilton, Wendi Weimar, Kathryn Luttgens. Kinesiology: Scientific Basis of Human Motion, 11th ed, McGrawHill publications, 2008. (ISBN: 9780071259514).
4. Nihat Ozkaya, Margerata Nordin. Fundamentals of biomechanics. Equilibrium, motion and deformation. 2nd ed. Springer. 1999 (ISBN: 0-387-98283-3).
5. Margerata Nordin, Victor H. Frankel. Basic biomechanics of muscular and skeletal system. 3rd ed. Baltimore Lippincott Williams and Wilkins. 2001. (ISBN: 0-683-30247-7).
6. John V. Basmajian. Muscles alive: their functions revealed by electromyography. 4th ed. Williams & Wilkins. 1978 (ISBN-13: 9780683004137 ISBN: 0683004131)

BPT 207 - EXERCISE THERAPY II

Course Description: The course introduces to principles of exercise therapy and its application in Physiotherapy practices.

Course Objective: The course enables the students to understand about the various techniques used in exercise therapy and its application.

Unit-I

1. Manual Muscle testing

1. Concept, introduction, significance and limitation of manual muscle testing.
2. Grading systems.
3. Principles and application techniques of muscle testing.
4. Testing positions of various muscles.

2. Muscle re-education

1. Concept, introduction, significance and limitation of re-education.
2. Various reeducation techniques and facilitating methods.
3. Re-education of muscle through grade I-V.
4. ADL-Reduction
5. PNF-Conceptual framework, principles, indications, contraindications, effects and uses

3. Balance and Coordination

1. Review of normal balance and coordination control mechanism.
2. Etiopathogenesis of neuromuscular in-coordination and balance problems.
3. Balance-static and dynamic.
4. Technique for regaining balance
5. Technique for coordination.

4. Motor learning and motor control

1. Introduction to motor learning: Motor skills, Motor performance, Measurement of motor performance.
2. Introduction to motor control theories, Theories, Application, Learning environment, learning of skill. Instruction and augmented feedback. Practice conditions.

Unit II

2. Strength and endurance.

1. Definition, classification and factors affecting strength and endurance.
2. Principles of strength training.
3. Advantages and disadvantages.
4. Physiological aspects of strength training.
5. Methods used for strength training.

6. Clinical examples of strength training.
7. Plyometric training.
8. Endurance training.

Unit III

1. Gait

1. Centre of gravity and line of gravity in detail
2. Normal gait-Definition, description, alignments of joints, alignment of LOG and COG in all phases,
Muscle work, ROM changes, determinants, time and distance parameters, gait deviations, types, assessments, aetogenesis and management.

2. Posture

1. Definition, classification and normal control mechanism.
2. Abnormal posture-types, assessment, aetogenesis and management.

3. Walking aids

1. Definition and classification
2. Preparation and measurement
3. Application
4. Advantages and disadvantages
5. Clinical examples with their uses.

Unit IV

1. Soft tissue mobilization

1. Principles and classification
2. Indications, contraindication and uses.
4. Effects and uses
5. Precautions

Unit V

1. Traction

1. Rationale.
2. Indications and contraindications.
3. Techniques.
4. Effects and uses

2. Vibration

1. Rationale.
2. Indications and contraindications.
3. Techniques.
4. Effects and uses

3. Manual Therapy.

1. Joint Mobility-Factors affecting it and general techniques to increase joint mobility
2. General mobilization techniques. Their effects and uses, indication, contraindication and precautions.
3. Various schools of thought of manual therapy (Brief)

4. Mat activities

1. Principles,
2. Application.
3. Effects and uses.

5. Gymnasium:

- Introduction to the gym equipments
- Types of Gym & gym equipments

Placement and setup of gym equipments

Books Recommended

1. Margaret Hollis, Phyl Fletcher-Cook. Practical exercise therapy 4th ed.- India, Blackwell Scientific Publications. (ISBN: 0-632-04973)
2. John V Basmajian, Wolf. Therapeutic Exercises. 4th ed. Lippincott Williams and Wilkins. 1984. (ISBN-13: 9780898746419 ISBN: 0898746418)
3. Carolyn Kisner, Lynn Allen Colby. Therapeutic Exercise: Foundations and Techniques, 5th ed. FA Davis, 2007 (ISBN-13: 978-0-8036-1584-7, ISBN-10: 0-8036-1584-1)
4. Susan B O'Sullivan, Thomas J Schmitz. Physical rehabilitation. Assessment and treatment. 5th ed. FA Davis (ISBN-9780803612471)
5. A.G.K. Sinha. Principles and practices of therapeutic massage 2nd ed. Jay Pee Publications, New Delhi. 2010 (ISBN: 978-81-8448-831-9)
6. Voss. Voss & Knott's Proprioceptive Neuromuscular Facilitation. Lippincott Williams & Wilkins, 1991. (ISBN-10: 0397548605 ISBN-13: 978-0397548606)
7. Susan S Adler, Dominiek Beckers, Math Buck. PNF in practice, An illustrated guide. 3rd ed. Springer. 2008 (ISBN: 978-3-540-73901-2)
8. Gardiner M.D. The Principles of Exercise Therapy. India. CBS, 2005. (ISBN: 9788123908939).
9. Pamela K Levangie, Cynthia C Norkin. Joint structure and Function: A comprehensive analysis 1th ed. Philadelphia F.A. Davis. 2206 (ISBN: 81-8061-693-2)
10. Florence Peterson Kendall, Elizabeth Kendall McCreary, Muscles: Testing and Function, with Posture and Pain, 5th ed. Lippincott Williams and Wilkins. 2005 (ISBN-10: 0-7817-4780-5 ISBN-13: 978-0-7817-4780-6)
11. Michelle H. Cameron. Physical Agents In Rehabilitation: From Research To Practice. 3rd ed. Saunders. 2008 (ISBN: 9781416032571)
12. Helen Hislop, Jacqueline Montgomery. Daniels and Worthingham's muscle testing. 8th ed Saunders. 2007. (ISBN-13: 978-1-4160-6617-0)

BPT 208- ELECTROTHERAPY II

Course Description: The course introduces to principles of electrotherapeutics and its application in physiotherapy practices.

Course Objective: The course enables the students to understand about the various electrotherapy modalities used in physiotherapy and its application

Unit I

1. Low frequency currents

1. A brief overview of nerve muscle physiology
2. Concept and introduction to AC, DC and modified currents such as ultrareiz, didynamic.
3. Production of all of all type of low frequency currents.
4. Physiological and therapeutic effects low frequency currents
5. Indications and contraindications techniques and parameters of muscle testing and treatment by all types of low frequency currents
6. Specialized techniques like Faradic foot bath, Faradism under pressure, iontophoresis and muscle re-education
7. Electro diagnosis -FG Test, SD Curve

2. TENS

1. Theories of pain and its control
2. Effects and uses of TENS.

3. Indications and contraindications
 4. Dosimetry
 5. Dangers and precautions
 6. Techniques
3. Medium frequency currents
1. Introduction and principles
 2. Physiological, therapeutic effects and uses
 3. Indications and contraindications
 4. Dosimetry
 5. Dangers and precautions
 6. Techniques

Unit II

1. High frequency therapy
 1. Short wave diathermy
 1. Definition and classification
 2. Physiological and therapeutic effects and uses
 3. Indications and contraindications
 4. Dosimetry
 5. Dangers and precautions
 6. Techniques
 2. Micro wave diathermy
 1. Definition and classification
 2. Physiological and therapeutic effects and uses
 3. Indications and contraindications
 4. Dosimetry
 5. Dangers and precautions
 6. Techniques
 3. Long wave diathermy

Unit III

1. Ultrasound
 1. Definition and classification
 2. Physiological and therapeutic effects and uses
 3. Indications and contraindications
 4. Dosimetry
 5. Dangers and precautions
 6. Techniques
2. Advanced Electrotherapy:
 1. Computerization of modalities
 2. Combination of different modalities.
 3. Progression of parameters.
 4. Selection and combination of parameters.
 5. Combination therapy
 1. Principles
 2. Uses and indications of ultrasound with electrotherapy.
 3. Uses and indications of laser with electro therapy
 4. Uses and indications of ultrasound with laser and electro therapy.
 5. Uses and indications of microwave with traction.
 6. Shock wave therapy

Books Recommended

1. Jhon Low, Ann Reed Electrotherapy Explained: Principles and Practice 4th ed .Butterworth Heinmann.2006(ISBN:10:0750688432,ISBN:13-978-0-7506-8843-7)
2. S.Kitchen, Bazin .Clayton's Electrotherapy, 10th ed, London,W.B. Saunders1995 (ISBN 07020 1762 0374.)
3. Justus F. Lehmann Lehmann .Therapeutic heat and Cold. 4th ed .Williams & Wilkins. 1990(ISBN- 10: 0683049089,ISBN-13: 978-0683049084)
5. Joseph Kahn .Principles and Practice of Electrotherapy. 4th ed. Churchill Livingstone, 2000. (ISBN-10: 0443065535 ISBN-13: 978-0443065538)
6. Steven L. Wolf. Electrotherapy. Churchill Livingstone (ISBN-10: 0443081468,ISBN-13 9780443081460)
7. JhonLow , Ann Reed .Physial Principles Explained,Butterworth-Heinemann, 1994.(ISBN 0750607483)
8. Nelson Currier. Clinical Electrotherapy Mcgraw-hill/appleton & Lange,1978 (ISBN: 0838512623 ISBN-13: 9780838512623, 978-0838512623)
9. Meryl Roth Gersh Electrotherapy in Rehabilitation. F. A. Davis Company1992 (ISBN-10: 0803640250 ISBN-13: 978-0803640252)
10. Susan L. Michlovitz Thermal agents in Rehabilitation 3rd edition, F. A. Davis, 1996 (ISBN-10: 0803600445, ISBN-13: 978-0803600447)

BPT 209P- CLINICAL VIVA I (BPT 201, BPT203, BPT204)

The students will be assessed about their understanding of practical aspects taught in BPT 201 and history taking, evaluation, medical and surgical treatment plann for patients of relevant diseases and disorders taught in BPT 203, BPT 204

BPT 210P- CLINICAL VIVA II (BPT 205)

The students will be assessed about history taking, evaluation and treatment planning for patients of relevant diseases and disorders taught in BPT 205.

BPT 211P- EXERCISE THERAPY II PRACTICAL

Unit I

1. Manual Muscle testing
 1. Grading Systems
 2. MMT of muscles around, Shoulder, Elbow, Wrist and hand, Hip, Knee Foot and Ankle, Trunk, Face
2. Muscle re-education
 1. Techniques
 2. Equipments
3. Muscle Strength Training.
 1. Different protocols of strength training
 2. Calculation of repetition maximum
 3. Methods to measure changes in muscle response in to muscle strengthening
 4. Plyometric training
4. Endurance training
 1. Techniques
 2. Application.
5. Balance and Coordination
 1. Assessment of balance and coordination
 2. Methods to improve balance and co-ordination.
6. Proprioceptive neuromuscular fecilitation (PNF)
 1. Patterns

2. Techniques

Unit II

1. Gait

1. Observational gait analysis
2. Methods to study temporal and spatial parameters
3. Assessment of gait deviations and its management.

2. Posture

1. Analysis
2. Correction of abnormal posture.

3. Walking aids

1. Measurement of walking aids
2. Pre-training
3. Training
4. Precautions

Unit III

1. Hydrotherapy

1. Patient preparation and Operational skills.

2. Soft tissue mobilization

1. Techniques and application
2. Patient preparation
3. Precautions

Unit IV

1. Traction

1. Different methods of traction application
2. Dosimetry

2. Manual Therapy: Joint Mobilization Techniques (Glides)

1. Shoulder
2. Elbow
3. Wrist and hand
4. Hip
5. Knee
6. Ankle and foot.

3. Therapeutic Gymnasium:

1. Introduction to various equipments used in gymnasium and its operation.

4. Mat activities

1. Techniques
2. Application.

Books recommended

1. Margaret Hollis, Phyl Fletcher-Cook. Practical exercise therapy 4th ed.- India, Blackwell Scientific Publications. (ISBN:0-632-04973)
2. Carolyn Kisner, Lynn Allen Colby. Therapeutic Exercise: Foundations and Techniques, 5th ed. FA Davis, 2007 (ISBN-13: 978-0-8036-1584-7, ISBN-10: 0-8036-1584-1)
3. Susan B O'Sullivan, Thomas J Schmitz. Physical rehabilitation. Assessment and treatment. 5th ed. FA Davis (ISBN-9780803612471)
4. A.G.K. Sinha. Principles and practices of therapeutic massage 2nd ed. Jay Pee Publications, New Delhi. 2010 (ISBN:978-81-8448-831-9)
5. Voss, Voss & Knott's Proprioceptive Neuromuscular Facilitation. Lippincott Williams & Wilkins, 1991. (ISBN-10: 0397548605 ISBN-13: 978-0397548606)

6. Susan S Adler, Dominiek Beckers, Math Buck. PNF in practice, An illustrated guide. 3rd ed. Springer. 2008 (ISBN: 978-3-540-73901-2)
7. Gardiner M.D. The Principles of Exercise Therapy. India. CBS, 2005. (ISBN: 9788123908939).
8. Pamela K Levangie, Cynthia C Norkin. Joint structure and Function: A comprehensive analysis 1th ed. Philadelphia F.A. Davis. 2006 (ISBN: 81-8061-693-2)
9. Florence Peterson Kendall, Elizabeth Kendall McCreary, Muscles: Testing and Function, with Posture and Pain, 5th ed. Lippincott Williams and Wilkins. 2005 (ISBN-10: 0-7817-4780-5 ISBN-13: 978-0-7817-4780-6)
10. Michelle H. Cameron. Physical Agents In Rehabilitation: From Research To Practice. 3rd ed. Saunders. 2008 (ISBN: 9781416032571)
11. Helen Hislop, Jacqueline Montgomery. Daniels and Worthingham's muscle testing. 8th ed Saunders. 2007. (ISBN-13: 978-1-4160-6617-0)

BPT 212P - ELECTROTHERAPY II PRACTICAL

1. Demonstration of electrical modalities functioning and usage
2. Demonstration and practice of various motor points' stimulations
3. Demonstration and practice of therapeutic application of different low frequency currents.
4. Demonstration and application of reaction of degeneration, SD curves plotting.
5. Demonstration and practice of the therapeutic application the following modalities:
 - a) Shortwave diathermy
 - b) Ultrasound
 - c) Electrical muscle stimulator
 - d) Interferential currents
 - e) TENS
 - f) Ultraviolet rays
 - g) Infrared rays
 - h) Microwave

BPT 301 - CARDIOPULMONARY MEDICINE AND SURGERY

1. Brief anatomy and physiology of cardiovascular system.
2. Methods of evaluation and investigation of cardiovascular diseases e.g. auscultation, ECG, Echocardiography, TMT etc.
3. Cardiovascular system diseases
Definition, Aetiopathogenesis, investigation, clinical features, assessment and management of the following conditions: Congenital heart diseases: ASD, VD, PDA, Fallot's tetralogy Ischemic heart diseases, Cardiac failure, Rheumatic fever, Hypertension, Endocarditis, Cardiac muscle disorder, Cardiac neoplasm, Peripheral vascular diseases.

Unit II

1. Brief anatomy and physiology of pulmonary system.
2. Methods of evaluation and investigations of pulmonary diseases e.g. radiograph, auscultation, PFT, ABG etc.
3. Pulmonary system diseases and disorders. COPD, Obstructive pulmonary diseases, Infections, Neoplasm, Interstitial pulmonary diseases, Diseases of nasopharynx, larynx and trachea, Diseases of pleura, diaphragm and chest wall, chest deformities, Respiratory failure.

Unit III

1. Introduction: Types of incision, pre and post operative assessment, management and Complications of cardiothoracic surgery.
2. Cardiac surgery: Indication, contraindications, incision, pre and post operative management and complications of the following: Valvotomy and valve replacement. Open heart surgery/ cardiac bypass surgery, Surgery on pericardium & Heart transplantation Operations of congenital disorders, Pacemaker implantation & Coronary angioplasty. Balloon angioplasty and vascular surgery, Surgery of arteries and veins.
3. Thoracic surgery:
 - a) Clinical features and management of: Rib fracture, Flail chest. & Stove in chest, Pneumothorax & Haemothorax, Lung contusion and laceration, Injuries to vessels and bronchus.
 - b) Site of incision, pre and post operative management and complications and their management of Lobectomy, Pneumonectomy, segmentectomy, Pleuro-pneumonectomy, Thoracoplasty, Decortication, thoracotomy and tracheostomy.
 - c) Carcinoma of lung
4. Describe the following in details: Management of endotracheal tubes, Tracheal suction, weaning the patient from ventilator, Extubation and post-extubation care.
5. Describe the principles of cardiopulmonary resuscitation, cardiac massage, artificial respiration, defibrillators and their use.

Unit IV

1. Emergency medicine: Methods of evaluation and monitoring, Ventilators and medical gas therapy, Effects of anesthesia on cardiopulmonary system, Acute respiratory failure, Acute cardiac failure, CPR

Books Recommended

1. Aaronson, Philip I.; Ward, Jeremy. The Cardiovascular System at a Glance (At a Glance) Blackwell Publishing Ltd (Oxford); 3rd Revised edition 2007 (ISBN-10: 1405150440 ISBN-13: 9781405150446)
2. Varun Bhargava.; Cardiology Clinical Practice, Ganga Publications 1st edition
3. Harrison's Principles of Internal Medicine, 17th Edition : McGraw-Hill
4. Essentials of Clinical Cardiology. By John F. Stapleton. F.A. Davis Company, Philadelphia, 1983
5. Richard Fraser, Nestor Muller, Neil Colman, P. Pare, Fraser And Pare's Diagnosis of Diseases of The Chest, Hardbound, 3504 pages, publication date: JUL-1999, ISBN-13: 978-0-7216-6194-0, ISBN-10: 0-7216-6194-7, SAUNDERS
6. Peter Libby; Robert O. Bonow, Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine, 2-Volume Set , Publisher: Saunders Format: Hardback, 2400 pages Pub Date: 10/2007 ISBN-13: 9781416041078 ISBN-10: 1416041079
7. Joseph G. Murphy; Edited by: Margaret A. Lloyd Mayo Clinic Cardiology: Concise Textbook, Third Edition Publisher: Informa Healthcare Pub Date: 11/2006 ISBN: 9780849390579

BPT 302: PHYSIOTHERAPY IN ORTHOPEDICS AND RHEUMATOLOGY

Unit I

1. Introduction

1. Assessment of the patient
 2. Setting of treatment goals and plans
2. Principles of treating soft tissue bone and joint problems
1. Identifying soft tissue lesions
 2. stages of inflammation and repair
 3. clinical and treatment during acute stage of soft tissue lesions
 4. Clinical and treatment and treatment during sub acute stage of healing
 5. Clinical and treatment during chronic remodeling stage
 6. Recurring pain treatment guidelines.

Unit II

1. General physiotherapy approach towards trauma
2. Effect of therapeutic modalities in various traumatic conditions
3. Classification of fractures and dislocation.
4. Fractures and soft tissue healing.
5. Principals of treatment and complication management of fractures ,dislocations and soft tissue injuries
6. Signs, symptoms, common sites, assessment and physiotherapeutic management of the following:
7. Upper limb trauma: Soft tissue injury, Bony injuries, Joint injuries.
8. Lower limb trauma: Soft tissue injury, Bony injuries, Joint injuries.
9. Spinal trauma
10. Polytrauma: Nerve injury, vascular injury

Unit III

Pre and post operative assessment and management of surgeries like: Arthrodesis and Arthroplasty, Osteotomy, Spinal stabilizations, Limb lengthening and reattachments, Tendon surgeries, Muscle surgeries, Nerve surgeries

Unit IV

1. Developmental disorders of bone; Signs, symptoms, assessment and physiotherapeutic management of the following congenital deformities: CTEV, CDH, Foot arch deformities, Limb deficiency, Arthrogryposis multiplex congenital, Spinal bifida, Sprengel's shoulder, Torticollis, Osteogenesis imperfect, Spinal deformities, Coxavara
2. Signs, symptoms, common sites, assessment and physiotherapeutic management of the following Bone and joint infections; Osteomyelitis, Tuberculosis, Leprosy, Septic arthritics.
3. Signs, symptoms, common sites, assessment and physiotherapeutic management of the following Arthritis; Osteoarthritis, Rheumatoid arthritis, Gout, Psoriatic arthritis, Pseudo gout, Miscellaneous arthritis conditions

Unit V

Review of the condition, assessment, management and treatment goals and plans for the following conditions:

1. Shoulder: Rotator cuff injury, Periarthritis, Adhesive capsulitis, Bursitis etc
2. Elbow; Tennis and Golfers elbow, Recurrent ulnar nerve slipping, Pulled elbow etc
3. Wrist and hand: Ganglion, Dequervians, Trigger thumb and finger, CTS, Dupuytren's contracture, Flexor and extensor tendon injuries, RA hand, Burned hand, Mallet finger
4. Hip : Slipped epiphysis, AVN, Hip OA

5. Knee : Deformities, Osgood schlatter's, Loose bodies, Anterior knee pain, Chondromalacia patella, Bursitis OA Knee
6. Foot and Ankle: Anterior foot pain , Child foot pain , Heel pain , Tarsal tunnel syndrome, Trophic ulcers , OA Foot
7. Spine: Thoracic inlet syndrome , Torticollis, PIVD, Sponylolesthesis, Strain, Lumbar canal stenosis, Spondylitis, Pott's spine, Ankylosing Spondylitis

Unit VI

Review of the condition, assessment, management and treatment goals and plans for the following conditions

1. Peripheral nerve injury: Classification of nerve injury, Brachial plexus, Musculocutaneous nerve injury, Radial nerve injury, Medial nerve injury, Ulnar nerve injury, Femoral nerve injury, Sciatic nerve injury
2. Neuromuscular disorders: Poliomyelitis, Myopathies, Leprosy, Cerebral palsy

Books recommended

1. Orthopedic physical therapy by Donatelli
2. Cash's Text book of Orthopedics and Rheumatology for Physio Therapists Jaypee bros
3. Manual mobilization of extremity joints by Fredy Kaltborn, Maitland.
4. Therapeutic Exercise by Kolby and Kisner
5. Therapeutic Exercises by O'Sullivan
6. taping Techniques – Rose Mac Donald
7. Neural tissue mobilization -Butler.
8. Zulunga et al. Sports Physiotherapy-W.B.Saunders.
9. Brokner and Khan, Clinical sports medicine -McGraw Hill
10. Reed Sports injuries, Assessment and Rehabilitation- W.B. Sounders.
11. Gould: Orthopedic sports physical therapy –M

BPT 303 - PHYSIOTHERAPY IN GENERAL MEDICINE AND SURGERY

Unit I

Etiology, symptoms and signs along with clinical and Physiotherapy management of the following Condition

1. Transplantation: Liver, Kidney
2. Nutritional and metabolic disorders; Balanced diet, Protein caloric malnutrition, Diabetic mellitus, Obesity, Osteoporosis, Other nutritional disorders
3. Physiotherapeutic techniques: Postural drainage, Manual techniques (percussion, vibration, shaking), Breathing exercises
Forced expiratory techniques
 - a) Coughing
 - b) Huffing
 - c) Supported coughing

Unit II

Etiology, symptoms and signs along with clinical and Physiotherapy management of the following conditions

1. Dermatology:Assessment of skin condition, Psoriasis, Leprosy, Syphilis, Acne, Leucoderma, Aplopacia
2. Oncology; Classification and characteristics of common tumors- their complications and management, Mastectomy.
3. AIDS

4. Edema: Definition, types, factors controlling tissue fluid circulation, cause of edema, physiotherapy assessment and management of edema,
5. Inflammation: Signs of inflammation, stages and their physiotherapy management
6. Gangrene: Types and their physiotherapy management

Unit III

Etiology, symptoms and signs along with clinical and Physiotherapy management of the following conditions

1. Paediatric.
Brief overview of General growth pattern, Paediatric assessment and its normal parameters, Birth trauma, Learning disorders (brief), Obesity, Diabetes, Bleeding disorders, Pre term babies with high risk infants, Congenital and acquired structural deformities

Unit IV

Pre and post physiotherapy management and complications and their management of the following Surgeries.

1. General surgery: General scheme of case taking, Incision and its types, Anaesthesia and its complication (brief overview), Hernia – its types and managements, Abdominal surgeries, Nephrectomy, Colostomy, Cystectomy., Colectomy, Prostatectomy
2. Obstetrics and Gynaecology: Clinical anatomy of Pelvic floor, Prenatal and postnatal programs, Relaxation, Postural training, Pelvic floor stretching and strengthening exercises, Physiotherapy during labor, Post natal exercise programme after normal labor /labor with invasive procedures, Uro-genital dysfunction, P.T. Management-Menopause De conditioning, PT. management-common gynecological surgeries, Role of PT clinical reasoning for application of electro therapeutic modalities in obstetric and gynaecological conditions.

Unit V

Review of pathological changes and principles of pre and post operative management by physiotherapy of the following conditions.

1. Wounds: Normal wound healing, Abnormal wound healing and chronic wound, Examination, Evaluation, Diagnosis, Prognosis and Physiotherapy Intervention, Pressure ulcers
2. Burns and Plastic Surgery: Skin anatomy and burn wound pathology, Classification of burn injury, Complication of burn injury, Burn wound healing, Medical and surgical management of burn, Physiotherapy management, Skin graft and flaps

Books Recommended

1. Paz, Jaime C.; West, Michele .Acute Care Handbook for Physical Therapists 3rd edition, Saunders, London
2. Physiotherapy in Gynaecological and Obstetrical conditions by Poldon Jaypee
3. Chest Physiotherapy in intensive care unit – Mackenzie et al Williams and Wilkins.
4. Cash text books of General medical and surgical conditions for physiotherapist Downie Jaypee Brother
5. Tidys Physiotherapy
6. P saunder's manual of physiotherapy
7. Therapeutic Exercise by Kolby and Kisner
8. Therapeutic Exercises by O'Sullivan

BPT 304 - PHYSIOTHERAPY IN SPORTS MEDICINE AND FITNESS

Brief description: This subject provides an opportunity for the study and application of the components of sports medicine including but not limited to: sports medicine related careers, prevention of athletic injuries,

recognition, evaluation, and immediate care of athletic injuries, rehabilitation and management skills, taping and wrapping techniques, emergency procedures, nutrition, sports psychology, therapeutic modalities, and therapeutic exercise.

Unit 1 Sports Medicine Team Members

The student understands what sports medicine is and what the responsibilities are of the various professionals involved. Emphasis to be placed upon:

1. Sports Medicine Team Model
2. Various Sports medicine organizations
3. Athletic training facility and rules of operation

Unit II Introduction to Sports Sciences

1. Nutritional Considerations- Significance of prevent meal and eating disorders
2. Protective Sports Equipment-Relevance of protective equipments in sports
3. Environmental Factors & Sports Performance-Climatic variations and sports performance
4. Body Composition & Sports Performance: Concept and significance of various body composition techniques in sports
5. Special Considerations- Female Athlete, Strength and endurance considerations for adolescent non athletic population

Unit III Preventive Aspects of Sports Injury

Injuries occur and successful rehabilitation is significant to achieve sporting excellence. Emphasis to be placed upon:

1. Different causes for sports injury
2. Principles of training, methods and exercise prescription
3. Exercise consideration Special Population : Hypertension, Diabetes Mellitus and other life style disorder
4. Basic Concept of periodization in sports
5. Preparticipation Athlete Evaluation
6. Therapeutic and preventive interventions- Taping, Sports Massage Bandaging and wrapping techniques, Cryotherapy etc.
7. Emergency Care & On field Injury Assessment and management
8. Psychological Aspects of Sports Injury

Unit IV Sports Traumatology and Management

1. Physiotherapeutic Aims and objectives for an injured athlete
2. Decision making and safe return to play criteria
3. Introduction to sports injury: Common etiology, investigation and diagnosis
4. Common Sports Injuries involving:
 - a. Spine Injury Patterns, Assessment and Management of common spinal injuries in sports
 - b. Shoulder Joint Complex-Rotator Cuff Injuries in throwing athletes, Fractures of GI Joint Complex- Conservative, Surgical Management and Return to sports criteria for different sports, Design of prevention models etc.
 - c. Elbow Joint, Wrist Joint and Hand Complex- Overuse Injuries, Biomechanical Errors, Conservative, Surgical Management and Return to sports criteria for different sports
 - d. Hip, Pelvis and thigh, Knee Joint Complex- Ligamentous and meniscal injury patterns in different sports, Conservative, Surgical Management and Return to sports criteria for different sports injuries

- e. Foot and Ankle joint Complex: Conservative, Surgical Management and Return to sports criteria for different sports

Unit V. An introduction to exercise and sports physiology

1. Cardio respiratory function and performance
 - a. Cardiovascular control during exercise
 - b. Respiratory regulation during exercise
 - c. Cardio respiratory adaptation to training

Unit VI. Ergogenic aids and performance

Unit VII. Physical fitness

- a) Concept of health and physical fitness
- b) Assessment of coordination, speed, accuracy of performance

Books Recommended

1. Taping Techniques – Rose Mac Donald
2. Zuluaga et al. Sports Physiotherapy- W.B.Saunders.
3. Brukner and Khan, Clinical sports medicine McGraw Hill
4. Reed Sports injuries, Assessment and Rehabilitation W.B. Saunders.
5. Gould: Orthopedic sports physical therapy Mosby
6. C Norris Sports injuries Diagnosis and Management
7. Principles of athletic training- William Prentice
8. Rehabilitation techniques in Sports medicine- William Prentice
9. Psychological dynamics of Sports Exercise- Diane L.Gill, Kavon Williams, Human Kinetics
10. Textbook of Medical Physiology- Arthur Guyton (Mosby)
11. Review of Medical Physiology - Ganong
12. Principles of Anatomy and Physiology Tortora 7 Grabowski -Harper Collin
13. Physiology of sport and Exercise. Jack H. Wilmore

BPT 305 - BIOENGINEERING AND BUSINESS ADMINISTRATION

SECTION A: BIOENGINEERING

1. Introduction: Definition, Terminology, Basic principles, Materials used.
2. Psychological aspects of prosthesis and orthosis
3. Prescription of orthosis
4. Indications, check outs and details of upper limb orthosis
5. Indications, check outs and details of lower limb orthosis
6. Indications, check outs and details of spinal orthosis.
7. Prescription of prosthesis
8. Indications, check outs and details of upper limb prosthesis.
9. Indications, check outs and details of lower limb prosthesis.
10. Foot wear modification
11. Design and construction of adaptive devices. (Brief)
12. Amputations.
 1. Classification.
 2. Indication and contraindication.
 3. Techniques.
 4. Preoperative and postoperative treatment
 5. Complication, prevention of complications and treatment.

SECTION B: BUSINESS ADMINISTRATION

1. General Administration
 1. Planning and organization, planning cycle, principles of organization Charts, Resources and quality management, planning change
 2. Financial issue including budget and income generation

3. Hospital management: Hospital organization, Staffing, Information communication and coordination with physiotherapy, Services of hospital, Cost of service, Monitoring, Evaluation
2. Self Management: Preparing for first job, Time management, Career development, Sale of goods and services, Profession of services and advertising
3. Administration of the Department:
 1. Describe methods of administration in a Physiotherapy department
 - a. Records their purpose e.g. attendance, statistics, inventory stock
 - b. Maintenance of records e.g. Methods of community and institutional based department (CBR and IBR)
 - c. Referrals – purposes and types of referral
 2. Administration of the following:
 - a. Store keeping materials, inventory records, purchase ordering petty cash accounting
 - b. General maintenance of equipment, furniture, building costing, of splints/aids, equipment/articles, made in physiotherapy.
 - c. Describe and Demonstrate
 1. Types of correspondence
 2. Methods of filing
 3. Describe methods for care of equipment and materials
 4. Discuss budgeting including items for an annual budget
 5. Discuss considerations for constructions of a new department, and modification of an old department including
 - a. Space requirement
 - b. Allotment of space e.g. suitability for access, plumbing requirements and circulation of air
 6. Plan assessment forms e.g. pre vocational ADL hand function and higher functions for initial evaluation and progress recording.

Books Recommended

1. Hand splitting Wilson-WB Saunders.
2. Atlas of Limb Prosthetics American Academy of Orthopedic surgeon Mosby
3. Atlas of Orthotics – American academy of orthopedic surgeon mosby
4. Krusen's Handbook of Physical medicine and rehabilitation Kottke and Lehman W.B. Saunders.

BPT 306P - PHYSIOTHERAPY IN ORTHOPEDICS AND RHEUMATOLOGY PRACTICAL

The students will be shown patients of relevant diseases and disorders for:

1. History taking of the conditions of patients.
2. All the basic physiotherapeutic intervention pertaining to the subject
3. Evaluation and physiotherapy treatment: its presentation and documentation of all the conditions listed in BPT 302

BPT 307P - PHYSIOTHERAPY IN GENERAL MEDICINE AND SURGERY PRACTICAL

The students will be shown patients of relevant diseases and disorders for:

1. History taking of the conditions of patients.

2. All the basic physiotherapeutic intervention pertaining to the subject
3. Evaluation and physiotherapy treatment: its presentation and documentation of all the conditions listed in BPT 303

BPT 308P - PHYSIOTHERAPY IN SPORTS MEDICINE AND FITNESS PRACTICAL

1. Taping techniques and procedures for joints-Therapeutic and Prevent
 - a) Shoulder Joint Complex
 - b) Elbow Joint Complex
 - c) Knee Joint Injuries
 - d) Ankle Joint Injuries
2. Preparticipation Screening and Evaluation for athletes of different sporting backgrounds
3. Assessment of Body Composition:
 - a) Skinfold Measurement with Herpenden Skinfold Caliper
 - b) Determination of Body Frame and size
 - c) Determination of Fat Free Mass using Bioelectrical Impedance analysis
4. Differentiation between characteristics of footwear with respect to sports-Running Shoe, training shoe, walking shoe and prescriptive strategies.
5. Prepare an assessment and exercise prescription plan for injured athletes.
6. Assessment of Health Related and skill related Fitness:
 - a. Agility- Ilionais Agility Test, 505 Agility Test, ZigZag Test, Figure of 8 test, Line drill and 3-cone drill test, Edgren Side Step test etc.
 - b. Mobility and balance: Modified Sit and reach test, Standing Stork test, Static Flexibility test- Ankle, Hip and Trunk, Shoulder etc., Functional Balance Test
 - c. Strength and Power Testing: Hand Grip strength test, Biceps Curl test, Squats test, Carioca Drill Test, Hexagon Test
 - d. Coordination testing in sports
 - e. Reaction time test
 - f. Aerobic Endurance Testing
 - g. Lower Extremity Anaerobic Power Testing- Lower Extremity Functional test, 300m Sprint, running based anaerobic test
 - h. Upper Extremity Testing: Functional Throwing performance index (FTPI), SidearmMedicine ball throw, Medicine Ball toss

BPT 309P - CLINICAL VIVA III (BPT301)

The students will be assessed about history taking, evaluation and treatment planning for patients of relevant diseases and disorders taught in BPT301

BPT 401- RESEARCH METHODOLOGY, BIOSTATISTICS AND ETHICS

Course Description: This course involves description of principles for conducting research and ethics for dealing with patients.

Course Objective: The students will be able to understand the principles of research, biostatistics and follow the ethical principle for treating the patients.

SECTION A: RESEARCH METHODOLOGY

Unit I

- A. Introduction: Importance of research in physiotherapy, Research ethics, Clinical issues in research, elements of informed consent, Structure of research proposal
- B. Research methodology, Research problems, questions and hypotheses, Review of literature, Measurement; Principles of measurement reliability and validity, Experimental sampling and design, Descriptive research

Unit II

Biostatistics - Definition and Scope - Collection of Data - Sampling methods - Variable: Discrete and continuous. Presentation of Data: Classification and tabulation. Diagrams and graphs: Bar, pie, Histogram, line graph - Concept of statistical population and sample characteristics of frequency distribution.

Unit II

Measures of Central tendency: Mean, Median, Mode & Weighted Arithmetic Mean - Measures of Dispersion: Range, Quartile deviation, Mean deviation & Standard deviation - Correlation and Regression.

Unit III

Test of significance, T-test, chi square test, test homogeneity, ANOVA

SECTION B: ETHICS

1. History of physiotherapy
2. Philosophy of physiotherapy
3. Major ethical principles applied to moral issues in health care
4. Rules of professional conduct and scope of practice
5. Relationship with patient
6. Relationship with the profession
7. Confidentiality and responsibility
8. Professional and government licensing accreditation and education standards.
9. Laws and legal concepts
10. Outline legal aspects related to rehabilitation
 1. Medico legal cases
 2. Workman compensation

3. Insurance facilities other financial benefits available for the disability
 4. Law protection from malpractice claim
 5. Consumer protection act. Liability and documentation
11. Constitution and functions of the Indian association of Physiotherapists
 12. Functioning of the World Confederation of Physical therapy (W.C.P.T and its various branches special interest groups (brief)
 13. Role of WHO and WCPT.
 14. Outline safety precautions in Physiotherapy.

Books recommended

1. Mahajan BK .Methods in Biostatistics Edn: 7th ed. Jaypee Brothers Medical Publishers (P) Ltd 2010. ISBN: 978-81-8448-713-8
2. Irfan A Khan, Atiya Khanum. Fundamentals Of Biostatistics edn:4th Ukaaz. Publications
3. Carolyn M. Hicks Research Methods for Clinical Therapists: Applied Project Design and Analysis edn.1st 2009, Churchill Livingstone ISBN13: 9780702029981
4. Physical Rehabilitation Assessment and Treatment- Sullivan and Schnitz F.A. Davis.
5. Krusen's Handbook of Physical medicine and rehabilitation Kottke and Lehman w.B. Saunders.
6. Tidys Physiotherapy

BPT 402 - PHYSIOTHERAPY IN CARDIOPULMONARY CONDITIONS

Course description: This course involves a description of the assessment and treatment of patients with cardio pulmonary conditions

Course objectives: The student will be able to conduct a safe and effective treatment of patient with cardio pulmonary conditions

Unit I (PHYSIOTHERAPY TECHNIQUES)

- A. Review of basic anatomy and physiology of cardiovascular and pulmonary system.
- B. Principles and techniques of physiotherapy in diseases of cardiovascular and pulmonary origin.
 1. Breathing exercises
 2. Inspiratory muscle training
 3. PNF respiration.
 4. Humidification and aerosol therapy
 5. Ventilators
 6. Airway clearance devices
 - a. Flutter
 - b. Thera PEP
 - c. Acapella
 - d. High frequency chest wall oscillation (HFCWO)
 - e. Intrapulmonary percussive ventilation (IPV)
 - f. Insufflation /exsufflation- assisted cough
 - g. IPPB

7. Airway clearance techniques
 - a. Postural Drainage & Manual Techniques
 - b. ACBT
 - c. AD
 - d. Manual and Ventilator Hyperinflation
 - e. Suctioning

8. Selection of airway clearance technique

9. Positioning and Mobilization

Unit II (CARDIOVASCULAR PHYSIOTHERAPY)

A. Assessment of cardiovascular system

B. Investigative procedures

C. Cardiac rehabilitation and secondary prevention

D. Etiopathogenesis, clinical and physiotherapy management of the following conditions.

- a. Congenital heart diseases: ASD, VD, PDA, Fallot's tetralogy
- b. Ischemic heart diseases
- c. Cardiac failure
- d. Rheumatic fever
- e. Hypertension
- f. Endocarditis
- g. Cardiac muscle disorder
- h. Cardiac neoplasm
- i. Peripheral vascular diseases.

Unit III (PULMONARY PHYSIOTHERAPY)

A. Assessment of pulmonary system

B. Pulmonary rehabilitation

C. Investigative procedures

D. Etiopathogenesis, clinical and physiotherapy management of the following conditions

- a. Obstructive pulmonary diseases
- b. Infections
- c. Neoplasm.
- d. Interstitial pulmonary diseases
- e. Diseases of nasopharynx, larynx and trachea.
- f. Diseases of pleura, diaphragm and chest wall
- g. Chest deformity

Unit IV (PHYSIOTHERAPY IN CARDIOVASCULAR AND PULMONARY SURGERIES)

Introduction, Types of incision, pre and post operative assessment, management and complications of cardiothoracic surgery

A. Cardiac surgery: Indication, contraindications, incision, pre and post operative management and complications of the following:

- a. Valvotomy and valve replacement.
- b. Open heart surgery/ cardiac bypass surgery
- c. Surgery on pericardium
- d. Operations of congenital disorders.
- e. Heart transplantation
- f. Pacemaker implantation
- g. Coronary angioplasty.
- h. Balloon angioplasty and vascular surgery.
- i. Surgery of arteries and veins.

B. Thoracic surgery:

1. Pre and post operative management and complications of:

- a. Rib fracture
- b. Flail chest.
- c. Stove in chest
- d. Surgery of the pleura
- e. Pneumothorax
- f. Haemothorax
- g. Lung contusion and laceration
- h. Injuries to vessels and bronchus.
- i. Lung transplantation
- j. Intercostals catheters (chest tubes)
- k. Lobectomy
- l. Pneumonectomy, segmentectomy
- m. Thoracoplasty
- n. Lung Volume Reduction surgery
- o. VATS

C. Physiotherapy in intensive care unit

- a. Assessment of critically ill patient in the ICU
- b. Monitoring and interpreting medical investigations
- c. Mechanical ventilation: implications for physiotherapy
- d. Respiratory failure
- e. Physiotherapeutic technique used in ICU

D. Cardiopulmonary exercise testing and prescription

Books recommended

1. Pryor, Jennifer A.; Prasad, Ammani S. Physiotherapy for Respiratory and Cardiac Problems: Adults and Paediatrics (Physiotherapy Essentials) 4th edition, 2008, Churchill Livingstone (London)(ISBN-10: 0080449859 ISBN-13: 9780080449852)
2. Downie PA. Cash's Text books of general medical and surgical conditions for physiotherapists, Jaypee Brothers.
3. Downie PA. Cash's Text books of chest heart and vascular Disorders for physiotherapist, Japee Brother.
4. Corne, Jonathan. Chest X-Ray Made Easy (Made Easy) 3rd Revised edition, 2009, Churchill Livingstone (London)(ISBN-10: 0443069220 ISBN-13: 9780443069222)

5. Hampton, John R .The ECG Made Easy, 2008, Churchill Livingstone (London)(ISBN-10: 0443068178 ISBN-13: 9780443068171)
6. West, John B. Pulmonary Physiology and Pathophysiology: An Integrated, Case-based Approach, Lippincott Williams and Wilkins (Philadelphia); 2nd Revised edition,
7. ACSM Guidelines for Exercise testing and Prescription ACSM Williams and Wilkins.
8. Cash text books of General medical and surgical conditions for physiotherapist Downie Jaypee Brother
9. Donna Frownfelter & Elizabeth dean.Cardiovascular and pulmonary physical therapy evidence andpractice, 4th edn. Mosby.
10. Smith, Mandy; Ball, Valerie Cardiovascular/Respiratory Physiotherapy 1998, Mosby (London), ISBN-10: 0723425957 ISBN-13: 9780723425953)
11. Porter, Stuart. Tidy's Physiotherapy (Physiotherapy Essentials), 14th revised edition, 2008 Churchill Livingstone (London); (ISBN-10: 0443103925, ISBN-13: 9780443103926)

BPT 403 - PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS

Unit I

1. Neurological Assessment and Neurophysiotherapy techniques
 1. Review of basic neuroanatomy and neurophysiology
 2. Assesment of CNS
 3. Assessment of PNS
 4. Examination of higher Functions.
 5. Electrodiagnostic procedures (Brief)
 6. Paediatric neurologic assessment
2. Approaches in neurological rehabilitation.
 1. NDT.
 2. Bobath.
 3. Roods.
 4. PNF
 5. Motor relearning programme.
 6. Biofeedback

Unit II

Aetiopathogenesis, Clinical manifestations and management of

1. Neuromuscular Diseases
 1. Motor-neuron diseases.
 2. Disorders of peripheral nerves.
 3. Disorders of cranial nerves.
 4. Myopathies.
 1. Inflammatory Myopathies
 2. Muscular dystrophy
 3. Spinal Muscular Atrophy
 5. Disorders of muscle characterized by cramps, spasm and pain.
2. Infections Disorders of Nervous system.
 1. Encephalitis
 2. Meningitis.
 3. Transverse myelitis.
 4. Poliomyelitis
3. Demeylinating disorders of CNS.
 1. Multilpe Sclerosis
4. Neoplasm of Nervous system.
 1. Brain Tumor
 2. Spinal Tumors.

5. Congenital and Developmental anomalies of nervous system.
 1. Neural tube defects and hydrocephalus.
 2. Malformations of nervous system.
 3. Congenital Myopathies
6. Metabolic, toxic and hereditary disorders of nervous system
 1. Nutritional deficiencies.
 2. Toxin and drug induced nervous system damage
7. Cerebellar Disorders.
 1. Hereditary
 2. Acquired
8. Movement disorders
 1. Athetosis.
 2. Chorea
 3. Hemiballismus
 4. Tremors
9. Cerebrovascular accident.
10. Spinal cord Injury.
11. Traumatic brain injury.
12. Cerebral Palsy.
13. Vestibular disorders.
14. Disorders of autonomic nervous system.
15. Pain Management.
16. Neurocutaneous syndrome.
17. ICU management of neurologically impaired.
18. Pre and post-operative physiotherapy management of:
 1. Nerve repair.
 2. Tumor Surgery of brain and spinal cord.

Unit III

1. Principles of physiotherapy management of psychiatric patients.
2. Physiotherapy management of psychiatric patients.

Books Recommended:

1. Cash's text book for Physio Therapist in Neurological Disorders – Jaypee bros Publication
2. Proprioceptive Neuro Muscular facilitation by Herman Kabat
3. Practical physical therapy Margaret Hollis
4. PNF in Practice by Alder and Alder
5. Therapeutic Exercise by O'Sullivan
6. Right in the Middle by Patricia Davis
7. Stroke Rehabilitation by Nervous system.
8. Restoration of Motor functions in stroke patient: A physiotherapist approach Johnstone Churchill Livingstone

BPT 404 - PHYSIOTHERAPY IN COMMUNITY BASED REHABILITATION

Course description: The course introduces to concept on preventive and rehabilitative aspects in community.

Course objectives

1. Concept of team approach in rehabilitation
2. Formulation of appropriate goals in treatment and rehabilitation in the community

Unit I Community Medicine

1. Introduction to community medicine
2. Concepts of Health & Illness
3. Healthcare system
4. Screening for a health conditions

Unit II: Preventive medicine and Public Health practice

1. Communicable diseases
2. Maternal and child health (MCH)
3. Geriatrics
4. Disaster Management
5. Concept & philosophy of public health
6. Public health law and concept of social security
7. International health and role of international agencies.

Unit III: Health Education

1. Health Education:
2. Role of health education in rehabilitation services

Unit IV: Community Rehabilitation

1. Disability and Rehabilitation
2. Introduction to Rehabilitation Medicine
3. Rehabilitation
 - a. Multidisciplinary approach
 - b. Rehabilitation approaches
 - c. Socio-legal aspects Rehabilitation
 - d. National and international agencies in rehabilitation
 - e. Barriers in rehabilitation
 - f. Community Based Rehabilitation
 - g. Vocational Rehabilitation
4. Rehabilitation in special cases:
 - a. Visual, Speech, Communication & Hearing impairment.
 - b. Physically challenged.
 - c. Mentally challenged.
 - d. Psychiatry & De-addiction Syndromes.
 - e. Behavior and Learning problems.
 - f. Role of Telerehabilitation & Assistive technology
 - g. Geriatric rehabilitation
 - h. Paediatric rehabilitation

Unit V: Occupational Health & Ergonomics

- a. Occupational hazards
- b. Occupational Stress & Work management
- c. Returning the worker to productivity

d. Occupational Ergonomics

BPT405 - ENVIRONMENTAL SCIENCES

Unit I

Environmental Pollution

Definition, causes, effect and control measures of pollution [air, water, soil, marine, oil, thermal, radiation, heavy metal, gases particulate matter, pesticide, solid waste (urban and rural), solvents, drugs and noise.

Unit II

Absorption, Distribution, Elimination and Organ Toxicology

Membrane coefficient, Mechanism of absorption, Rate of penetration, Routes of absorption of toxicants in human (oral, pulmonary, dermal) Air-water, Octanol-water, Lipid-water, Particle-water partitioning, Renal, Hepatic, Respiratory. Alimentary, Dermal, Cellular, Sex linked elimination of toxicants, Target organ toxicity (Hepato, Neuro, Nephro, Reproductive)

Unit III

Bioaccumulation, Biomagnification, Biodegradable & non biodegradable substances, Acute and chronic toxicity, Dose- response relationship, LD 50 & LC 50, Environmental, Forensic, Food, Clinical toxicology, Food additives, Indoor and outdoor pollutants, Occupational hazard, Biological warfare and chemical warfare, Infectious and medical waste, Drugs of abuse, pollutants in cosmetics, Additive, synergistic, Antagonistic effects.

BPT406P - PHYSIOTHERAPY IN CARDIOPULMONARY CONDITIONS PRACTICAL

Course description: This course involves a description of the assessment and treatment of patient with cardio pulmonary conditions

Course objectives: the student will be able to conduct a safe and effective treatment of patient with cardio pulmonary conditions

1. The students will be shown patients of relevant diseases and disorders for:
 - a) History taking of the conditions of patients.
 - b) All the basic physiotherapeutic intervention pertaining to the subject
 - c) Evaluation and physiotherapy treatment: its presentation and documentation of all the conditions listed in BPT 402
2. Demonstration, application and Interpretation of ECG
3. Interpretation of arterial blood gas disorders
4. Demonstration, application and Interpretation of PFT
5. Demonstration, application and Interpretation of chest x-ray
6. Demonstration, and Interpretation of auscultation: breath sounds, added sounds, vocal resonance, heart sounds
7. Demonstration and application airway clearance techniques

8. Demonstration and application of airway clearance devices
9. Demonstration and application techniques of breathing exercises
10. Demonstration setting up of invasive and non invasive ventilators
11. Demonstration and practice of various cardiopulmonary exercise testing and prescription
12. Demonstration and application of monitoring devices in ICU
13. Demonstration and interpretation of cardiopulmonary exercise testing

BPT407P - PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS PRACTICAL

The students will be shown patients of relevant diseases and disorders for:

1. History taking of the conditions of patients.
2. All the basic physiotherapeutic intervention pertaining to the subject
3. Evaluation and physiotherapy treatment: its presentation and documentation of all the conditions listed in BPT 403

BPT408P - PHYSIOTHERAPY IN COMMUNITY BASED REHABILITATION PRACTICAL

Students will visit community based rehabilitation centre, leprosy centres, primary health care centres, polio centres, old age homes and various other rehabilitation centres

The students will be shown patients of relevant diseases and disorders for:

1. History taking of the conditions of patients.
2. All the basic physiotherapeutic intervention pertaining to the subject
3. Evaluation and physiotherapy treatment: its presentation and documentation of all the

Conditions listed in BPT 404

BPT409P - PROJECT WORK

Course Objective: This will give the students a background on research methods and recent advances
Course Content: Project will be a clinical assignment on given topic or condition. This may be done in the form of a literature review.

Examination: Students will present their project in front of internal and external examiners followed by viva-voice

CLINICAL TRAINING II

Course Objective: the students will be able to conduct assessment diagnosis, goal formulation, treatment plan formulation, and execution of therapeutic skills

Course Content: the students will be posted in the department of physiotherapy and they will learn the assessment, diagnosis, and physiotherapy treatment of patients visiting the department.

Examination: There will be no examination but the clinical skill and knowledge gained by the student will be examined in other concerned practical subjects

INTERNSHIP

The students will undergo a six months (26 weeks) compulsory rotatory internship after the final year.

Examination, for candidate declared to have passed the examination in all subjects of BPT programme offered by the centre.

Internship should be done in a teaching hospital recognized by the university limited to within Delhi/NCR only. The internship should cover clinical branches concerned with physiotherapy such as orthopaedics, cardiopulmonary including ICU, neurology, neurosurgery, paediatrics, general medicine, general surgery, obstetrics and gynaecology both inpatient and outpatient services.

No candidate shall be awarded bachelor of physiotherapy degree without successfully completing six months of internship.