SHRI GURU RAM RAI UNIVERSITY DEHRADUN (UTTARAKHAND)

REGULATION OF THE UNIVERSITY FOR THE AWARD OF THE DEGREE OF BACHELOR OF PHYSIOTHERAPY (B.P.T $4^{1/2}$ Yr. Course)

An exercise of the powers conferred by section of the SGRR University Act no.3 of 2017. The Academic Council of the Shri Guru Ram Rai University, Dehradun, Uttarakhand hereby makes the following regulations:-

CHAPTER-I

SHORT TITLE AND COMMENCEMENT

i) These regulations shall be called "THE REGULATIONS FOR THE BACHELOR OF PHYSIOTHERAPY OF THE SHRI GURU RAM RAI UNIVERSITY , DEHRADUN, UTTARAKHAND"

ii) They shall come into force from the 2017-2018 academic session.

iii) The regulations framed are subject to modification from time to time by the Standing Academic Board of the University.

GENERAL CONSIDERATIONS AND TECHING APPROACH

1. Graduate Allied Health Science Curriculum is oriented towards training students to help the responsibilities of physician of first contact who is capable of looking after the preventive, promotive, curative and rehabilitative aspects of medicine.

2. With wide range of career opportunities available today, an Allied Health Science graduate has a wide choice of career opportunities. The training through broad based and flexible should aim to provide an educational experience of the essentials required for health care in our country.

3. To undertake the responsibilities of service situations which is changing condition and of various types. It is essential to provide adequate placement training tailored to the needs of such services as to enable the Allied Health Science graduates to become effective instruments of implementation of those requirements. To avail of opportunities and be able to conduct professional requirement the graduate shall endeavour to have acquired basic training in different aspects of Physiotherapy.

4. The importance of the community aspects of health care and of rural health care service is to be recognized including rehabilitation. This aspect of education and training of Allied Health Science graduates should be adequately recognized in the years and adequate exposure to such experience should be available throughout all phases of education and training. This has to be further emphasized and intensified by providing exposures to field practice areas and training during the internship period. The aim of the period of training during internship is to enable the fresh graduates to function efficiently under such settings.

5. As such all the basic concepts of modern scientific medical education allied with allied health sciences are to be adequately dealt with particularly the clinical area and Physiotherapy.

6. There must be enough experience to be provided for self-learning. The methods and techniques that would ensure this must become apart of teaching-learning process.

7. The Allied Health Science graduate of modern scientific medicines shall endeavor to become capable of functioning independently in both urban and rural environment. He/She shall endeavor to give emphasis on fundamental aspects of the subjects taught and on common problems on health and disease.

8. The importance of social factors in relation to the problem of health disease should receive proper emphasis throughout the course and to achieve this purpose, the educational process should also be community based particularly for physiotherapy.

9. Adequate emphasis is to be place on cultivating logical and logical and scientific habits of thought, clarity of expression and independence of judgment, ability to collect and analyze information and to correlate them.

10. The educational process should be placed in Laboratory/Practical background as and evolving process and not merely as an acquisition of a large number of disjointed facts without a proper perspective.

11. Lectures alone are generally not adequate as a method of training and are a poor means of transferring/acquiring information and even less effective at skill development and in generating the appropriate attitudes. Every effort should be made to encourage the use of active methods related to demonstration and on firsthand experience, Students will be encouraged to learn in small groups through peer interactions so as to gain maximal experience. While the curriculum objectives often refer to areas of knowledge or science, they are best taught in a setting of clinical relevant and hands on experience for students who assimilate and make this knowledge a part of their own working skills and knowledge about diagnosis.

12. The Allied Health Science graduate medical education in clinical subjects should be based primarily on outpatient teaching, other medical and surgical departments and

within the community including peripheral health care institutions. The outpatient departments should be suitably planned to provide training to graduates in small groups and demonstration subjects of all the appropriate techniques. Clinics should be organized in small groups of preferably not more than 10 students so that a teacher can give personal attention to each student with a view to improve his skill and competence in handling of the patients & methods of diagnosis & treatment.

13. Proper records of the work should be maintained which will form the basis for the student internal assessment and should be available to the inspectors/examiners at the time of inspection/ examination of the college.

14. Maximal efforts have to be made to encourage integrated teaching between traditional subjects areas using a problem based learning approach starting with clinical and exploring the relevance of various pre-clinical disciplines in both understanding and resolution of the problem. Every attempt be made to de-emphasize compartmentalization of disciplines so as to achieve both horizontal and vertical integration in different phases.

15. Every attempt is to be made to encourage students to participate in group discussions and seminars to enable them to develop personality, character, expression and other faculties which bare necessary for Allied Health Science graduate to function either in solo practice or as a team leader when he begins his independent career. A discussion group should not have more than 20 students.

16. Faculty members should avail of modern educational technology while teaching the students and to attain this objective.

17. To derive maximum advantage out of this, the vacation period to students in one calendar year should not exceed one month, during 4 years of Bachelor of Allied of Physiotherapy.

18. Minimum working days shall be 180 in one calendar year.

OBJECTIVES OF PHYSIOTHERAPY GRADUATE TRAINING PROGRAMME:

NATIONAL GOALS: At the end of undergraduate program, the Allied Health Science student shall endeavor to be able to:

a) Recognize 'health for all' as national goal and health right of all citizens and by undergoing training for Allied Health Science Profession fulfill his/her social obligation towards realization of this goal; learn every aspect of National policies of health and devote himself/herself to its practical implementation.

b) To help to achieve competence in practice of holistic medicine, encompassing promotive, preventive, curative and rehabilitative aspects of diseases particularly with Physiotherapy.

c) Develop scientific temper, acquire educational experience for proficiency in profession and promote healthy living; particularly in the field of rehabilitation.

d) Become exemplary citizen by observation of medical ethics and medical & Physiotherapy ethics and professional obligations, so as to respond to national aspirations.

INSTITUTIONAL GOALS:

In consonance with the national goals each Allied Health Science Institution should evolve institutional goals to define the kind of trained manpower (or professional) they intend to produce. The undergraduate students coming out of an Allied Health Science institute should:

a) Be competent in therapeutic techniques of common health problems of the individual and the community, associated with or concerned with Physiotherapy commensurate with his/her position as a member of the health team at the primary, Secondary or tertiary levels, using his/her clinical/technical skills based on history, physical examination and relevant investigation techniques and as per the advise of the attending physician.

b) Be competent to practice preventive, promotive, curative and rehabilitative medicine in respect to the all the applicable and encountered health problems physiotherapy.

c) To help to appreciate rationale for different therapeutic modalities pertaining to the subjects of Physiotherapy.

d) To be able to appreciate the socio-psychological, cultural economic and environmental factors affecting health and develop human attitude towards the patients in discharging one's professional responsibilities (Physiotherapy).

e) Possess the attitude for continued self-learning and to seek further expertise or to pursue research in any chosen area of Physiotherapy.

f) Acquire basic management skills in the area of human resources, materials and resource management related to health care delivery.

g) Be able to identify community health problems and learn to work to resolve these by designing, instituting corrective steps and evaluating outcome of such measures (Physiotherapy); in community rehabilitation.

h) Be able to work as a leading partner in health care teams and acquire proficiency in communication skills;

i) Be competent to work in variety of health care settings.

j) Have personal characteristics and attitude required for professional life such as personal integrity, sense of responsibility and dependability and ability to relate to or show concern for other individuals.

OUTLINE ABOUT THE GRADUATE PHYSIOTHERAPY PROGRAMME

It is recognized that the physician of today is over worked professionally. It is also recognized that many of the functions of the physician can be performed by auxiliaries, given suitable training and the auxiliary worker has been defined as one" who has just less than full professional qualifications in a particular field/subject and is supervised by qualified professional worker". (W.H.O.).

The W.H.O. no longer uses the term "Paramedical" for various health's profession allied with medicine (WHO-1984-Health for all Ser, No, 9)

Apart from the "Doctors" the group of manpower which is very essentially required to effectively deliver the Health Care Services in the field of Medicare-are collectively called as "Allied Health "(Paramedical) Manpower. The Science, which deals this subject, is called as the "Allied Health Sciences" (W.H.O.).

The dearth for allied Health Sciences manpower and is lucrative job opportunities are existing very widely, not only in India but also Overseas Countries. Almost all the trained & duly qualified Allied Health Science professionals are absorbed by the foreign countries.

The Allied Health Science courses offer and fulfill the following criteria

ADMISSION TO B.P.T COURSE

1. **ELIGIBILITY CRITERIA:** A Candidate seeking admission to Bachelor of Physiotherapy (hereinafter called B.P.T) Course, must have pass 10+2 examination from a recognized Board/Council/University with Chemistry, Physics, Biology and English with 50% marks in PCB OR Diploma in Physiotherapy conducted by a recognized Board/Council/University OR Medical College, or Such other qualifications as prescribed by the University from time to time.

2. **DURATION OF COURSE:** The Bachelor of Physiotherapy shall be of four years followed by six months compulsory rotatory internship. Maximum duration for completion of the course will be one year less than twice the normal duration of the course. Hence, for B.P.T course, duration of 7 years is the maximum period granted within which the course should be completed.

3. **REGISTRATION:** Candidate admitted to the course in Physiotherapy College shall register with this University by remitting the prescribed fees along with the application from for registration duly filled in and forwarded to the University through the Head of the Institution with in the stipulated date.

4. MIGRATION /TRANSFER OF CANDIDATES

a) Migration / transfer of candidates from one recognized Institution to another of this University or from another University will not generally be considered.

b) However, under extra ordinary circumstances, the Vice-Chancellor shall have the powers to place any migration / transfer he deems fit in the Governing Council and get its approval for grant of permission for migration / transfer to candidates undergoing courses of study in affiliated Institutions of this University.

5. **REQUIREMENT OF MEDICAL FITNESS:** Every candidate before admission to the course shall submit of the Principal of the Institution a certificate of medical fitness from an authorised medical officer that the candidates is physically fit to undergo the academic course and does not suffer from any disability or contagious diseases.

6. EXAMINATION REGULATIONS:

Compartments / Supplementary/ Back Paper:

(I) A student who obtain 40% of the marks individually but has failed in two papers shall be permitted to appear in those papers only at the two consecutive examination and if he/she passes at either of those examination he/she will be deemed to have passed the examination and will be promoted to higher class. (Aggregate marks should be 50%).

(II) A student (s) appearing in back paper/ supplementary shall be eligible to join the next higher Class provisionally however any student who fails to pass Ist year would not be admitted in 3rd year course.

There shall be one main examination in a year and a supplementary to be held not less than 6 months after publication of its results.

Theory Examination: All the papers in each year carrying 100 marks out of which 30 marks will be internal assessment and 70 marks for external assessment based on the question paper sent by the University the paper will be 3 hrs. Each paper will have 8 questions out of which the candidate will have to attempt 5 questions.

The practical examination will be held with the Final Examination. The practical and Viva voice in each subject will carry 30% marks as internal & 70% marks as external assessment (according to examination scheme) prescribed for the year.

PHASE DISTRIBUTION AND TIMING OF EXAMINATION:

1. Ist Annual Examination at the end of Ist year.
2. 2nd Annual Examination at the end of 2nd year.
3. 3rd Annual Examination at the end of 3rd year.
4. 4th Annual Examination at the end of 4th year.
5. Six months Internship after third Annual Examination.

EXAMINATION REGULATIONS

Essentialities for qualifying to appear in professional examinations. The performance in essential components of training to be assessed based on.

ATTENDANCE: 75% of attendance in a subject for appearing in the examination is compulsory provided he/she has 80% attendance in non-lecture teaching i.e. seminars group discussions. Practical in Hospital postings and bedside clinics of 150 bedded indoor hospital with at least 75% patient Occupancy.

7. Medium of Instruction/examination shall be an English

8. **WORKING DAYS:** 180 in one calendar year

9. **REVALUATION OF ANSWER PAPERS:** The regulations as prescribed by the University for other Undergraduate Courses shall be applicable.

10. **UNVERSITY RANKING :** First, Second and third University ranks may be awarded to candidate who have passed all the examination in the first appearance and taking into consideration the aggregate marks obtained in all subjects, in which the candidate had been examined during the entire course of study. Where a candidate secures marks less than those obtained in the first attempt (applicable in case of improvement, not failure candidates) the best of the two marks will be considered for the purpose of the final results. Theory or practical shall be considered as a paper, but where a paper consists of both theory & Practical, it will be treated as one paper.

Hence, a candidate can appear as an ex-student in practical/theory or both, as the case may be. In case of a back, position in merit list will not be include.

Where a student fails in a project (if included in course of study) or fails to submit in the specified time, he/she shall be allowed to resubmit the same in the next year (when the related examination falls due next) on payment of the required back paper fee.

INTERNSHIP:

(I) General : Internship is a phase of training where in graduate is expected to conduct actual practice of Physiotherapy and acquired skills under supervision so that he/she may become capable of functioning independently.

(II) Specific Objectives: At the end of Internship training the graduate shall be able to:

(i) Perform all diagnostic techniques.

(ii) Use discretely the essential lab services.

(iii) Manage all type of clinical diagnostic methods.

(iv) Demonstrate skills in handling the modern equipment in Physiotherapy.

(v) Develop leadership qualities to function effectively as a leader of lab environment.

(vi) Render services to the lab set up and communicate effectively with the doctors and the hospital management.

Final year students may start rotatory internship immediately after passing in the University Examination. All Medical college/District hospitals shall be presumed to be recognized to be training centres for the purpose of Internship. The internship will be considered to be completed only on successful presentation of the project in front of the board, appointed for this purpose. In case the project is found unsatisfactory the internship period can be extended maximum upto two month, left to the discretion of the H.O.D In such case the extended duration of internship has to be completed in the college O.P.D. only.

In Case of Physiotherapy centre, run by the Institute conducting/running the physiotherapy degree course, will have to be approved by the HOD as a training Institute for the purpose of Internship.

Compulsory rotatory internship can be in following clinical areas:-

1. Locomotors handicapped training at department of physical medicine and Orthopaedics - 2 months

2. Cardiothoracic rehabilitation. - 1 month

3. Neurological rehabilitation - 1 month

4. Plastic surgery, hand rehabilitation, burns etc. - 1 month

5. Rheumatology - 15 days

6. Pediatric rehabilitation - 15 days

ASSESSMENT OF INTERNSHIP

I. The interns maintain the record of work which is to be verified and certified by the Sr. Physiotherapist under whom he/she works. A part from scrutiny of the record of the project, assessment and evaluation of training shall be undertaken by an objective approach using situation test in knowledge, skills and attitude during and the end of training. Based on the record of work/project and date of evaluation the Director /HOD /Principal shall issue "Certificate of Satisfactory Completion" of training following which the University shall award the BPT degree or declare the candidate eligible for the same.

II. Satisfactory completion shall be determine on the basis of following:

(a) Proficiency of knowledge required each lab technique.
(b) The competency in skill expected to manage each lab technique.

- Competency for self performance.
- Of having assistant in procedures.
- Of having observe responsibility, punctuality and work up of lab technique.

(c) Satisfactory submission of projects based on clinical work.

(d) Capacity to work in a team.

(e) Initiating, participation in discussions, research aptitude.

(f) Full registration shall only give by the State Physiotherapy council on the award of BPT degree by the University or its declaration that the candidate is eligible for it.

SYLLABUS (OUT LINE)

Scheme of the examination for bachelor of Physiotherapy (B.P.T)

PART/YEAR – I - (B.P.T.)

Course Code	Course Title	Marks For theory			Marks for Practical			Total Marks
		IA	EE	Total	IA	EE	Total	
BP 101	Human Anatomy	30	70	100	30	70	100	200
BP 102	Human Physiology	30	70	100	30	70	100	200
BP 103	Gen. Social & Clinical Psychology	30	70	100	-	-	-	100
BP 104	Biochemistry	30	70	100	-	-	-	100
BP 105	Basic Principles in Physiotherapy	30	70	100	-	-	-	100
	Total	**150**	**350**	**500**	**60**	**140**	**200**	**700**

PART / YEAR – II – (B.P.T.)

Course Code	Course Title	Marks For theory			Marks for Practical			Total Marks
		IA	EE	Total	IA	EE	Total	
BP 201	Exercise Therapy yoga & Massage	30	70	100	30	70	100	200
BP 202	Electro Therapy & Actinotherapy	30	70	100	30	70	100	200
BP 203	Biomechanics & Kinesiology	30	70	100	30	70	100	200
BP 204	Pathology Microbiology	30	70	100	-	-	-	100
BP 205	Pharmacology	30	70	100	-	-	-	100
	Total	**150**	**350**	**500**	**90**	**210**	**300**	**800**

PART / YEAR – III – (B.P.T.)

Course Code	Course Title	Marks For theory			Marks for Practical			Total Marks
		IA	EE	Total	IA	EE	Total	
BP 301	Clinical Orthopedics	30	70	100	30	70	100	200
BP 302	Clinical Neurology & psychiatry	30	70	100	30	70	100	200
BP 303	Clinical Cardiothoracic Condition	30	70	100	-	-	-	100
BP 304	Gen. Medicine, Skin & Pediatrics	30	70	100	-	-	-	100
BP 305	Gen Surgery, Obs Gynae, ENT & Plastic Surgery	30	70	100	-	-	-	100
BP 306	Disability prevention Rehabilitation	30	70	100	-	-	-	100
	Total	**180**	**420**	**600**	**60**	**140**	**200**	**800**

PART/YEAR-IV-BPT

Course Code	Course Title	Marks For theory			Marks for Practical			Total Marks
		IA	EE	Total	IA	EE	Total	
BP 401	PT in Orthopedics	30	70	100	30	70	100	200
BP 402	PT in Neurology	30	70	100	30	70	100	200
BP 403	PT Cardiothoracic Conditions	30	70	100	30	70	100	200
BP 404	PT in Gen. Medicine & Surgery	30	70	100	30	70	100	200
BP 405	Research Methodology Computer & Biostatistics	30	70	100	-	-	-	100
BP 406	Clinical Dissertation & Project Submission				60	140	200	200
	Total	**150**	**350**	**500**	**180**	**420**	**600**	**1100**

PAPER IST HUMAN ANATOMY

(BPT IST YEAR)

Section – I

General Anatomy

1. Introduction **:** Scope of Anatomy, organization of tissue, organs and systems.

Anatomical position of the body, axis and planes.

2. Structure of skin

3. Muscles- Classification & description of the structure.

4.Bones- Classification development, parts of long bones and blood supply of bones

5. Joints- Definition, classification, movements of different joints.

Section – II

Regional Anatomy

- **Upper Extremity**

(a) Osteology- Clavicle, Scapula, Humeus, Radius, Ulna, Carpels, metacarpels & Phalanges

(b) Soft tissue parts- Breast, pectoral region, axilla, front of arm, back of arm, cubital fossa, front of foream, back of foream, palm, dorsum of hand, nerves and vessels of upper extremity.

(c) Joints- Shoulder girdle, shoulder joint, elbow joint, radio-ulnar joint, wrist joint and joints of hand.

Section – III

- **Lower Ectremity**

(a) Osteology- Hipbone, femur, tibia, fibula, patella, tarsals, metarsals and pjalanges.

(b) Soft tissue parts: Gluteal region, front and back of the thigh (Femoral triangle femoral canal and inguinal canal) medial side of the thigh (adductor canal), lateral side of the thigh, popliteal fossa, anterior and posterior compartment of leg, sole of the foot, lymphatic drainage of Lower limb, venous drainage of the lower limb arterial supply of the lower limb.

(c) Joints- Hip joint, knee joint, ankle joint, joints of the foot.

Section – IV

- **Trunk**

(a) Oestology- vertebra and ribs.

(a) Soft tissue parts- pre and para vertebral muscles, intercoastal muscles, Anterior abdominal wall muscles.

(b) Joints- Cost chondral, costo vertebral, Intervertebral.

- **Head and neck-**

(a) Osteology-Mandible and bones of skull

(b) Soft tissue parts- muscles of face and neck and their nerve and blood supply.

(c) Joints- Temporomandibular joints.

Section –V

Thoracic Region

(a) Walls of the Thorax

(b) Thoracic cavity and pleura

(c) Lungs

(d) Media stinium

(e) Pericardium

(f) Heart

(g) Trachea

(h) Oesophagus

(i) Thoracic Duct

Section – VI

Abdomen

(a) Anterior abdominal wall

(b) Abdomen cavity 7 peritoneum

(c) Stomach

(d) Intestine

(e) Spleen

(f) Pancreas

(g) Liver

(h) Posterior abdominal wall

(i) Kidney & Ureter, Urinary Bladder & Urethra

(j) Diaphgram

(k) Perineum

(l) Male &Female reproductive organs

(m)Rectum & Anal Canal

Section – VII

Neuro Anatomy

(a) Meninges & C.S.F

(b) Sulci & Gyri and various areas of Cerebral Hemispheres

(c) Thalamus, Hypothalamus and Basal Ganglia

(d) Cerebullum

(e) Pons, Medulla

(f) Spinal Cord.

(g) IIIrd, IVth & Lateral ventricles

Practicals

1. Identification and description of all anatomical structures with help of models, charts, CD Rooms etc.
2. Surface making of lung pleura fiddures and lobes of lungs heart avdominal viscera and important nerves and blood vessels.
3. Demonstration of movements of important joints.
4. Identification of body prominences on inspection and palpation in the body especially of extremities.
5. Points of Palpation of Nerves & Arteries.

LIST OF BOOKS

1. Gray's Anatomy.
2. Human Anatomy by- B.D Chaurasia.
3. Snell's Clinical Anatomy
4. Grant's Anatomy
5. Last's Anatomy
6. Mc. Gregor Surgical Anatomy
7. Hollinshed Anatomy for Surgeons
8. Neuro Anatomy By-I.B. Singh
9. Neuro Anatomy By-Snell's
10. Trux and Carpenter's Neuro Anatomy
11. Mc. Millions Atlas and Human Anatomy
12. Grant's Atlas of Human Anatomy
13. Dc fioris Human Anatomy

PAPER IIND HUMAN PHYSIOLOGY

(BPT IST YEAR)

Subject Description

The course in Physiology over the first year is designed to give the student an in-depth knowledge of fundamental reactions of living organisms, particularly in the human body.

The major topics covered include the following: the cell; primary tissue; connective tissue; skin;muscle; nervous tissue; blood; lymphoid tissues; respiration; blood vessels; circulation; cardiac cycle; systemic circulation; sensory receptors; special senses; motor unit; spinal cord; control of movement; hypothalamic functions; gastrointestinal tract; kidneys; uterus; urinary tract; pregnancy; endocrine system.

Practical classes include hematology experiments, clinical examinations, amphibian chart, and recommended demonstrations.

THEORY

General Physiology [2 Hours]

- Cell: Morphology. Organelles: their structure and functions
- Transport Mechanisms across the cell membrane
- Body fluids: Distribution, composition. Tissue fluid – formation.

Blood [10 Hours]

- Introduction: Composition and functions of blood.
- Plasma: Composition, formation, functions. Plasma proteins.
- RBC: count and its variations. Erythropoiesis- stages, factors regulating. Reticulo-
- Endothelial system (in brief) Haemoglobin - Anemia (in detail), types of Jaundice.

Blood indices, PCV,ESR.

- WBC: Classification. Morphology, functions, count, its variation of each. Immunity
- Platelets: Morphology, functions, count, its variations
- Hemostatic mechanisms: Blood coagulation–factors, mechanisms.Their disorders.

- Anticoagulants.
- Blood Groups: Landsteiner's law. Types, significance, determination, Erythroblastosis foetalis.
- Blood Transfusion: Cross matching. Indications and complications.
- Lymph: Composition, formation, circulation and functions.

Nerve Muscle Physiology [15 Hours]

- Introduction: Resting membrane potential. Action potential –ionic basis and properties.
- Nerve: Structure and functions of neurons. Classification, Properties and impulse transmission of nerve fibres. Nerve injury – degeneration and regeneration.
- Neuroglia: Types and functions.
- Muscle: Classification. Skeletal muscle: Structure. Neuromuscular junction : Structure.

  Neuromuscular transmission, myasthenia gravis. Excitation- Contraction coupling.
- Rigor mortis. Motor unit. Properties of skeletal muscles, Strength- Duration curve, Length-tension relationship, fatigue, load.
- Smooth muscle: Structure, types, mechanism of contraction. Plasticity.

Cardiovascular System [20 Hours]

- Introduction: Physiological anatomy and nerve supply of the heart and blood vessels.
  Organisation of CVS. Cardiac muscles: Structure. Ionic basis of action potential and Pacemaker potential. Properties.
- Conducting system: Components. Impulse conduction Cardiac Cycle: Definition. Phases of cardiac cycle. Pressure and volume curves. Heart sounds – causes, character. ECG: Definition. Different types of leads. Waves and their causes. P-R

interval. Heart block.

- Cardiac Output: Definition. Normal value. Determinants. Stroke volume and its regulation. Heart rate and its regulation. Their variations
- Arterial Blood Pressure: Definition. Normal values and its variations. Determinants.

Peripheral resistance. Regulation of BP.

- Arterial pulse.
- Shock – Definition. Classification–causes and features
- Regional Circulation: Coronary, Cerebral and Cutaneous circulation.
- Cardiovascular changes during exercise.

Respiratory System [15 Hours]

- Introduction: Physiological anatomy – Pleura, tracheo-bronchial tree, alveolus, respiratory membrane and their nerve supply. Functions of respiratory system. Respiratory muscles.
- Mechanics of breathing: Intrapleural and Intrapulmonary pressure changes during respiration.Chest expansion. Lung compliance: Normal value, pressure-volume curve, factors affecting compliance and its variations. Surfactant – Composition, production, functions. RDS
- Spirometry: Lung volumes and capacities. Timed vital capacity and its clinical significance.Maximum ventilation volume. Respiratory minute volume.
- Dead Space: Types and their definition.
- Pulmonary Circulation. Ventilation-perfusion ratio and its importance.
- Transport of respiratory gases: Diffusion across the respiratory membrane. Oxygen transport –Different forms, oxygen-haemoglobin dissociation curve. Factors affecting it P50, Haldane and Bohr effect. Carbon dioxide transport: Different forms, chloride shift.
- Regulation of Respirtation: Neural Regulation. Hering-breuer's reflex. Voluntary control.Chemical Regulation.
- Hypoxia: Effects of hypoxia. Types of hypoxia. Hyperbaric oxygen therapy. Acclimatization Hypercapnoea. Asphyxia. Cyanosis – types and features. Dysbarism
- Disorders of Respiration: Dyspnoea. Orthopnoea. Hyperpnoea, hyperventilation, apnoea,tachypnoea. periodic breathing – types
- Artificial respiration
- Respiratory changes during exercise.

Digestive System [5 Hours]

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

Renal System [8 Hours]

- Introduction: Physiological anatomy. Nephrons – cortical and juxtamedullary. Juxtaglomerular apparatus. Glomerular membrane. Renal blood flow and its regulation. Functions of kidneys.
- Mechanism of Urine Formation:Glomerular Filtration: Mechanism of glomerular filtration.GFR – normal value and factors affecting. Renal clearance. Inulin clearance.

Creatinine clearance.

- Tubular Reabsorption: Reabsorption of Na+, glucose, HCO3 urea and water. Filtered load.Renal tubular transport maximum. Glucose clearance: TmG. Renal threshold for glucose.
- Tubular Secretion: Secretion of H+ and K+. PAH clearance.
- Mechanism of concentrating and diluting the Urine: Counter-current mechanism.

Regulation of water excretion. Diuresis. Diuretics.

- Micturition: Mechanism of micturition. Cystometrogram. Atonic bladder, automatic bladder.
- Acid-Base balance (very brief)
- Artificial Kidney: Principle of haemodialysis.
- Skin and temperature regulation.

Endocrine System [10 Hours]

- Introduction: Major endocrine glands. Hormone: classification, mechanism of action.

Functions of hormones

- Pituitary Gland: Anterior Pituitary and Posterior Pituitary hormones: Secretory cells, action on target cells, regulation of secretion of each hormone. Disorders: Gigantism, Acromegaly, Dwarfism, Diabetes insipidus. Physiology of growth and development:
  hormonal and other influences.
- Pituitary-Hypothalamic Relationship.
- Thyroid Gland:Thyroid hormone and calcitonin: secretory cells, synthesis, storage, action and regulation of secretion. Disorders: Myxoedema, Cretinism, Grave's disease.
- Parathyroid hormnes: secretory cell, action, regulation of secretion. Disorders: Hypoparathyroidism. Hyperthyroidism. Calcium metabolism and its regulation.
- Adrenal Gland: Adrenal Cortex: Secretory cells, synthesis, action, regulation of secretion of Aldosterone, Cortisol, Androgens. Disorders: Addison's disease, Cushing's syndrome, Conn's syndrome, Adrenogenital syndrome. Adrenal Medulla: Secretory cells, action, regulation of secretion of adrenaline and noradrenaline. Disorders: Phoechromocytoma.

- Endocrine Pancreas:Secretory cells, action, regulation of secretion of insulin and glucagon.Glucose metabolism and its regulation. Disorder: Diabetes mellitus.
- Calcitrol, Thymus and Pineal gland (very brief).
- Local Hormones. (briefly).

Reproductive System [5 Hours]

- Introduction: Physiological anatomy reproductive organs. Sex determination. Sex differentiation. Disorder
- Male Reproductive System: Functions of testes. Pubertal changes in males. Spermatogenesis.Testosterone: action. Regulation of secretion. Semen.
- Female Reproductive System: Functions of ovaries and uterus. Pubertal changes in females.Oogenesis. Hormones:oestrogen and progesterone-action. regulation of secretion. Mentrual Cycle: Phases. Ovarian cycle. Uterine cycle. Hormonal basis. Menarche. Menopause.Pregnancy: Pregnancy tests. Physiological changes during pregnancy. Functions of placenta.Lactation. Contraception methods

Special Senses [10 Hours]

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

Nervous System [20 Hours]

- Introduction: Organization of CNS – central and peripheral nervous system. Functions of nervous system. Synapse: Functional anatomy, classification, Synaptic transmission. Properties.
- Sensory Mechanism: Sensory receptors: function, classification and properties. Sensory pathway: The ascending tracts – Posterior column tracts, lateral spinothalamic tract and the anterior spinothalamic tract – their origin, course, termination and functions. The trigeminal pathway. Sensory cortex. Somatic sensations: crude touch, fine touch, tactile localization, tactile discrimination,

stereognosis, vibration sense, kinesthetic sensations. Pain sensation: mechanism of pain. Cutaneous pain –slow and fast pain, hyperalgesia. Deep pain. Visceral pain – referred pain. Gate control theory of pain. tabes dorsalis, sensory ataxia.

- Motor Mechanism: Motor Cortex. Motor pathway: The descending tracts – pyramidal tracts, extra pyramidal tracts – origin, course, termination and functions. Upper motor neuron and lower motor neuron. Paralysis,monoplegia, paraplegia, hemiplegia and quadriplegia.
- Reflex Action: components, Bell-,classification and Properties. Monosynaptic and polysynaptic reflexes, superficial reflexes, deep reflexes. Stretch reflex– structure of muscle spindle, pathway, higher control and functions. Inverse stretch reflex. Muscle tone –definition, and properties hypotonia, atonia and hypertonia. UMNL and LMNL
- Spinal cord Lesions: Complete transection and Hemisection of the spinal cord.
- Cerebellum: Functions. Cerebellar ataxia.···Posture and Equilibrium: Postural reflexes – spinal, medullary, midbrain and cerebral reflexes.
- Thalamus and Hypothalamus: Nuclei. Functions. Thalamic syndrome
- Reticular Formation and Limbic System: Components and Functions.
- Basal Ganglia: Structures included and functions. Parkinson's disease.
- Cerebral Cortex: Lobes. Brodmann's areas and their functions. Higher functions of cerebral cortex – learning, memory and speech.
- EEG : Waves and features. Sleep: REM and NREM sleep.
- CSF: Formation, composition, circulation and functions. Lumbar puncture and its significance.Blood brain barrier. Hydrocephalus.
- ANS: Features and actions of parasymapathetic and sympathetic nervous system.

Applied Physiology [15Hours]

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

a. Pulmonary Functions

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

b. Cardio vascular Functions

1. Blood flow through arteries, arterioles, capillaries, veins and venuoles.
2. Circulation of Lymph, Oedema
3. Factors affecting cardiac output.
4. Circulatory adjustment in exercise and in postural and gravitational changes,
5. Pathophysiology of fainting and heart failure.

c. Muscles and Nervous System Functions

1. Peripheral nervous system, Neuromuscular transmission, Types of nerve fibres.
2. Action potential, Strength-duration curve, ECG, EMG, VEP, NCV
3. Degeneration and regeneration of nerve, Reactions of denervations.

4. Synaptic transmission, Stretch reflex- Mechanism and factors affecting it.
5. Posture, Balance and Equilibrium/Coordination of voluntary movement
6. Voluntary motor action, clonus, Rigidity, Discordination,
7. Special senses- Vision, taste, hearing, vestibular, Olfaction
8. Sympathetic and Parasympathetic regulation, Thermoregulation,

d. Blood functions

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

e. Metabolic Functions

Diabetes Mellitus, Physiological basis of Peptic Ulcer, Jaundice, GIT disorders an Dietary fiber,Thyroid functions, Vitamins deficiency,

PRACTICAL

I. Haematology [20 Hours]

To be done by the students

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

Demonstrations only

1. Determination of ESR
2. Determination of PCV

II. Clinical Examination [20 Hours]

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

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

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

Paper-III GENERAL, SOCIAL & CLINICAL PSYCHOLOGY

(BPT IST YEAR)

Unit – I

1. (i) Natural of Psychology: Behavior and Experience Conscious, Subconscious and Unconscious mind.
   (ii) Fields of Psychology: - Introspective and Experimental Method
   (iii) Schools of Psychology: - Associationism, Psycho-analytical theory, Behaviorism; Gestat psrchology; Structuralism and functionlism.

Unit – II

1. **Motivation: -** Principle of Homeostasis, Need and its relation to structure and environment. Kinds of motive physiological, Psychological, Social and Unconscious Motive life goals and levels of Aspirations; Interest and Attitude and motivational Force.
2. **Emotion: -** It nature and relationship with Autonomic nervous system; sentiment and feeling; Pathological and functional disorders of emotion, emotional hygiene.

Unit – III

1. Conflict and Frustration; common defensive mechanism- Identification Regression, lkoi98 Repression, Projection, Sublimation and Rationalization.

2. Learning role of learning in Human life: Types of learning (a) Thorndike's and Error learning (b) Associative (Conditioning) Learning, practical application conditioning technique in morbid. Fears, Compulsion to steal and other neurological behavior in eliminating undesirable behavior, (c) Learning by insight-Gesture learning, Kobler's experiments on animal learning; Transfer of learning.

Unit – IV

1. Memory (Retention): Types of memory-Recall, Recognition and role of memory causes of forgetting.

2. Attention and perception- Nature of Attention, factors deterring attention; Nature perception, principles of perceptual grouping; illusion and Hallucinations.

Unit – V

1. Intelligence- Definition, intelligence tests-their uses; How the Test is standardization Intelligence Quotient (I-Q) General Intelligence and special intelligence.
2. Personality-Definition; Type approach and trait approach; Measurement of personality-Interview questionnaire Rating, Performance, Projective methods,

factors contribution towards development of personalities-Biological and social factors.

Unit –VI

1. Develop and understanding of various emotional reactions to various illnesses.
2. Appreciate patient-therapist relationship.
3. Understand the various defence mechanisms used by patients in physical illness, terminal illness & old Age.
4. Develop ability to assess mental status for a brief history.
5. Appreciate signs and symptoms of mental ilness.
6. Mental mechanism & their role in health & disease
7. Intelligence assessment and the role of neuro-psychological tests.
8. Psychological reaction of patients to physical illness, reaction to loss, death & bereavement.
9. Emotional needs & Psychological factors in relation to unconsciousness & handicap.

REFERENCE BOOKS

1. Gen Psychology - C.P. morgan
2. do - J.P. Guiiford
3. do - Henry E Garret
4. do - S.T. Chaubey
5. do - D.N. Shrivastava
6. Manovigyan ke Mool Adhar - R.K. Tandon
7. Abnormal Psychology-a dynamic approach - J.C. Coleman
8. Abnormal Psychology - Dr. Govind Tiwari
9. Abnormal Psychology - Page
10. Abnormal psychology - Cameron
11. Fundamental Concepts of Clinical Psychology - Schanfar & Lazaraus

PAPER IVTH BIOCHEMISTRY

(BPT IST YEAR)

THEORY

1. Nutrition [7 hours]

Introduction, importance of nutrition, calorific values,

Respiratory quotient – Definition and its Significance

Energy requirement of a person – Basal metabolic rate: Definition, Normal values, factor affecting BMR special dynamic action of food

Physical activities- Energy expenditure for various activities.

Calculation of energy requirement of a person

Balanced diet, Recommended dietary allowances

Role of carbohydrates in diet: Digestible carbohydrates and dietary fibers

Role of lipids in diet

Role pof proteins in diet: Quality of proteins – Biological value, net protein utilization,

Nutritional aspects of proteins-essential and non essential amino acids. Nitrogen balance, Nutritional disorders

2. Carbohydrate Chemistry [3 Hours]

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

3. Lipid Chemistry [3 Hours]

Definition, general classification
Definition, classification, properties and functions of Fatty acids, Triacylglycerol, Phospholipids, Cholesterol
Essential fatty acids and their importance
Lipoproteins: Definition, classification, properties, Sources and function
Ketone bodies

4. Amino-acid Chemistry [3 Hours]

Amino acid chemistry: Definition, Classification, Peptide bonds
Peptides: Definition, Biologically important peptides
Protein chemistry: Definition, Classification, Functions of proteins

5. Enzymes [3 Hours]

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

6. Nucleotide and Nucleic acid Chemistry [2 Hours]

Nucleotide chemistry: Nucleotide composition, functions of free nucleotides in body. Nucleic acid (DNA and RNA) chemistry: Difference between DNA and RNA, Structure of DNA (Watson and Crick model), Functions of DNA. Structure and functions of tRNA, rRNA, mRNA.

7. Digestion and Absorption [3 Hours]

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

8. Carbohydrate Metabolism [5 Hours]

Introduction, Glycolysis – Aerobic, Anaerobic
Citric acid cycle, Substrate level phosphorylation
Glycogen metabolism – Glycogenesis, Glycogenolysis, Metabolic disorders glycogen, Gluconeogenesis, Cori cycle
Hormonal regulation of glucose, Glycosuria, Diabetes mellitus,

9. Lipid Metabolism [5 Hours]

Introduction to lipid metabolism, Lipolysis, Oxidation of fatty acids ·-oxidation of fatty acids, Lipogenesis - Denovo synthesis of fatty acids, chain elongation, desaturation, triacylglycerol synthesis, fat metabolism in adipose tissues
Ketone body metabolism: Ketone body formation (ketogenesis), utilization (ketolysis), ketosis,Rothera's test

Cholesterol metabolism: synthesis, degradation, cholesterol transport
Hypercholesterolemia and its effects (atherosclerosis and coronary heart diseases)
Hypocholesterolemic agents, Common hyperlipoproteinemia, Fatty liver

10. Amino acid and Protein Metabolism [3 Hours]

Catabolism of amino acids - Introduction, transamination, deamination, Fate of ammonia,transport of ammonia, Urea cycle
Specialized products formed from amino acids - from glycine, arginine, methionine, phenylalanine and tyrosine.

11. Vitamins [7 Hours]

Definition, classification according to solubility,
Individual vitamins - Sources, Coenzyme forms, functions, RDA, digestion, absorption and transport, deficiency and toxicity

12. Mineral Metabolism [2 Hours]

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

13. Cell Biology [2 Hours]

Introduction, Cell structure, Cell membrane structure and function, various types of absorption. Intracellular organelles and their functions, briefly on cytoskeleton

14. Muscle Contraction [2 Hours]

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

15. Biochemistry of Connective tissue [2 Hours]

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

16. Hormone Action [2 Hours]

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

17. Acid-Base balance [2 Hours]

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

18. Water balance [1 Hour]

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

19. Electrolyte balance [1 Hour]

Osmolarity. Distribution of electrolytes
Electrolyte balance: Role of aldosterone, rennin angiotensin system and ANF

20. Clinical Biochemistry [2 Hours]

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

Recommended Text books

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

PAPER VTH BASIC PRINCIPLES OF PHYSIOTHERAPY & YOGA

(BPT IST YEAR)

Unit – I

Definition of Physiotherapy : Its branches and scope.

Unit – II

Definition of Electrotherapy and classification of various modalities, circuit diagrams of various modalities

1. Basic electricity

(a) Main power supply earthing types of plugs safety devices, transformers.

(b) AC, Electricity waveform, Frequency, amplitude Etc.

(c) DC Electricity : Fundamental electric charges conduction and Insulators, Free Electron, Capacitance and Potential difference, Resistance and Ohms law. Capacitors, Rheostat Ammeter and Voltmeter. Application of all these in Physiotherapy department.

Effects of electric currents its chemical, thermal and magnetic effects. Shock and its Preventions:

Magnetism and its principle its emphasis in dipole theory.
Thermionic valves & semiconductors.
Introduction to Galvanic and Faradic currents.
Section II: Basic Principles in light & sound.
Section III: Therapeutic and physiological effects of heat and cold.
Section IV: Mechanical Principles, force, equilibrium, fixation and stabilization, axis and planes levers and pulleys, springs. Putty, action & reaction, torque, friction, work, energy & power.
Section V: Introduction to movements, type of muscles, types of muscles work, muscles contraction group action of muscles.
Introduction to Exercise Therapy
Active movement & passive movements and its various types. And description it is details. Basic starting positions

Unit – IV

Introduction to Basic modalities of electrotherapy and exercise therapy – traction, tilt table, parallel bars, medicine balls, C.P.M., wall bars, static cycle, quadriceps table. Shoulder wheel, ankle exerciser, balance board, jogger, dumb bells weightcuffs etc.

SWD, ultra sound apparatus, stimulator, TENS, IFT, Wax bath, moist heat therapy etc.

Unit- V

Introduction to Yoga [5 Hours]

Asanas – Principles and elements;

Pranayamas – Principles, Methods and Techniques

PAPER IST EXERCISE THERAPY

(BPT IIND YEAR)

Course Description

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

Theory

1. Introduction to Exercise Therapy [3 Hours]

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

2. Methods of Testing [15 Hours]

a) Functional tests

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

c) Tests for neuromuscular efficiency

- Electrical tests
- Manual Muscle Testing: Introduction to MMT, Principles & Aims, Indications & Limitations, Techniques of MMT for group & individual muscles: Techniques of MMT

  Upper limb /Techniques of MMT for lower limb / Techniques of MMT for spine
- Anthropometric Measurements: Muscle girth – biceps, triceps, forearm,

  quadriceps,

  Calf.
- Static power Test
- Dynamic power Test
- Endurance test
- Speed test

d) Tests for Co-ordination

e) Tests for sensation

f) Pulmonary Function tests

g) Measurement of Limb Length: true limb length, apparent limb length, segmental limb

Length

h) Measurement of the angle of Pelvic Inclination

3. Relaxation [4 Hours]

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

4. Passive Movements [4 Hours]

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

5. Active Movements [6 hours]

Definition of strength, power & work, endurance, muscle actions.
Physiology of muscle performance: structure of skeletal muscle, chemical & mechanical events during contraction &relaxation, muscle fiber type, motor unit, force gradation.
Causes of decreased muscle performance.

Physiologic adaptation to training:
Strength & Power, Endurance. Types of active movements

Free exercise: Classification, principles, techniques, indications, contraindications, effects and uses.

Active Assisted Exercise: principles, techniques, indications, contraindications, effects and uses

Assisted-Resisted Exercise: principles, techniques, indications, contraindications, effects and uses

Resisted Exercise: Definition, principles, indications, contraindications, precautions & techniques, effects and uses

Types of resisted exercises: Manual and Mechanical resistance exercise, Isometric exercise,

Dynamic exercise: Concentric and Eccentric, Dynamic exercise: Constant versus variable resistance, Isokinetic exercise, Open-Chain and Closed-Chain exercise.

Specific exercise regimens

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

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

Isokinetic regimens

6. Proprioceptive Neuromuscular Facilitation [6 Hours]

Definitions & goals

Basic neurophysiologic principles of PNF: Muscular activity, Diagonals patterns of movement: upper limb, lower limb

Procedure: components of PNF

Techniques of facilitation

Mobility: Contract relax, Hold relax, Rhythmic initiation

Strengthening: Slow reversals, repeated contractions, timing for emphasis, rhythmic stabilization

Stability: Alternating isometric, rhythmic stabilization

Skill: timing for emphasis, resisted progression

Endurance: slow reversals, agonist reversal

7. Suspension Therapy [6 Hours]

Definition, principles, equipments & accessories, Indications & contraindications, Benefits of suspension therapy

Types of suspension therapy: axial, vertical, pendular

Techniques of suspension therapy for upper limb

Techniques of suspension therapy for lower limb

8. Functional Re-education [4 hours]

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

9. Aerobic Exercise [4 Hours]

Definition and key terms; Physiological response to aerobic exercise, Examination and evaluation of aerobic capacity – Exercise Testing, Determinants of an Exercise Program, The Exercise Program, Normal and abnormal response to acute aerobic exercise, Physiological changes that occur with training, Application of Principles of an Aerobic conditioning program for patients –types and phases of aerobic training.

10. Stretching [3 Hours]

Definition of terms related to stretching; Tissue response towards immobilization and elongation,

Determinants of stretching exercise, Effects of stretching, Inhibition and relaxation procedures,

Precautions and contraindications of stretching, Techniques of stretching.

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

Schools of Manual Therapy, Principles, Grades, Indications and Contraindications, Effects and Uses – Maitland, Kaltenborn, Mulligan

Biomechanical basis for mobilization, Effects of joint mobilsation, Indications and Contraindiactions, Grades of mobilization, Principles of mobilization, Techniques of mobilization for upper limb, lower limb, Precautions.

12. Balance [4 Hours]

Definition

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

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

13. Co-ordination Exercise [4 Hours]

Anatomy & Physiology of cerebellum with its pathways

Definitions: Co-ordination, Inco-ordination

Causes for Inco-ordination, Test for co-ordination: equilibrium test, non equilibrium test

Principles of co-ordination exercise

Frenkel's Exercise: uses of Frenkel's exercise, technique of Frenkel's exercise, progression, home exercise.

14. Posture [3 Hours]

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

15. Walking Aids [3 hours]

Types: Crutches, Canes, Frames; Principles and training with walking aids

16. Massage [4 Hours]

History and Classification of Massage Technique

Principles, Indications and Contraindications

Technique of Massage Manipulations

Physiological and Therapeutic Uses of Specific Manipulations

17. Hydrotherapy [3 Hours]

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

18. Individual and Group Exercises [3 Hours]

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

Practicals

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

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

Recommended Textbooks

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

PAPER IIND ELECTROTHERAPY

(BPT IIND YEAR)

Course Description.

In this course the student will learn the Principles, Techniques, Effects, Indication, Contra-Indication and the dosage parameter for various indications of electro therapeutic modalities in the restoration of physical function. The objective of this course is that after 240hrs. of lectures, demonstration, practical and clinics the student will be able to list the indications, contra indications, dosages of electro therapy modalities, demonstrates the different techniques, and describe their effects on various conditions.

Section I - Introductory Physics.

1. Electricity definition, types [1 Hour]

2. Static electricity [2 Hour]

a. Production of electrical charges.

b. Characteristics of charged body.

c. Characteristics of lines of forces.

d. Potential difference and EMG.

3. Current Electricity [5 Hour]

a. Units of Electricity, faraday, volt, ampere, coulomb, watt.

b. Resistance in series and parallel.

c. Ohms law and its application to DC/AC.

d. Fuse.

e. Shock: Micro/ Macro shocks, safety precaution and management, earthing techniques & precautions.

f. Burns: electrical & chemical burns, prevention and management.

g. Condensors: definition, principles, types construction, working and uses.

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

5. Valves, transformers, types, principles, construction and working. [1 Hour]

6. Ionization: Principles, effects of various technique of medical ionization. [1 Hour]

Section II – Therapeutic Electricity

Section II A - Low frequency Currents

1. Basic types of current [1 Hour]

a. Direct Current: types, physiological &therapeutic effects.

b. Alternating Current

2. Types of Current used in Therapeutics [1 Hour]

Modified D.C

- Faradic Current
- Galvanic Current

Modified A.C

- Sinusoidal Current
- Diadynamic Current.

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

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

Denervated Muscles. [2 Hours]

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

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

7. Ionization / Iontophoresis : Techniques of Application of Iontophoresis, Indications, Selection of Current (Drugs) for pain, hyperhydrosis, would healing [1 Hour]
8. Cathodal / Anodal galvanism. [1 Hour]

9. Micro Current & Macro Current [1 Hour]

10. Types of Electrical Stimulators [1 Hour]

- NMES- Construction component.
- Neuro muscular diagnostic stimulator- construction component.
- Components and working Principles

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

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

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

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

Section II B - Electro-diagnosis

1. FG Test

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

3. Nerve conduction velocity studies [1 Hour]

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

5. Bio-feedback. [1 Hour]

Section II C - Medium Frequency

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

2. Russian Current

3. Rebox type Current [1 Hour]

Section III - Thermo & Actinotherapy (High Frequency Currents)

1. Electro Magnetic Spectrum. [1 Hour]

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

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

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

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

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

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

8. LASER: Define LASER. Types of LASER. Principles of Production. Production of LASER by various methods. Methods of application of LASER. Dosage of LASER. Physiological & Therapeutic effects of LASER. Safety precautions of LASER.

Classifications of LASER.
Energy density & power density [8 Hours]

Section IV – Superficial heating Modalities

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

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

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

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

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

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

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

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

Practical

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

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

Recommended Textbooks

1. Claytons Electrotherapy by Forster & Plastangs
2. Electrotherapy Explained by Low & Reed
3. Clinical Electrotherapy by Nelson
4. Electrotherapy Evidene based practice by Sheila Kitchen
5. Physical agents by Michile Cameroon
6. Principles of Electrotherapy by Michile Camreeon
7. Thermal agents by Susan Michlovitz.

PAPER IIIRD BIOMECHANICS & KINESIOLOGY

(BPT IIND YEAR)

Unit – I

1. Introduction of study of kinesiology
2. Fundamental concepts: Starting position, thje centre of gravity, line of gravity, planes and axis of motoin, fundamental movement of major body segments.

Unit – II

1. Muscular System :- Definition : properties of muscle, muscular contraction, structural classification, action of muscles in moving bones, direction of pull, angle of pull, functional classification, co-ordination of muscular system

2. The joints: - Their structure and function.

3. Neuro- muscular functions: the motor units, innervation of muscles, muscles, muscle tonus, reflexes, reciprocal innervation and inhibition kinesthetic senze and ballistic movements.

Unit – III

1. The machinery of the musculo-skeletal system- the levers, Anatomical levers, the wheel and axle, the pulley, the efficiencyof machines.

2. The fundamental principles of motion- The causes and kinds of motion, kinds of motion experienced by the body and factors determining the kind and modification of motion. The laws of circular motion.

3. Fundamental principles of force and work-force and its magnitude, direction, point of application, components of muscular force, components of external force, graphic representation of force, true force and the resistance arms of the lever, the confused affects of two or more forces.

Unit – IV

PRINCIPLES OF STABILITY PRINCIPLES CONVERING POSTURE

(a) Vertebral column (Thorax)
(b) Shoulder Region
(c) Elbow
(d) Wrist and hand

(e) Hip
(f) Knee
(g) Ankle and Foot
(h) Neck

Unit – V

APPLICATION OF KINESIOLOGY TO

(a) Locomotion- walking, Running & Biomechanics of all phases of gait cycle

(b) Physical therapy and occupational therapy

(c) Daily life skills

(d) The selection and evaluation of exercise for conditions like kyphosis, lordosis scoliosis etc for corrective purposes.

Practical

Evaluation and assessment of joint motion

Evaluation and assessment of daily life skills

Evaluation and assessment of different types of postures

Evaluation and assessment of locomotion

Evaluation and assessment of soft tissue injuries

PAPER IVTH PATHOLOGY & MICROBIOLOGY

(BPT IIND YEAR)

Subject Description

This subject follows the basic subjects of Anatomy, Physiology and Biochemistry and it forms a vital link between preclinical subjects and clinical subjects. Pathology involves the study of causes and mechanisms of diseases. Microbiology involves the study of common organisms causing diseases including nosocomial infections and precautionary measures to protect one from acquiring infections. The knowledge and understanding of Microbiology & Pathology of diseases is essential to institute appropriate treatment or suggest preventive measures to the patient.
Particular effort is made in this course to avoid burdening the student.

Theory [45 Hours]

General Pathology

1. Introduction to Pathology [1 Hour]

2. Cell injuries: [3 Hours]

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

3. Inflammation and Repair [3 Hours]

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

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

4. Immunopathology [2 Hours]

Immune system: General concepts.

Hypersensitivity: type and examples, antibody and cell mediated tissue injury with examples. Secondary immunodeficiency including HIV infection. Auto-immune disorders: Basic concepts and classification, SLE.

AIDS-Aetiology, Modes of transmission, Diagnostic procedures, handling of infected material and health education.

5. Infectious diseases [3 Hours]

Mycobacterial diseases: Tuberculosis, Leprosy and Syphilis.

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

Viral diseases: Poliomyelitis, Herpes, Rabies, Measles, Rickttsia, Chlamydial infection, HIV infection.

Fungal disease and opportunistic infections.

Parasitic diseases: Malaria, Filaria, Amoebiasis, Kala-azar, Cysticercosis, Hydatid cyst.

6. Circulatory Distrurbances [3 Hours]

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

7. Growth Disturbances and Neoplasia [3 Hours]

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

Benign & Malignant epithelial tumours Eg. Squamous papilloma, Squamous cell carcinoma,

Malignant melanoma. Benign & Malignant mesenchymal tumours Eg: Fibroma, Lipoma,

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

8. Nutritional Disorders [1 Hour]

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

9. Genetic Disorders [1 Hour]

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

10. Hematology [4 Hours]

Constituents of blood and bone marrow, Regulation of hematopoiesis.

Anemia: Classification, clinical features & lab diagnosis.

Nutritional anemias: Iron deficiency anemia, Folic acid,Vit. B 12 deficiency anemia including pernicious anemia. Hemolytic Anaemias: Classification and Investigations.

Hereditary hemolytic anaemias: Thalessemia, Sickle cell anemia, Spherocytosis and Enzyme deficiencies.Acquired hemolytic anaemias

i. Alloimmune, Autoimmune

ii. Drug induced, Microangiopathic

Pancytopenia - Aplastic anemia.

Hemostatic disorders, Vascular and Platelet disorders & lab diagnosis.

Coagulopathies - (i) Inherited (ii) Acquired with lab diagnosis.

Leukocytic disorders: Leukocytosis, Leukopenis, Leukemoid reaction.

Leukemia: Classification, clinical manifestation, pathology and Diagnosis.

Multiple myeloma and disproteinemias.

Blood transfusion; Grouping and cross matching, untoward reactions, transmissible infections including HIV & hepatitis, Blood-components & plasma-pheresis.

11. Respiratory System [2 Hours]

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

11. Cardiovascular Pathology [2 Hours]

Congenital Heart disease: Atrial septal defect, Ventricular septal defect, Fallot's tetralogy, Patent ductus arteriosus.Endocarditis.Rheumatic Heart disease.
Vascular diseases: Atherosclerosis, monckeberg's medial calcification, Aneurysm and Arteritis and tumours of Blood vessels.
Ischemic heart Disease: Myocardial infarction.
Hypertension and hypertensive heart Disease.

13. Alimentary tract [3 Hours]

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

14. Hepato – biliary pathology [2 Hours]

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

15. Lymphatic System [2 Hours]

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

16. Musculoskeletal System [3 Hours]

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

17. Endocrine pathology [3 Hours]

Diabetes Mellitus: Types, Pathogenesis, Pathology, Laboratory diagnosis
Non-neoplastic lesions of Thyroid: Iodine deficiency goiter, autoimmune Thyroiditis, Thyrotoxicosis, myxedema, Hashimoto's thyroiditis.
Tumours of Thyroid: Adenoma, Carcinoma: Papillary, Follicular, Medullary, Anaplastic.
Adrenal diseases: cortical hyperplasia, atrophy, tuberculosis, tumours of cortex and medulla.

18. Neuropathology [3 Hours]

Inflammations and Infections : TB Meningitis, Pyogenic Meningitis, viral meningitis and Brain Abscess,Tuberculosis, Cysticercosis,CNS Tumors, Astrocytoma, Neuroblastoma, Meningioma, Medulloblastoma

19. Dermatopathology [1 Hour]

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

Practical [15 Hours]

Demonstration of Slides – The students may be demonstrated the common histopathological, hematological and cytological slides and specimens and charts and their interpretations.

Recommended Textbooks

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

MICROBIOLOGY

Theory

1. General Microbiology [5 Hours]

Definitions: infections, parasite, host, vector, fomite, contagious disease, infectious disease, epidemic, endemic, pandemic, Zoonosis, Epizootic, Attack rate.
Normal flora of the human body.
Routes of infection and spread; endogenous and exogenous infections; source at reservoir of infections.

Bacterial cell. Morphology limited to recognizing bacteria in clinical samples Shape, motility and arrangement. Structures, which are virulence, associated.

Physiology: Essentials of bacterial growth requirements.Sterilization, disinfection and universal precautions in relation to patient care and disease prevention. Definition of asepsis, sterilization, disinfection.Antimicrobials: Mode of action, interpretation of susceptibility tests, resistance spectrum of activity.

2. Immunology [5 Hours]

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

3. Bacteriology [12 Hours]

To be considered under the following headings
Morphology, classification according to pathogenicity, mode of transmission, methods of prevention, collection and transport of samples for laboratory diagnosis, interpretation of laboratory reports Staphylococci, Streptococci and Pneumococci.
Mycobacteria: Tuberculosis, M.leprae, atypical mycobacteria, Enterobacteriaceae, Vibrois : V. cholerae and other medically important vibrios, Campylobacters and Helicobacters,Pseudomonas, Bacillus anthracis, Sporing and non-sporing anaerobes: Clostridia, Bacteroides and Fusobacteria,

4. General Virology [8 Hours]

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

5. Mycology [3 Hours]

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

6. Clinical/Applied Microbiology [12 Hours]

Streptococcal infections: Rheumatic fever and Rheumatic heart disease, Meningitis.Tuberculosis,Pyrexia of unknown origin,leprosy,Sexually transmitted diseases,Poliomyelitis,Hepatitis,Acute-respiratory infections, Central nervous System infections,Urinary tract infections, Pelvic inflammatory disease,Wound infection, Opportunistic infections,HlV infection, Malaria,Filariasis,Zoonotic diseases.

Practical [15 Hours]

1. Demonstration of Microscopes and its uses
2. Principles, uses and demonstration of common sterilization equipment
3. Demonstration of common culture media
4. Demonstration of motility by hanging drops method
5. Demonstration of Gram Stain, ZN Stain
6. Demonstration of Serological test: ELISA
7. Demonstration of Fungus

Recommended Textbooks:

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

PAPER VTH PHARMACOLOGY

(BPT IIND YEAR)

Course Description

This course introduces the student to basic pharmacology of common drugs used, their importance in the overall treatment including Physiotherapy. The student after completing the course will be able to understand the general principles of drug action and the handling of drugs by the body. The student will be aware of the contribution of both drug and physiotherapy factors in the outcome of treatment.

1. General Pharmacology [5 Hours]

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

2. Autonomic Nervous system [5 hours]

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

3. Cardiovascular Pharmacology [10 Hours]

Drugs Used in the Treatment of Heart Failure:
Digitalis, Diuretics, Vasodilators, ACE inhibitors Antihypertensive Drugs: Diuretics, Beta Blockers, Calcium Channel Blockers, ACE Inhibitors, Central Acting Alpha Agonists, Peripheral Alpha Antagonists, Direct acting Vasodilators.
Antiarrhythmic Drugs

Drugs Used in the Tratment of Vascular Disease and Tissue Ischemia :
Vascular Disease,
Hemostasis Lipid-Lowering agents, Antithrombotics, Anticoagulants and Thrombolytics
Ischemic Heart Disease – Nitrates, Beta-Blockers, Calcium Channel Blockers
Cerebral Ischemia,Peripheral Vscular Disease

4. Neuropharmacology [8 Hours]

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

Antidepressants, Atypical Antidepressants, Lithium
Antipsychotic drugs

5. Disorders of Movement [6 Hours]

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

6. Inflammatory/Immune Diseases [14 Hours]

Non-narcotic Analgesics and Nonsteroidal Anti-Inflammatory Drugs: Acetaminophen, NSAIDs,Aspirin, Nonaspirin NSAIDs, drug Interactins with NSAIDs

Glucocorticoids: Pharmacological Uses of Glucocorticoids, adverse effects, Physiologic Use of Glucocorticoids

Drugs Used in Treatment of Arthritic Diseases: Rheumatoid Arthritis, Osteoarthritis, Gout,Drugs Used in the Treatment of Neuromuscular Immune/Inflmmatory Diseases: Myasthena gravis, Idiopathic Inflammatory Myopathies, systemic lupus Erythmatosus, Scleroderma,Demyelinating Disease

Respiratory Pharmacology: Obstructive Airway Diseases, Drugs used in Treatment of Obstructive airway Diseases, Allergic Rhinitis

7. Digestion and Metabolism [6 Hours]

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

8. Geriatrics [6 Hours]

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

9. Elementary knowledge of Drug toxity and drug allergy,Drug resistance,
Elementary concept of drug-response relationships,
Drug potency and efficacy
Drug antagonism
Scope of pharmacology in Physiotherapy

Recommended Textbooks

1. Lippicott's Pharmacology.

2. Essential of Medical Phramacology by Tripathi

3. Text book of Medical Pharmacology by Padmaja uday kumar

PAPER IST CLINICAL ORTHOPAEDICS

(BPT IIIRD YEAR)

Subject Description

This subject follows the basic science subjects to provide the knowledge about Orthopedic conditions the therapist would encounter in their practice. The objective of this course is that after 60 hrs of lectures and discussion the student will be able to demonstrate an understanding of orthopedic conditions causing disability, list the etiology, clinical features and methods of investigations and management.

1. Introduction [3 Hours]

Introduction to orthopaedics. Clinical examination in an Orthopedic patient. Common investigative procedures. Radiological and Imaging techniques in Orthopeadics.
Inflammation and repair, Soft tissue healing.
General terminology & techniques, Generalized idea about deformities, Contractures, Common infection of bones, joints etc

2. Traumatology [3 Hours]

Fracture: definition, types, signs and symptoms.Fracture healing.Complications of fractures.Conservative and surgical approaches.
Principles of management –
reduction (open/closed, immobilization etc). Subluxation/ dislocations – definition, signs and symptoms,management (conservative and operative).

3. Fractures and Dislocations of Upper Limb [6 Hours]

Fractures of Upper Limb - causes, clinical features, mechanism of injury, complications,conservative and surgical management of the following fractures: Fractures of clavicle and scapula. Fractures of greater tuberosity and neck of humerus. Fracture shaft of humerus. Supracondylar fracture of humerus. Fractures of capitulum, radial head,olecranon, coronoid, and epicondyles. Side swipe injury of elbow. Both bonefractures of ulna and radius. Fracture of forearm – monteggia, galaezzi fracture – dislocation. Chauffer's fracture.Colle's fracture. Smith's fracture. Scaphoid fracture.
Fracture of the metacarpals. Bennett's fracture.
Fracture of the phalanges. (Proximal and middle.)

Dislocations of Upper Limb - Anterior dislocation of shoulder – mechanism of injury, Clinical feature, complications, conservative management (Kocher's and Hippocrates maneuver), surgical management (putti plat, bankart's) etc. Recurrent

dislocation of shoulder. Posterior dislocation of shoulder – mechanism of injury, clinical features and management. Posterior dislocation of elbow– mechanism of injury, clinical feature, complications & management.

4. Fracture of Spine [4 Hours]

Fracture of Cervical Spine - Mechanism of injury, clinical feature, complications (Quadriplegia); Management- immobilization (collar, cast, brace, traction); Management for stabilization,management of complication (bladder and bowel, Quadriplegia). Clay shoveller's fracture.

Hangman's fracture. Fracture odontoid. Fracture of atlas.
Fracture of Thoracic and Lumbar Regions - Mechanism of injury, clinical features, management—conservative and surgical of common fractures around thoracic and lumbar regions. Fracture of coccyx.
Fracture of Rib Cage - Mechanism of injury, clinical features, management for Fracture Ribs, Fracture of sternum.

5. Fractures and Dislocations of Lower Limb [5 Hours]

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

Supracondylar fracture of femur. Fractures of the condyles of femur. Fracture patella.
Fractures of tibial condyles. Both bones fracture of tibia and fibula. Dupuytren's fracture Maisonneuve's fracture. Pott's fracture – mechanism of injury, management.
Bimalleolar fracture Trimalleolar
fracture Fracture calcaneum – mechanism of injury, complications and management.
Fracture of talus. Fracture of metatarsals—stress fractures jone's fracture. Fracture Of phalanges.
Dislocations of Lower Limb - mechanism of injury, clinical features, complications, Management of the following dislocations of lower limb.
Anterior dislocation of hip. Posterior dislocation of hip. Central dislocation of hip. Dislocation of patella. Recurrent dislocation of patella.

6. Soft Tissue Injuries [3 Hours] –

Define terms such as sprains, strains, contusion, tendinitis,rupture, tenosynovitis,

tendinosis, bursitis.
Mechanism of injury of each, clinical features, managements- conservative and surgical of the following soft tissue injuries:
Meniscal injuries of knee. Cruciate injuries of knee. Medial and lateral collateral injuries of knee. Lateral ligament of ankle. Wrist sprains. Strains- quadriceps, hamstrings, calf, biceps, triceps etc. Contusions- quadriceps, gluteal, calf, deltoid etc.
Tendon ruptures-Achilles, rotator cuff muscles, biceps, pectorals etc.

7. Hand Injuries [2 Hours]-

mechanism of injury, clinical features, and management of the following –
Crush injuries. Flexor and extensor injuries. Burn injuries of hand.

8. Amputations [2 Hours] –

Definition, levels of amputation of both lower and upper limbs,indications, complications.

9. Traumatic Spinal Cord Injuries [2 Hours] –

Clinical features, complications, medical and surgical management of Paraplegia and Quadriplegia.

10. Deformities [6 Hours] –

clinical features, complications, medical and surgical management of the following Congenital and Acquired deformities.

Congenital Deformities - CTEV. CDH. Torticollis. Scoliosis. Flat foot. Vertical talus. Hand anomalies- syndactyly, polydactyly and ectrodactly. Arthrogryposis multiplex Congenital (amyoplasia congenita). Limb deficiencies- Amelia and Phocomelia. Klippel feil syndrome. Osteogenesis imperfecta(fragile ossium). Cervical rib.
Acquired Deformities - Acquired Torticollis. Scoliosis. Kyphosis. Lordosis. Genu varum. Genu valgum. Genu recurvatum Coxa vara. Pes cavus. Hallux rigidus. Hallux valgus. Hammer toe. Metatarsalgia.

11. Disease of Bones and Joints [4 Hours]:

Causes, Clinical features, Complications,
Management- medical and surgical of the following conditions :

- Infective conditions: Osteomyelitis (Acute / chronic). Brodie's abscess. TB spine and Major joints like shoulder, hip, knee, ankle, elbow etc.

- Arthritic conditions: Pyogenic arthritis. Septic arthritis. Syphilytic infection of joints.

- Bone Tumors: classification, clinical features, management - medical and surgical of The following tumors : Osteoma. Osteosarcoma, Osteochondroma. Enchondroma.
  Ewing's sarcoma. Gaint cell tumor. Multiple myeloma. Metastatic tumors.

- Perthes disease, Slipped Capital Femoral Epiphysis and Avascular Necrosis.

- Metabolic Bone Diseases: Rickets. Osteomalacia, Osteopenia. Osteoporosis.

12. InfIammatory and Degenerative Conditions [4 Hours]:

    causes, clinical feature, complications,deformities, radiological features, management- conservative and surgical for the following conditions :

    Osteoarthritis. Rheumatoid arthritis. Ankylosing spondylitis Gouty arthritis. Psoriatic arthritis.Hemophilic arthritis. Still's disease (juvenile rheumatoid arthritis). Charcot's joints.
    Connective Tissue Disorders- Systemic Lupus Erythematosis, Scleroderma, Dermatomyositis,Poliomyelitis, Mixed connective tissue Disease (MCTD)

12. Syndromes [3 Hours]:

    Causes, Clinical features, complications, management- conservative and surgical of the following :
    Cervico brachial syndrome. Thoracic outlet syndrome. Vertebro- basilar syndrome. Scalenus syndrome. Costo clavicular syndrome. Levator scapulae syndrome. Piriformis syndrome.

14. Neuromuscular Disorders [3 hours]:
    Definition, causes, clinical feature, complications,management. (Multidisciplinary approach) medical and surgical of the following conditions :
    Cerebral palsy. Poliomyelitis. Spinal Dysraphism. Leprosy.

15. Cervical and Lumbar Pathology [3 Hours]:

    Causes, clinical feature, patho-physiology,investigations, management-Medical and surgical for the following :
    Prolapsed interverbral disc (PID), Spinal Canal Stenosis. Spondylosis (cervical and lumbar) Spondylolysis. Spondylolisthesis. Lumbago/ Lumbosacral strain. Sacralisation. Lumbarisation.Coccydynia. Hemivertebra.

16. Orthopedic Surgeries [3 Hours]: Indications, Classification, Types, Principles of Management of the following Surgeries :

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

17. Regional Conditions [4 Hours]: Definition, Clinical features and management of the Following regional condition.

- Shoulder:

    Periarthritic shoulder (adhesive capsulitis). Rotator cuff tendinitis. Supraspinatus
    Tendinitis. Infraspinatus Tendinitis. Bicipital Tendinitis. Subacromial Bursitis.

- Elbow:

    Tennis Elbow. Golfer's Elbow. Olecranon Bursitis (student's elbow). Triceps, Tendinitis.

- Wrist and Hand:

    De Quervain's Tenosynovitis. Ganglion. Trigger Finger/ Thumb. Mallet Finger, Carpal Tunnel Syndrome, Dupuytren's Contracture.
- Pelvis and Hip :
    IT Band Syndrome. Piriformis Syndrome. Trochanteric Bursitis.

- Knee:

    Osteochondritis Dissecans. Prepatellar and Suprapatellar Bursitis. Popliteal. Tendinitis. Patellar Tendinitis. Chondromalacia Patella. Plica Syndrome. Fat Pad Syndrome (Hoffa's syndrome).

- Ankle and Foot:

    Ankle Sprains. Plantar Fasciitis / Calcaneal Spur. Tarsal Tunnel Syndrome. Achilles Tendinitis. Metatarsalgia. Morton's Neuroma.

Books Recommended:

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

PAPER IIND CLINICAL NEUROLOGY & PSYCHIATRY

(BPT IIIRD YEAR)

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

1. Disorders of function in the context of Pathophysiology, Anatomy in Neurology and Cortical Mapping. [1 hour]

2. Classification of neurological involvement depending on level of lesion.[1 hour]

3. Neurological assessment: Principles of clinical diagnosis, higher mental function, assessment of brain & spinal cord function, evaluation of cranial nerves and evaluation of autonomic nervous system. [3 hours]

4. Investigations: principles, methods, views, normal/abnormal values/features, types of following investigative procedures- skull x-ray, CT, MRI, evoked potentials, lumbar puncture, CSF examination, EMG, NCV. [3 hours]

5. Neuro-ophthalmology: Assessment of visual function – acuity, field, colour vision, Pupillary reflex, accommodation reflex, abnormalities of optic disc, disorders of optic nerve, tract, radiation, occipital pole, disorders of higher visual processing, disorders of pupil, disorders of eye movements, central disorders of eye movement. [1 hour]

6. Deafness, vertigo, and imbalance: Physiology of hearing, disorders of hearing, examination & investigations of hearing, tests of vestibular function, vertigo, peripheral vestibular disorders, central vestibular vertigo. [2 hours]

7. Lower cranial nerve paralysis – Etiology, clinical features, investigations, and management of following disorders - lesions in trigeminal nerve, trigeminal neuralgia, trigeminal sensory neuropathy, lesions in facial nerve, facial palsy, bell's palsy, hemi facial spasm, Glossopharangial neuralgia, lesions of Vagus nerve, lesions of spinal accessory nerve, lesions of hypoglossal nerve. Dysphagia – swallowing mechanisms, causes of dysphagia, symptoms, examination, and management of dysphagia. [3 hours]

8. Cerebro-vascular diseases: Define stroke, TIA, RIA, stroke in evolution, multi infarct dementia and Lacunar infarct. Classification of stroke – Ischemic, hemorrhagic venous infarcts. Risk factors, cause of ischemic stroke, causes of hemorrhagic stroke. Classification of hemorrhagic stroke, classification of stroke based on symptoms, stroke syndrome,investigations, differential diagnosis, medical and surgical management. [4 hours]

9. Head injury: Etiology, classification, clinical signs & symptoms, investigations, Differential diagnosis, medical management, surgical management and complications. [3 hours]

10. Higher cortical, neuro psychological and neurobehavioral disorders: Causes of blackouts,physiological nature of Epilepsy, classification, clinical feature investigations, medical & surgical management of following disorders – Non-epileptic attacks of childhood, Epilepsy in childhood, Seizers, and Epilepsy syndromes in adult. Classification and clinical features of Dyssomnias, Parasomnias, Dementia, Obsessive-compulsive disorders. Neural basis of consciousness, causes & investigations of Coma, criteria for diagnosis of Brain death.Etiology, pathophysilogy, classification, clinical signs & symptoms, investigations,differential diagnosis, management of Perceptual disorders and Speech disorders. [3 hours]

11. Movement disorders: Definition, etiology, risk factors, pathophysilogy, classification, Clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Parkinson's disease, Dystonia,Chorea, Ballism, Athedosis, Tics, Myoclonus and Wilson's disease. [3 hours]

12. Cerebellar and coordination disorders: Etiology, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Congenital ataxia,Friedreich's ataxia, Ataxia talengiectasia, Metabolic ataxia, Hereditary cerebellar ataxia,Tabes dorsalis and Syphilis. [3 hours]

13. Spinal cord disorders: Functions of tracts, definition, etiology, risk factors, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Spinal cord injury, Compression by IVD prolapse, Spinal epidural abscess, Transverse myelitis, Viral myelitis, Syringomyelia, Spina bifida, Sub acute combined degeneration of the cord, Hereditary spastic paraplegia, Radiation myelopathy, Progressive encephalomyelitis, Conus medullaris syndrome, Bladder & bowel dysfunction, and Sarcodosis. [3 hours]

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

15. Infections of brain and spinal cord: Etiology, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Meningitis, Encephalitis, Poliomyelitis and Postpolio syndrome. Complications of systemic infections on nervous system – Septic encephalopathy, AIDS, Rheumatic fever, Brucellosis, Tetanus, and Pertussis. [2 hours]

16. Motor neuron diseases: - Etiology, pathophysilogy, classification, clinical signs & symptoms,investigations, differential diagnosis, medical management, and complications of following disorders - Amyotrophic lateral sclerosis, Spinal muscular atrophy, Hereditary bulbar palsy,Neuromyotonia and Post-irradiation lumbosacral polyradiculopathy. [2 hours]

17. Multiple sclerosis - Etiology, pathophysilogy, classification, clinical signs & symptoms,investigations, differential diagnosis, medical management, and complications. [2 hours]

18. Disorders of neuromuscular junction – Etiology, classification, signs & symptoms, investigations, management, of following disorders Myasthenia gravis, Eaton-Lambert syndrome, and Botulism. [2 hours]

19. Muscle diseases: Classification, investigations, imaging methods, Muscle biopsy, management of muscle diseases, genetic counselling. Classification, etiology, signs & symptoms of following disorders – Muscular dystrophy, Myotonic dystrophy, myopathy,Non-dystrophic myotonia. [3 hours]

20. Polyneuropathy – Classification of Polyneuropathies, Hereditary motor sensory neuropathy,Hereditary sensory and Autonomic neuropathies, Amyloid neuropathy, Acute idiopathic Polyneuropathies. Guillain-Barre syndrome – Causes, clinical features, management of GBS, Chronic Idiopathic Polyneuropathies, diagnosis of polyneuropathy, nerve biopsy. [2 hours]

21. Focal peripheral neuropathy: Clinical diagnosis of focal neuropathy, neurotmesis, Axonotmesis, Neuropraxia. Etiology, risk factors, classification, neurological signs & symptoms, investigations, management, of following disorders – RSD, Nerve tumors,Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions, Phrenic & Intercostals nerve lesions, Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy,Musculocutaneous nerve palsy, Anterior & Posterior interosseous nerve palsy, Axillary nerve palsy, Long thoracic nerve palsy, Suprascapular nerve palsy, Sciatic nerve palsy, Tibial nerve palsy, Common peroneal nerve palsy, Femoral nerve palsy, Obturator nerve palsy, Pudental nerve palsy. [3 hours]

22. Paediatric neurology: Neural development, Etiology, pathophysilogy, classification, Clinical signs & symptoms, investigations, differential diagnosis, medical

management, surgical management and complications of following disorders - Cerebral palsy, Hydrocephalus, Arnold-chiari malformation, Basilar impression, Klippel-Feil syndrome, Achondroplacia, Cerebral malformations, Autism, Dandy walker syndrome and Down's syndrome. [3 hours]

23. Toxic, metabolic and environmental disorders: Etiology, risk factors, classification, neurological signs & symptoms, investigations, management, of following disorders–Encephalopathy, Alcohol toxicity, Recreational drug abuse, Toxic gases & Asphyxia,Therapeutic & diagnostic agent toxicity, Metal toxicity, Pesticide poisoning, Environmental & physical insults, Pant & Fungal poisoning, Animal poisons, & Complications of organ transplantation. [3 hours]

24. Introduction, Indications and Complications of following Neuro surgeries: Craniotomy,Cranioplasty, Stereotactic surgery, Deep brain stimulation, Burr-hole, Shunting,Laminectomy, Hemilaminectomy, Rhizotomy, Microvascular decompression surgery,Endarterectomy, Embolization, Pituitary surgery, Ablative surgery - Thalamotomy and Pallidotomy, Coiling of aneurysm, Clipping of aneurysm, and Neural implantation. [2 hours]

PSYCHIATRY

1. Defece mechanism causes and types of mental disorders,psychosomatic complications.

2. Schizophrenic,Manic depressive psychosis.

3. Psychoneurosis: Conversion and anxiety disorders, Hysteric anxiety states, Reactive depression, observation compulsive disorders.

4. Electro convulsive therapy

5. Mental retardation

Recommended books:

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

PAPER III[RD] CLINICAL CARDIOTHRACIC CONDITIONS

(BPT III[RD] YEAR)

Unit – I

Introduction Review of Anatomy and Physiology and Branchy Pulmonary Segment. Lungs, Heart and thorax.

Unit – II

Basic Principles of assessment in Cardiothoracic Sciences

Examination of Respiratory system and cardiac system disorders, investigation techniques used in Pulmonary function tests bronchoscopy, blood gas analysis, X-Rays, exercise tolerance test, Mediastinoscopy, ECG, Angiography Doppler & Ecl. Cardiography etc.

Unit – III

Thoracic cage abnormality

Common deformites like

(a) Funnel chest

(b) Pigeon Chest

(c) Barrel Chest

(d) Fracture rib & flail chest etc.

Unit – IV

Cardio vascular system

Common condition like

Cadiac failure, Rheumatic fever, Congential Heart Disease, Ischemic Heart disease, Hypertension, Infective Endocarditis, Cardiac Myopathies and Myocarditis, Pericarditis Vascular diseases like Atheroscelerosis, Buerger's disease, Phlebitis, Aneurysis Thrombosis, Vericose vein etc.

Unit –V

- Common cardiac surgeries
- Type of incision, Pre & Post operative assessment & MGT & complication
- Valvular diseases & its SURGERIES
- Cogential heart diseases
- Surgeries of Pericardium
- Open heart surgery and coronary angioplasty
- Cardiac transplant
- Vascular surgeries

Unit – VI

Respiratory Diseases.

Definition, Etiology, Clinical features diagnosis actue & chronic bronchitis COPD Restrictive Disease.

Emphysema, Bronchial asthma, Pneumonia, Pulmanary tuberculosis ling abscess, Bronchiectasis, Occupational lung diseases.

Respiratory failure & AIDS

Unit – VII

Thoracic surgeries

Out line – indications, Contraindications, site of inscisions, Pre & Post Operative management of following:-

Lobectomy, Pneumectomy, Segmentectomy, thoroplasty, tracheostomy & Rib Resection.

Unit – VIII

Description of the following procedures

Management of Endotracheal tubes Tracheal suction, Post extubation care cardio plumonary resucitation.

Cardiac Massage, Artificial respiration, Defibrillators & ICU, ICCU care.

PAPER IVTH GENERAL MEDICINE & PEDIATRICS

(BPT IIIRD YEAR)

Subject Description

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

1. Infection : Effects of Infection on the body – Pathology – source and spread of infection –vaccinations – generalized infections – rashes and infection – food poisoning and gasteroenteritis – sexually transmitted diseases – HIV infections and Aids: Measles, Entewric fever, Tuberculosis, Syphilis, Malaria, Amoebiasis, etc [3 Hours]

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

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

4. Endocrine diseases : Common presenting symptoms of Endocrine disease – common classical disease presentations, clinical features and its management; Diabetes Mellitus : Etiology and pathogenesis of diabetes – clinical manifestations of the disease – management of the disease –Complications of diabetes. Hypothyroidism,Hyperthyroidism,Cushing syndrome,etc

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

6. Diseases of the digestive system : Clinical manifestations of gastrointestinal disease Aetiology, clinical features, diagnosis, complications and treatment of the following Conditions : Reflux Oesophagitis, Achlasia Cardia, Carcinoma of Oesophagus, GI bleeding,

Peptic Ulcer disease, Carcinoma of Stomach, Pancreatitis, Malabsorption Syndrome, Ulcerative Colitis, Peritonitis, Infections of Alimentary Tract
Clinical manifestations of liver diseases - Aetiology, clinical features, diagnosis, complications and treatment of the following conditions: Viral Hepatitis, Wilson 's disease, Alpha1-antitrypsin deficiency, Tumors of the
Liver, Gall stones, Cholycystitis. [7 Hours]

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

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

9. Diseases of the Skin : Examination and clinical manifestations of skin diseases ; Causes, clinical features and management of the following skin conditions: Leprosy, Psoriasis,Pigmentary Anomalies, Vasomotor disorders,SLE,Atheletic foot,Eczema,Alopecia,Folliculitis,Callosities,Warts,Panniculitis, Dermatitis, Coccal and Fungal Parasitic and Viral infections. [6 Hours]

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

Recommended books:

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

PAPER VTH GENERAL SURGERY , OBS, GYNAE, ENT & PLASTIC SURGERY

(BPT IIIRD YEAR)

Subject Description

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

1. Fluid, Electrolyte and Acid-Base disturbances – diagnosis and management ; Nutrition in the surgical patient ;

Wound healing – basic process involved in wound repair, basic phases in the healing process, clinical management of wounds, factors affecting wound healing,

Scars –types and treatment. Hemostasis – components, hemostatic disorders, factors affecting bleeding during surgery. Transfusion therapy in surgery – blood components, complications of transfusion ; Surgical Infections ; General Post Operative Complications and its management [6 Hours]

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

3. Causes, Clinical Presentation, Diagnosis and treatment of the following Thoracic Trauma situations – Airway obstruction, Pnuemothorax, Hemothorax, Cardiac Tamponade, Tracheobronchial disruption, Aortic disruption, Diaphragmatic disruption, Esophageal disruption, Cardiac and Pulmonary Contusions. [4 Hours]

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

5. Disorders of the Chest Wall, Lung and Mediastinum – Definition, Clinical features, Diagnosis and choice of management for the following disorders – chest wall deformities, chest wall tumors, Spontaneous Pneumothorax, Pleural Effusion, Empyema Thoracis, Lung abscess, Bronchiectasis, Tuberculosis, Bronchogenic Carcinoma, Bronchial Adenomas, Metastatic tumors of the Lung, tracheal Stenosis,

Congenital tracheomalacia, Neoplasms of the trachea,Lesions of the Mediastinum. Carcinoma of the female breast. [5 Hours]

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

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

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

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

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

11.Shock:- Types, clinical features, Pathology & management

12.Haemorrhage:- Types, clinical management & management

OBS & GYNAE

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

b) Rectal Prolapse

c) Uterine Prolapse

d) Pelvic inflammatory disease

14. ENT: Common problems of ear, otitis media, Otosclerosis, functional achonia and deafness, management facial palsy classification, medical and surgical management of lower motor neuron type of facial palsy, Palatadeformities, Vertigo, Rhinitis, Tonsilitis, CSOM etc [3 Hours]

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

Recommended books:

1. General Surgical Operations – by Kirk / Williamson

2. Surgery by Nan

3. Bailey and Love's – Short Practice of Surgery

4. Chest Disease by Crofton and Douglas.

5. Patrica A Downie, Text book of Heart, Chest Vascular Disease for physiotherapists, JP Bros.

PAPER VITH DISABILITY, PREVENTION AND REHABILITATION

(BPT IIIRD YEAR)

Unit –I

ORGANISATION

A general Survey of the fields: Correlating of theoretical principles with practical-application history and Development of Occupational therapy and Physiotherapy with special reference to present uses and techniques in the major medical fields professional and Hospital Ethics and Atiquettes.

Supplementary reading and reports

a. Definition of Rehabilitation of the handicapped

b. Scope of rehabilitation programme in India & abroad

c. Organisation structure of the Rehabilitation

Units of the Handicapped including:-

(i) Finances: Budgets and income and expenditure statement and other financial detail of Rehabilitation Units including details of various part of Rehabilitation.

(ii) Space: Locations, survey sites, climatic and environmental conditions.

(iii) Miscellaneous:- Preparation of scheme for set up of Rehabilitation units in a Hospital of outside Hospitals with a given number of children or specific conditions.

Unit – II

ADMINISTRATION

(a) Principles of Relationship between personnel of Rehabilitation unit and other departments.

(b) Principles of Relationship between the Institution and the guardians of the Handicapped patient.

(c) Principles of Relationship between head of the Unit with various Government and Semi-Government, Trusts and juniors

(d) Principles of maintaining Department Secrecy; handling difficult problems day to day work.

(e) Introduction to job analysis of importance

(f) Methods of teaching to Handicapped and other workers in Rehabilitation units

(g) Principles of teaching and guiding students, juniors and seniors in O.T. and training schools and centres.

Unit – III

REHABILITATION THERAPY

I. (a) The philosophy and need of Rehabilitation
(b) Principles of Physical therapy

II. Principles of Rehabilitation Nursing
(a) Organisation and Functions of nursing Personnel
(b) Nursing Activities on the Rehabilitation team
(c) Nursing Practice in Rehabilitation

III. Mental Retardation
(a) Definition
(b) Classification
(c) Therapeutic approach for children with mental retardation in special schools
(d) Home care programme for children with mental retardation
(e) Organization & administration of special schools in different field disabilities

Unit – IV

MANAGEMENT

(a) Principles in Management of social Problems

(i) Social needs of the patient

(ii) Rehabilitation centre environment

(iii) The social worker as a member of the Rehabilitation team

(iv) Contribution on social work

(v) Community resources

(b) Principles in Management of Vocational problem and Occupational therapy

(i) Vocational Evaluation

(ii) Vocational Goals for the Severally disabled.

PAPER IST PT IN ORTHOPEDICS & SPORTS PHYSIOTHERAPY

(BPT IVTH YEAR)

Subject Description

The subject serves to integrate the knowledge gained by the students in orthopedics and traumatology with skills to apply these in clinical situations of dysfunction and musculoskeletal 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 musculoskeletal dysfunction, plan and set treatment goals and apply the skills gained in exercise therapy and electrotherapy in these clinical situations to restore musculoskeletal function.

1. PT assessment for Orthopedic conditions - SOAP format. Subjective - history taking, Informed consent, personal, past, medical and socioeconomic history Chief complaints, history of present illness.

Pain assessment- intensity, character, aggravating and relieving factors, site and location. Objective- on observation - body built swelling, muscle atrophy, deformities, posture and gait. On palpation- tenderness-grades, muscle spasm, swelling-methods of swelling assessment, bony prominences, soft tissue texture and integrity, warmth and vasomotor disturbances. On examination – ROM – active and passive, resisted isometric tests, limb length-apparent, true and segmental, girth measurement, muscle length testing-tightness, contracture and flexibility, manual muscle testing, peripheral neurological examination dermatomes, myotomes and reflexes, special tests and functional tests.
Prescription of home program.
Documentation of case records, and follow up. [5 Hours]

2. Fractures –

Types, classification, signs and symptoms, complications.
Fracture healing - factors affecting fracture healing. Principles of fracture Management-reduction-open and closed, immobilization - sling, cast, brace, slab, traction- manual, mechanical, skin, skeletal, lumbar and Cervical traction, external fixation, functional cast bracing. PT management in complications - early and late– shock, compartment syndrome, VIC, fat embolism, delayed and mal union, RSD, myositis ossificans, AVN, pressure sores etc.
Physiotherapy assessment in fracture cases. Aims of PT management in fracture cases - short and long term goals.
Principles of PT management in fractures - Guidelines for fracture treatment during period of immobilization and guidelines for treatment after immobilization period. [9 Hours]

3. Specific fractures and dislocations:

PT assessment and management of upper limb Fractures and dislocations. PT assessment and management of lower limb fractures and dislocations including pelvis.
PT assessment and management spinal fractures. [6 Hours]

4. Selection and application of physiotherapeutic techniques, maneuver's, modalities for preventive, curative and rehabilitative means in all conditions. [2 Hours]

5. Principles of various schools of thought in manual therapy. (Briefly Maitland and (Mc. kenzie). [3 Hours]

6. Degenerative and Inflammatory conditions:

Definition, signs and symptoms, clinical features, path physiology, radiological features, deformities, medical, surgical management. Describe the PT assessment and management and home program for the following conditions – Osteoarthritis - emphasis mainly on knee, hip and hand,
Rheumatoid Arthritis, Ankylosing spondylitis, Gout, Perthes disease, Periarthritic shoulder. [3 Hours]

7. Infective conditions:

Definition, signs and symptoms, clinical features, pathophysiology, radiological features, medical, surgical management. Describe PT assessment and management for following conditions – Osteomyelitis – acute and chronic, Septic arthritis, Pyogenic arthritis, TB spine and major joints - knee and hip. [2 Hours]

8. Define, review the postural abnormalities of spinal column, clinical features, deformities, medical and surgical management. Describe PT assessment and management and home program. [3 Hours]

9. Deformities:

Review in detail the causes, signs and symptoms, radiological features,
Medical and surgical management. Describe the PT. assessment and management of the following conditions : Congenital : CTEV, CDH, Torticollis, pes planus, pes cavus and other common deformities. Acquired: scoliosis, kyphosis, coxa vara, genu varum, valgum and recurvatum. [3 Hours]

10. Cerebral palsy:

Definition, etiology, classification, clinical features, complications,deformities, medical and surgical management and home program with special emphasis on carrying techniques. PT management after surgical corrections. [2 Hours]

11. Poliomyelitis:

Definition, etiology, types, pathophysiology, clinical features, deformities, medical and surgical management. PT. assessment and management after surgical corrections and reconstructive surgeries - emphasis on tendon transfer and home program. [2 Hours]

12. Leprosy:

Definition, cause, clinical features, medical and surgical management. PT assessment, aims, and management after surgical procedures such as tendon transfer both pre and post operatively. [2 Hours]

13. Amputations:

Definition, levels, indications, types, PT assessment, aims, management pre and post operatively. PT management with emphasis on stump care and bandaging. Pre and post prosthetic training, checking out prosthesis, complications of amputations and its management. [3 Hours]

14. Spinal conditions:

Review the causes, signs and symptoms, investigations,
Radiological features, neurological signs. PT assessment, aims, and management and home program of the following conditions: Cervical spondylosis, Lumbar spondylosis, Spondylolisthesis, Spinal canal stenosis, Spondylolysis, Sacro-iliac joint dysfunction, Sacralisation, Lumbarisation, Intervertebral disc prolapse, Coccydynia, Spina bifida occulta. [5 Hours]

15. Effects of spinal traction, types of traction, modes of application, indications for spinal traction, contraindications, precautions, limitations of traction. [2 Hours]

16. Osteoporosis- causes, predisposing factors, investigations and treatment. [1 Hour]

17. Orthopedic surgeries:

Pre and post operative PT assessment, goals, precautions and PT management of following surgeries such as : Arthrodesis, Osteotomy, Arthroplasty-partial and total

- Excision arthroplasty, excision arthroplasty with implant, interpositional arthroplasty and total replacement; Tendon transplant, Soft tissue release-tenotomy, myotomy, lengthening; Arthroscopy, Spinal stabilization,
Re-attachment of limbs, External fixators, Synovectomy. [4 Hours]

18. Shoulder joint :

Shoulder instabilities, TOS, RSD, Impingement syndrome – conservative and Post operative PT management. Total shoulder replacement and Hemi replacement. – Post operative PT management. AC joint injuries - rehabilitation.
Rotator cuff tearsconservative and surgical repair. Subacromial decompression - Post operative PT management. [3 Hours]

19. Elbow and forearm:

Excision of radial head - Post operative PT management. Total
Elbow arthroplasty- Post operative PT management. [2 Hours]

20. Wrist and Hand:

Total wrist arthroplasty. Repair of ruptured extensor tendons. Carpal Tunnel syndrome. Flexor and extensor tendon lacerations - Post operative PT management. [3Hours]

21. Hip: Joint surgeries –

hemi and total hip replacement - Post operative PT Management Tendonitis and bursitis. - management. [2 Hours]

22. Knee:

Lateral retinacular release, chondroplasty- Post operative management. Realignment of extensor mechanism. ACL and PCL reconstruction surgeries-Post operative rehabilitation. Meniscectomy and meniscal repair - Post operative management. Plica syndrome, patellar dysfunction and Hoffa's syndrome-conservative management. TKR- rehabilitation protocol.
Patellar tendon ruptures and Patellectomy- rehabilitation. [5 Hours]

23. Ankle and foot:

Ankle instability. Ligamentous tears- Post operative management. [1 Hour]

24. Introduction to Bio-Engineering;

Classification of Orthoses and prostheses;
Biomechanical principles of orthotic and prosthetic application; Designing of upper extremity, lower extremity and spinal orthosis, indications and check out; Designing of upper extremity and lower extremity prostheses, indications and check out; Psychological aspects of orthotic and prosthetic application; prescription and designing of footwear and modifications; Designing and construction of adaptive devises. [9 Hours]

25. Sports Physiotherapy :

Physical fitness. Stages of soft tissue healing. Treatment Guidelines for soft tissue injuries- Acute, Sub acute and chronic stages. Repair of soft tissues- rupture of muscle, tendon and Ligamen.tous tears. Soft tissue injuries- prevention and rehabilitation of, Lateral ligament sprain of ankle. Rotator cuff injuries.
Collateral and Cruciate injuries of knee. Meniscal injuries of knee. Supraspinatus and Bicipital tendonitis . Pre patellar and Subacromial bursitis. Tennis and Golfer's elbow. Hamstring strains, Quadriceps contusion,TA rupture. Dequervain's tenosynovitis. Trigger and Mallet finger. Plantar fasciitis. Wrist sprains. [5 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:

1. Tidy's physiotherapy.
2. Textbook of orthopedics- Cash.
3. Clinical orthopedic rehabilitation- Brotzman.
4. Orthopedic physiotherapy - Jayant Joshi.
5. Physical Rehabilitation Assessment and Treament – O'Sullivan Schmitz
6. Sports physiotherapy- Maria Zuluaga

PAPER IIND PT IN NEUROLOGY AND NEUROSURGERY

(BPT IVTH YEAR)

Subject 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.

1. Neurological Assessment: Required materials for examination, Chief complaints, History taking – Present, Past, medical, familial, personal histories, Observation, Palpation, Higher mental function – Consciousness, Orientation, Wakefulness, memory, Speech, Reading,Language, Writing, Calculations, Perception, Left right confusion, Reasoning, and Judgment,Motor Examination – Muscle power, Muscle tone, Spasticity,

Flaccidity, Reflexes –
Developmental reflexes, deep tendon reflexes, Superficial reflexes, Sensory examination – Superficial, Deep and Cortical sensations, Special tests – Romberg's, Kernig's sign, Brudenzki sign, Tinels's sign, Slum test, Lehermitte's sign, Bells Phenomenon, Gower's sign, Sun set sign, Battle's sign, Glabellar tap sign, etc, Balance examination, coordination examination,

Gait analysis – Kinetics & Kinematics (Quantitative & Qualitative analysis), Functional Analysis, Assessment tools & Scales – Modified Ashworth scale, Berg balance scale, FIM, Barthel index, Glasgow coma scale, Mini mental state examination, Rancho Los Amigos Scale for Head injury, APGAR score, ASIA scale, Reflex Grading. Differential diagnosis. [10 hours]

2. Neuro physiological Techniques – Concepts, Principles, Techniques, Effects of following Neurophysiological techniques: NDT, PNF, Vojta therapy, Rood's Sensory motor Approach, Sensory Integration Approach, Brunnstorm movement therapy, Motor relearning program, Contemporary task oriented approach, Muscle re-education approach and Constraint induced movement therapy. [14 hours]

3. Paediatric Neurology: Paediatric Examination, Developmental milestones, Developmental reflexes, Neuro developmental screening tests. Evaluation & Management - History, Observation, Palpation, Milestone Examination, developmental reflex Examination, Higher mental function, Cranial nerve examination, Motor & Sensory examination, Reflex testing, differential Diagnosis,

Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches & Modalities in Risk babies, Minimum brain damage, Developmental disorders, Cerebral palsy, Autism, Down's Syndrome, Hydrocephalus, Chorea, Spina bifida, and syringomyelia. [14 hours]

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

5. Evaluation and Management of Cerebellar, Spinal Cord and Muscle Disorders: History, Observation, Palpation, Motor & Sensory examination, Reflex testing, differential Diagnosis.

Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches& Modalities in Ataxia, Sensory Ataxia, Parkinson's disease, Muscular dystrophy (DMD),Myasthenia Gravis, Eaton-Lambert Syndrome, Spinal tumors, Spinal cord injury, Transverse myelitis, Bladder & Bowel Dysfunction, Spinal muscular atrophies, Poliomyelitis, Post Polio Syndrome [10 hours]

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

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

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

Practical: 60 Hours

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

3. Bedside case presentations and case discussions
4. Lab sessions consisting of evaluation and assessment methods on student models, Treatment techniques and practice sessions.

Recommended books:

1. Tidy's physiotherapy.

2. Cash’s Textbook of Neurology for Physiotherapists

3. Neurological Rehabilitation by D Umphred

4. Physical Rehabilitation Assessment and Treament – O’Sullivan Schmitz

5. Elements of Pediatric Physiotherapy-Eckersley

PAPER IIIRD PT IN CARDIO-THORACIC CONDITIONS

(BPT IVTH YEAR)

Subject Description

The subject is designed to provide knowledge in assessing and planning physiotherapy interventions for various General, Medical and Surgical conditions. The student must be able to reassess the patient as necessary, to monitor the patient in regard to treatment, to monitor the patient's vital signs , and to provide appropriate interventions to the patient.

1. Anatomical and Physiological differences between the Adult and Pediatric lung [1 Hour]

2. Bedside assessment of the patient-Adult & Pediatric [5 Hours]

3. Investigations and tests – Exercise tolerance Testing – Cardiac & Pulmonary, Radiographs PFT, ABG, ECG, Hematological and Biochemical Tests [6 Hours]

4. Physiotherapy techniques to increase lung volume – controlled mobilization, Positioning, breathing exercises, Neurophysiological Facilitation of Respiration, Mechanical aids -Incentive Spirometry, CPAP, IPPB [3 Hours]

5. Physiotherapy techniques to decrease the work of breathing – Measures to optimize The balance between energy supply and demand, positioning, Breathing re- education – Breathing control techniques, mechanical aids – IPPB, CPAP, BiPAP [3 Hours]

6. Physiotherapy techniques to clear secretions – Hydration, Humidification & Nebulisation,Mobilisation and Breathing exercises, Postural Drainage, Manual techniques – Percussion,Vibration and Shaking, Rib Springing, ACBT, Autogenic Drainage, Mechanical Aids – PEP,Flutter, IPPB, Facilitation of Cough and Huff, Nasopharyngeal Suctioning [3 Hours]

7. Drug therapy – Drugs to prevent and treat inflammation, Drugs to Treat Bronchospasm, Drugs to treat Breathlessness, Drugs to help sputum clearance, Drugs to inhibit coughing, Drugs to improve ventilation, Drugs to reduce pulmonary hypertension, Drug delivery doses, Inhalers and Nebulisers.[1 Hour]

8. Neonatal and Pediatric Physiotherapy – Chest physiotherapy for children, The neonatal unit, Modifications of chest physiotherapy for specific neonatal disorders, Emergencies in the neonatal unit [3 Hours]

9. Physiotherapy in Obstructive lung conditions [2 Hours]

10. Physiotherapy in Restrictive lung conditions [2 hours]

11. Management of breathlessness [2 hours]

12. Pulmonary Rehabilitation [4 Hours]

13. Physiotherapy following Lung surgeries [3 Hours]

14. Respiratory failure – Oxygen Therapy and Mechanical Ventilation [4 Hours]

15. Introduction to ICU : ICU monitoring –Apparatus, Airways and Tubes used in the ICU -Physiotherapy in the ICU – Common conditions in the ICU – Tetanus, Head Injury, Lung Disease, Pulmonary Oedema, Multiple Organ Failure, Neuromuscular Disease, Smoke Inhalation, Poisoning, Aspiration, Near Drowning, ARDS, Shock; Dealing with an Emergency Situation in the ICU [4 Hours]

16. Physiotherapy management following cardiac surgeries [3 Hours]

17. Cardiac Rehabilitation [4 Hours]

18. Physiotherapy management following PVD [3 Hours]

19. Abdominal Surgeries - Management of Pulmonary Restorative Dysfunction following Surgical procedures on Abdomen and Thorax [3 Hours]

FIRST AID & CPR

1. Importance of First Aid in Physiotherapy.
2. Examination of Vital Signs
3. First Aid in cardiac arrest.
4. First Aid in Respiratory failure.
5. First Aid in Burns.
6. First Aid in Electric shock.
7. First Aid in Drowning.
8. First Aid in Spinal cord injuries.
9. First Aid in Hypovolemic Shock.
10. First Aid in Poisoning

11. Instrumentation used in First Aid (First Aid kit).

12. First Aid in RTA.

13. Indication of CPR.

14. Assessment and technique of CPR.

15. Artificial ventilation

Practical: 60 Hours

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

1. Bedside case presentations and case discussions

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

Recommended books:

1. Tidy's physiotherapy.

2. Cash’s Text Book of Chest, Heart, Vascular Disorders for Physiotherapists.

3. The Brompton Guide to chest physiotherapy DU Gasket [Completed]

4. Physical Rehabilitation Assessment and Treament – O’Sullivan Schmitz

5. Elements in Pediatric Physiotherapy – Pamela M Eckersley

6. Essentials of Cardio Pulmonary Physical Therapy by Hillegass and Sadowsky

7. Cardiao pulmonary Symptoms in physical Therapy practice Cohen and Michel

8. Chest Physiotherapy in Intensive Care Unit by Mackenzi

9. Cash’s Text book of General Medicine and Surgical conditions for Physiotherapists.

10. Physiotherapy in Psychiatry

11. Physical Therapy for the Cancer patient by M.C Garvey

12. Physiotherapy in Obstetrics and Gynecology by Polden

PAPER IVTH PHYSIOTHERAPY IN GEN. MEDICAL AND SURGICAL CONDITIONS

(BPT IVTH YEAR)

Unit – I

Oedema, Inflammation, Artherosclerosis, Aneurysma, Tumors, Rickets, Diabetes panniculitis, obesity, Lymphedema, Tetanus.

Unit – II

Gen. Surgery: Wound, Ulcers, Boils, carbuncles, Burns, pre & post operative P.T. Common Abdominal Incisions & common surgeries with their P.T. Treatment & Post Operative Complications, Appendicectomy, Gallbladder Surgeries, Hernia, Splenectomy Nephrectomy etc.

Unit – III

Skin: Acne, Psoriasis, SLE, Alopecia, Leucoderma, Athletic foot, Eezyma, Folliculities warts, callosities etc.

Unit – IV

Obs. And Gynae: Ante natal and post natal Physiotherapy, Painless delivery complication of pregnancy.

PID and Salphingitis, Incontinence and Bladder conditions, Prolapsed Rectum and Uterus, Radical mastectomy.

Unit – V

ENT: Rhinitis, Sinusitis, Vertigo, Tonsillitis, Otitismedia, Palatal surgeries.

Unit – VI

Skin grafting and flaps, liposuction, mamoplasty, Rhinoplasty.

Unit – VII

Pediatrics, delayed milestones, Cerebral palsy, Autism.

Unit – VIII

Sports: Preparation of programmes for sportsmen.

Mechanism of injury

Muscle building therapies

PT treatment of common sports injuries

Nutrition in sports

Ergonomics.

Practicals : The syllabus of practical will be relevant portions of the theory.

PAPER VTH RESEARCH METHODOLOGY, BIOSTATISTIC AND COMPUTER

(BPT IVTH YEAR)

1. Biostatistics

Unit – I

Measurement of Central Tendency (Mean, Median, Mode)

Measurement of Dispersion, Collection and classification of data, Graphical representation of data. Measurement of Central tendency.

Theory of Probability – Definition, Mathematical definition, Law of Probability (Additional and Multiplication Theorems)

Condition Probability, Expectations – Expected values of the Mathematical expectation, addition and multiplication theorem on expectation.

Unit – II

Test-t-test, f-test and X^2-test

Theoretical distribution (Binokial, Poisson and Normal distibution), theory of sampling

Population and sampling-introduction, main steps in sample survey, purposive sampling

Probability Sampling simple Random sampling, quota sampling, systematic sampling, cluster

sampling, multistage sampling.

Unit – III

Correlation and regression line:-

1. Coefficient of correlation
2. Properties of coeficient of correlation (r) calculation of (r) from table rank (Rank coefficient of correlation)
3. Linear and non linear regression. Regression Coefficient and Regression line.
4. Condition for constancy of data, coefficient of measuring associations.

Unit – IV

Computer: Application, Soft and Hardware, Application in Medicina, Programming etc. Modern concept of Computer Technology in Rehabilitation of persons with disabilities