

2ND YEAR B.P.T.

Course Code: B.P.T-201

SUBJECT DESCRIPTION: COURSE TITLE - PATHOLOGY AND MICROBIOLOGY (PM): Theory (L) Practical (P)

PM 1.0. Subject Description and instruction to teacher

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.

PM 1.0.1. Course Outcomes: Course Pathology and Micro biology

1. Explain important pathological processes including cell death and injury, inflammation, thrombosis and neoplasia. (KH)
2. Discuss the relationship between pathological process and pathogenesis of musculoskeletal, cardio-vascular, neurological and oncological diseases. (KH)
3. Describe the predisposing factors, causes, pathogenesis, morphology, and complications of musculoskeletal, cardio-vascular, neurological, and oncological diseases. (K)
4. Discuss the clinical features in relation to causes and pathogenesis of the diseases. (KH)
5. Describe the classification and characteristics of microorganisms' cause's diseases.(K)
6. Describe the reproduction of common bacterial, fungal, viral pathogens. (K)
7. Discuss the mechanism of infectious disease and body's immune defense. (KH)
8. Explain infection control practices that prevent the spread of infection (KH)
9. Discuss the process of infection and mechanism create a sterile field in physiotherapy practice (KH)

PM 1.0.2. Teaching – Learning Methods

1. Lecture
2. Tutorial
3. Demonstration using models including digital tools
4. Flipped class

PM 1.0.3. Assessment Methods

1. MCQs
2. Assignments
3. Short Essays
4. Long essay

Course Contents: B.P.T. PM 201 (L)

SECTION A

UNIT 1

- PM 1.1. Discuss the Causes of disease, cell injury
- PM 1.2. Describe the mechanism of cell injury – hypoxia, free radical injury. Necrosis and gangrene
- PM 1.3. Explain the pathology inflammation
- PM 1.4. Differentiate acute and chronic inflammation
- PM 1.5. Explain the process of primary healing, secondary healing
- PM 1.6. Discuss the factors affecting healing and repair of soft tissues and skin.

UNIT 2

- PM 2.1. Describe Fluid and hemodynamic derangements
- PM 2.2. Discuss the pathophysiology of edema, hyperemia, Hemorrhage, shock, embolism, thrombosis, and infarction
- PM 2.3. Discuss Immune mechanisms (natural and acquired)
- PM 2.4. Discuss the features of autoimmune diseases and immunodeficiency diseases.
- PM 2.5. Discuss the characteristic of benign and malignant tumors
- PM 2.6. Describe grading and staging of malignant tumors
- PM 2.7. Describe general effects of malignancy on the host
- PM 2.8. Outline the carcinogenic agents
- PM 2.9. Outline the methods of diagnosis of malignancy
- PM 2.10. Classify the Nutritional disorders
- PM 2.11. Discuss the deficiency disorders (protein deficiency, vitamin deficiency (A,B,C,D,E,K) iodine deficiency)
- PM 2.12. Discuss the effect of nutrition deficiency on skeletal muscles, bones and neurological functions
- PM 2.13. Describe the hypersensitivity reactions

UNIT 3

PM 3.1. Discuss the causative factors, pathology, clinical features, diagnosis and management of Disorders of blood

1. Discuss the causative factors, pathology, clinical features, diagnosis and management of Disease of circulatory system (atherosclerosis,
2. Thromboangitis obliterans, varicose vein, DVT, thrombophlebitis, lymphedema, congestive cardiac failure, rheumatic heart disease,)
3. Explain the causative factors, pathology, clinical features, diagnosis and management of ischemic heart disease
4. Explain the causative factors, pathology, clinical features, diagnosis and management of Congenital Heart disease.
5. Explain the causative factors, pathology, clinical features, diagnosis and management of Disease of Respiratory System (Pneumonias, Bronchiectasis, Emphysema, Chronic bronchitis, Asthma, Occupational lung diseases, Carcinoma of lungs)
6. Explain the causative factors, pathology, clinical features, diagnosis and management of Disorders of musculoskeletal system. (Arthritis: rheumatoid, degenerative, infective, metabolic. osteoporosis, pagets disease, osteogenesis imperfecta, osteomyelitis, a brief outline of bone tumors. Muscular dystrophy, myasthenia gravis, myositis.)

PM 3.2. Explain the causative factors, pathology, clinical features, diagnosis and management of Diseases of Nervous system. (Meningitis, encephalitis, vascular diseases of brain, peripheral nerve lesions. Degenerative diseases parkinsonism, Alzheimer's disease)

PM 3.3. Describe the causative factors, pathology, clinical features, diagnosis and management of Diseases endocrine system. (Diabetes Mellitus, Thyroiditis, Thyrotoxicosis, myxedema.)

PM 3.4. Describe the causative factors, pathology, clinical features, diagnosis and management of the Disorders of blood (anemias, Leukemia)

1. Describe the causative factors, pathology, clinical features, diagnosis and management of the Disorders atherosclerosis, thromboangitis obliterans, varicose vein, DVT

SECTION -B

UNIT 4

Classify microorganisms

- PM 4.1. Discuss the type, source and mechanism of Infection
- PM 4.2. Describe the prevention and management of common infections
- PM 4.3. Describe the causative factors, and pathology of common Infectious diseases:
- PM 4.4. Outline of the management of common infective diseases
- PM 4.5. List the causative factors, pathology, clinical features, diagnosis and management of Bacterial disease (Diphtheria, Whooping Cough Tetanus Pyogenic, Diphtheria, Gram negative infection, bacillary dysentery. STD Gastroenteritis, Food Poisoning Tuberculosis, Leprosy, Syphilis)
- PM 4.6. Describe the causative factors, pathology, clinical features, diagnosis and management of viral diseases: (Poliomyelitis, Herpes, Rabies, Measles, Rickets, Chlamydial infection, HIV infection. Chicken Pox, Measles, Mumps, Influenza)
- PM 4.7. Describe the causative factors, pathology, clinical features, diagnosis and management of Fungal and opportunistic infections.
- PM 4.8. Describe the causative factors, pathology, clinical features, diagnosis and management of: Malaria, Filaria, Amoebiasis, Kala-azar, Cysticercosis, Hydatid cyst.

Recommended Text Books for PM

1. Cotran, Kumar & Robbins Robbins Pathological Basis of Disease - - W.B. Saunders.
2. Harsh Mohan Text book of Pathology - - Jaypee Brothers.
3. Goodman and Boissonnault Pathology: Implications for Physical Therapists - - W.B. Saunders.
4. Bhatia & Lal Essential of Medical Microbiology - - Jaypee Brothers.
5. Medical Microbiology - Mims - Jaypee Brothers.

Recommended reference books for PM

1. Walter & Israel, General Pathology - - Churchill Livingstone.
2. Anderson Muirs Textbook of Pathology - - Edward Arnold Ltd.
3. Ackerman and Richards - Microbiology: An Introduction for the Health Sciences – W.B. Saunders

Course Title- PHARMACOLOGY (PC): Theory (L)**PC 1.0. Subject Description and instruction to teacher**

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. Details of chemistry of molecules should be avoided.

PC 1.0.1. Course Outcomes: Course Pharmacology

1. Describe the concepts of pharmacology (including pharmacokinetics and pharmacodynamics) of commonly used drugs.(K)
2. Discuss the effects of commonly used drugs on body function.(KH)
3. Discuss the therapeutic and adverse effects, contraindications, and precautions for commonly used drugs.(KH)
4. Discuss the pharmacological effects of drugs used in the management pain, inflammatory, cardio-vascular, respiratory, neurological and oncological disorders. (KH)
5. Explain the effect of commonly prescribed on exercise and movement.(KH)
6. Identify the red and yellow flags for physiotherapy prescription based on the pharmacological effect of commonly prescribed drugs. (KH)

PC 1.0.2. Teaching Learning Methods:

1. Lecture
2. Tutorial
3. Demonstration using models including digital tools
4. Flipped class

PC 1.0.3. Assessment Methods:

1. MCQs
2. Assignments
3. Short Essays
4. Long essay

Course Contents: B.P.T. PC 202 (L)

SECTION -A

Unit 1:

PC 1.1. General Pharmacology

1. Define and, Classify drugs.
2. Describe Sources of drugs, Routes of drug administration, Distribution of drugs,
3. Discuss Metabolism and Excretion of drugs Pharmacokinetics, Pharmacodynamics, Factors modifying drug response, adverse effects.

PC 1.2. Inflammatory/Immune Diseases -

1. Describe Non-narcotic Analgesics and Nonsteroidal Anti-Inflammatory Drugs: Acetaminophen, NSAIDs, Aspirin, Non aspirin NSAIDs, drug Inter- actions with NSAIDs
2. Discuss Pharmacological Uses of Glucocorticoids, adverse effects, Physiologic Use of Glucocorticoids
3. Discuss Drugs Used in Treatment of Arthritic Diseases: Rheumatoid Arthritis, Osteoarthritis, Gout

PC 1.3. Discuss Drugs Used in the Treatment of Neuromuscular Immune/Inflammatory Diseases: Myasthenia gravis, Idiopathic Inflammatory Myopathies, systemic lupus Erythematosus, Scleroderma, Demyelinating Disease

UNIT 2: Autonomic Nervous system

PC 2.1. Describe General considerations – The Sympathetic and Parasympathetic Systems, Receptors, Somatic Nervous System

PC 2.2. Discuss cholinergic and Anti-Cholinergic drugs, Adrenergic and Adrenergic blocking drugs, Peripheral muscle relaxants.

Cardiovascular Pharmacology –

PC 2.3. Describe Drugs used in the treatment of heart failure: Digitalis, Diuretics, Vasodilators, ACE inhibitors

1. Describe Antihypertensive Drugs: Diuretics, Beta Blockers, Calcium Channel Blockers, ACE Inhibitors, Central Acting Alpha Agonists, Peripheral Alpha Antagonists, Direct acting Vasodilators
2. Describe Antiarrhythmic Drugs
3. Discuss the Drugs used in the treatment of vascular disease and tissue ischemia: Vascular Disease, Hemostasis Lipid-Lowering agents, Antithrombotics, Anticoagulants and Thrombolytics

- PC 2.4. Discuss the Drugs used in the treatment of Ischemic Heart Disease – Nitrates, Beta-Blockers, Calcium Channel Blockers, Cerebral Ischemia Peripheral Vascular Disease

SECTION -B

UNIT 3:

PC 3.1. Neuropharmacology

1. Discuss Sedative-Hypnotic Drugs: Barbiturates, Benzodiazepines
2. Describe Antianxiety Drugs: Benzodiazepines, Other Anxiolytics
3. Discuss Drugs Used in Treatment of Mood Disorders: Monoamine Oxidase Inhibitors, Tricyclic Antidepressants, Atypical Antidepressants, Lithium
4. Describe Antipsychotic drugs

PC 3.2. Disorders of Movement -

1. Discuss Drugs used in Treatment of Parkinson 's disease
2. Describe Antiepileptic Drugs
3. Discuss Spasticity and Skeletal Muscle Relaxants

PC 3.3. Discuss Respiratory Pharmacology and Drugs used in Treatment of Obstructive airway Diseases, Allergic Rhinitis

UNIT 4

PC 4.1. Describe Gastrointestinal Pharmacology and drugs used in Peptic Ulcer Disease, Constipation, and Diarrhea Drugs

PC 4.2. Describe Hormones and drugs affecting endocrine functions Used in Treatment of Diabetes Mellitus: Insulin, Oral Hypoglycemic

Geriatrics -

PC 5.1. Discuss the adverse effects of special concern in the Elderly, Dementia, and Postural hypotension.

PC 5.2. Describe chemotherapeutic agents

Recommended Text Books for PC

1. Udaykumar P. Pharmacology for physiotherapy. Jaypee Bros. Medical Publishers;2011.
2. Ramesh KV, Shenoy KA. Pharmacology for Physiotherapist. Jaypee Brothers Medical Publishers Pvt. Limited;2005.
3. Tripathi KD. Essentials of medical pharmacology. JP Medical Ltd;

Recommended reference books for PC

1. The Pharmacological basis of Therapeutics - Goodman and Gilman - MacMillan.
2. Satoskar RS, Rege N, Bhandarkar SD. Pharmacology and pharmacotherapeutics. Elsevier India; 2017



Course Title: Public Health & Health Promotion (PH): Theory (L)

PH 1.0. Subject Description and instruction to teacher

This subject follows the basic science subjects to provide the knowledge about conditions the therapist would encounter in their practice in the community. The objective of this course is that after 60 hrs. of lectures and discussion the student will be able to demonstrate an understanding of various aspects of health and disease and the methods of health administration, and be able to appreciate role of health education and disease preventive measures in keeping the population healthy.

PH 1.0.1. Course Outcomes:

After completion of this course the student shall be able to

1. Discuss the determinants of health in relation to the local context
2. Discuss National health policy, programmes and its application to physiotherapy practice
3. Explain the health care delivery system of India.
4. Describe the role of individual, family and community on health
5. Discuss the levels of prevention and its application in health care delivery
6. Explain basic epidemiological principles of health
7. Discuss the prevention of communicable and non-communicable diseases.

Course Contents: B.P.T. PH 203 (L)

SECTION -A

Unit 1

- PH 1.1. Health and Disease: Definitions, Concepts, Dimensions and Indicators of Health, Concept of well-being, Spectrum and Determinants of Health, Concept and natural history of Disease, Concepts of disease control and prevention, Modes of Intervention, Population Medicine,
- PH 1.2. Epidemiology, definition and scope. Principles of Epidemiology and Epidemiological methods: Components and Aims, Basic measurements, Methods, Uses of Epidemiology, Infectious disease epidemiology, Dynamics and modes of disease transmission, Host defenses and Immunizing agents, Hazards of Immunization, Disease prevention and control, Disinfection. Screening for Disease: Concept of screening, Aims and Objectives, Uses and types of screening.
- PH 1.3. Epidemiology of communicable disease: Respiratory infections, Intestinal infections, Arthropod-borne infections, Zoonoses, Surface infections, Hospital acquired infections Epidemiology of chronic non-communicable diseases and conditions: Cardio vascular diseases: Coronary heart disease, Hypertension, Stroke, Rheumatic heart disease, Cancer, Diabetes, Obesity, Blindness, Accidents and Injuries.

Unit 2

- PH 2.1. Public health administration- an overview of the health administration set up at Central and state levels. The national health programme highlighting the role of social, economic and cultural factors in the implementation of the national programmes. Health problems of vulnerable groups- pregnant and lactating women, infants and pre-school children, occupational groups.
- PH 2.2. Health programmes in India: Vector borne disease control programme, National leprosy eradication programme, National tuberculosis programme, National AIDS control programme, National programme for control of blindness, Iodine deficiency disorders (IDD) programme, Universal Immunisation programme, Reproductive and child health programme, National cancer control programme, National mental health programme. National diabetes control programme, National family welfare programme, National sanitation and water supply programme, Minimum needs programme.
- PH 2.3. Demography and Family Planning: Demographic cycle, Fertility, Family planning- objectives of national family planning programme and family planning methods, A general idea of advantage and disadvantages of the methods.
- PH 2.4. Preventive Medicine in Obstetrics, Paediatrics and Geriatrics: MCH problems, Antenatal, Intranatal and post-natal care, Care of children, Child health problems, Rights of child and National policy for children, MCH services and indicators of MCH care, Social welfare programmes for women and children, Preventive medicine and geriatrics.

SECTION -B

Unit 3

- PH 3.1. **Nutrition and Health:** Classification of foods, Nutritional profiles of principal foods, Nutritional problems in public health, Community nutrition programmes.
- PH 3.2. **Environment and Health:** Components of environment, Water and air pollution and public health: Pollution control, Disposal of waste, Medical entomology.
- PH 3.3. **Hospital waste management:** Sources of hospital waste, Health hazards, Waste management.
- PH 3.4. **Disaster Management:** Natural and man-made disasters, Disaster impact and response, Relief phase, Epidemiologic surveillance and disease control, Nutrition, Rehabilitation, Disaster preparedness.

Unit 4

- PH 4.1. **Occupational Health:** Occupational environment, Occupational hazards, Occupational diseases, Prevention of occupational diseases. Social security and other measures for the protection from occupational hazard accidents and diseases. Details of compensation acts.
- PH 4.2. **Mental Health:** Characteristics of a mentally healthy person, Types of mental illness, Causes of mental ill health, Prevention, Mental health services, Alcohol and drug dependence. Emphasis on community aspects of mental health. Role of Physiotherapist in mental health problems such as Intellectual Disability.
- PH 4.3. **Health Education:** Concepts, aims and objectives, Approaches to health education, Models of health education, Contents of health education, Principles of health education, Practice of health education.
- PH 4.4. **Exercise as Preventive Medicine:** for Old age, Working Population, Adolescents and Children. How to keep your Society fit.

Recommended text books for PH

1. Park K: Park's textbook of preventive and social medicine. 24th Ed, M/s Banarasidas Bhanot, Jabalpur, 2017
2. Rao SB: Principles of community medicine. 4th Ed, AITBS Publishers & distributors, New Delhi, 2005.
3. Rahim A: Principles and practice of community medicine. 1st Ed, Jaypee brothers, New Delhi. 2008.
4. Gupta MC & Mahajan BK: Textbook of preventive and social medicine. 3rd Ed, Jaypee Brothers, New Delhi, 2003

Recommended reference books for PH

1. Matzen RN, Lang RS: Clinical preventive medicine. Mosby, Missouri,
2. Abramson JH, Abramson ZH: Survey methods in community medicine, Churchill Livingstone, Edinburgh,
3. Jekel JF, Katz DL, Elmore JG: Epidemiology, Biostatistics and Preventive Medicine, 2nd Ed, Saunders, Philadelphia, 2001.



Course Title: Basics of Emergency Care and Life Support Skills (ECLS): Theory (L) Practical (P)**ECLS 1.0. Subject Description and instruction to teacher**

Basic life support (BLS) is the foundation for saving lives following cardiac arrest. Fundamental aspects of BLS include immediate recognition of sudden cardiac arrest (SCA) and activation of the emergency response system, early cardiopulmonary resuscitation (CPR), and rapid defibrillation with an auto-mated external defibrillator (AED). Initial recognition and response to heart attack and stroke are also considered part of BLS. The student is also expected to learn about basic emergency care including first aid and triage. The purpose of this course is to equip the students with the skill to save the life of a person in different emergency situation as first responder. The training should be provided using Mannequins and dummies and Videos presentations and Role plays should be also used to impart knowledge and skill besides the lecture - demonstrations.

ECLS 1.0.1. Course Outcomes:

After completion of this course the student shall be able to

1. Perform Opening and maintaining and patent airway: assessment and knowledge of airway maneuvers and adjuncts
2. Ventilate patients: Assessment and management of breathing with Mouth to mouth and mouth to mask
3. Administer basic life support skills including cardiopulmonary resuscitation
4. Provide first aid of simple and multiple system trauma such as • Controlling hemorrhage • Managing Burns and wounds • Response to effects of weapons of mass destruction • manually stabilizing injured extremities
5. Provide first aid to patients with medical emergencies like heart attack and stroke • Identifying signs of Stroke and heart attack and safe transfer after first aid without delay in transfer. • Manage general medical complaints seizures and animal bites (snake /dog bite)
6. Reassure patients and bystanders by working in a confident, efficient manner • Avoid mishandling and undue haste while working expeditiously to accomplish the task
7. Manage safe patient transport Entailing-Extrication of the victim, helmet removal and spine protection during transport.
8. Explain Roles, responsibilities and limitation of first responder.

Course Contents: B.P.T. ECLS 204 (L)

SECTION -A

UNIT 1

- ECLS 1.1. Emergent conditions and magnitude, Concept of golden hour, Duties and responsibilities of first responder
- ECLS 1.2. Ethical issues and Gather information from observation, experience and reasoning. Identification of rapidly changing situations and adapt accordingly. Planning and organization of work. Scene safety. Dealing with emotional reactions family members and bystanders
- ECLS 1.3. Well-being of first responder Personal protection
1. Steps to be taken against airborne and blood-borne pathogens
 2. Personal protective equipment necessary for each of the following situations: Hazardous materials Rescue Operations Violent Scenes Crime scenes
 3. Electricity, Water and ice
 4. Exposure to blood-borne pathogens Exposure to airborne pathogens

UNIT 2

- ECLS 2.1. Airway
1. Signs of inadequate breathing
 2. Mechanism of injury to opening the airway
 3. Steps in the head-tilt chin-lift
 4. Steps in the jaw thrust
 5. Taking out foreign body
 6. Ensuring patent airway during seizures and vomiting.
- ECLS 2.2. Ventilation
1. Of a patient with a mask or barrier device
 2. Steps in providing mouth-to-mouth and mouth-to-stoma ventilation
- ECLS 2.3. Circulation
1. Evaluate the cardiac status of the patient
 2. Determine the need for and take necessary action to proper circulation
 3. Steps for control of bleeding: Pressure bandage and tourniquet
- ECLS 2.4. Clearing a foreign body airway obstruction

ECLS 2.5. CPR

1. Implications of cardiac arrest
2. Cardiopulmonary resuscitation (CPR)
 - i. How it works
 - ii. Steps
 - iii. When to stop CPR
3. Brief overview of AED Automated external defibrillator (only demonstration –no hands on)

SECTION -B

UNIT 3

ECLS 3.1. Bleeding and Soft Tissue Injuries

1. Difference between arterial and venous bleeding
2. Stopping external bleeding
3. Identification of Internal bleeding
4. types and Functions of dressings and bandages
5. How to help a victim of burn injury

ECLS 3.2. Injuries to Muscles and Bones

1. Suspecting bony/spinal injury
2. Splinting –materials used
3. Importance of splinting

UNIT 4

ECLS 4.1 Medical Emergencies

ECLS 4.2

1. Identification of the patient steps in providing first aid to a patient with
 - i. A general medical complaint –Seizures
 - ii. Chest-pain
 - a. Shortness of breath
 - b. Exposure to heat
 - c. Including other medical complaints like allergy, diarrhea, fainting, low blood sugar, stroke

2. Drowning

3. Poisoning

ECLS 4.3 Transportation Importance of timely and proper transportation methods of transportation of victim from site of injury to ambulance. Importance of spine protection methods of spine protection during transportation

ECLS 4.4 Disaster preparedness -. Preparedness and risk reduction Incident command and institutional mechanisms Resource management

Practicals B.P.T. ECLS 204 (P)

Student should practice on Mannequins and dummies and should be able to

ECLS (P) 5.1. Provide Airway & Ventilation

ECLS (P) 5.2. Perform Basic Life Support: CPR

ECLS (P) 5.3. Perform Initial management of Thermal injury, electric injury

ECLS (P) 5.4. Perform stabilizing injured extremity and wound management

ECLS (P) 5.5. Demonstrate bandaging techniques to various body parts

ECLS (P) 5.6. Demonstrate Extrication, Helmet removal and spine protection

ECLS (P) 5.7. Demonstrate Stretcher use

Recommended text books for ECLS

Indian red cross : INDIAN FIRST AID MANUAL 2016 (7th edition) available at <https://www.indianredcross.org/publications/FA-manual.pdf>

Course Title: Exercise Therapy (ExT): Theory (L) Practical (P)**ExT 1.0. Subject Description and instruction to teacher**

the purpose of this course is to provide detailed knowledge and skills about the advanced concepts and methods of exercise therapy - build over the fundamental concepts taught in the first year such as relaxation, suspension therapy, hydrotherapy, manual therapy, aerobic exercises functional re-education stretching etc. The basic idea is that after the completion of this course student acquires the skills and knowledge to apply the techniques of exercise therapy in patient care. The emphasis should be giving hands on training on execution of various types of exercises and passive procedures. Besides lecture and demonstration, the emphasis should be placed on making the student capable to perform the exercise procedures independently using DOAP [demonstrate, observe, assist, perform] model of teaching learning

ExT 1.0.1. Course Outcomes: Exercise Therapy

1. Explain the physiological effects of endurance, strengthening, balance and coordination effects on various systems. (KH)
2. Differentiate types of exercise based on the therapeutic effects. (SH)
3. Discuss the indications, contraindications and precautions to be taken while performing
 - i. Passive Range of Motion
 - ii. Active Range of Motion
 - iii. Assisted exercises
 - iv. Endurance exercise
 - v. Strengthening exercise
 - vi. Balance and coordination exercise
4. Demonstrate competencies in prescribing
 - i. Passive Range of Motion
 - ii. Active Range of Motion
 - iii. Assisted exercises
 - iv. Endurance exercise
 - v. Strengthening exercise
 - vi. Balance and coordination exercise
5. Prescribe therapeutic exercise based on the assessment findings. (SH)

6. Demonstrate competencies in preparing and implementing evidence-based exercise protocol for movement impairments under supervision. (SH)
7. Demonstrate abilities to document the dosage and progression as per the prescribed format (SH)
8. Communicate the exercise protocol effectively to the stakeholders. (SH)

ExT 1.0.2. Teaching Learning Methods:

1. Lecture
2. Tutorials
3. Demonstration
4. Performance under supervisor
5. Lab work

ExT 1.0.3. Assessment Methods:

1. MCQs
2. Structured Essay
3. OSPE

Course Contents: B.P.T. ExT 205 (L)

SECTION-A

UNIT 1

ExT 1.1. RELAXATION

1. Discuss 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,
2. Discuss the Indications of relaxation, Methods & techniques of relaxation-Principles & uses:
3. Demonstrate General, Local, Jacobson's, Mitchel's, additional methods

ExT 1.2. SUSPENSION THERAPY:

1. Discuss the principles, indications, contraindications and benefits of suspension therapy
2. Demonstrate types of suspension therapy – axial, vertical, pendulum; techniques of suspension therapy for upper limb & lower limb

ExT 1.3. FUNCTIONAL RE-EDUCATION

1. Discuss the muscle activities of Lying to sitting:
2. Demonstrate Activities on the Mat/Bed, Movement and stability at floor level; Sitting activities and gait; Lower limb and Upper limb activities.

ExT 1.4. POSTURE

1. Discuss Active and Inactive Postures, Postural Mechanism, Patterns of Posture, Principles of re-education:
2. Demonstrate corrective methods and techniques
3. Demonstrate skills in Patient education

ExT 1.5. BREATHING EXERCISES:

1. Describe normal breathing
2. Discuss types, techniques, indications, contraindications, therapeutic effects and precautions of breathing exercises
3. Perform Chest expansion measurement and evaluation

ExT 1.6. Group Exercises

1. Discuss the advantages and Disadvantages of group exercises
2. Demonstrate skills in Organization of Group exercises; Recreational Activities and Sports.

Unit 2

ExT 2.1. STRETCHING

1. Describe terms related to stretching;
2. Discuss Tissue response towards immobilization and elongation
3. Discuss the determinants of stretching exercise
4. Discuss the Effects of stretching, Inhibition and relaxation procedures,
5. Discuss the Precautions to be taken and contraindications of stretching.
6. Perform passive and active stretching for upper and lower limb muscles

ExT 2.2. MANUAL THERAPY & PERIPHERAL JOINT MOBILIZATION

1. Discuss Principles, Grades, Indications and Contraindications, Effects and Uses – Maitland, Kaltenborn, Mulligan
2. Discuss Biomechanical basis for mobilization,
3. Explain the Effects of joint mobilisation, in terms of Indications and contraindications, Grades of mobilization, Principles of mobilization

4. Identify red flags for mobilisation
5. Perform mobilization for upper limb lower limb, and spine
 - i. Demonstrate clinical reasoning skills in selection and application of manual therapy techniques
 - ii. Demonstrate skills in examining joint integrity, contractile and non-contractile tissues
 - iii. Identify accessory movements and end feel
 - iv. Demonstrate Assessment of articular & extra-articular soft tissue status
 - v. Myofascial assessment
 - vi. Acute & Chronic muscle hold
 - vii. Tightness
 - viii. Pain-original & referred
6. Discuss the principles, Indications, Contra-Indications and evidence for schools of mobilization (Maitland, Mulligan, McKenzie, Muscle Energy Technique, Myofascial stretching, Cyriax, Neuro Dynamics)
7. Discuss the Principles, physiological and therapeutic effects of traction
8. Discuss the types, indications, contraindications for traction
9. Perform manual and mechanical tractions

Section B

Unit 3

ExT 3.1. THERAPEUTIC GYMNASIUM:

1. Identify the equipment used in the therapeutic gymnasium
2. Discuss the usage of identified equipment
3. Demonstrate skills in handling the equipment

ExT 3.2. AEROBIC EXERCISE

1. Explain the Physiological response to aerobic exercise
2. Discuss the methods of exercise testing
3. Explain the Normal and abnormal response to acute aerobic exercise
4. Discuss the Physiological changes that occur with training,
5. Apply the Principles of Aerobic conditioning program while prescribing exercise

ExT 3.3. CO-ORDINATION EXERCISE

1. Discuss the physiology of Co-ordination
2. Appreciate the causes and pathophysiology of Inco-ordination
3. Demonstrate Test for co-ordination: (equilibrium test, non-equilibrium test)
4. Discuss the Principles of co-ordination exercise.
5. Discuss Frenkel's Exercise in terms of its effects, mechanism, indications and Evidence
6. Demonstrate skills in prescribing Frenkel's exercise (Prescription progression, home exercise)

Unit 4

ExT 4.1. MOTOR LEARNING AND FUNCTIONAL RE-EDUCATION:

1. Describe Motor Learning:
2. Classify of Motor skills
3. Discuss the methods of Measurement of Motor Performance
4. Discuss the Theories of motor control and its application

ExT 4.2. Discuss Learning under the following headings

1. Learning Environment:
2. Learning of skill
3. Instruction and augmented feedback Practice Conditions

ExT 4.3. Proprioceptive Neuromuscular Facilitation

1. Definitions & goals
2. Explain the neurophysiologic principles of PNF: Muscular activity, Diagonals patterns of movement: upper limb, lower limb
3. Demonstrate skills in performing PNF components (timing for emphasis, resisted progression Endurance: slow reversals, agonist reversal)
4. Demonstrate the following PNF techniques, Procedure: components of PNF
5. Demonstrate skills in performing PNF components (timing for emphasis, resisted progression Endurance: slow reversals, agonist reversal)
6. Demonstrate the following PNF techniques
 - i. Mobility: Contract relax, Hold relax, Rhythmic initiation
 - ii. Strengthening: Slow reversals, repeated contractions, timing for emphasis, rhythmic stabilization Stability: Alternating isometric, rhythmic stabilization

ExT 4.4. WALKING AIDS

ET 7.1. Identify different types of walking aids (Crutches, Canes, Frames)

ET 7.2. Discuss Principles of prescribing walking aids

PRACTICAL: B.P.T. ExT 205 (P)

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

List of practicals

Student shall be able to perform independently on human model

ExT (P) 5.1. Demonstrate the PNF techniques – patterns [upper limb lower limb trunk], special techniques

ExT (P) 5.2. Demonstrate preparation for relaxation training

ExT (P) 5.3. Measure chest expansion and demonstrate various breathing exercises

ExT (P) 5.4. Demonstrate exercises for training co-ordination – Frenkel's exercise

ExT (P) 5.5. Demonstrate techniques for functional re-education lying to side lying, lying to sitting, sitting to standing

ExT (P) 5.6. Assess and train for using walking aids axillary crutch [3 point, 2 point 4-point gait}, elbow crutch walker

ExT (P) 5.7. Demonstrate to use the technique of suspension therapy for mobilizing and strengthening joints and muscles

ExT (P) 5.8. Demonstrate the techniques for muscle stretching

ExT (P) 5.9. Assess and evaluate posture and gait

ExT (P) 5.10. Design and conducts aerobic training programme

ExT (P) 5.11. Demonstrate techniques of strengthening muscles using resisted exercises

ExT (P) 5.12. Demonstrate techniques for measuring limb length and body circumference

Observation [Demonstration by the teacher]

ExT (P) 5.13. Techniques of hydrotherapy in hydrotherapy pool

ExT (P) 5.14. Special techniques of relaxation

Recommended Text Books for ExT

1. Practical Exercise Therapy: Hollis, Blackwell, Scientific Publications.
2. Therapeutic Exercise: Foundations and Techniques, Kisner & Colby.
3. Principles Of Exercise Therapy: Gardiner
4. Manipulation and Mobilization: Extremities and Spinal Techniques, Edmond, Mosby.
5. Aquatic Exercise Therapy-Bates and Hanson -W.B. Saunders.
6. Hydrotherapy: Principles & Practices, Campion, Butterworth & Heinemann.

Recommended Reference Books for ExT

1. Proprioceptive Neuromuscular Facilitation: Voss et al, Williams & Wilkins
2. Orthopedic Physical Therapy: Woods, Churchill Livingstone
3. Manual Examination and Treatment of Spine & Extremities: Wadsworth, Lippincott.
4. Motor Control: Theory and Practical Applications, Shumway Walcott-Lippincott
5. Therapeutic Exercises: Basmajian, Williams &Wilkins.

Course Title: Electrotherapy (ET): Theory (L) Practical (P)**ET 1.0. Subject Description and instruction to teacher**

This course on electrotherapy is the extension of fundamentals of electrotherapy taught in the previous year. the purpose of this course is imparting the theoretical and practical knowledge on the various electro-physical agents commonly used in physiotherapy practice viz, therapeutic ultrasound, shortwave and microwave diathermy, LASER, cryotherapy, and intermittent compression therapy, it also intends to analyse the physiological response to heat gain and loss and understand the role of electro physical agents in various stages of tissue healing. An introduction to the principles of the advanced uses of electrical current in diagnosis of neuromuscular lesions shall be offered along with the conceptual introduction of the techniques of bio-feedback. The emphasis should be given on providing hands on training on the uses of various modalities with intension of making student able to analyse the underlying pathological process and make a rational selection of the modality for treatment.

ET 1.0.1. Course Outcomes: Electrotherapy**Electro Physical Agents**

1. Explain pathophysiology of inflammation to tissue injury/healing. (KH)
2. Discuss the physiology and pathophysiology of pain. (KH)
3. Discuss theories of pain and its implications to physiotherapy clinical decision making. (KH)
4. Explain the production, physiological and therapeutic effects of **electro physical agents (KH)**
5. Discuss the indications, contraindications and precautions to be taken while applying **electro physical agents (KH)**
6. Demonstrate competencies in applying (selection, dosage calculation, progression) **electro physical agents**
7. Rationalize the use of electro physical agents as appropriate to the stage of healing (SH)
8. Demonstrate competencies in preparing and implementing evidence based electro physical agents' protocol for movement impairments under supervision. (SH)
9. Demonstrate abilities to document the dosage and progression as per the prescribed format (SH)
10. Demonstrate competencies in equipment maintenance, care and safety-precautions (SH)
11. Demonstrate competencies in communicating to the stakeholders effectively. (SH)

ET 1.0.2. Teaching Learning Methods Assessment

1. Demonstration
2. Performance under supervisor
3. Lab work

ET 1.0.3. Assessment Methods

1. OSPE
2. MCQs
3. Short and Long Essay
4. Assignment

Course Contents: B.P.T. ET 206 (L)

Unit 1:

Introduction

- ET 1.1. Explain the Physiological responses to heat gain or loss on various tissues of the body.
- ET 1.2. Discuss the Physical principles of electromagnetic radiation.
- ET 1.3. Discuss the Physics of sound including characteristics and propagation.
- ET 1.4. Rationalize the use of electro physical agents as appropriate to the stage of healing

Unit 2:

Therapeutic Ultrasound

- ET 2.1. Explain the mechanism of Production, biophysical effects, types, therapeutics types, indication, and contraindication, precautions, of therapeutic Ultra sound.
- ET 2.2. Calculate dosage of ultrasound for various structures and types of injuries
- ET 2.3. Demonstrate the skills in application of Therapeutic ultrasound
- ET 2.4. Demonstrate the skills in handling the equipment including preparation, maintenance and safety.

UNIT 3 –

Therapeutic LASER

- ET 3.1. Discuss the historical background and physical principles of LASER.
- ET 3.2. Classify LASER
- ET 3.3. Explain the Production, Biophysical effects, types, therapeutic effects, techniques of application, indication, contraindications, and precautions of LASER therapy
- ET 3.4. Calculate dosage of LASER for various structures and types of injuries

- ET 3.5. Demonstrate the skills in application of LASER
- ET 3.6. Demonstrate the skills in handling the equipment including preparation, maintenance and safety
- ET 3.7. Discuss the current evidence pertaining to LASER therapy

Unit 4:

Therapeutic Cold (Cryotherapy)

- ET 4.1. Explain the Production, Biophysical effects, types, therapeutic effects, techniques of application, indication, contraindications, and precautions of cryotherapy
- ET 4.2. Demonstrate the skills in application of cryotherapy
- ET 4.3. Demonstrate the skills in handling the equipment including preparation, maintenance and safety
- ET 4.4. Discuss the current evidence pertaining to cryotherapy

Unit 5:

Therapeutic mechanical pressure (Intermittent Compression Therapy)

- ET 5.1. Discuss the Principles, biophysical effects, types, therapeutic effects, indications, and contraindications of intermittent compression therapy
- ET 5.2. Demonstrate the skills in application of compression therapy
- ET 5.3. Demonstrate the skills in handling the equipment including preparation, maintenance and safety.
- ET 5.4. Discuss the current evidence pertaining to intermittent compression therapy

Unit 6:

Shockwave therapy

- ET 6.1. Discuss the Principles, biophysical effects, types, therapeutic effects, indications, and contraindications of shockwave therapy
- ET 6.2. Demonstrate the skills in application of shockwave therapy
- ET 6.3. Demonstrate the skills in handling the equipment including preparation, maintenance and safety.
- ET 6.4. Discuss the current evidence pertaining to intermittent shockwave therapy

Unit 7:

- ET 7.1. Case Discussion on EPA: Design a management protocol for a client with identified impairments, activity limitations and participatory restrictions.

Unit-8

ET 8.1 TENS: a) Definition b) Theories of pain modulation emphasizing on “Pain Suppression System”, c) Types of TENS d) Techniques of application e) Types of Electrodes & Placement of Electrodes f) Physiological Effects and therapeutic uses g) Indication and contra –indications

ET 8.2 Interferential current: Definition, characteristics, physiological & therapeutic effects of Interferential current, techniques of application, indications, contra-indications and precautions Russian Currents Parameters, technique of application, effects and uses, Indications and Contraindications Rebox currents Parameters, technique of application, effects and uses, Indications and Contraindications

ET 8.3 Bio-feedback: a) Introduction b) Principles of bio-feedback c) Therapeutic effects of bio-feedback d) Different types of biofeed back e) EMG biofeedback f) Positive and negative feedback g) Technique of application h) Indications and contra-indications

ET 8.4 Combination therapy: a) Principles, b) Therapeutic uses and indications like, Ultrasound therapy with stimulation or TENS etc.

ET 8.5 Short Wave Diathermy (SWD): a) Introduction b) Physiological effects and Therapeutic effects of SWD c) Methods of application (capacitor field method and cable method etc.) d) Techniques of treatment, indication, contra-indications and dangers.

ET 8.6 Pulsed SWD: a) Definition b) Characteristics c) Mechanism of work d) Physiological effects and therapeutic effects e) Indications, techniques of application f) Principles of treatment and contra-indications

ET 8.7 Hydrotherapy: a) Properties of water buoyancy b) Effects of buoyancy on movement c) Hubbard tank d) Contrast bath, e) Whirlpool bath

ET 8.8 Recent advances in Electro-physiotherapy: a) High power class IV LASER b) Shockwave c) PEMF (Pulse Electro Magnetic Energy), High Intensity Magnetotherapy d) Spinal Decompression, e) Pneumatic Compression therapy f) Functional Electrical Stimulation g) TECAR Therapy h) Cold air cryotherapy i) Virtual and Augmented Reality j) Brief idea about Robotic therapy

Recommended Text Books for ET

1. Electrotherapy Explained: Principle and Practice, Low and Reed, Butterworth Heinemann.
2. Claytons Electrotherapy -Kitchen and Basin.
3. Principles and Practice of Electrotherapy -Kahn Church hill Livingstone.

Recommended reference books for ET

1. Therapeutic Heat and Cold Lehman- Williams and Wilkins.
2. Electrotherapy: Clinics in Physical therapy- Wolf Churchill Livingstone.

Course Title: BIOMECHANICS & KINESIOLOGY- (BK): Theory (L)**BK 1.0. Subject Description and instruction to teacher**

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

BK 1.0.1. Course Outcomes: Biomechanics and Kinesiology

After completion of this course the student shall be able to

1. Discuss the principles of physics and laws related to human movement. (KH)
2. Demonstrate understanding of functional movement (kinetics and kinematics) of human body. (SH)
3. Identify the relationship between structure, function, and mechanical properties of movement system (SH)
4. Analyse the components of human movement both in normal and pathological conditions. (SH)
5. Apply the principles of movement analysis in understanding normal and abnormal gait and posture. (SH)
6. Perform basic movement analysis to identify gait and postural abnormalities.(SH)
7. Apply the principles of biomechanics in designing physiotherapy protocols. (SH)
8. Interpret data obtained from movement analysis such as gait and postural analysis. (KH)

BK 1.0.2. Teaching Learning Methods :

1. Lecture
2. Flipped class
3. Video demonstration
4. Demonstration
5. Lab works

BK 1.0.3. Assessment Methods :

1. MCQs
2. Long & Short Essays
3. Assignments
4. Viva Voce
5. OSCE

Course Contents: B.P.T. BK 207 (L)

Unit 1:

BK 1.1. Basics of Bio-mechanics: Discuss the basic Concepts in Biomechanics: Kinematics and Kinetics in following terms

1. Types of Motion
2. Location of Motion
3. Direction of Motion
4. Magnitude of Motion
5. Definition of Forces
6. Force of Gravity
7. Reaction forces
8. Equilibrium
9. Objects in Motion
10. Force of friction
11. Concurrent force systems
12. Parallel force system
13. Work
14. Moment arm of force
15. Force components
16. Equilibrium of levers

BK 1.2. Introduction to Biomechanical Analysis:

1. Discuss the techniques of biomechanical analysis
2. Explain the importance of biomechanical analysis

BK 1.3. Explain Joint structure and Function in terms of

1. Joint design
2. Materials used in human joints
3. General properties of connective tissues
4. Human joint design
5. Joint function
6. Joint motion
7. General effects of disease, injury and immobilization.

BK 1.4. Discuss Muscle structure and function -

1. Mobility and stability functions of muscles
2. Elements of muscle structure
3. Muscle function
4. Effects of immobilization, injury and aging

Unit 2

BK 2.1. Biomechanics of spine: Discuss the Biomechanics of Cervical spine, Lumbar Spine and Pelvic complex in terms of

1. Structure and function of cervical spine,
2. Factors responsible for stability of cervical spine
3. Movements of cervical spine.
4. Structure and function of lumbar spine,
5. Factors responsible for stability of lumbar spine
6. Movements of lumbar spine.
7. Structure and function of pelvic complex- Sacro-iliac Joint, Sacrum, symphysis pubic joint and lumbo sacral joint

BK 2.2. Analyse the movement of spine

BK 2.3. Identify the abnormal movements of Spine

Unit: 3

BK 3.1. Biomechanics of the Thorax and Chest wall - Discuss Biomechanics of the Thorax and Chest wall in terms of

1. General structure and function
2. Rib cage and the muscles associated with the rib cage
3. Ventilator motions: its coordination and integration
4. Developmental aspects of structure and function
5. Changes in normal structure and function I relation to pregnancy, scoliosis and COPD
 - i. Identify the abnormal movements of thoracic cage
 - ii. Discuss the mechanics of abnormal thoracic movement
 - iii. Describe the Temporomandibular Joint in terms of General features, structure, function and dysfunction
 - iv. Discuss the mechanics of abnormal TMJ movements

Unit 4:

BK 4.1. Biomechanics of the upper extremity joints -

1. Explain the shoulder complex in terms of Structure and components of the shoulder complex and their integrated function
2. Identify the normal and abnormal movements of shoulder
3. Discuss static and dynamic stability of Shoulder
4. Describe the common abnormalities of shoulder movement
5. Describe elbow complex in terms of Structure and function of the elbow joint – humero ulnar and humero radial articulations, superior and inferior radioulnar joints; mobility and stability of the elbow complex; the effects of immobilization and injury.
6. Identify the normal and abnormal movements of elbow joint
7. Describe the common abnormalities of elbow movement
8. Discuss wrist and hand complex in terms of : Structural components and functions of the wrist complex; structure of the hand complex; functional position of the wrist and hand.
9. Identify the normal and abnormal movements of wrist complex
10. Describe the common abnormalities of wrist complex

Unit 5:

BK 5.1. Biomechanics of the lower extremity joints

1. Explain The hip complex in terms of : structure and function of the hip joint; hip joint pathology- arthrosis, fracture, bony abnormalities of the femur
2. Identify the normal and abnormal movements of Hip joint
3. Discuss stability of Hip
4. Describe the common abnormalities of hip movement
5. Explain knee complex in terms of structure and function of the knee joint – tibiofemoral joint and patellofemoral joint; effects of injury and disease.
6. Identify the normal and abnormal movements of knee joint
7. Discuss stability of knee complex
8. Describe the common abnormalities of knee movement
9. Explain ankle and foot complex in terms of structure and function of the ankle joint, subtalar joint, talo calcaneo navicular joint, transverse tarsal joint, tarsometatarsal joints, metatarsophalangeal joints, interphalangeal joints,
10. Discuss the structure and function of the plantar arches, muscles of the ankle and foot, deviations from normal structure and function – Pes Planus and Pes Cavus

Unit 6:

BK 6.1. Posture

1. Define Posture
2. Explain normal posture
3. Discuss the factors affecting posture
4. Explain the causes for abnormal posture
5. Discuss kinetics and kinematics of posture
6. Identify postural abnormalities
7. Discuss the role of posture in preventing musculoskeletal disorders.
8. Describe ergonomics
9. Discuss the effects of age, pregnancy, occupation and recreation on posture.

Unit 7:

BK 7.1. Gait

1. Explain the normal gait cycle
2. Discuss the kinetics and kinematics of gait
3. Discuss the determinants of gait
4. Identify gait abnormalities
5. Discuss the energy recruitment of normal and abnormal gait
6. Explain the kinetic and kinematic analysis of stair climbing
7. Identify the effects of muscle weakness on gait

PRACTICAL: B.P.T. BK 207 (P)

BK 8.1. Describe Movement Analysis: ADL activities like sitting – to standing, lifting, various grips, pinches

Shall be conducted for various joint movements and analysis of the same. Demonstration may also be given as how to analyze posture and gait. The student shall be taught and demonstrated to analysis for activities of daily living – ADL – (like sitting to standing, throwing, lifting etc.) The student should be able to explain and demonstrate the movements occurring at the joints, the muscles involved, the movements or muscle action produced, and mention the axis and planes through which the movements occur. The demonstrations may be done on models or skeleton.

Recommended Text Books For BK

1. Cynthia C, Norkin D, Pamela K. Joint structure and function. A comprehensive analysis.
2. Houglum PA, Bertoti DB. Brunnstrom's clinical kinesiology. FA Davis; 2011.

Recommended Reference Books For BK

1. Steindler A. Kinesiology of the human body under normal and pathological conditions. Springfield, IL. Charles C Thomas. Neumann DA. Kinesiology of the musculoskeletal system-e-book: foundations for rehabilitation. Elsevier Health Sciences;
2. Oatis CA. Kinesiology: the mechanics and pathomechanics of human movement. Lippincott Williams & Wilkins; 2009.
3. Hamill J, Knutzen KM. Biomechanical basis of human movement. Lippincott Williams & Wilkins; 2006 Oct1.
4. Robert shawe P. Kapandji AI.: The Physiology of the Joints, Volume 3: The Spinal Column, Pelvic Girdle and Head. Journal of the Australian Traditional-Medicine Society. 2009 Sep1;15(3):178-9.
5. Margareta Nordin: Basic Biomechanics of Musculoskeletal System, 4th Edition

COURSE CODE: 208

Course Title: Yoga & Systems of Medicine: (AYUS) Theory (L) Practical (P)

AYUS 1.0. Subject Description and instruction to teacher

Yoga and AYUSH is the ancient wisdom of our country that plays a vital role in keeping a person healthy. The purpose of this introductory course on yoga

and Ayush is to introduce the conceptual foundation of yoga and Ayush System and its role in maintaining the health of an individuals. The emphasis will be on learning the correct methods of performing basic *asanas*, and *pranayaam* and inculcate practice yoga in daily life routine

AYUS 1.0.1. Course Outcomes: Yoga & Systems of Medicine

After completion of this course the student shall be able to

1. understand the conceptual aspect of yoga and other Systems of Medicine.
2. appreciate the role of yoga in maintaining personal and societal health
3. perform basic asanas and pranayama
4. have an understanding of kriyas

Course Contents: B.P.T. AYUS 208 (L)

Section A: Yoga

Unit 1: Foundations of Yoga

AYUS 1.1. Introduction to Yoga and its philosophy

AYUS 1.2. Brief history, development of Yoga

AYUS 1.3. Streams & types of Yoga

Unit 2: Yoga and Health

AYUS 2.1. Concept of body in yoga – Pancha kosha theory

AYUS 2.2. Concept of Health and Disease in yoga

AYUS 2.3. Stress management through yoga

AYUS 2.4. Disease prevention and promotion of positive health through yoga

Unit 3: Physiological effects of Yoga practices

AYUS 3.1. Physiological effects of Shat kriyas

AYUS 3.2. Physiological effects of Asanas

AYUS 3.3. Physiological effects of Pranayamas

AYUS 3.4. Physiological effects of Relaxation techniques and Meditation

Section B: Other Systems of Medicine

Unit 4: Other Systems of Medicine and Need for integration of various system of medicine

AYUS 4.1. Introduction to AYUSH system of medicine

AYUS 4.2. Introduction to Ayurveda.[Philosophy and Principals, Methods and Brief Treatment Techniques].

AYUS 4.3. Naturopathy [Philosophy and Principals, Methods and Brief Treatment Techniques]

AYUS 4.4. Unani [Philosophy and Principals, Methods and Brief Treatment Techniques].

AYUS 4.5. Siddha [Philosophy and Principals, Methods and Brief Treatment Techniques].

AYUS 4.6. Homeopathy [Philosophy and Principals, Methods and Brief Treatment Techniques].

PRACTICAL: B.P.T. AYUS 208 (P)

List of Practical / Demonstrations (30 hours)

AYUS (P) 5.1. Sukshma Vyayama/Sithilikarna Vyayama and Surya Namaskar: (3 hours)

Loosening exercises of each part of the body particularly of the joints

12 step Surya namaskar

AYUS (P) 5.2. Yogic kriyas [Observation/ demonstration only] (3 hours)

1. Neti (Jala Neti, Sutra Neti)
2. Dhauti (Vamana Dhauti, Vastra Dhauti)
3. Trataka
4. Shankaprakshalana (Laghu & Deergha)

AYUS (P) 5.3. **Yogasanas:**

1. **Standing postures** (4 hours)
 - i. Tadasana (Upward stretch posture)
 - ii. Ardha Chakrasana (Half wheel posture)
 - iii. Ardha Katichakrasana (Half lumber wheel posture)
 - iv. Utkatasana (Chair posture)
 - v. Pada Hastasana (Hand to toes posture)
 - vi. Trikonasana (Triangle posture)
 - vii. Parshva Konasana (Side angle posture)
 - viii. Garudasana (Eagle posture)
 - ix. Vrikshasana (Tree posture)

2. Prone positions (4 hours)

- i. Makarasana (Crocodile posture)
- ii. Bhujangasana (Cobra posture)
- iii. Salabhasana (Locust posture)
- iv. Dhanurasana (Bow posture)
- v. Naukasana (Boat posture)
- vi. Marjalarasana (Cat posture)

3. Supine postures (4 hours)

- i. Ardha halasana/ Uttana Padasana
- ii. Sarvangasana (All limb posture)
- iii. Pawana muktasana (Wind releasing posture)
- iv. Matsyasana (Fish posture)
- v. Halasana (plough posture)
- vi. Chakrasana (Wheel posture)
- vii. Setu Bandhasana (Bridge posture)
- viii. Shavasana (Corpse posture)

4. Sitting postures

- i. Parvatasana (Mountain posture)
- ii. Bhadrasana (Gracious posture)
- iii. Vajrasana (Adamantine posture)
- iv. Paschimottanasana (Back stretching posture)
- v. Janushirasana (Head to knee posture)
- vi. Simhasana (Lion posture)
- vii. Gomukhasana (Cow head posture)
- viii. Ushtrasana (Camel posture)
- ix. Ardha Matsyendrasana (Half matsyendra spine twist posture)
- x. Vakrasana (Spinal twist posture)
- xi. Kurmasana (Turtle posture)
- xii. Shashankasana (Rabbit posture)
- xiii. Mandukasana (Frog Posture)

5. **Meditative postures and Meditation techniques (2 hours)**

- i. Siddhasana (Accomplished pose)
- ii. Padmasana (Lotus posture)
- iii. Samasana

6. **Swastikasana (Auspicious posture)**

AYUS (P) 5.4. **Pranayamas:**

1. The practice of correct breathing and Yogic deep breathing
2. Kapalabhati
3. Bhastrika
4. Sitali
5. Sitkari
6. Sadanta
7. Ujjayi
8. Surya Bhedana
9. Chandra Bhedana
10. Anuloma-Viloma/Nadishodana
11. Bhramari

AYUS (P) 5.5. **Relaxation Techniques**

1. Shavasana
2. Yoga Nidra

Recommended text books for AYUS

1. Lights on yoga by BKS Iyengar
2. Lights on pranayam by BKS Iyengar
3. Anatomy and Physiology of Yogic Practices - M.M Ghore, Kaivalyadhama, Lonavala, Pune.
4. A Systematic course in the ancient tantric techniques of yoga and kriya - Bihar School of Yoga, Munger.
5. Yoga for different ailments - series published by SVYASA, Bangalore and Bihar Yoga Bharati.
6. Yoga for common ailments : Robin Monro, Nagarathna & Nagendra - Guia Publication, U.K.
7. Yoga therapy : by Swami Kuvalayanand, Kaivalaya dhama, Lonavala.
8. Yogic therapy : Swami Shivananda, Umachal Yoga Ashram, Kamakhya, Assam.

Course Code: B.P.T. 209: Clinical observation (COb)

Students will be posted in rotation in the physiotherapy OPDs and various wards of hospitals attached with the college. The students will observe the process of providing physiotherapy care for the patients. They may assist the clinical staff as well in executing non clinical aspects of service delivery. Each student shall maintain a case portfolio / diary to record the various activities performed during clinical posting. This diary should be presented before the final exam and the grade should be awarded by the college.

