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BACHELOR OF PHYSIOTHERAPY

(BPT)

Version 3.0

New Syllabus
(Effective from 2011-2012)

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#. BACHELOR OF PHYSIOTHERAPY [BPT]

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Table –IV: FOURTH YEAR BPT

Paper No.	**Papers**	Weekly Class Hours	Total	**Hours**		**Marks**		**Total Marks**
	Exam Papers			Theory	Practical	Theory (External +Internal)	Practical (External +Internal)	
1.	Neurology & Neurosurgery	5-6	80	80	***	80+20	*****	100
2.	Neuromuscular Physiotherapy *	4-6	140	80	60	80+20	80+20	200
3.	Cardiopulmonary Physiotherapy *	4-6	140	80	60	80+20	80+20	200
4.	Physiotherapy in Rehabilitation	4-6	135	80	55	80+20	****	100
5.	Physical & Functional Diagnosis*	3-4	120	80	40	80+20	80+20	200
	Non-Exam Papers							
6.	Administration & Management in Physiotherapy	2-3	45	45	****	****	****	****
7.	Evidence Based Physiotherapy & Ethics	1-2	40	40	****	****	****	****
8.	Allied Therapeutics	1-2	30	30	****	****	****	****
*.	Clinical Training -II	18	430	430		****	****	****
**	Extra-curricular Activities [Conference, Tours, Seminar, Workshops, Sports and Cultural Activities]	--	100	100		****	****	****
	Total Hours in Fourth Year		1260 Hours					

F.

Fourth Year

Bachelor of Physiotherapy

PAPER-I: NEUROLOGY & NEUROSURGERY

Total hours: Theory:	80 80
Total Hours/ Week:	5-6 hours
Method of Assessment:	Written

Course Description:

This subject follows the basic science subjects to provide the knowledge about relevant aspects of neurology & neurosurgery. The student will have a general understanding of the diseases and therapist would encounter in their practice. The objective of this course is that after 80 hours of lectures and discussion the student will be able to list the etiology, patho physiology, clinical features, assessment, investigation and treatment methods for various neurological conditions.

THEORY

SECTION – I

1. **Disorders of function in the context of Pathophysiology and Anatomy in Neurology [2 hour]**
2. **Classification of neurological involvement depending on level of lesion. [2 hour]**
3. **Neurological assessment[4 hours]**: Principles of clinical diagnosis, higher mental function, assessment of brain & spinal cord function, evaluation of cranial nerves and evaluation of autonomic nervous system.
4. **Investigations [3 hours]**: principles, methods, views, normal/abnormal values/features, types of following investigative procedures in brief- skull x-ray, CT, MRI, evoked potentials, lumbar puncture, EMG, NCV.
5. **Lower cranial nerve paralysis[6 hours]:** Etiology, clinical features, investigations, and management of following disorders - lesions in trigeminal nerve, trigeminal neuralgia, lesions in facial nerve, facial palsy, bell's palsy, hemi facial spasm, lesions of Vagus nerve, lesions of spinal accessory nerve, lesions of hypoglossal nerve. Causes, symptoms, examination, and management of dysphagia.
6. **Cerebro-vascular diseases [7 hours]**: Define stroke, TIA, stroke in evolution, Lacunar infarct. Classification of stroke – Ischemic, hemorrhagic, venous infarcts. Early warning Sign & Prevention. Risk factors, cause of ischemic stroke, causes of hemorrhagic stroke. Classification of hemorrhagic stroke, classification of stroke based on symptoms, stroke syndrome, investigations, differential diagnosis, medical and surgical management.
7. **Head injury [4 hours]**: Etiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications.

8. **Higher cortical, neuro psychological and neurobehavioral disorders [3 hours]**: Causes of blackouts, Epilepsy- classification, clinical features, investigations, medical& surgical management of epilepsy in children and adult. Neural basis of consciousness, causes & investigations of Coma. Perceptual disorders and Speech disorders.

9. **Movement disorders [6 hours]:** Definition, etiology, risk factors, Pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Parkinson's disease, Dystonia, Chorea, Athetosis, Myoclonus and Wilson's disease.

10. **Cerebellar and coordination disorders [3 hours]:** Etiology, Pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Congenital ataxia, Friedreich's ataxia, Tabes dorsalis and Syphilis**.**

SECTION – II

1. **Spinal cord disorders [4 hours]:** Functions of tracts, definition, etiology, risk factors, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Spinal cord injury, IVD prolapse, Spinal epidural abscess, Transverse myelitis, Syringomyelia, Spina bifida, Sub acute combined degeneration of the cord, Hereditary spastic paraplegia, Conus medullaris syndrome, Bladder & bowel dysfunction.

2. **Brain tumors and spinal tumors [3 hours]:** Classification, clinical features, investigations, medical and surgical management.

3. **Infections of brain and spinal cord [2 hours]:** Etiology, Pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Meningitis, Encephalitis, Poliomyelitis and Post- polio syndrome.

4. **Motor neuron diseases [4 hours]:** Etiology, Pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications of following disorders - Amyotrophic lateral sclerosis, Spinal muscular atrophy, Hereditary bulbar palsy, Neuromyotonia.

5. **Multiple sclerosis [2 hours]:** Etiology, Pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications.

6. **Disorders of neuromuscular junction [2 hours]:** Etiology, classification, signs & symptoms, investigations, management, of following disorders Myasthenia gravis, Eaton-Lambert syndrome.

7. **Muscle diseases [3 hours]:** Classification, investigations, imaging methods, Muscle biopsy, management of muscle diseases, genetic counseling. Classification, etiology, signs & symptoms of following disorders – Muscular dystrophy: Myotonic and non myotonic dystrophy.

8. **Polyneuropathy [2 hours]:** Classification of Polyneuropathies. Causes, clinical features, diagnosis and management of: Guillain-Barre syndrome, Chronic Idiopathic Polyneuropathies, and Hereditary motor sensory neuropathy.

9. **Focal peripheral neuropathy [3 hours]:** Etiology, risk factors, classification, neurological signs & symptoms, investigations, management, of following disorders – RSD, Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions, Phrenic nerve lesions, Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy, Musculocutaneous nerve palsy, Anterior & Posterior interosseous nerve palsy, Axillary nerve palsy, Long thoracic nerve palsy, Suprascapular nerve palsy, Sciatic nerve palsy, Tibial nerve palsy, Common peroneal nerve palsy, Femoral nerve palsy.

10. **Pediatric neurology [10 hours]:** Neural development, Etiology, Pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders - Cerebral palsy, Hydrocephalus, Arnold-chiari malformation, Autism, Dandy walker syndrome and Down's syndrome.

11. **Introduction, Indications and Complications of following Neuro-surgeries in brief [5 hours]:** Craniotomy, Cranioplasty, Stereotactic surgery, Deep brain stimulation, Burr-hole, Shunting, Laminectomy, Hemilaminectomy, Rhizotomy, Micro vascular decompression surgery, Endarterectomy, Embolization, Pituitary surgery, Ablative surgery - Thalamotomy and Pallidotomy, Coiling of aneurysm, Clipping of aneurysm, and Neural implantation.

Recommended books:

Text books:

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

Reference books:

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

PAPER-II: NEUROMUSCULAR PHYSIOTHERAPY

Total hours: Theory: Practical:	140 80 60
Total Hours/ Week: Lecture: Practicals: Seminars/ Tutorials:	6 hours 3 hours /week 2 hours/ week 1 Hour/ week
Method of Assessment:	Written, Oral, Practical

Course Description:

The subject serves to integrate the knowledge gained by the students in neurology and neurosurgery with skills to apply these in clinical situations of dysfunction and neurological pathology. The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to identify disabilities due to neurological dysfunction, plan and set treatment goals and apply the skills gained in exercise therapy and electrotherapy in these clinical situations to restore neurological function.

THEORY

SECTION – I

1. **Neurological Assessment [8 hours]:** Required materials for examination, Chief complaints, History taking – Observation, Palpation, Higher mental function, Motor Examination, Reflexes, Sensory examination, Special tests for neurological disorder, coordination examination, Gait analysis, Functional Analysis, Assessment tools & Scales, Differential diagnosis.

2. **Neuro physiological Techniques in brief [10 hours]:** Concepts, Principles, Techniques, Effects of following Neurophysiological techniques: NDT, PNF, Vojta therapy, Rood's Sensory motor Approach, Sensory Integration Approach, Brunnstorm movement therapy, Motor Control, Motor relearning program, Contemporary task oriented approach, Muscle re-education approach and Constraint induced movement therapy.

3. **Paediatric Neurology [12 hours]:** Paediatric Examination, Developmental milestones, developmental reflexes, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Use of various Neurophysiological approaches & Modalities in Risk babies, Minimum brain damage, Developmental disorders, Cerebral palsy, Autism, Down's Syndrome, Hydrocephalus, Spina bifida.

4. **Evaluation and Management of Brain and Spinal Cord Disorders [10 hours]**: History, Observation, Palpation, Higher mental function, Cranial nerve examination, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches & Modalities in Cerebro-vascular Accident, TIA, Lacunar Stroke, Meningitis, Encephalitis, Head Injury, Brain Tumors, Perceptual disorders, Amyotrophic lateral sclerosis, Spinal muscular atrophy and Multiple sclerosis, SACD. Extrapyramidal disorder: Parkinson's diseases, chorea, athetoid.

SECTION – II

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

2. **Evaluation and Management of Peripheral Nerve Injuries and Disorders [10 hours]**: History, Observation, Palpation, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches & Modalities in Hereditary motor sensory neuropathy, Guillain-Barre syndrome, Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions, Phrenic , Alcoholic and Diabitic Neuropathy, Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy, Musculocutaneous nerve palsy, Anterior & Posterior interosseous nerve palsy, Axillary nerve palsy, Long thoracic nerve palsy, Suprascapular nerve palsy, sciatic nerve palsy, Tibial nerve palsy, Common peroneal nerve palsy, Femoral nerve palsy, Obturator nerve palsy, Pudental nerve palsy.

3. **Assessment and management of Neurological gaits [8 hours]:** Quantitative and Qualitative (Kinetic & Kinematics) analysis, List of Problems, short & Long Term goals, Management of following Neurological Gaits - Hemiplegic gait, Parkinson gait, High step gait, Hyperkinetic gait, Hypokinetic gait, Waddling gait, Scissoring gait, Spastic gait, Chorea form Gait, Diplegic Gait, and Myopathic Gait , Frontal lobe disorder Gait

4. **Pre and Post surgical assessment and treatment following conditions [9 hours]:** Spinal disc herniation, Spinal stenosis, Spinal cord trauma, Head trauma, Brain tumors, Tumors of the spine, Spinal cord and peripheral nerves, Cerebral aneurysms, Subarachnoid hemorrhages, epilepsy, Parkinson's disease, Chorea, Arteriovenous malformations, and Spina bifida

5. **Applied Yoga in Neurological conditions [3 Hours]**

PRACTICAL: 60 HOURS

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

1. Bedside case presentations and case discussions

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

Recommended books:

Text books:

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

Reference books:

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

Paper-III - CARDIOPULMONARY PHYSIOTHERAPY

Total hours: Theory: Practical:	140 80 60
Total Hours/ Week: Lecture: Practical: Seminars/ Tutorials:	6 hours 2 hours /week 3 hours/ week 1 Hour/ week
Method of Assessment:	Written, Oral, Practical

Course Description:

At the end of the course the candidate will be able to: Identify, discuss and analyze cardiovascular and pulmonary dysfunction based on Pathophysiological principles and arrive at the appropriate function diagnosis. Acquire the knowledge of rationale of basic investigation in the medical system and surgical intervention, regimes related to cardiovascular and pulmonary impairments. Execute effective physiotherapeutic measures (with clinical reasoning) and special emphasis on the breathing retraining, nebulization, humidification, bronchial hygiene, general mobilization and exercise conditioning. Acquired knowledge of overview of patient's care at I.C.U., artificial ventilation, suctioning, positioning for bronchial hygiene and continuous monitoring of patient in I.C.U. Acquired the skill of evaluation and interpretation of functional capacity, using simple exercise tolerance test such as 6 minute walk test, symptom limited test. Select strategies for cure, care and prevention; adopt restorative and rehabilitative measures for maximum possible functional independence of patient at home, work and in community. Acquire the skill of basic CPR.

THEORY

Cardiopulmonary evaluation, which includes:

1. Pulmonary function test & its interpretation
2. Chest imaging & neck imaging.
3. ECG interpretation and Echocardiograph in brief.
4. Blood gas analysis & its interpretation.
5. Special tests- stress test , exercise tolerance test
6. Interpretation of the procedures performed-open heart surgery, angiogram, nuclear test catheterization in brief.
7. Analysis of current impairments, functional limitation & disability.

SECTION – I

1. **Review of [6 Hours]:** Cardio respiratory anatomy and physiology, mechanism of normal respiration, relaxation and maintenance of bronchial hygiene in respiratory diseases. Anatomical differences between adult & pediatric lungs, aging in cardiovascular system and respiratory system.

2. **Respiratory and cardiac rehabilitation for cardio respiratory disorders** [**8 Hours]:** definition, aims and objective, Pathophysiology of diseases, physiotherapy assessment and principles of rehabilitation. Fitness programs.

3. **Principle and techniques of physiotherapy in diseases of respiratory and cardiopulmonary system [12 Hours]:** Body positioning, P.D., breathing exercises and thoracic mobility exercises, PNF techniques of respiration, chest clearance techniques- PEP mask, flutters, ACBT, autogenic drainage, cough-assisted techniques ,techniques of facilitations of accessory muscles, MECANICAL AIDS-INCENTIVE SPIROMETRY,CPAP,IPPB .

4. **Clinical examination of cardiovascular disorders, principles and techniques of PT in cardiovascular disease [7 Hours]:** CCF, myocardial infarction, endocarditis, myocarditis, pericarditis, valvular disease of heart, congenital heart disease.

5. **Clinical examination of respiratory disease, principles and techniques of PT [7 Hours]:** Chronic bronchitis, emphysema, asthma, cystic fibrosis, Bronchiectasis, pulmonary embolism, pulmonary TB, pleurisy, emphyema, atelectesis, pneumothorax**.**

SECTION – II

1. **Evaluation, principles and techniques of physiotherapy management in traumatic and surgical conditions of chest, lung, vessels, pleura and mediastinum. [10 Hours]**

2. **Pre and post operative physiotherapy assessment and management in [14 Hours]**: Lobectomy, pneumonectomy, decortications, Thoracoplasty, Tracheostomy, angioplasty, mitral valvotomy (mitral stenosis), valve replacement, PDA, Coarctation of aorta, Septal defect, Fallot's tetralogy, bypass surgery, open heart surgery and heart transplant

3. **Principles of chest physiotherapy in [10 Hours]:** I.C.U., I.C.C.U. along with effect of anesthesia on cardiopulmonary system. Knowledge of equipments in CPU, I.C.U. and I.C.C.U. Ventilators-Modes, classification criteria for initiating mechanical ventilation, suction apparatus. IABP, Pulse oxymeter, nebulizers, humidifiers, O2 therapy, aerosol therapy, drugs used in ICU.

4. **Cardiopulmonary resustications - demonstrations. And on-call physiotherapy [3-Hours].**

5. **Different diagnostic techniques to be used in cardiopulmonary conditions in brief [3-Hours].**

PRACTICAL: 60 HOURS

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

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

Recommended books:

Text Book:

1. Tidy's Physiotherapy by Stuart Porter (2008)
2. Cash's Textbook of Chest, Heart and Vascular Disorders for Physiotherapists by Joan E. Cash and Patricia A. Downie (1993)
3. Physiotherapy for Respiratory and Cardiac Problems: Adults and Paediatrics by Ammani S Prasad and Jennifer A. Pryor (2008)
4. Principles and Practice of Cardiopulmonary Physical Therapy by Elizabeth, Ph.D. Dean, Donna Frownfelter, Donna L. Frownfelter, and Elizabeth Dean 1996.

Reference Books:

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

Paper – IV: PHYSIOTHERAPY IN REHABILITATION

Total hours: Theory: Practical:	135 80 55
Total Hours/ Week: Lecture: Practical: Seminars/ Tutorials:	5 hours 3 hours /week 1 hour/ week 1 Hour/ week
Method of Assessment:	Written, Oral, Practical

Course Description:

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

THEORY

SECTION – I [40 Hours]

1. **General Rehabilitation [5 hours]:** Conceptual framework of rehabilitation, definitions, various models of Rehab, Rehab team including Medical person/P.T./O.T. audiologist/speech therapist /P.&O./ rehab nurse/ psychologist/ vocational guide. WHO definition of Health & disease, Health care delivery system, National Policies of Rehab, National health care programs, Community awareness, Participation, Preventive aspects & demands of PT devices

2. **Disability [5 hours]**: Definition of Impairment, Handicap and Disability, Difference between impairment, handicap and disability, Causes, Types and Prevention and rehabilitation of disability.

3. **Disability Evaluation In Brief [5 hours]**: Introduction, What, Why and How to evaluate, Quantitative versus Qualitative data.

4. **Introduction to Community Based Rehabilitation [4 hours]:** Definition, Concept of CBR, Need for CBR, Objectives of CBR, Scope of CBR, Members of CBR team, Models of CBR, Difference between Institution based and Community based Rehabilitation.

5. **Principles of Community based Rehabilitation [8 hours]**: W.H.O.`s policies-about rural health care-concept of primary /tertiary health centers-district hospitals etc., Principles of a team work in C.B.R. of physically handicapped person , Agencies involved in rehabilitation of physical handicapped - Legislation for physically handicapped. Concept of multipurpose health worker. Role of family members in the rehabilitation of a physically handicapped.

6. **Role of Social work in CBR [3 hours]**: Definition and Methods of social work. Role of social worker in rehabilitation.

7. **Health Promotion [5 hours]:** Physiological changes with aerobic exercises in various systems of the body, Clinical applications of aerobic exercise, Obesity; criteria for overweight & obese patients screening and weight reductions programmes, Measurement of Body Mass Composition.

8. **Geriatrics [5 hours]:** Definition gerontology, geriatrics, aging, senior citizen in India, NGO's, legal right's and benefits. Institutional community based elderly. Old age homes. Physiology of aging: changes in various systems: musculoskeletal, cardio-pulmonary, neurological, special senses. Theories of aging. Clinical implication , strategies for improvement. Compensatory approaches and physiotherapy management.

SECTION – II [40 Hours]

1. Occupational Health [12 hours]

a) **Occupational health diseases:** Prevention, diagnosis and management.
b) **Occupational & Environmental Hazards**: Accidents due to :
   - Physical agents: e.g. heat/cold, light, noise, vibration, UVR. Ionizing radiation.
   - Chemical agents: inhalation, local action & ingestion.
   - Mechanical Hazards: overuse / fatigue, injuries due to ergonomics alteration & ergonomic evaluation of work place.
   - Psychological Hazards: monotocity job dissatisfaction, work anxiety, quality control, interpersonal relationships, work hours.
c) Role of Physiotherapy.
d) Industrial health: Job analysis, job description, job demand analysis, task analysis, Employee fitness, job modification
e) Management: Acute care, concept of functional capacity assessment, work hardening and work conditioning.
f) Employment acts [briefly]:
   - Employee state insurance scheme.
   - Workman's compensation act.
   - Legal aspects of disability in terms of compensation for PWD, benefits & rights.
g) Vocational Rehabilitation: Introduction, evaluation & management.

2. Prosthetics & Orthotics [20 hours]:

a) Definition and Biomechanical principles in designing of appliances & assessment **[1 hours]**

b) Classification of Aids & appliances**[1 hours]**

c) Differences between prosthesis and orthoses**[1 hours]**

d) Prostheses – For Lower limb and upper limb indications and checkout.**[3 hours]**

e) Introduction to Splints / Orthoses – For spine, upper & lower limb**[3 hours]**

f) Upper Limb Orthoses: - Knuckle Bender splint, Cock Up Splint, Opponens splint, finger splints, aero plane splint, wrist hand orthoses**[3 hours]**

g) Spinal Orthoses: Head Cervical Orthoses, Cervical, Thoraco-lumbar, Lumbo – sacral Orthoses (Knight brace, Taylors's Brace, Milwawkee Brace, Collars) **[3 hours]**

h) Lower Limb Orthoses: HKAFO, KAFO, AFO, Foot Orthoses (Shoe Modification) **[3 hours]**

i) Wheel Chair – Parts and prescription**[2 hours]**

3. Role of Physiotherapy in ARCHITECTURAL BARRIERS & POSSIBLE MODIFICATIONS [8 hours]

a) Screening for disabilities, Prescribing exercise programme, Prescribing and devising low cost locally available assistive aids, Modifications physical and architectural barriers for disabled, Disability prevention, Strategies to improve ADL, Rehabilitation programmes for various neuro-musculoskeletal and cardiothoracic disabilities.

b) Keeping in mind conditions like RA, Hemiplegia, Paraplegia, Cerebral palsy, Polio, severe OA, Amputation; sensory loss—vision, hearing, speech impairment, Degenerative, geriatric patients, Other disabling conditions.

Practical: 55 Hours

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

Recommended books:

1. A textbook on physical medicine and rehabilitation by Howard A Rusk (1964)
2. Community Based Rehabilitation of Persons with Disabilities by Pruthvish; Jaypee Brothers.
3. Ergonomics for Beginners: A Quick Reference Guide, Third Edition by Jan Dul and Bernard
4. Ergonomics for Therapists by Karen Jacobs
5. Ergonomic Living : How to Create a User-Friendly Home & Office: Gordon Inkeles and Iris Schencke
6. Textbook of Rehabilitation by Sunder, Jaypee Publications
7. Physical Medicine and Rehabilitation: Principles and Practice (2 Volume Set) by Joel A DeLisa, Bruce M Gans, Nicolas E Walsh, and William L Bockenek
8. Essentials of Physical Medicine and Rehabilitation: Walter R. Frontera MD PhD, Julie K. Silver MD, and Thomas D. Rizzo Jr. MD (2008)
9. Community Based Rehabilitation by Peat (Paperback - July 1997)
10. Physical Medicine & Rehabilitation Secrets by Bryan J. O'Young MD, Mark A Young MD, and Steven A. Stiens MD MS (2007)
11. Physical Rehabilitation by Susan B. O'Sullivan and Thomas J. Schmitz (2006)
12. Orthotics and Prosthetics in Rehabilitation by Michelle M. Lusardi and Caroline C. Nielsen (2006)
13. Preventive & social medicine by Park & Park
14. Textbook of community medicine & community health by Bhaskara Rao.
15. Legal rights of disabled in India by Gautam Bannerjee
16. Geriatric Physiotherapy by Andrew Guccione.
17. Industrial Therapy by Glenda Key
18. Atlas of Orthotic & Prosthetic devices.

Paper –V : PHYSICAL & FUNCTIONAL DIAGNOSIS

Total hours: Theory: Practical:	120 80 40
Total Hours/ Week: Lecture: Practicals:	4 hours 3 hours /week 1 hours/ week
Method of Assessment:	Written, Oral, Practical

Course description:

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

THEORY

SECTION – I [40 Hours]

Introduction and general consideration of evaluation and measurement of:

1. **Cardio – pulmonary system: [20 hours]**
   a) Physical evaluation of cardio pulmonary, normal and pathological conditions.
   b) Posture: Recumbent, erect and orthopnea
   c) Breathing Pattern and breath hold (rate, rhythm, use of accessory muscles), chest deformities, cough, sputum, tactile and vocal fremitus, mobility of thoracic spine and rib cage, percussion, breath sounds. Chest expansion measurements.
   d) Measurements of lung volumes and lung capacities, blood gas level, exercise tolerance test, etc.
   e) Heart rate, blood pressure, heart sounds, pulse rate (volume and pressure), exercise tolerance test.
   f) Pulmonary function test, spirometry, gas analysis
   g) Cardiac efficiency tests : Stress ECG, treadmill and ergometry

2. Musculoskeletal system: [20 hours]

Goniometry, manual muscle assessment , Posture and postural disorder evaluation ,Physical examination of joints in normal and patho – mechanical conditions.Muscle strength and endurance Range of motion of joints, flexibility Measurement of girth, leg length, pelvic inclination, Measurement of body parts, femur, tibia, etc, Angle of scoliotic curve, etc, Gait analysis in pathological conditions and measurement of gait parameters.

Functional Evaluation

- Mobility in bed, transfers, ambulation
- Personal care – eating, dressing, washing, bathing etc
- Household jobs
- Work and recreation.

Section – II [40 Hours]

1. Nervous System:[20 hours]

a) Evaluation of function and measurement in general and with reference to upper motor and lower motor neuron lesions.
b) Myotomes and Dermatomes
c) Nerve Entrapments
d) Muscle tone, voluntary movement and voluntary control tests (isolated and skilled)
e) Higher Motor Functions
f) Tests for disorder of cerebellum, and basal ganglia, etc and coordination tests.
g) Abnormal movements – clonus, tremors, chorea, athetosis.
h) Reflexes (superficial and deep, Cortical & Neonatal reflexes, etc)
i) Neural control of bladder

2. Electro – Diagnosis [15 Hours]

a) Review of electro physiology
b) Surface and needle electromyography
c) Nerve conduction velocity test (motor and sensory)
d) Reflex study
e) H and F wave
f) Cerebral evoked potential. SD curve and EMG [in brief]
g) Analysis of normal and pathological conditions with EEG, MRI, CT Scan etc. [in brief]

3. Biofeedback: [5 Hours]

Introduction, principles of biofeedback, therapeutic effects, indications and contraindications, techniques of treatment

Recommended Books:

1. Textbook of Physical Diagnosis with DVD: History and Examination Mark H. Swartz
2. Physical Diagnosis Secrets: Salvatore Mangione MD
3. Bates' Guide to Physical Examination and History Taking, 10th Edition Lynn S. Bickley
4. Differential Diagnosis for Physical Therapists: Screening for Referral Catherine C. Goodman ,Teresa Kelly Snyder
5. Pocket Guide to Musculoskeletal Diagnosis [Paperback] Grant Cooper
6. Differential Diagnosis for the Orthopedic Physical Therapist [Paperback] James Meadows
7. Electro-Diagnosis and Electro-Therapeutics: A Guide for Practitioners and Students Toby Cohn
8. Electrodiagnosis in Diseases of Nerve and Muscle: Principles and Practice [Hardcover] Jun Kimura M.D.
9. Biofeedback, Third Edition: A Practitioner's Guide [Paperback] Mark S. Schwartz PhD (Editor), Frank Andrasik PhD (Editor)
10. ACSM's Guidelines for Exercise Testing and Prescription. American College of Sports Medicine
11. Principles of Exercise Testing and Interpretation: Including Pathophysiology and Clinical Applications. Karlman Wasserman, James E. Hansen, Darryl Y. Sue, William W. Stringer , Brian J. Whipp
12. The Physiotherapist's Pocket Guide to Exercise: Assessment, Prescription and Training. Angela Jane Glynn, Helen Fiddler
13. Neuromusculoskeletal Examination and Assessment: A Handbook for Therapists. Nicola J. Petty
14. Physiotherapy Assessment [Paperback] Anne Parry .
15. Neurological Disabilities: Assessment and Treatment Susan E. Bennett , James L. Karnes .
16. Clinical Orthopedic Assessment Guide - 2nd Edition Janice Loudon, Marcie Swift, Stephania Bell
17. Pocket Guide to Musculoskeletal Assessment Richard E. Baxter

Paper-VI: ADMINISTRATION & MANAGEMENT IN PHYSIOTHERAPY

Total hours: Theory:	45 45
Lecture:	1-2 hours / week

Course description:

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

THEORY

1. Administration, Management and Supervision [20 Hours]:

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

2. Standards of Practice [5 Hours]:

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

3. Clinical Audit [5 Hours].

4. Documentation [4 Hours].

5. Clinical Decision Making [5 Hours].

6. Outcome Measures in Physiotherapy [6 Hours].

Recommended books:

1. Consumer Protection Act – 1986, Government of India, New Delhi.
2. Francis C M – Hospital Administration
3. Davies, R and Macaulay, BMC – Hospital Planning and Administration
4. Prescription Writing by Frederic Henry Gerrish
5. Innovations in Rehabilitation Sciences Education: Preparing Leaders for the Future by Patricia Solomon and Sue Baptiste
6. Management in Physical Therapy Practice by Catherine G. Page
7. Physical Therapy Management by Ronald W. Scott and Christopher L Petrosino
8. Management in Physiotherapy by Jones
9. Clinical Decision Making and Outcomes In Sports Rehabilitation by Dinesh A. Kumbhare and John V. Basmajian
10. Ethical Decision Making in Therapy Practice (Skills for Practice Series) by Julius Sim
11. Documentation for Rehabilitation: A Guide to Clinical Decision Making by Lori Quinn EdD PT and James Gordon EdD PT
12. Expertise in Physical Therapy Practice by Gail M. Jensen, Jan M. Gwyer , Laurita M. Hack, and Katherine F. Shepard .
13. Legal Aspects of Physiotherapy by Bridgit Dimond
14. Therapy Outcome Measures Manual: Physiotherapy, Occupational Therapy, Rehabilitation Nursing by Pam Enderby, Alexandra John, and Brian Petheram
15. Therapy Outcome Measures for Rehabilitation Professionals: Speech and Language Therapy, Physiotherapy, Occupational Therapy by Pamela Enderby, Alexandra John, and Brian Petheram
16. Evidence-Based Rehabilitation: A Guide to Practice by Mary C. Law PhD and Joy MacDermid PhD
17. Writing Soap Notes: With Patient/Client Management Formats by Ginge Kettenbach
18. Writing Patient/ Client Notes: Ensuring Accuracy in Documentation by Ginge Kettenbach

Paper-VII: EVIDENCE BASED PHYSIOTHERAPY AND ETHICS

Total hours: Theory:	40 40
Lecture:	1-2 hours/ week

Course description:

This course serves to acquire knowledge gained by the students that how to integrate individual clinical expertise and the best external evidence in making decisions about the care of individual patients & to improve standards of health care in the public interest.

THEORY

SECTION – I EVIDENCE BASED PHYSIOTHERAPY [30 Hours]

1. Introduction to Evidence Based Practice: Definitions, Evidence Based Practice, Evidence Based Physiotherapy Practice **[3 hours]**
2. Concepts of Evidence based Physiotherapy: Awareness, Consultation, Judgment, Creativity **[1hours]**
3. Development of Evidence based knowledge, The Individual Professional, Professionals within a discipline, Professionals across disciplines **[2 hours]**
4. Evidence Based Practitioner: The Reflective Practitioner, The E Model, Using the E Model **[1hours]**
5. Finding the Evidence: Measuring outcomes in Evidence Based Practice, Measuring Health Outcomes, Measuring clinical outcomes, Inferential statistics and Causation **[3 hours]**
6. Searching for the Evidence: Asking Questions, Identifying different sources of evidence, Electronic Bibliographic databases and World Wide Web, Conducting a literature search. Step- by-step search for evidence **[2 hours]**
7. Assessing the Evidence: Evaluating the evidence; Levels of evidence in research using quantitative methods, Levels of evidence classification system, Outcome Measurements, Biostatistics, The critical review of research using qualitative methods **[4 hours]**
8. Systematically reviewing the evidence: Stages of systematic reviews,Meta-analysis, The Cochrane collaboration **[3 hours]**
9. Economic evaluation of the evidence: Types of economic evaluation, Conducting economic evaluation, Critically reviewing economic evaluation, Locating economic evaluation in the literature **[2 hours]**

10. Using the evidence: Building evidence in practice; Critically Appraised Topics (CATs), CAT format, Using CATs, Drawbacks of CATs **[2 hours]**

11. Practice guidelines, algorithms, and clinical pathways: Recent trends in health care, Clinical Practice Guidelines (CPG), Algorithms, Clinical pathways, Legal implications in clinical pathways and CPG, Comparison of CPGs, Algorithms and Clinical Pathways **[3 hours]**

12. Communicating evidence to clients, managers and funders: Effectively communicating evidence, Evidence based communication in the face of uncertainty, Evidence based communication opportunities in everyday practice **[2 hours]**

13. Research dissemination and transfer of knowledge: Models of research transfer, Concrete research transfer strategies, Evidence based policy **[2 hours]**

Recommended books:

1. Practical Evidence Based Physiotherapy: Robert Herbert, Gro Jamtvedt, Judy Mead, and Kare Birger Hagen; Elsevier.
2. Evidence-Based Physiotherapy Practice; Mary Ann O'Brien
3. Guide to Evidence-Based Physical Therapy Practice by Dianne V. Jewell (2007)
4. Evidence-Based Rehabilitation: A Guide to Practice by Mary C. Law PhD and Joy MacDermid PhD (2007)
5. Evidence-Based Healthcare: A Practical Guide for Therapists by Tracy J. Bury and Judy M. Mead (1998)
6. Principles of Assessment and Outcome Measurement for Occupational Therapists and Physiotherapists: Theory, Skills and Application by Alison J. Laver Fawcett (2007)

SECTION – II: ETHICS [10 Hours]

1. History of physiotherapy, Ethical principles in health care, Ethical principles related to physiotherapy, Scope of practice, Enforcing standards in health profession-promoting quality care, Professional ethics in research, education and patient care delivery, Informed consent issues, Medical ethics and Economics in clinical decision-making. **[3 hours]**

2. Rules of professional conduct **[2 hours]**

   (a) Physiotherapy as a profession
   (b) Relationship with patients
   (c) Relationship with health care institutions
   (d) Relationship with colleagues and peers
   (e) Relationship with medical and other professional.

3. Confidentiality and Responsibility, Malpractice and negligence, Provision of services and, advertising, Legal aspects: Consumer protection act, Legal responsibility of physiotherapist for their action in professional context and understanding liability and obligations in case of medico-legal action **[3 hours]**

4. IAP - Memorandum of Association; & Rules and Regulations **[2 hours]**

Recommended books:

1. Medical Ethics by C M Francis.
2. George V Lobo – Current Problems in Medical Ethics
3. Consumer Protection Act – 1986, Government of India, New Delhi.
4. Physical Therapy Ethics by Donald L. Gabard and Mike W. Martin
5. Educating For Moral Action: A Sourcebook In Health And Rehabilitation Ethics by Ruth B. Purtilo, Gail M. Jensen, and Charlotte Brasic Royeen
6. Legal and Ethical Issues in Physical Therapy by Laura Lee, Ph.D. Swisher and Carol Krueger-Brophy

Paper-VIII: ALLIED THERAPEUTICS

Total hours: Theory: Lecture:	30 30 1-2 hours/ week

Course Description:

The Subject is designed to provide an overview in the basics of Occupational Therapy, Speech and Language Therapy and Alternative Medicine. This will help the student to make decisions during the course of patient evaluation to refer to the concerned specialist for a required therapy.

THEORY

1. **Basic Occupational Therapy [12 Hours]**

    a) Introduction to Occupational Therapy

    b) Principles of Occupational Therapy

    c) Human Structure and Function in Occupational Therapy

    d) Therapeutic Media in Occupational Therapy

    e) Therapeutic Modalities in Occupational Therapy

    f) Health Care Management in Occupational Therapy

    g) Pathophysiology in Occupational Therapy

    h) Mental Health in Occupational Therapy

    i) Physical Function in Occupational Therapy

2. **Basic Speech Therapy [12 Hours]**

    a) Anatomy and Physiology of the Organs of Language

    b) Introduction to Audiology

    c) Neurological Basis of Language, Linguistics, Phonetics and Phonology

    d) Introduction to Language Disorders

    e) Speech Therapy Intervention in Language Development Disorders, Aphasia, Speech Articulation Disorders, Deafness.

    f) Dyslexias and dysgraphias

    g) Stuttering

    h) Alternative Systems of Communication

    i) Intervention in autism and Psychopathological Disorders

    j) Intervention in Basic Language, Psychomotor Development

k) New Educational Methodologies for Children with Auditory Alterations

l) Technology Applied to Speech Processing

m) Speech Therapy Intervention in Cochlear Implantation

3. Alternative Medicine [6 Hours]

a) Acupuncture: Definitions, Principles, Techniques, Physiological and Therapeutic effects, Indications and Contra indications.

b) Introduction to Naturotherapy – Principles of application, Indications and Uses.

c) Magnetotherapy - Principles of application, Indications and Uses.

d) Role of the above Alternative Medicine approaches in comprehensive rehabilitation of patients.

Recommended Books:

1. Occupational Therapy for Physical Dysfunction by Radomski and Catherine A Trombly
2. Introduction to Occupational Therapy by Susan Hussey, Barbara and Jane Clifford O'Brien
3. Pedretti's Occupational Therapy: Practice Skills for Physical Dysfunction by Pendleton and -krohn
4. Super Star Speech: Speech Therapy Made Simple by Deborah Lott and Katie Lott
5. Here's How to Do Therapy: Hands-On Core Skills in Speech Language Pathology by Debra M. Dwight
6. Hegde's Pocket Guide to Assessment in Speech-Language Pathology by M.N. Hegde
7. Acupuncture in Physiotherapy: Key Concepts and Evidence-Based Practice by Val Hopwood
8. Acupuncture and Related Techniques in Physical Therapy by Val Hopwood, Lovesey, and Mokone
9. Acupuncture: Treatments of Musculoskeletal Conditions by Christopher M. Norris
10. Magnetotherapy: The art of healing through magnets by H. L. Bansal
11. Naturopathy: A Practical guide to understanding the healing power of nature by Stewart Mitchell
12. An Introduction to Principles & Practices of Naturopathic Medicine by Fraser Smith
13. Mosby's Complementary & Alternative Medicine: A Research-Based Approach by Lyn W. Freeman
14. Complementary Therapies in Rehabilitation: Evidence for Efficacy in Therapy, Prevention, and Wellness by Carol M. Davis

CLINICAL TRAINING – II

Total Hours: **430**

Method of Assessment: Oral, Practical

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

1. Neuro Physiotherapy OPD
2. Neurology, Neurosurgery & Neuro ICU
3. Community-PHC
4. Cardiopulmonary Physiotherapy IPD & OPD