# Bachelor of Physiotherapy

## Program Structure
(2018-2022)

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*Six months of clinical Internship in a minimum 200 bedded specialty hospital.

# C = (L+T+½P)
Course Objectives:

- To interpret the gross structure of human body, specifically musculo-skeletal, cardio-respiratory and nervous system.
- Apply the anatomical principles in the practice of physiotherapy.
- To interpret the functional components of each of the major nerves, its distribution and the effects of injury.
- Determine the course of the major superficial veins of the upper and lower limbs.

Course Outcome:
On successful completion of the course in Anatomy-I, students should be able to:

1. To use and learn terminology and language associated with anatomy
2. To interpret the normal anatomical structures and their relations
3. To correlate anatomical facts with the manifestation of pathological conditions (orthopedic conditions, neurological conditions, cardio-vascular conditions) and differentiation of normal anatomical structure from the pathological conditions
4. To correlate between the attachment of the muscles and their functions on the different joint.
5. To interpret the structure of various systems of the Human Body- especially musculo-skeletal system, Cardio-vascular system.

Course Description:
The students will understand the structure of various systems of the human body. The students will learn how to identify and palpate various joints, muscles, nerves, soft tissues and organs of the human body. The students will be explained to apply this knowledge for the assessment of pathological conditions by differentiating the normal anatomical structure from pathological conditions.

Textbooks:

Reference Books:
Course Contents:

Unit I: General Anatomy - 1 15 Lecture hours
- Introduction and concepts
- Terminologies
- Muscle classification, structure and functional aspect.
- Nerve-structure, classification with examples.
- Neurons-classification with examples, simple reflex arc. Parts of typical spinal curve/Dermatomes.
- Joints-classification, structures of joint, movements, range limiting factors, stability, blood supply, nerve supply, dislocations and applied anatomy.

Unit II: General Anatomy - 2 13 Lecture hours
- Circulatory system-Parts of heart, blood supply, major arteries and veins of the body, structure of blood vessels.
- Lymphoid system-circulation & function, lymphoid organs and their structure and functions.
- Integumentary system, Skin & its appendages, flexion creases, Langer’s lines, Superficial and Deep Fascia, Tendons, Ligaments, aponeuroses, bursae

Unit III: Upper Extremity 16 Lecture hours
- Bony architecture
- Joints – structure, range of movement
- Muscles – origin, insertion, actions, nerve supply
- Major nerves – course, branches and implications of nerve injuries
- Surface Anatomy

Unit IV: Lower Extremity 16 Lecture hours
- Bony architecture
- Joints – structure, range of movement
- Muscles – origin, insertion, actions, nerve supply
- Major nerves – course, branches and implications of nerve injuries
- Surface Anatomy

Unit V: Thorax 10 Lecture hours
- Thoracic cage
- Pleural cavities & Pleura
- Lungs and Respiratory tree
- Mediastinum & Pericardium
- Heart and great vessels
- Diaphragm & Surface Anatomy
Mode of Evaluation:

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1=Addressed to small extent
2=Addressed significantly
3=Major part of course
Course objectives:
To study:
- The physiological functions of the systems of Human body with special emphasis on cardio, musculoskeletal, nervous system.
- The physiological principles in the practice of physical therapy.
- The metabolic pathways

Course outcomes:
On completion of the course, a student should be able:
1. Illustrate general and blood physiology.
2. Determine muscle physiology.
3. Illustrate and identify the normal cardiovascular physiology.
4. Demonstrate the respiratory physiology.
5. Relate to the functioning of special senses and functioning of the renal system.

Course Description:
The students will understand the physiological functions of various systems of the human body which will help them in identification of various pathological events leading to diseased process and the study of tissue chemistry that will help them in clinical examination and investigation for diagnosis of diseases. The students will gain the knowledge of metabolic pathways and nutrition which will help in rehabilitation and maintaining a healthy body.

Text books:

Reference Books
Course Contents:

Unit I: General Physiology  
16 Lecture hours  
- Structure of cell membrane  
- Transport across cell membrane  
- Functional morphology of the cell  
- Intercellular communication  

Blood  
- Composition and Function  
- Blood groups  
- Blood coagulation  
- Hemoglobin  
- W.B.C., R.B.C., Platelets formation & functions  
- Haemostasis

Unit II: Muscle  
14 Lecture hours  
- Types, structure and function of muscles  
- Muscle groups  
- Physiology of muscle contraction  

Unit III: Cardiovascular System  
14 Lecture hours  
- Structure of Heart  
- Structure of blood vessels — Arterial & Venous System  
- Circulation: systemic, pulmonary, coronary  
- Functions of Heart, Conduction, Cardiac cycle  
- Circulation— Principles, Control, factors influencing BP and Pulse

Unit IV: Respiratory System  
14 Lecture hours  
- Physiological anatomy of Respiratory system  
- Functions of respiratory organs  
- Physiology of respiration  
- Pulmonary ventilation, Volume  
- Mechanics of respiration  
- Gaseous exchange in lungs  
- Carriage of oxygen & carbon-dioxide, Exchange of gases in tissues  
- Regulation of respiration.  
- Pulmonary Function Tests

Unit V: Renal System  
12 Lecture hours  
- Structure of organs of urinary System: Kidney, ureters, urinary bladder, urethra  
- Functions of kidneys, ureters, urinary bladder & urethra  
- Mechanism of urine formation  
Special senses: Nerve receptors, Eye, Ear, Labyrinth
Mode of Evaluation:

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Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

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1=Addressed to small extent
2=Addressed significantly
3=Major part of course
Course Objective:
To study the specific psychological factors and effects in physical illness and this will help them to have a holistic approach in their dealings with patients during admission, treatment, rehabilitation and discharge.

Course outcome:
On completion of the course, a student should be able:
1. To apply the principles of psychology for understanding the disease process and formulating a holistic treatment for the patients.
2. To understand the importance of the psychological status of the person for his physical, mental and social health and the influence of the environment and emotions of the health of a person.
3. To understand the influence of society on psychology of the individual for his health.
4. Through the knowledge of various psychological disorders student will gain an in-depth understanding of how the Mental Health of a person affects his or her physical health.
5. To effectively communicate and form rapport with the patients.

Course Description:
The students will learn the various psychological factors important for understanding the disease process and formulating a holistic treatment program. The students will learn the importance of the psychological status and influence of the environment, society and emotions on the health (physical, mental and social health) of a person and its rehabilitation.

Textbooks:

References:
Course Contents:

**Unit I—Introduction, Foundation and Life span development**  
10 Lecture hours
- Introduction to Psychology—Definition, Psychology as Science & Fields of Application with special reference to health care professionals
- Influences of heredity and environment on behavior
- Life Span Development—development in infancy, childhood, adolescent changes & old age changes—physical and psychological

**Unit II—Learning, Memory & Motivation**  
10 Lecture hours
- Learning—Definition, Principles of Classical Conditioning, Operant Conditioning & Social-Cognitive Learning
- Memory—Definition, stage-wise model, levels of processing approach & Ways of improving memory
- Motivation--- Definition; Maslow’s Need Hierarchy theory of Motivation;

**Unit III—Individual differences—Intelligence & Personality**  
12 Lecture hours

**Intelligence**
- Definition, Theories (Spearman’s Two-factor theory, Thurstone’s PMA, Gardner’s Multiple intelligence, Cattell’s Fluid & Crystallized intelligence, Sternberg’s Triarchic theory of intelligence).
- Intelligence testing—Mental Age, Intelligence Quotient (IQ), Verbal and performance tests of intelligence.

**Personality**
- Definition & concept, Theories of personality: Type theories of Personality; Trait Theory of Personality (Allport, Big Five factors), Psychoanalytic theory of Personality by Sigmund Freud.; Behaviouristic Perspective & Humanistic Perspective (in brief)
- Factors influencing Personality: Heredity, Family environment, Parenting style, schooling, peer group and relationships

**Unit IV—Stress and Abnormal behavior (Psychological Disorders)**  
15 Lecture hours
- Stress—concept, impact of stress on health and well being, stress cycle, Ways of managing stress
- What is abnormal behavior—definition
- Anxiety Disorders—GAD, Panic disorder, Phobias, OCD & PTSD
- Mood Disorders--- Depression & Mania
- Somatoform disorders—Somatization disorder, Conversion disorder, Hypochondriasis
- Psychotic disorders (Schizophrenia)—Nature, classification and key symptoms
- Childhood Disorders--- Mental Retardation, Autism, Learning Disability, ADHD
- Old Age--- Depression, Dementia & Alzheimer’s disease (Symptomatology)

(*All disorders to be discussed in brief—only symptoms and prevalence)

**Unit V—Health and Psychological aspects of Patient care**  
8 Lecture hours
- Health—Definition, Psychological issues and concerns of patients suffering from various physical health problems or illness conditions
- Prevention—Primary, Secondary & Tertiary; & Rehabilitation
- Effective Communication & Rapport formation with the patients.
- Ways of improving clinical compliance of patients
- Counselling & Guiding patients
### Mode of Evaluation:

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### Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

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1=Addressed to small extent  
2=Addressed significantly  
3=Major part of course
Course Objectives:
The student is expected to study:
- To develop awareness about our environment.
- To develop a concern about sustainable development.

Course Outcome:
The students will be able to understand the followings:-
1. To illustrate about environment and its components and problems associated with natural resources and their sustainable use.
2. To utilize the knowledge in understanding chemical Toxicity of the chemicals in the environment.
3. To illustrate sources of pollution in air, water, soil, marine, noise, thermal, nuclear hazards and its management including solid waste management and natural Disaster management.
4. To demonstrate social issues of population in environment.
5. To demonstrate the application of sustained Chemistry of environment.

Course Description
The students will understand the objective of environmental studies and importance of natural resources conservation. They will study the effect of toxic chemicals available in the environment. The students will learn about the sources, effects and control measures of air, water, soil, noise, thermal pollution. They will also be made aware of natural disaster management. The students will understand the need of sustainable development, environment laws, role of information technology in the environment. The students will be explained basic principles of green Chemistry and concept of atom economy.

Text Books

Reference Books/ Other Study material
Course Content

Unit I: Environment & Natural Resources 10 Lecture hours

Definition, scope, importance, need for public awareness, Environmental Management Systems its objectives, components, EIA, Natural Resources – forest resources – use, exploitation, deforestation, construction of multipurpose dams – effect on forests, Water resources – use of surface and subsurface water; effect of floods, drought, water conflicts, Mineral resources – Use and exploitation, environmental effects of extracting and using mineral resources, Food resources – food problems, advantage and disadvantage of fertilizers & pesticides, effect on environment, Energy resources – need to develop renewable energy, land resources – Land degradation, landslides, soil erosion, desertification & case studies.

Unit II: Chemical Toxicology 8 Lecture hours

Toxic chemicals in the environment, Impact of toxic chemicals on enzymes, biochemical effects of arsenic, cadmium, lead, chromium, mercury, biochemical effects of pesticides

Unit III: Environmental Pollution 10 Lecture hours

Definition – Causes, pollution effects and control measures of Air, Water, Soil, Marine, Noise, Thermal, Nuclear hazards. Solid waste management: causes, effects and control measures of urban and industrial wastes, pollution measures, case studies, Disaster management: floods, earthquake, cyclone and landslides.

Unit IV: Social Issues, Human Population and the Environment 9 Lecture hours


Unit V: Green Chemistry 8 Lecture hours

Introduction, Basic principles of green technology, concept of Atom economy, Tools of Green technology, zero waste technology.
## Mode of evaluation:

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1=addressed to small extent
2=addressed significantly
3= major part of course
Course Objectives:

- To interpret the gross structure of human body, specifically musculo-skeletal, cardio-respiratory and nervous system.
- Apply the anatomical principles in the practice of physiotherapy.
- To interpret the functional components of each of the major nerves, its distribution and the effects of injury.
- Determine the course of the major superficial veins of the upper and lower limbs.

Course Outcome:
On successful completion of the course in Anatomy-I, students should be able to:

1. To use and learn terminology and language associated with anatomy.
2. To interpret the normal anatomical structures and their relations.
3. To correlate anatomical facts with the manifestation of pathological conditions (orthopedic conditions, neurological conditions, cardio-vascular conditions) and differentiation of normal anatomical structure from the pathological conditions.
4. To correlate between the attachment of the muscles and their functions on the different joint.
5. To interpret the structure of various systems of the Human Body- especially musculo-skeletal system, Cardio-vascular system.

Course Description:
The students will understand the structure of various systems of the human body. The students will be demonstrated how to identify and palpate the various joints, muscles, nerves, soft tissues and organs of the human body. The students will be taught to apply this knowledge for the assessment of pathological conditions by differentiating the normal anatomical structure from pathological conditions.

Textbooks:

Reference Books:
Course Contents:

- Learning of surface landmarks with special emphasis on bones, joints, muscles, and nerves
- Demonstration through dissected parts, slides, models, charts, etc.
- Demonstration of dissected parts (upper extremity, lower extremity, thoracic & abdominal viscera)
- Demonstration of skeleton articulated and disarticulated.
Mode of Evaluation:

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1=Addressed to small extent
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3=Major part of course
Course objectives:
To study:
- The physiological functions of the systems of Human body with special emphasis on cardio respiratory, musculoskeletal and nervous system.
- The physiological principles in the practice of physical therapy.

Course outcomes:
On completion of the course, a student should be able:
1. Utilize their knowledge for identification of various pathological events that are leading to the disease process. To gain an understanding of the basics of clinical examination for diagnosis of the disease process.
2. Apply the knowledge to identify various abnormalities in cardiovascular, respiratory and renal system.
3. Demonstrate the examination of various physiological processes.
4. Demonstrate basic clinical examination for diagnosis.
5. Determine various investigations involved in the diagnosis.

Course Description:
The students will understand the physiological functions of various systems of the human body which will help them in identification of various pathological events leading to disease process involved in cardiovascular, respiratory, nervous, musculoskeletal and circulatory system. They will be acquainted with the physiological principles in the practice of physiotherapy.

Text books:

Reference Books
Course Contents:
- Examination of pulse and Blood Pressure.
- Nervous system: Superficial and deep reflexes.
- Higher function tests
- Cranial nerve Examination
- Cerebellum tests: Balance, Equilibrium and coordination
- Sensory Examination: Pain, Temperature, touch, vibration, two point discrimination
- Muscular Examination: Myotomes (in brief)
- Spirometry to measure various lung capacities & volumes, Respiratory rate, tidal volume, VC, timed VC, IRV, IC, ERV, EC on Spirometry (demonstration only), auscultation and percussion.
- Normal ECG
Mode of Evaluation:

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1=Addressed to small extent  
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3=Major part of course
Course Objectives:

The student is expected to study:
- Describe the gross structure of human body, specifically musculo-skeletal, Cardio-respiratory and nervous system.
- Apply the anatomical principles in the practice of physiotherapy

Course Outcome:
On completion of the course in Human Anatomy-II, a student should be able:
1. To apply the knowledge of spinal anatomy in patient evaluation and management.
2. To apply the knowledge of head and neck anatomy in patient evaluation and management.
3. To apply the knowledge of brain structure in patient evaluation and management.
4. To apply knowledge of spinal cord in patient evaluation and management.
5. To build knowledge of abdominal and pelvis structures.

Course Description
The students will understand the structure of various systems of the human body. The students will learn how to identify and palpate various joints, muscles, nerves, soft tissues and organs of the human body. The students will be explained to apply this knowledge for the assessment of pathological conditions by differentiating the normal anatomical structure from pathological conditions.

Textbooks:

Reference Books:
Course Contents:

**Unit I: Spine**  
14 Lecture hours  
- Muscles of back – Superficial layer, Deep muscles, origin, insertion, action and nerve supply.  
- Surface Anatomy

**Unit II: Head & Neck**  
14 Lecture hours  
- Articulated skull & mandible, Cervical vertebrae, Foetal skull, Joints  
- Scalp, Face, Oral Cavity, Tongue  
- Fascia of neck, muscles of neck, cranial cavity  
- Nerves, muscles of mastication.  
- Larynx, pharynx  
- Palate, Trachea, Oesophagus

**Unit III: Brain**  
18 Lecture hours  
- Meninges, Cerebrum, Cerebellum, Brainstem, Motor and sensory tracts including optic, auditory, gustatory pathways.  
- Ventricular system of brain and CSF, Blood supply  
- Thalamus, hypothalamus  
- All Cranial nerves – special emphasis on V, VII, X, XI, XII (course, distribution and palsies)

**Unit IV: Spinal cord**  
10 Lecture hours  
- Spinal cord – anatomy, blood supply, nerve pathways, applied significance  
- Pyramidal, extra pyramidal system  
- Autonomic nervous system- Sympathetic nervous system, its parts and components  
- Parasympathetic nervous system (Brief Description).  
- Surface Anatomy

**Unit V: Abdomen and Pelvis**  
14 Lecture hours  
- Abdominal cavity – divisions.  
- Muscles of abdominal wall, pelvic floor  
- Bony Pelvis  
- Digestive system (Liver & pancreas, Alimentary canal).  
- Urinary system – Kidney, Ureter, bladder, urethra  
- Genital system – male and female  
- Surface Anatomy
Mode of Evaluation:

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Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

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1=Addressed to small extent
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3=Major part of course
Course objectives:
To study:

- The physiological functions of the systems of Human body with special emphasis on respiratory, reproductive and nervous system.
- The physiological principles in the practice of physical therapy.
- The metabolic pathways
- To understand the principles of nutrition.

Course outcomes:
On completion of the course, a student should be able:

1. To utilize their knowledge for identification of pathological events occurring in the digestive system.
2. To illustrate the physiology of the nervous system and interpret its role in normal function.
3. To interpret the common pathophysiology of the reproductive and the endocrine systems in an individual.
4. To illustrate the biochemical pathways occurring in an individual for its metabolic activities.
5. To interpret the general deficiency syndromes occurring in an individual due to metabolic errors.

The students will understand the physiological functions of various systems of the human body which will help them in identification of various pathological events leading to diseased process and the study of tissue chemistry that will help them in clinical examination and investigation for diagnosis of diseases. The students will gain the knowledge of metabolic pathways and nutrition which will help in rehabilitation and maintaining a healthy body.

Text books:


Reference Books

Course Contents:

Unit I **Digestive System**  
- Structure of Alimentary tract and accessory organs of digestion
- Functions of organs of digestive tract
- Movements of alimentary tract
- Digestion in mouth, stomach, small intestines, Large intestines, Absorption of food
- Functions of liver, gall bladder and pancreas

**Unit II: Nervous system**  
- Structure and Functions of neurons
- Stimulus & nerve-impulse- definitions and mechanism, ionic basis, all or none phenomenon, Concept of nerve injury & Wallerian degeneration
- The Synapse
- Somatic Nervous system: Structure and Functions of brain, spinal cord, cranial nerves, spinal nerves and peripheral nerves
- Cerebrospinal fluid
- Reflex arc, Reflex action and reflexes
- Autonomic Nervous System — sympathetic, parasympathetic
- Autonomic functions
- Pain: somatic, visceral, and referred

Unit III:  
**Male & female reproductive system**  
- Structure of female reproductive organs
- Structure of male reproductive organs
- **Endocrine system:** Pituitary, Thyroid, parathyroid, pancreas, Supra renal, Placenta and ovaries & Testes

**Unit IV: Nutrition**  
- Basic principles of nutrition of carbohydrates, Proteins and Lipids, caloric requirement and balanced diet.
- **Metabolism of Carbohydrates**
  - Types, structure, composition and uses
  - Metabolism Pathways of glucose
- **Lipids**
  - Types, structure, composition and uses of fatty acids

**Unit V:**  
- **Vitamins and minerals**
- **Proteins**
  - Types, structure, composition and uses of Amino acids and Proteins
- **Enzymes and co-enzymes**
  - Classification
  - Properties
Mode of Evaluation:

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Course Objective:
To study the specific psychological factors present in the society will help them to have a holistic approach in their dealings with patients during admission, treatment, rehabilitation and discharge.

Course outcome:
On completion of the course, a student should be able:
1. To apply the principles of sociology for understanding the disease process and formulating a holistic treatment for the patients.
2. To understand the importance of the status of a person in society for his physical, mental and social health.
3. To understand the influence of society and social changes on the health and its rehabilitation
4. To interpret the influence of the environment and emotions of the health of a person.
5. To apply the principles of sociology for formulating physiotherapy treatment for the patients

Course Description:
The students will learn the various sociology factors important for understanding the disease process and formulating a holistic treatment program. The students will learn the importance of the sociological status and influence of the environment, society and emotions on the health (physical, mental and social health) of a person and its rehabilitation.

Textbooks:

References:
Course Contents:

Unit I: Introduction to sociology 10 Lecture hours
- Meaning-Definition and scope of Sociology
- Importance of its study with special reference to health care professionals.
- Social Factors in Health and Disease-Meaning & Role

Unit II 10 Lecture hours
- Socialization-Meaning and nature
- Social Groups-Concepts
- Influence of formal and informal groups on health and sickness

Unit III 10 Lecture hours
- Family-Meaning, definition and Functions
- Changing family Patterns
- Influence of family on the individual health, family and nutrition. The effects of sickness on family and psychosomatic disease and their importance to Physiotherapy.
- Community Rural & Urban community-Meaning and features-Health hazards of both

Unit IV: Social problems of disabled 16 Lecture hours
- Consequences of the following social problems in relation to sickness and Disability, remedies to prevent these problems.
- Population explosion
- Poverty and unemployment
- Beggary
- Juvenile delinquency
- Prostitution
- Alcoholism
- Problems of women in employment

Unit V: 10 Lecture hours
- Social security and social legislation in relation to the Disabled.
- Social worker- Meaning of social work; the role of a medical social worker.
### Mode of Evaluation:

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Course objectives:
To study:
- And to understand the basic principles of biomechanics
- And to apply the basic principles in exercise therapy.

Course outcomes
On completion of the course, a student should be able:
1. Apply the principles of mechanics including gravity and equilibrium
2. Demonstrate the principles of levers and pulleys in clinical setting
3. Plan specific exercises for a patient using various active and passive movements
4. Apply the principles of biomechanical modalities used for aiding rehabilitation
5. Prepare specific soft tissue manipulation programs employing the physiological effects and specific uses

Course Description:
The students will understand the basic principles of biomechanics and exercise therapy. They will learn the application of various biomechanical modalities eg. pulley, shoulder wheel etc. The students will be explained the principles of various starting positions, active and passive movements, and soft tissue manipulations.

Text books:

Reference Books:
Course Contents:

Unit I: Mechanics  12 Lecture hours
- Definition of mechanics and Biomechanics
- Force: Definition, diagrammatic representation, classification of forces, concurrent, coplanar and co-linear forces, composition and resolution of forces, angle of pull of muscle.
- Momentum: Principles and practical application
- Friction
- Gravity: Definition, line of gravity, Centre of gravity.
- Equilibrium: Supporting base, types, and stability of equilibrium
- Energy work and power: Energy (potential and kinetic), work and power

Unit II:  11 Lecture hours
- **Levers**: Definition, function, classification and application of levers in physiotherapy & order of levers with example of lever in human body.
- **Pulleys**: System of pulleys, types and application
- **Elasticity**: Definition, stress, strain, HOOKE’S Law,
- **Springs**: Properties of springs, springs in series and parallel,

Unit III: Active and Passive movements  11 Lecture hours
**Active movements**
- Free, assisted and resisted
- Principle, techniques and effects and Uses of various types of active exercises.
- Progressive resisted exercises.
**Passive movements**
- Definition
- Relaxed, forced and stretching type
- Principle, effect and uses of passive movements
- Techniques of Relaxed passive movements.

Unit IV:  12 Lecture hours
**Starting positions**
- Description and muscle work,
- Importance of fundamental and derived types,
- Effects and uses of individual positions
**Aims and scope of various biomechanical modalities**
- Shoulder wheel,
- Shoulder ladder,
- Shoulder pulleys,
- Pronator- Supinator instrument,
- Static cycle,
- Ankle exerciser,
- Balancing board,
- Parallel bar
- Springs, weights etc.

Unit V: Soft tissue manipulation  10 Lecture hours
- History, definition, types and their rationale,
- Physiological effects: General and local effects of individual manipulation and uses,
- Contra-indications
- Techniques of application.
Mode of Evaluation:

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# UNIVERSAL HUMAN VALUES AND ETHICS

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## Objectives

1. To help students distinguish between values and skills, and understand the need, basic guidelines, content and process of value education.
2. To help students initiate a process of dialog within themselves to know what they ‘really want to be’ in their life and profession.
3. To help students understand the meaning of happiness and prosperity for a human being.
4. To facilitate the students to understand harmony at all the levels of human living, and live accordingly.
5. To facilitate the students in applying the understanding of harmony in existence in their profession and lead an ethical life.

## Expected Outcome

On completion of this course, the students will be able to:

1. To understand the significance of value inputs in a classroom
2. To distinguish between values and skills, happiness and accumulation of facilities, the self and the body, intention and competence.
3. To understand the value of harmonious relationship based on trust and respect in their life and profession.
4. To understand the role of human being in ensuring harmony in society and nature.
5. To distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment.

## Unit I

**Course Introduction - Need, Basic Guidelines, Content and Process for Value Education**

1. Understanding the need, basic guidelines, content and process for Value Education
2. Self Exploration–what is it? - its content and process; ‘Natural Acceptance’ and Experiential Validation- as the mechanism for self exploration
3. Continuous Happiness and Prosperity- A look at basic Human Aspirations
4. Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority
5. Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario
6. Method to fulfill the above human aspirations: understanding and living in harmony at various levels

## Unit II

**Understanding Harmony in the Human Being - Harmony in Myself**

7. Understanding human being as a co-existence of the sentient ‘I’ and the material ‘Body’
8. Understanding the needs of Self (‘I’) and ‘Body’ - Sukh and Suvidha
9. Understanding the Body as an instrument of ‘I’ (I being the doer, seer and enjoyer)
10. Understanding the characteristics and activities of ‘I’ and harmony in ‘I’
11. Understanding the harmony of I with the Body: Sanyam and Swasthya; correct appraisal of Physical needs, meaning of Prosperity in detail
12. Programs to ensure Sanyam and Swasthya

**Unit III**

**Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship**

13. Understanding harmony in the Family- the basic unit of human interaction
14. Understanding values in human-human relationship; meaning of Nyaya and program for its fulfillment to ensure Udbhay-tripti; Trust (Vishwas) and Respect (Samman) as the foundational values of relationship
15. Understanding the meaning of Vishwas; Difference between intention and competence
16. Understanding the meaning of Samman, Difference between respect and differentiation; the other salient values in relationship
17. Understanding the harmony in the society (society being an extension of family): Samadhan, Samriddhi, Abhay, Sah-astitva as comprehensive Human Goals
18. Visualizing a universal harmonious order in society- Undivided Society (AkhandSamaj), Universal Order (SarvabhaumVyawastha )- from family to world family!

**Unit IV**

**Understanding Harmony in the Nature and Existence - Whole existence as Co-existence**

19. Understanding the harmony in the Nature
20. Interconnectedness and mutual fulfillment among the four orders of nature- recyclability and self-regulation in nature
21. Understanding Existence as Co-existence (Sah-astitva) of mutually interacting units in all-pervasive space
22. Holistic perception of harmony at all levels of existence

**Unit V**

**Implications of the above Holistic Understanding of Harmony on Professional Ethics**

23. Natural acceptance of human values
24. Definitiveness of Ethical Human Conduct
25. Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order
26. Competence in Professional Ethics:
   a) Ability to utilize the professional competence for augmenting universal human order,
   b) Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems, technologies and management models
27. Case studies of typical holistic technologies, management models and production systems
28. Strategy for transition from the present state to Universal Human Order:
   a) At the level of individual: as socially and ecologically responsible engineers, technologists and managers
   b) At the level of society: as mutually enriching institutions and organizations

**Text Books:**

References:


Mode of Evaluation:

| Assignment/ Seminar/Continuous Assessment Test/Semester End Exam |

Recommended by the Board of Studies on:

Date of Approval by the Academic Council:

Mode of Evaluation:

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- **CO 1**: Knowledge and Understanding of Physiotherapy
- **CO 2**: Problem Analysis
- **CO 3**: Design and Development of Solutions
- **CO 4**: Leadership Skills
- **CO 5**: Professional Identity
Course Objectives:

- Describe the gross structure of human body, specifically Respiratory, Digestive and nervous system.
- Apply the anatomical principles in the practice of physiotherapy

Course Outcome:
On completion of the course in Human Anatomy-II, a student should be able:
1. To demonstrate the structures of axial skeleton.
2. To demonstrate about the structures of human brain and its parts.
3. To demonstrate Spinal cords and tracts.
4. To demonstrate abdominal organs e.g., stomach, spleen, intestine, liver, pancreas & kidney.
5. To demonstrate pelvic organs e.g., male and female reproductive system.

Course Description:
The students will understand the structure of various systems of the human body. The students will be demonstrated how to identify and palpate the various joints, muscles, nerves, soft tissues and organs of the human body. The students will be taught to apply this knowledge for the assessment of pathological conditions by differentiating the normal anatomical structure from pathological conditions.

Textbooks:

Reference Books:

Course Contents:
- Demonstration of parts (face and brain)
- Demonstration through parts, slides, models, charts, etc.
- Demonstration of skeleton articulated and disarticulated.
- During the training more emphasis will be given on the study of bones, muscles, joints, nerve supply of the limbs.
Mode of Evaluation:

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**BPTH1010** ANATOMY LAB -II

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<th>3 = Major part of course</th>
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**Course objectives:**
To study:
- And to understand the basic principles of biomechanics
- And to apply the basic principles in exercise therapy.

**Course outcomes**
On completion of the course, a student should be able:
1. Apply plan exercises using force, gravity and equilibrium
2. Prepare exercises using lever system and with help of pulleys.
3. Demonstrate active and passive movements of human body
4. Demonstrate exercises using biomechanical modalities
5. Demonstrate the techniques of soft tissue manipulation.

**Course Description**
The students will learn the basic principles of biomechanics and exercise therapy. The students will be demonstrated the application of various biomechanical modalities e.g. shoulder pulley, shoulder wheel, balancing board, static cycle etc. The students will be demonstrated various starting positions, active and passive movements, muscle strengthening techniques and soft tissue manipulations.

**Text books:**

**Reference Books:**

**Course Contents:**
- Demonstration of Biomechanical principles.
- Study of structure, function and application of various Biomechanical modalities shoulder wheel, shoulder ladder, shoulder pulleys, pronator-supinator instrument, static cycle, ankle exerciser, balancing board, springs, weights etc.
- Demonstration and learning of active & passive movements of Limbs and spine.
- Demonstration and practice of muscle strengthening techniques.
- Demonstrations and practice of soft tissue manipulative techniques
Mode of Evaluation:

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### Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

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3=Major part of course
Course Objectives:

- Utilize diagnostic, surgical, and procedural terms and abbreviations related to the nervous system, and endocrine system.
- Apply suffixes, prefixes, and combining roots in physiotherapy profession.
- Interpret the medical records on health record system.

Course Outcome:

On completion of the course in medical terminology, a student should be able:

1. To identify terminology related to the health care and physiotherapy profession.
2. To apply suffixes, prefixes, and combining roots in physiotherapy profession.
3. Interpret basic medical abbreviations/symbols in physiotherapy profession and healthcare system.
4. Utilize diagnostic, surgical, and procedural terms and abbreviations related to the nervous system, and endocrine system.
5. Interpret medical records/report on electronic health record system.

Course Description:

This course introduces the elements of medical terminology. Emphasis is placed on building familiarity with medical words through knowledge of roots, prefixes, and suffixes. Topics include: origin, word building, abbreviations and symbols, terminology related to the human anatomy, reading medical orders and reports, and terminology specific to the student’s field of study. Spelling is critical and will be counted when grading tests.

Textbooks:


Reference Books:

Course Contents:

Unit I: Basic medical terms in health care and physiotherapy 6 Lecture hours
Derivation of medical terms: Define word roots, prefixes, and suffixes. Conventions for combined morphemes and the formation of plurals. Basic medical terms in health care and physiotherapy.

Unit II: Interpret basic medical abbreviations 6 Lecture hours
Form medical terms utilizing roots, suffixes, prefixes, and combining roots. Interpret basic medical abbreviations/symbols.

Unit III: Procedural terms and abbreviations to the integumentary system, musculoskeletal system, respiratory system, cardiovascular system 6 Lecture hours
Utilize diagnostic, surgical, and procedural terms and abbreviations related to the integumentary system, musculoskeletal system, respiratory system, cardiovascular system.

Unit IV: Procedural terms and abbreviations to the Nervous and endocrine system 6 Lecture hours
Utilize diagnostic, surgical, and procedural terms and abbreviations related to the nervous system, and endocrine system.

Unit V: Interpret medical records/reports 6 Lecture hours
Interpret medical records/reports. Data entry and management on electronic health record system.
Mode of Evaluation:

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Course Objectives:
1. To understand the basic concepts of quality in health Care and develop skills to implement sustainable quality assurance program in the health system.
2. To help prevent harm to workers, property, the environment and the general public.
3. To provide a broad understanding of the core subject areas of infection prevention and control and to equip AHPs with the fundamental skills required to reduce the incidence of hospital acquired infections and improve health outcomes.
4. To provide knowledge on the principles of on-site disaster management.

Course Outcome:
1. Illustrate the basic concepts of quality in health Care and develop skills to implement sustainable quality assurance program in the health system.
2. Relate provide a broad understanding of the core subject areas of infection prevention and control and to equip AHPs with the fundamental skills required to reduce the incidence of hospital acquired infections and improve health outcomes.
3. To interpret knowledge on the principles of on-site disaster management.
4. To interpret knowledge on the principles of public health.
5. Demonstrate the managing an emergency including moving a patient.

Textbooks:
- CM Francis, Mario C De Souza. Hospital Administration, 3/e, 2004, Jappe Brothers,ISBN 9788171797219

Reference Books:
- Singh Anantpreet, Kaur Sukhjit, Biomedical Waste Disposal ,1/e, 2008, Jappe Brothers,ISBN 9789350255544
Course Contents:

Unit I: Concepts of Quality of Care and guidelines of NABH 3 Lectures
Concepts of Quality of Care, Quality Improvement Approaches, Standards and Norms, Quality Improvement Tools, Introduction to NABH guidelines

Unit II: Emergency care and BLS 10 Lectures

1. Vital signs and primary assessment
2. Basic emergency care – first aid and triage
3. Ventilations including use of bag-valve-masks (BVMs)
4. Choking, rescue breathing methods
5. One- and Two-rescuer CPR
7. Managing an emergency including moving a patient

Unit III: Bio medical waste management and environment safety 6 Lectures

1. Definition of Biomedical Waste
2. Waste minimization
3. BMW – Segregation, collection, transportation, treatment and disposal (including color coding)
4. Liquid BMW, Radioactive waste, Metals / Chemicals / Drug waste
5. BMW Management & methods of disinfection
6. Modern technology for handling BMW
7. Use of Personal protective equipment (PPE)
8. Monitoring & controlling of cross infection (Protective devices)

Unit IV: Infection prevention and control 6 Lectures

1. Evidence-based infection control principles and practices [such as sterilization, disinfection, effective hand hygiene and use of Personal protective equipment (PPE)]
2. Prevention & control of common healthcare associated infections,
3. Components of an effective infection control program, and
4. Guidelines (NABH and JCI) for Hospital Infection Control
**Antibiotic Resistance**

1. History of Antibiotics
2. How Resistance Happens and Spreads
3. Types of resistance- Intrinsic, Acquired, Passive
4. Trends in Drug Resistance
5. Actions to Fight Resistance
6. Bacterial persistence
7. Antibiotic sensitivity
8. Consequences of antibiotic resistance
9. Antimicrobial Stewardship- Barriers and opportunities, Tools and models in hospitals

**Unit V: Disaster preparedness and management** 5 Lectures

1. Fundamentals of emergency management
2. Psychological impact management
3. Resource management
4. Preparedness and risk reduction,
5. Key response functions (including public health, logistics and governance, recovery, rehabilitation and reconstruction), information management, incident command and institutional mechanisms.
Mode of Evaluation:

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1=Addressed to small extent
2=Addressed significantly
3=Major part of course
Course objective:
The students are required to study:

- The deviations in the structure and functions of tissues and body organs when diseased
- Describe the classification and characteristics of disease producing micro organisms
- Explain the various types of immunity

Course outcomes:
On completion of the course, a student should be able:

1. To demonstrate an understanding of the inflammation in human body and the immune system and its related pathologies.
2. To demonstrate the structure of musculoskeletal system in human body and the related pathologies.
3. To show how cardiovascular system is employed in the human body the function it carries and the pathologies related to it.
4. To utilize the basic principles central nervous system in the human body, how it functions and the applied pathology it suffers from.
5. To demonstrate the various types of microorganisms and the infectious agents that affect the human health.

Course Description:
The students will be taught the deviations in the structure and functions of tissue and body organs when diseased. The students will understand the process of inflammation, injury and repair. They will be made aware of different types of micro-organism, their characteristics and immunological response. The students will learn the etio-pathogenesis and clinical of various pathological conditions.

Textbooks:

Reference Books:
Course Content:

Unit I: 12 Lecture hours

Inflammation, injury and repair

Immunology
- Brief outline of immune system, immunity, immune responses & immune deficiency.
- Immunology and exercise with its implications on Physical therapy
- Hypersensitivity disorders.

Unit II: 10 Lecture hours

Musculoskeletal system:
- Etiopathogenesis and gross pathology of conditions.
- Biological responses to trauma, bone and soft tissue immobilization.
- Osteomalacia, Osteoporosis, Osteomyelitis, Osteoarthritis, Rheumatoid arthritis, Gout, Myofascial pain syndrome.

Unit III: 13 Lecture hours

Cardiovascular system:
- Etiopathogenesis and gross pathology of conditions
- Aging, Ischemic Heart Diseases, Myocardial Infarction, Congestive Cardiac Failure, Hypertension, Rheumatic Heart Diseases, Congenital heart disease, Arteriosclerosis, Thromboangitis, Vasomotor-Raynaud’s disease, Venous thrombosis, Gangrene, Lymphedema.

Respiratory system:
- Etiopathogenesis and gross pathology of conditions
- Aging, Pneumonia, Pulmonary TB, Bronchiectasis, COPD, Bronchial Asthma, Restrictive Lung disease.

Unit IV: 12 Lecture hours

CNS
- Etiopathogenesis and gross pathology of conditions
- Aging, Meningitis, Parkinson’s diseases, Amyotrophic lateral sclerosis, Multiple Sclerosis, Stroke.

PNS
- Etiopathogenesis and gross pathology of conditions
- Poliomyelitis and post-polio syndrome, Myasthenia Gravis.
- Peripheral nerve injuries

Unit V: 9 Lecture hours

Infectious diseases
- Classification of microorganisms

Micro-organisms and common Pathogens
- Identification disease produced, prevention and treatment of common pathogens
- Streptococci, Staphylococci, Meningococci, Tetanus, Diphtheria, M. Leprae, M. tuberculosis, Poliomyelitis, Malaria.
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Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

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1=Addressed to small extent
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3=Major part of course
Course objectives:
The student is expected to study:
- The clinical approach to examine a medical patient
- The diseases of the various organ systems of human body.
- The implications of medical condition in physical therapy

Course outcomes:
On course completion the student will be able to:
1. To illustrate infectious diseases
2. To interpret disorders of bone
3. To interpret disorders of respiratory system
4. To interpret disorders of cardio-vascular system
5. To illustrate diseases of blood

Course Description:
The students will understand the concept of medicine and the clinical approach to examine a medical patient. They will be explained about the diseases affecting various systems of the body. The students will learn to identify the implications of medical condition in physical therapy.

Text Books:

Reference Books:
Course Contents:

Unit I: Infectious Diseases  
7 Lecture hours
Brief description of concept of infection
- Types of infection
- Classification & manifestation of infection
- General principle of management

Unit II: Diseases of connective tissues, joints & bone  
9 Lecture hours
Brief description of manifestations along with outline of management of common connective tissues, joints & bone diseases
- Osteoarthritis
- Rheumatoid arthritis
- Spondylo-arthritis
- Polymyositis
- Osteoporosis
- Osteomalacia & rickets
- Gout

Unit III: Respiratory System  
10 Lecture hours
- Manifestations of respiratory disease & general principles of diagnosis.
Brief description of following diseases along with outline of management
- Obstructive Pulmonary diseases (Bronchial Asthma, COPD, Bronchitis)
- Restrictive lung disease
- Pulmonary infections (Pneumonia, Lung abscess, Tuberculosis)
- Occupational lung disease
- Pleurisy
- Cystic fibrosis
- Pulmonary embolism

Unit IV: Cardio-vascular System  
10 Lecture hours
- Manifestations of heart & vascular disease & general principle of diagnosis.
Brief description of following diseases along with outline of management.
- Cardiac failure
- Rheumatic heart disease
- Ischaemic heart disease
- Hypertension
- Arterial disease – Atherosclerosis, Raynaud’s disease
- Deep vein thrombosis, Thrombophlebitis
- Burger’s disease

Unit V:  
6 Lecture hours
Diseases of the blood: Brief description of manifestations along with outline of management of common blood diseases
- Anaemia
- Leukaemia
Mode of Evaluation:

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## Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

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| BPTH2002 (MEDICINE WITH PEDIATRICS AND GERIATRICS) | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 |

1=Addressed to small extent  
2= Addressed significantly  
3=Major part of course
Course objective:
The student is expected to study:

- Various methods of assessment of the physical parameters like joint ROM, muscle strength etc.
- The principles of exercise therapy e.g. co-ordination, re-education, strengthening, mobilization, Goniometry.

Course outcome:
On completion of the course the student should be able to:

1. Assess a patient applying the techniques of measuring range of motion for a joint.
2. Demonstrate the principles used to determine the dosage of peripheral joint mobilization.
3. Plan the dosage for specific patients of manual cervical and lumbar traction.
4. Prepare a muscle re-education program using principles of muscle strengthening and co-ordination training.
5. Plan a rehabilitation program using the principles of suspension.

Course Description:
Here, the main focus is to develop the skills of the students in areas like assessment of physical parameters (joint range of motion, muscle strength etc) and principles of exercise therapy (strengthening, stretching, goniometry etc) and its application.

Text Books:


Reference Books:

Course content:

Unit I: Goniometry 11 Lecture hours
- Types of Goniometers
- Measurement of various joints range in normal and disease condition
- Different techniques of goniometry
- Limb-length measurements.

Unit II: Joint Mobility 11 Lecture hours
- Joint range, stiffness, end feel and limitations
- Accessory movements – glides, traction and approximation
- Mobilization of peripheral joints in detail.

Unit III: Traction 11 Lecture hours
- Introduction (manual and mechanical)
- Rationale
- Technique
- Precautions, indications & contra-indications

Unit IV: Re-education of muscles 14 Lecture hours
- Concept, technique
- Progressive strengthening of various muscle groups in Grade-I-Grade V with special emphasis on major muscle groups
- Muscle strengthening technique – PNF.

Co-ordination
- Introduction to balance and co-ordination
- Re-education of balance and coordination: PNF (procedures and techniques) and Frenkel’s exercises.

Unit V: Suspension Therapy 9 Lecture hours
- Principles of suspension, types
- Components of suspension apparatus
- Effects and uses of suspension therapy-their therapeutic application.
Mode of Evaluation:

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1=Addressed to small extent  
2=Addressed significantly  
3=Major part of course
Course objectives:
The student is expected to study:
- The construction and principle of working of various electrotherapeutic modalities.
- The indications, contraindications, precautions, harmful effects of various modalities.

Course outcomes:
On completion of the course the student should be able to:
1. To illustrate the therapeutic effects, methods of application, indication and contraindication of superficial and deep heating modalities.
2. To determine the therapeutic effects, methods of application, dosimetry, indication and contraindication of High frequency currents.
3. To determine the therapeutic and physiological effects, methods of application, dosimetry, indication and contraindication of Ultrasound.
4. To illustrate the therapeutic effects, methods of application, indication, contraindication and potential dangers of cryotherapy.
5. To determine the therapeutic and physiological effects, methods of application, dosimetry, indication and contraindication of LASER and Ultraviolet radiations.

Course Description:
The students will learn about the construction and principle of working of various electrotherapeutic modalities and will be explained the indications, contraindications and harmful effects of the same. They will be taught to perform a check for all modalities. This will enable the students to apply these modalities for therapeutic purpose efficiently.

Text books:

Reference Books:
Course content:

Unit I: Heating Modalities 15 Lecture hours
- Therapeutic effects and Uses, Techniques and Applications.
- Indications, Contraindications, Precautions and Potential harmful effects of various heating modalities.
- Paraffin wax bath therapy, Hydro collator packs, Whirlpool and moist heat

Infrared Therapy
- Therapeutic effects and uses, Techniques of application.
- Indications, contraindications, precautions and Potential harmful effects.

Unit II: High Frequency currents 11 Lecture hours

Short wave Diathermy: Continuous & Pulsed
- Indications, contraindications and therapeutic effects.
- Methods of application – capacitor and induction electrode
- Precautions and Potential harmful effects of treatment
- Dosimetry

Microwave Diathermy
- Characteristics and therapeutic effects
- Indications, contraindications
- Application techniques
- Precautions and potential harmful effects
- Dosimetry.

Unit III: Ultrasonic Therapy 10 Lecture hours
- Physiological and therapeutic effects & potential harmful effects
- Indications, contraindications, methods of application and precautions, Dosimetry.

Unit IV: Cold-therapy 10 Lecture hours
- Indications, contraindications and therapeutic effects.
- Technique, precautions and Potential harmful effects of treatment, Dosimetry.

Unit V: Laser and Ultraviolet radiation therapy 10 Lecture hours

Laser
- Introduction, effects, types and potential harmful effects
- Indication, contraindications, precautions
- Method of application
- Dosimetry.

Ultraviolet therapy
- Physiological and therapeutic effects – Photosensitization
- Indications, contraindications and potential harmful effects.
- Methods of application, Sensitizes, Filters, Dosage, wavelength, penetration, tolerance
- Treatment Application condition wise
Mode of Evaluation

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Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

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1=Addressed to small extent
2= Addressed significantly
3=Major part of course
Course objective:
The student is expected to study:
- Various methods of assessment of the physical parameters like joint ROM, muscle
  strength etc
- The principles of exercise therapy e.g. Co-ordination, Re-Education, strengthening,
  mobilization, Goniometry.

Course outcome:
On completion of the course the student should be able to:
1. Demonstrate the techniques of measuring range of motion for a joint
2. Demonstrate the methods used for peripheral joint mobilization for increasing the
   range of motion of a joint
3. Apply the techniques of manual cervical and lumbar traction.
4. Plan a muscle re-education program using principles of muscle strengthening and co-
   ordination training
5. Demonstrate the application of Suspension on upper and lower limb

Course Description:
Here, the main focus is to develop the skills of the students in areas like assessment of
physical parameters (joint range of motion, muscle strength etc) and principles of exercise
therapy. The students will be demonstrated and made to practice various types of exercise
therapy techniques like strengthening, mobilization, suspension therapy, goniometry etc.

Text Books:
- Margaret Hollis & Phyl Fletcher Cooks. Practical Exercise Therapy 4th edition, Wiley
- Carolyn Kisner, Lynn Allen Colby. Therapeutic Exercise: Foundations and
- Pamela K. Levangie, Cynthia C Norkins. Joint Structure and Function: A
  0803623620

Reference Books:
  0443037207
- Margaret Knott, Ionta Voss, James W. Myers, Dorothy E. Voss. Proprioceptive
  Neuromuscular Facilitation: Patterns and Techniques 3rd revised edition, Lippincott
- Helen J. Hislop, Jacqueline Montgomery. Daniels and Worthingham's Muscle Testing:
  Techniques of Manual Examination 8th edition, Elsevier Science Health Science
Course Contents:
- Demonstration and practice of Goniometry
- Demonstration and practice of muscle re-education techniques
- Demonstration and practice of coordination exercises (Frenkel’s)
- Demonstration and practice of mobilization of peripheral joints
- Demonstration and practice of mechanical spinal traction
- Study of structure, function and application of suspensions
- Demonstration of suspension
Mode of Evaluation:

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1=Addressed to small extent  
2= Addressed significantly  
3=Major part of course
Course objectives:
The student is expected to study:
- The construction and principle of working of various electrotherapeutic modalities.
- The indications, contraindications, precautions, harmful effects of various modalities.

Course outcomes:
On completion of the course the student should be able to:
1. To demonstrate and apply the knowledge in application of superficial and deep heating modalities according to their physiological effects, indications and contraindications.
2. To apply the knowledge in application of Ultrasound therapy according to their physiological effects, indications and contraindications.
3. To demonstrate the knowledge in application of cryotherapy according to their physiological effects, indications and contraindications.
4. To apply the knowledge in application of LASER therapy according to their physiological effects, indications and contraindications.
5. To demonstrate the knowledge in application of ultraviolet radiations according to their physiological effects, indications and contraindications.

Course Description:
The students will be acquainted with the construction and principle of working of various electrotherapeutic modalities. They will be demonstrated the procedure of application of electrical modalities while considering the technique of application, indications, contraindications and harmful effects related to the modality. This will enable the students to apply these modalities for therapeutic purpose safely and efficiently.

Text books:

Reference Books:
Course Contents:
- Demonstration of Electrical Modalities functioning & Usage
- Demonstration and practice of therapeutic application of the following modalities: Short-wave diathermy, Ultrasound, Infrared, Wax bath, Hydrocollator, Microwave, Laser, UVR

Note: All the Demonstrations are done on Normal Person
Mode of Evaluation:

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## Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

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1=Addressed to small extent  
2= Addressed significantly  
3=Major part of course
Course objective:
The students are expected to study Medical/Physiotherapy laws, rights of patients, medical negligence, malpractices, and importance of record maintenance for medico-legal purposes. Students are also expected to study about various roles, responsibilities and values that must be followed by a Physiotherapist.

Course outcome:
On completion of the course the student should be able to:

1. Apply the physiotherapy laws onto clinical practice
2. Relate the knowledge of patient’s rights while planning management protocols and providing information
3. Apply the physiotherapy ethics onto clinical practice
4. Prepare any management plan keeping in view the professional values and responsibilities
5. Demonstrate various roles of a Physiotherapist in clinical and non-clinical settings

Text Books:

Reference Books:
Course description:
The module on professionalism will deliver the concept of what it means to be a professional and how physiotherapy profession is different from a usual vocation. It also explains how relevant is professionalism in terms of healthcare system and how it affects the overall patient environment.

Legal and ethical considerations are firmly believed to be an integral part of medical practice in planning patient care. Advances in medical sciences, growing sophistication of the modern society’s legal framework, increasing awareness of human rights and changing moral principles of the community at large, now result in frequent occurrences of healthcare professionals being caught in dilemmas over aspects arising from daily practice.

Medical/ Physiotherapy ethics has developed into a well based discipline which acts as a "bridge" between theoretical bioethics and the bedside. The goal is "to improve the quality of patient care by identifying, analyzing, and attempting to resolve the ethical problems that arise in practice". Doctors are bound by, not just moral obligations, but also by laws and official regulations that form the legal framework to regulate medical practice. Hence, it is now a universal consensus that legal and ethical considerations are inherent and inseparable parts of good medical practice across the whole spectrum. Topics to be covered under the subject are discussed in detail below.
Course content:

Unit I: Introduction to Physiotherapy Laws  
- Medical ethics versus medical law - Definition - Goal - Scope
- Introduction to Code of conduct
- Basic principles of medical ethics – Confidentiality
- Malpractice and negligence - Rational and irrational drug therapy
- Care of the terminally ill- Euthanasia
- Development of standardized protocol to avoid near miss or sentinel events

Unit II: Patient’s rights  
- Autonomy and informed consent - Right of patients
- Obtaining an informed consent
- Medical diagnosis versus physiotherapy diagnosis.
- Medico legal aspects of medical records – Medico legal case and type-Records and document related to MLC - ownership of medical records - Confidentiality Privilege communication - Release of medical information - Unauthorized disclosure - retention of medical records - other various aspects.
- Professional Indemnity insurance policy

Unit III: Ethics  
- Biomedical ethical principles
- Code of ethics for physiotherapists
- Ethics documents for physiotherapists
- Laws affecting physiotherapy practice

Unit IV: Professional Values  
- Professional values- Integrity, Objectivity, Professional competence and due care, Confidentiality. Core values- Accountability, Altruism, Compassion/caring, excellence, integrity, professional duties, social responsibility.
- Personal values- ethical or moral values
- Attitude and behavior- professional behavior
- Code of conduct , professional accountability and responsibility, misconduct
- Differences between professions and importance of team efforts
- Cultural issues in the healthcare environment
- Entry level health care practitioner, direct access, autonomy in profession, practitioner of practice and evidence based practice.

Unit IV: Role of a Physiotherapist  
- Physiotherapist as patient/client manager
- Physiotherapist as a consultant
- Physiotherapist as a Critical inquirer
- Physiotherapist as an Administrator
- Physiotherapist as an Educator
Mode of Evaluation:

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Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

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3/S = Strong co-relation
2/M=Medium co-relation
1/L= Low co-relation
Course Objectives:
1. To aware of the indications and implications of commonly used diagnostic imaging tests as they pertain to patient’s management.
2. Demonstrate the study of common diagnostic and therapeutic imaging tests.
3. The course will cover that how X-Ray, CT, MRI, Ultrasound and Other Medical Images are created and how they help the health professionals to save lives.

Course Outcome:
1. To illustrate the indications and implications of commonly used diagnostic imaging tests as they pertain to patient’s management.
2. Demonstrate the study of common diagnostic and therapeutic imaging tests.
3. To evaluate that how X-Ray, CT, MRI, Ultrasound and Other Medical Images are created and how they help the health professionals to save lives.
4. To distinguish between radiography and mammography
5. To interpret of Nuclear medicine.

Textbooks:

Reference Books:
- Govind B Chavan. MRI Made Easy (for Beginners), 2/e, 2013, Jaypee Brothers, ISBN: 9789350902707
Course Contents:

Unit I: Introduction to Image Interpretation 3 Lectures
a. History
b. A New Kind of Ray
c. How a Medical Image Helps
d. What Imaging Studies Reveal
e. Radiography (x-rays)
   I. Fluoroscopy (Computed)
   II. Tomography (CT)
h. Magnetic Resonance Imaging (MRI)
   I) Ultrasound
   II) Endoscopy.

Unit II: Radiography And Mammography 3 Lectures
a. Equipment components
b. Procedures for Radiography & Mammography
c. Benefits versus Risks and Costs
d. Indications and contraindications.

Unit III: Introduction to Fluoroscopy, CT, MRI 3 Lectures
a. What is Fluoroscopy?
b. Equipment used for fluoroscopy
c. Indications and Contra indications
d. How it helps in diagnosis
e. The Findings in Fluoroscopy

COMPUTED TOMOGRAPH (CT)
a. What is Computed Tomography?
b. Equipment used for Computed Tomography
c. Indications and Contra indications
d. How it helps in diagnosis
e. The Findings in Computed Tomography

MAGNETIC RESONANCE IMAGING (MRI)

a. What is MRI?
b. Equipment used for MRI
c. Indications and Contra indications
d. How it helps in diagnosis
e. The Findings in MRI
f. Benefits versus Risks and Costs
g. Functional MRI.

Unit IV: Introduction to Ultrasound and Endoscopy 3 Lectures

ULTRASOUND
a. What is Ultrasound?
b. Equipment used for Ultrasound
c. Indications and Contra indications
d. How it helps in diagnosis
e. The Findings in Ultrasound

ENDOSCOPY
a. What is Endoscopy?
b. Equipment used for Endoscopy
c. Indications and Contra indications
d. How it helps in diagnosis
e. The Findings in Endoscopy

Unit V: Brief Idea about Nuclear medicine 3 Lectures
a. What is Nuclear Medicine?
b. Equipment used for Nuclear Medicine
c. Indications and Contra indications
d. How it helps in diagnosis.
e. Benefits versus Risks and Costs.
Mode of Evaluation:

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Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

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1=Addressed to small extent
2=Addressed significantly
3=Major part of course
Course objectives:
- To study understand pharmacokinetics, pharmacodynamics.
- To be Oriented in the usage of common drugs with (indications, contraindications, side effects)
- Identify the drug actions that may affect the physical therapy treatment.

Course outcomes:
On completion of the course, a student should be able:
1. To demonstrate the scientific concepts and principles that serve as the foundation of pharmacological sciences that primarily includes pharmacokinetics and pharmacodynamics.
2. To demonstrate an understanding of the molecular, cellular, and physiological mechanisms taking place between the drug and central nervous system.
3. To employ the major drugs and drug classes currently used in the pathologies related to the cardiovascular system.
4. To utilize the basic principles of physiology and the mechanisms by which disorders related to endocrinology can be countered.
5. To demonstrate the relative pros and cons in the use of drugs being prescribed in the diseases caused by pathogens and infectious agents.

Course Description:
The students will understand the mechanism of action of various drugs thereby gaining knowledge on its effects and usage along with indication, contraindications and side effects. They will also be made aware of interaction and effect of drugs with various systems of human body and with physical therapy treatment.

Textbooks:

Reference Books:

Course content:

**Unit I: General Pharmacology** 10 Lecture hours
- Introduction & general concepts
- Pharmacokinetics (routes of administration, metabolism & elimination)
- Pharmacodynamics (mechanism of drug action, therapeutic & side effects, toxicity)
Unit II: Central Nervous System  
- Sedatives and hypnotics – uses, side effects and interaction with physical therapy.
- Anti-epileptic drugs – uses, side effects and interaction with physical therapy.
- Analgesics – uses, side effects and interaction with physical therapy.
- Anti-inflammatory drugs – uses, side effects and interaction with physical therapy.
- Drugs for Spasticity, Rigidity with special emphasis on the role of Botox

Peripheral Nervous System
- Skeletal Muscle Relaxants
- Local Anesthetics.

Autonomic Nervous System
- Therapeutic agents – uses, effects and interaction with physical therapy.

Unit III:
Cardio-vascular System
- Therapeutic agents (classification, effects on cardio-vascular system, uses & adverse reactions)
- Drugs used in cardiac failure, hypertension, myocardial infarction, atherosclerosis & arrhythmias and interaction with physical therapy.
- Drug therapy in venous disease & ischemia and interaction with physical therapy.

Unit IV:
Respiratory system
- Therapeutic agents – uses, side effects and interaction with physical therapy.
Glucocorticoids & Thyroxin
- Uses, side effects and interaction with physical therapy (brief description only)
Diabetes mellitus
- Drug therapy and its interaction with physical therapy.

Unit V:
Geriatrics
- Pharmacological challenges in geriatric age group (in the above system wherever applicable)
Drug Therapy for Infection
- Antibiotics, Anti-tubercular Drugs and Anti-leprosy drugs.
- Anti-emetics
Mode of Evaluation:

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1=Addressed to small extent  
2=Addressed significantly  
3=Major part of course
**Course objectives:**
The student is expected to study:

- The nutritional and metabolic diseases
- The nutrition and immunization process and the clinical presentation of various pathologies in a pediatric patient
- The disorders of geriatrics

**Course outcomes:**
On course completion the student will be able to:

1. To relate the concept of various nutritional and metabolic diseases.
2. To relate the concept of growth, development, nutrition and immunization in children.
3. To interpret common disorders in a pediatric patient.
4. To interpret rheumatism and cardio-pulmonary ailments in a pediatric patient.
5. To relate normal ageing and its disorders along with its management in geriatric population.

**Course Description:**
The students will understand the concept of medicine and the clinical approach to examine a medical patient. The students will be made aware of nutrition, immunization process and clinical presentation of various pathologies in a pediatric patient and its special needs in relation to physical therapy. They will learn about normal ageing and disorders in geriatric population.

**Text Books:**


**Reference Books:**

Course content:

Unit I: 8 Lecture hours
Nutritional and Metabolic disease
Brief description of following
   Vitamins & Minerals Deficiencies
   Diabetes Mellitus, hypo and hyper thyroidism.
   Alcoholism (in brief)

Unit II: 9 Lecture hours
Growth and development of child
   Motor, mental, social (in detail)
Immunization programs
   WHO schedule
   Different vaccinations
Nutrition
   Nutritional requirements

Unit III: 10 Lecture hours
Congenital disorders: Types, brief description with outline of management
Common diseases in children: Brief description of following diseases along with outline of management: Tetanus, Botulism Diptheria, Measles, HIV, Cerebral palsy, Poliomyelitis

Unit IV: 8 Lecture hours
Childhood rheumatism
   Types
   Clinical presentation
   Management (in brief).
Common cardio-pulmonary ailments in Pediatrics:
   Clinical features, complications and management
   Upper Respiratory tract infections, Lower Respiratory tract infections,
   Bronchitis, Asthma

Unit V: Geriatrics 7 Lecture hours
   Normal ageing
   Preventive and management strategies for Common Geriatric disorders.
   Nutritional needs of elderly
Mode of Evaluation:

| Components | Theory |  
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| Marks | Internal | ETE |
| 30 | 70 |
| Total Marks | 100 |

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

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| CO5 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 |

1=Addressed to small extent 
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3=Major part of course
Course objective:
The student is expected to study:
  - Various methods of assessment of the physical parameters like joint ROM, muscle strength etc
  - The principles of exercise therapy e.g. relaxation, stretching, strengthening, manual muscle testing.

Course outcome:
On completion of the course the student should be able to:
1. To illustrate the principles of Manual Muscle Testing for assessment
2. To apply techniques of Stretching for management of muscle tightness
3. To differentiate different types of gait patterns using walking aid Develop the skills to train the patients in use of walking aids
4. To interpret the principles of relaxation training used for rehabilitation
5. To illustrate the principles of hydrostatics & hydrodynamics

Course Description:
Here, the main focus is to develop the skills of the students in areas like assessment of physical parameters (joint range of motion, muscle strength etc) and principles of exercise therapy (strengthening, stretching, etc) and its application. The students will also be taught about the usage of walking aids.

Text Books:

Reference Books:
Course content:

**Unit I: Manual Muscle Testing**

- Concept, introduction, significance and limitations
- Grade systems
- Techniques of Muscle testing.
- Emphasis on skills to grade upper limb, lower limb, neck and trunk muscles including trick movement.

**Unit II: Muscle Stretching**

- Stretching – definition, effects and uses of stretching, indications, contra indications, general techniques, self stretching & group stretching techniques
- Special emphasis on stretching of: Pectoral major, Sternocleidomastoid, Biceps brachii, Triceps brachii, and long flexors of fingers. Rectus femoris, Ilio-tibial band, gastrocnemius-soleus, hamstrings, hip abductors, ilio-psoas.

**Unit III: Walking Aids**

- Cane-Types, parts, measurement & gait patterns
- Crutch: Description of crutch – components, classification.
- Crutch measurements,
- Crutch use – Preparation, Training, counseling
- Crutch gaits – types & significance
- Crutch complications – Palsy, dependency etc.
- Walkers-Types, parts, measurement & gait patterns
- Sitting & stair-climbing with walking aids
- Wheelchair (in brief)

**Unit IV:**

Relaxation

- Rationale of relaxation Techniques.
- Techniques of Relaxation – local and General with indication

**Unit V:**

Hydrostatics and Hydrodynamics

- Specific gravity, Hydrostatic pressure, Archimedes Principle, Properties of water, and other liquids
- Buoyancy-law of floatation, factors determining up thrust, and effect of buoyancy on movements performed in water.
- Equilibrium of a floating body, Bernoulli’s theorem.

Hydrotherapy

- Introduction
- Different types of pools and baths.
- Indication and contraindication
- Dangers and precautions
- Hydrotherapy regimes of exercises
- Hydrotherapy exercise for all age groups
Mode of Evaluation:

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1=Addressed to small extent  
2=Addressed significantly  
3=Major part of course
Course objectives:
The student is expected to study:
- The construction and principle of working of various electrotherapeutic modalities.
- The indications, contraindications, precautions, harmful effects of various modalities.

Course outcomes:
On completion of the course the student should be able to:
1. To apply the principles of therapeutic medium frequency currents in clinical practice.
2. To apply the principles of therapeutic low frequency currents in clinical practice.
3. To demonstrate the indications and contraindications of Therapeutic currents.
4. To interpret the appropriate dosage of therapeutic currents according to the pathological conditions.
5. To demonstrate the principles of common electrodiagnostic tools for clinical evaluation.

Course Description:
The students will learn about the construction and principle of working of various electrotherapeutic modalities and will be explained the indications, contraindications and harmful effects of the same. They will be taught to perform a check for all modalities. This will enable the students to apply these modalities for therapeutic purpose efficiently.

Text books:

Reference Books:

Course content:

**Unit I: Medium Frequency currents** 11 Lecture hours
- Definitions, effects, indications, techniques of application, contraindications.
- Interferential therapy
- Physiological, therapeutic effects & dangers, Indications & contraindications.
- Method of applications, dosimetry.

**Unit II: Low Frequency Currents I** 13 Lecture hours
- Nerve Muscle Physiology: brief outline
Faradic current
  ❖ Therapeutic Effects
  ❖ Indications, contraindications, techniques, parameters, therapeutic effects
  ❖ Group muscle stimulation, Faradic footbath, Faradism under pressure and muscle re-education.
  ❖ Dosimetry

Galvanic current
  ❖ Indications, contraindications, precautions and therapeutic effects of stimulation
  ❖ Techniques, parameters & dosimetry

Unit III: Low Frequency Currents II 10 Lecture hours

Direct Currents
  ❖ Definition and principles

Iontophoresis
  ❖ Definition, principles & factors
  ❖ Indications, effects, techniques, contraindications, precautions and potential harmful effects.

Unit IV: Low Frequency Currents III 13 Lecture hours

Electro – Diagnosis
  ❖ S.D. Curve, Reaction of degeneration, Chronaxie & Rheobase.
  ❖ Outline of EMG & Nerve conduction velocity.

TENS therapy
  ❖ Principle of therapy, Parameters, Types and therapeutic uses.
  ❖ Theories of pain and pain control.
  ❖ Indications, contra-indications & dosimetry.

Unit V: 9 Lecture hours

Advanced Electrotherapy
  ❖ Combination therapy
  ❖ Principles of Bio-feedback, indications & uses
  ❖ Long wave Diathermy
  ❖ Shock wave therapy
Mode of Evaluation:

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Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

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1=Addressed to small extent
2= Addressed significantly
3=Major part of course
Course objective:
The student is expected to study:
- Various methods of assessment of the physical parameters like joint ROM, muscle strength etc
- The principles of exercise therapy e.g. relaxation, stretching, strengthening.

Course outcome:
On completion of the course the student should be able to:
1. To apply the procedure of Manual Muscle Testing for assessment
2. To evaluate the techniques of stretching and compare different techniques Develop the skills to train the patients in use of walking aids
3. To apply the walking patterns for early mobility
4. To apply the relaxation techniques for management of a patient
5. To demonstrate hydrotherapy techniques used for rehabilitation

Course Description:
Here, the main focus is to develop the skills of the students in areas like assessment of physical parameters (joint range of motion, muscle strength etc) and principles of exercise therapy. The students will be demonstrated and made to practice various types of exercise therapy techniques like strengthening, manual muscle testing, stretching, relaxation, crutch gaits etc.

Text Books:

Reference Books:
Course Contents:
- Demonstration and practice of Manual Muscle testing.
- Demonstration and practice of muscle stretching techniques
- Demonstration and practice of relaxation techniques
- Demonstration and practice of crutch gaits.
Mode of Evaluation:

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1=Addressed to small extent  
2=Addressed significantly  
3=Major part of course
Course objectives:
The student is expected to study:
- The construction and principle of working of various electrotherapeutic modalities.
- The indications, contraindications, precautions, harmful effects of various modalities.

Course outcomes:
On completion of the course the student should be able to:
1. To apply the therapeutic currents clinically.
2. To apply the therapeutic currents according to their physiological effects.
3. To apply the therapeutic currents according to their indications and contraindications.
4. To apply the adequate dosage of therapeutic currents according to the clinical conditions.
5. To apply the proper testing of Electrotherapy modalities in clinical settings.

Course Description:
The students will be acquainted with the construction and principle of working of various electrotherapeutic modalities. They will be demonstrated the procedure of application of electrical modalities while considering the technique of application, indications, contraindications and harmful effects related to the modality. This will enable the students to apply these modalities for therapeutic purpose safely and efficiently.

Text books:

Reference Books:

Course Contents:
- Demonstration of Electrical Modalities functioning & Usage
- Demonstration and practice of various motor point stimulations
- Demonstration and practice of therapeutic application of different low Frequency currents
- Demonstration and practice of Reaction of degeneration, SD curves plotting
- Demonstration and practice of therapeutic application of the following modalities:
- Electrical Muscle stimulator, Interferential currents, TENS
Note: All the Demonstrations are done on Normal Person

Mode of Evaluation:

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### Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

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| BPTH2014 ELECTROTHERAPY LAB -II | 3   | 3   | 3   | 1   | 1   | 2   | 1   | 3   | 1   |

1=Addressed to small extent  
2=Addressed significantly  
3=Major part of course
Course objective:
The student is expected to study:

- The fractures and deformities of upper and lower limb
- The spinal deformities
- The congenital deformities
- Amputations
- Bone tumors

Course outcome:
On course completion the student will be able to:
1. To relate the concept of fracture.
2. To interpret the soft tissue injuries and degenerative and rheumatic diseases.
3. To interpret the spinal conditions and infectious diseases of musculoskeletal system.
4. To interpret the congenital malformations and developmental diseases of skeleton.
5. To interpret the neurovascular and neuromuscular conditions and amputation.

Course Description:
The students will understand the fractures and deformities of upper limb, lower limb and spine along with congenital deformities. This will develop the skill of clinical examination of an orthopedic patient and will make the students able to correlate radiological findings with clinical findings. The students will gain the knowledge to interpret pre and post-operative cases. This will make the students understand the physiotherapeutic need of the patients.

Text Books:

Reference Books:
Course Contents:

Unit I: Introduction to Orthopaedics
- Fracture: definition, types, signs and symptoms
- Fracture healing
- Complications of fractures
- Principles of management
- Fractures and dislocation (including causes, clinical features, mechanism of injury, complications, conservative and surgical management) of:
  - Upper limb
  - Lower limb
  - Pelvis

Unit II: Soft Tissue Injury of Upper limb and Lower limb
- Mechanism, clinical presentation and management (conservative and surgical)
- Arthritis & Rheumatic Diseases
  - Clinical features, evaluation & conservative management of various categories of arthritis.
  - Rheumatoid arthritis, Polymyalgia rheumatica, Gout, Osteoarthritis, Ankylosing spondylitis, Reiter’s disease, Adhesive capsulitis, Haemophilic arthritis, Charcot joints.

Unit III: Spine & Spinal deformities, Thoracic cage & Pelvic Girdle
- Disc prolapse, Spondylosis, spondylolisthesis, spinal canal stenosis.
- Brief description & Conservative management of Scoliosis, Kyphosis, lordosis.
- Fractures of the spine

Infections of Musculoskeletal system
- Bacterial infections of bones & joints with conservative management.
- Tubercular infections of bones & joints with conservative management.
- Pott’s paraplegia.

Unit IV: Congenital malformations
- Brief descriptions of following congenital conditions along with the outline of treatment
  - Congenital Hip Dysplasia, Congenital Talipes Equinovarus/ Calcaniovalgus, Arthrogryposis Multiplex congenita, Congenital Torticolis, Coxa vara, Coxa valga, cervical rib.

Developmental diseases of skeleton
- Osteogenesis imperfecta, Osteoporosis, Osteochondritis (Perthes’ disease).

Unit V: Neuro-vascular & Neuromuscular diseases
- Clinical features evaluation and conservative management of various condition.
  - Peripheral nerve injuries (in brief)
  - Poliomyelitis – full description including management (surgical management – outline only)

Amputations
- Definition, causes, types, levels (upper and lower limb), indications, complications & management.

Bone tumors
Mode of Evaluation:

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## Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

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1=Addressed to small extent  
2= Addressed significantly  
3=Major part of course
Course objectives:
The student is expected to study:

- Physical evaluation of an orthopaedic patient
- General principles of physiotherapy treatment in fracture (upper limb, lower limb) management including complications at different stages.
- Basic principles of assessment and application of physical therapy in treatment of orthopaedic conditions.
- Basic principles of assessment and application of physical therapy in amputation

Course outcomes:
On completion of the course the student should be able to:

1. To demonstrate the assessment of an Orthopaedic patient.
2. To apply the physiotherapy management skills in fractures of upper limb.
3. To apply the physiotherapy management skills in fractures of lower limb.
4. To apply the physiotherapy management skills in degenerative conditions.
5. To practice the pre and post prosthetic assessment and management in amputation.

Course Description:
The students will understand how to physically evaluate an orthopaedic patient. They will be taught principles of physiotherapy management in fracture cases and identification of various musculoskeletal dysfunctions clinically. They will be explained the general principles of assessment and physiotherapy management in various degenerative conditions and in amputation which will enable them in formulation of goals and application of therapeutic skills.

Text Books:


Reference Books:

Course Content:

Unit I: An Orthopaedic patient 12 Lecture hours
- PT assessment for Orthopedic conditions - SOAP format.
- Documentation of case records, and follow up.

Unit II: Traumatology : upper limb 12 Lecture hours
- General principles of physiotherapy in fracture and dislocation management including complications at different stages.
- Physiotherapy assessment and management of Fractures and Dislocations of upper limb

Unit III: Traumatology – lower limb 12 Lecture hours
- Physiotherapy assessment and management of Fractures and Dislocation of lower limb

Unit IV: Degenerative conditions 12 Lecture hours
- PT assessment and management of the following conditions – Osteoarthritis, Rheumatoid Arthritis, Ankylosing spondylitis, Gout, Perthes disease, Periarthritic shoulder.

Unit V: Amputation 12 Lecture hours
- Amputations: 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.
## Mode of Evaluation:

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## Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

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1=Addressed to small extent
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Course objectives:
The student is expected to study:
- Physiotherapeutic Evaluation, Clinical reasoning and Documentation for cardiac and pulmonary disorders and patients for general surgery.
- Common Investigations for cardiac and Pulmonary Disorders.
- Common Cardiovascular and pulmonary Disorders.

Course outcomes:
On completion of the course the student is expected to:
1. Evaluate the patients with cardiac or pulmonary disorders.
2. Compose treatment protocol for ICU Patients.
3. Design and implement treatment protocol for cardiac patients.
4. Design and implement treatment protocol for pulmonary patients.
5. Demonstrate Cardiac and pulmonary rehabilitation process.

Course Description:
The students will be explained in detail the physiotherapy evaluation, clinical reasoning and documentation for cardiac and pulmonary patients. They will understand the physiotherapy management in cardiac and pulmonary conditions which will help them in applying various physiotherapeutic procedures in these conditions.

Text Books:

Reference Books:
Course Contents:

Unit I: Physiotherapy Examination in cardiac and pulmonary disorders  
11 Lecture hours
- Applied aspects of Cardiopulmonary Anatomy and Physiology.
- History taking.
- Subjective and Objective Assessment
- BP measurement, Auscultation.
- Common Investigations including X Ray, ECG, ECHO, PFT, ABG, Stress Testing, Angiography etc.

Unit II: Physiotherapy in Intensive care unit for Cardiopulmonary Patients 
11 Lecture hours
- Monitoring in ICU/CCU/ICCU.
- Precautions in ICU including universal precautions.
- Physiotherapy in ICU- Bronchial hygiene therapy, Lung Expansion Therapy.
- Mobilization and Exercise therapy.
- Oxygen therapy.
- Mechanical Ventilation.
- CPR and emergency procedures.

Unit III: Physiotherapy Management in Common Cardiovascular Disorders 
12 Lecture hours
Introduction, Etiology, Clinical features, Medical and Physiotherapy Management for:
- Hypertension.
- Coronary Artery Disease, Angina Pectoris, Myocardial Infarction.
- Rheumatic heart Disease & other Valvular disorders.
- Thromboembolic Phenomenon and DVT.
- Varicose veins and Ulcers.
- Peripheral Vascular Diseases.

Unit IV: Physiotherapy Management in Common Pulmonary Disorders 
12 Lecture hours
Introduction, Etiology, Clinical features, Medical and Physiotherapy Management for:
- COPD, including chronic Bronchitis and Emphysema.
- Asthma.
- Bronchiectasis.
- Pneumonia.
- Pulmonary Tuberculosis.
- Pleurisy & Pleural effusion.
- Cystic fibrosis
- Pneumothorax.
- Restrictive lung disorders resulting from Kypho-scoliosis, Ankylosing Spondylitis & Spinal Cord Injury and chest trauma patients.
- Atelectasis and Bronchopulmonary fistula.
- Occupational lung Diseases.

Unit V: Rehabilitation for Cardiovascular and pulmonary Patients 
10 Lecture hours
- Cardiac Rehabilitation - aims, objectives, core components, principles, phases, PT techniques, outcome measures.
- Pulmonary Rehabilitation - aims, objectives, principles, PT techniques including biofeedback, outcome measures.
Mode of Evaluation:

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1=Addressed to small extent  
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3=Major part of course
Course objective:
The student is expected to study:
- Muscle, Joint structure and function
- Joint complexes of upper limb and thorax
- Mechanics of joint movements and their common dysfunctions

Course outcomes:
On completion of the course the student is expected to:
1. Demonstrate the biomechanics of muscles & joints clinically
2. Analyze the biomechanics of the shoulder joint complex in a clinical setting.
3. Analyze the biomechanics of the elbow joint complex in a clinical setting.
4. Evaluate the biomechanics of the wrist & hand complex clinically.
5. Evaluate the biomechanics of the spine clinically.

Course Description:
- The students will understand the structure and function of muscles and joints of the human body which will enable them to assess the patient biomechanically. The students will be able to identify the structure at fault which will further help them in determining the treatment protocols.

Text Books:

Reference Books:
Course Contents:

Unit I: 11 Lecture hours

Joint structure and function
- Types of joints
- Joint functions

Muscle structure and function
- Muscle structure
- Muscle function

Unit II: Shoulder joint complex 11 Lecture hours
- Brief anatomy
- Biomechanics

Unit III: Elbow joint complex 11 Lecture hours
- Brief anatomy
- Biomechanics

Unit IV: Wrist and hand complex 11 Lecture hours
- Brief anatomy
- Biomechanics

Unit V: Axial skeleton, Thorax and Chest Wall 12 Lecture hours
- Brief anatomy
- Biomechanics
Mode of Evaluation:

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2= Addressed significantly
3=Major part of course
Course objectives:
The student is expected to study:
- Physical evaluation of an orthopaedic patient.
- Basic principles of application of physical therapy in treatment of orthopaedic conditions.
- General principles of assessment and physiotherapy management in amputations.

Course outcomes:
On completion of the course the student should be able to:
1. To perform assessment of an Orthopaedic patient.
2. To perform the physiotherapeutic procedures for various orthopaedic conditions.
3. To perform special tests for diagnosing various orthopaedic conditions.
4. To perform physiotherapy management skills in degenerative and rheumatic conditions.
5. To perform physiotherapy management skills in amputation.

Course Description:
The students will learn practical demonstration of physical evaluation of an orthopaedic patient. They will be given practical explanation of principles of physiotherapy management in fracture cases and for identification of various musculoskeletal dysfunctions. They will get to know how to practically demonstrate the general principles of assessment, how to set goals and apply physiotherapy management in orthopaedic and surgical conditions.

Text Books:

Reference Books:
Course Contents:

- Physiotherapy assessment of an orthopaedic patient
- Special tests for upper limb
- Practical demonstration of basic principles of application of physical therapy in treatment of orthopaedic conditions like:
  - Degenerative conditions & Rheumatic conditions
  - Amputations
Mode of Evaluation:

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1=Addressed to small extent
2= Addressed significantly
3=Major part of course
Course objectives:
The student is expected to study:
- Physiotherapeutic Evaluation and clinical reasoning and Documentation for cardiac and pulmonary Disorders and patients for general surgery.
- Common Investigations for cardiac and Pulmonary Disorders
- Common Cardiovascular and pulmonary Disorders
- Physiotherapeutic management for cardiopulmonary patients.

Course outcomes:
On completion of the course the student is expected to:
1. Evaluate the patients with cardiac or pulmonary disorders.
2. Compose treatment protocol for ICU Patients.
3. Design and implement treatment protocol for cardiac patients.
4. Design and implement treatment protocol for pulmonary patients.
5. Demonstrate Cardiac and pulmonary rehabilitation process.

Course Description:
The students will learn in detail the clinical reasoning and documentation for cardiac and pulmonary surgical patients. They will learn practical demonstration of the physiotherapy evaluation and physiotherapy management in cardiac and pulmonary conditions which will help them in applying various physiotherapeutic procedures in these conditions.

Text Books:

Reference Books:

Course Contents:
- Practical demonstration of basic principles of application of physical therapy in treatment of:
  - Intensive care unit for Cardiopulmonary Patients
  - Common Cardiovascular Disorders
  - Common Pulmonary Disorders
- Practical demonstration of basic principles of application of physical therapy in cardiac and pulmonary rehabilitation.
Mode of Evaluation:

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## Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

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1=Addressed to small extent
2= Addressed significantly
3=Major part of course
The student will be posted in the hospitals (Department of Physiotherapy) & he/she will learn the approach, assessment, diagnosis, and Physiotherapy management of patients visiting the department.

The student will be acquainted with the electro therapeutic and exercise equipments used for various physiotherapy interventions in the physiotherapy department. He/she will learn how to apply various treatment modalities to patients while considering the technique of application, indications, contraindications and dangers related to the treatment modality.

The student will be acquainted with the skills of Approach to patient, collection of demographic data, art of history taking, bedside / OPD manners in relation to patient, general assessment of patient from therapeutic point of view, ability to find provisional diagnosis logically, and application of therapeutic skill learned.

Student should submit a clinical log book at the end of the clinical training containing the case sheets of patients assessed and treated during the training.

**Evaluation:**
The student will be evaluated based on the feedback from the Department of Physiotherapy in which he/she was posted.

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Course Objectives:
The student is expected to study:

1. To describe and compare different health outcomes measures
2. To describe and compare different methods used to value health states
3. To analyze health outcomes data
4. Independently apply and reflect on the physiotherapy process and ICF regarding current preventive and rehabilitating actions within several physiotherapy domains and for patients in different rehabilitation contexts
5. Apply behavioural medicine principles to support the patient's ability to reflect, behavioural changes, motivation and participation in the rehabilitation process and responsibility for own health including primary and secondary preventive measures

Course Outcome:
On course completion the student will be able to:

1. Reflect on, evaluate and explain all stages of the physiotherapy process based on theoretical and practical knowledge, and assess if the patient should be referred to another care provider
2. To reflect on the choice of different methods when valuing health states
3. To reflect on different perspectives, preferences, when valuing health states
4. To reflect on multidisciplinary in population health studies
5. To reflect on inequalities in health when conducting health outcomes research

Textbooks:


Reference Books:

Course Content

**Unit I: The physiotherapy process and ICF concerning disability**

- Lectures: 6 Lectures
- The physiotherapy process and ICF concerning disability, functioning and contextual factors including behavioral medical aspects in rehabilitation in different rehabilitation contexts
- The role of the physiotherapist as caregiver, educationalist, consultant and team member
- Evidence-based working method (published knowledge, best practice, the patient's wishes and available resources)
- Contraindications for different examination and treatment methods
- Gender, culture, diversity, laws and regulations and ethical rules
- Physical activity in rehabilitation

**Unit II: Clinical education with a focus on physiotherapy examination, assessment and treatment in rehabilitation of diseases/injuries in the musculoskeletal system**

- Lectures: 6 Lectures
- Movement habits and body positions, as well as behaviours and and reference to problems triggering or tending to maintain pain conditions principles of differential diagnoses concerning joint, muscle and nerve involvement
- Hyper- and hypomobility and their causes
- Muscle function regarding strength, endurance, coordination, muscle length and pain treatment with devices and orthopedic technical aids

**Unit III: Physiotherapy examination, assessment and treatment in rehabilitation of psychosomatic problems**

- Lectures: 6 Lectures
- Psychosomatic approach treatment, reflection and communication psychosomatic orientated examination with an emphasis on resource- and problem analysis psychosomatic-targeted treatment methods; body awareness, therapeutic touch, relaxation and stress management

**Unit IV: Clinical education with a focus on physiotherapy examination, assessment and treatment in rehabilitation of diseases/injuries in the nervous system**

- Lectures: 6 Lectures
- Motor control as a theoretical model for clinical practice, sensory motor control, cognitive functions and communication, condition and strength and ADL ability, participation in the rehabilitation process. Orthotic devices, wheelchairs and other aids

**Unit V: Evidence-based physiotherapy working method**

- Lectures: 6 Lectures
- Different competence areas in clinical context
- Evidence-based physiotherapy working method in injuries and diseases in the musculoskeletal system, the nervous system and in psychosomatic problems
- Independent application of integrated knowledge, skills and attitudes on an unknown patient and reflection on own effort
Mode of Evaluation:

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Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

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<th>Design &amp; development of solutions</th>
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**Course objective:**
The students are expected to study about leadership skills, management strategies and effective planning.

**Course description:**
This course focuses on the strategies used for management in any clinical or non-clinical setting. Leadership skills have an important role in effective functioning of a hospital or clinic. Team works and decision making lays a foundation on which any organization is build. In this course students will learn about the skills that will prove to be helpful not only in their professional life but also in personal life as well.

**Course outcome:**
On completion of the course the student should be able to:

1. Explain the theories and principles of management
2. Relate effective methods for several situations in view of the management skills in practice
3. Prepare effective plan using skills in clinical
4. Practice Demonstrate leadership skills in clinical practice
5. Apply clinical knowledge use by management skill

**Text Books:**
10. C.M.Francis, Mario C de Souza Hospital Administration, Jaypee Brothers Medical Publishers (P) Ltd., New Delhi.

**Reference Books:**
Course content:

Unit I: Introduction to management 9 Lecture hours
- Introduction to management, Strategic Management
- Principles of management
- Theories of management

Unit II: Decision Making 5 Lecture hours
- Decision Making
- Conflict
- Stress management

Unit III: Planning 5 Lecture hours
- Foundations of Planning
- Planning Tools
- Techniques

Unit IV: Team work 5 Lecture hours
- Managing Change and Innovation
- Understanding Groups and Teams

Unit V: Leadership 6 Lecture hours
- Leadership
  - Qualities of a leader
  - Responsibilities of a leader
- Time Management
- Cost and efficiency
Mode of Evaluation:

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3/S = Strong co-relation
2/M=Medium co-relation
1/L= Low co-relation
**Course objectives:**
The student is expected to study:
- Principles of surgical examination.
- Brief description of various types of wounds, scars, ulcers, boils, vascular surgeries, abdominal surgeries, plastic surgeries, orthopedic, neurosurgeries, cardiovascular surgeries and the management of all these surgical conditions etc.
- The burns patients and patient with amputation.
- The nutritional requirement in a post-surgical patient.
- The various common gynecological and obstetrics procedures.

**Course outcomes:**
On course completion the student will be able to:
1. To demonstrate knowledge and understanding of common surgical problems and the techniques used for assessments.
2. To demonstrate an understanding of surgical treatments in vascular disorders and the surgeries related to abdominal areas.
3. To utilize the basic anatomy for understanding and learning about the various injuries and pathologies related to head and spinal cord.
4. To demonstrate the understanding of limitations, essential diagnostic procedures that are used in cardiovascular pathologies and the outcomes of different types of surgeries.
5. To utilize the knowledge of anatomy and physiology to understand the female reproductive organs, the surgeries related to it, the reproductive health, and the surgical approaches.

**Course Description:**
The students will understand common surgical conditions and procedures. They will be made aware of conditions like wounds, scars, ulcers, boils and their management. They will be explained common gynecological and obstetrics procedures.

**Text Books:**

**Reference Books:**
Course Contents:

PART- A: GENERAL SURGERY

Unit I: 10 Lecture hours

Introduction
- Surgery & Surgical patient.
- Principles of surgical examination (Brief description)
- Brief description of events of General Anesthesia.

Brief description of various types of
- Wounds, Scars, Ulcers, Boils etc
- Burns: Causes, Classification, Complications, conservative management of patients, Management of burns, wounds and scars.
- General principles of plastic surgery and postoperative management.

Unit II: 10 Lecture hours

Vascular Disorders
- Arterial occlusion, dilatations, arteritis, small vessel abnormalities (brief description of clinical features, complication & surgical management).
- Amputations – causes & types (brief outline only).
- Lymphedema – brief outline of causes, clinical features & management.

Abdominal wall
- Brief description of various types of abdominal incisions, resultant potential complications and management of incision complications in various abdominal surgeries.
- Brief description of causes, clinical presentation and management of various types of hernias.

Unit III: 9 Lecture hours

Cranium & Spinal cord
- Head injuries & Spinal cord injuries – classification, clinical features, complications & management.
- Brief outline of other intra-cranial disorders with clinical features, complications & management (Abscess, space occupying lesions, hydrocephalus, vascular malformation, spina bifida).

Unit IV: 11 Lecture hours

Thoracic and Cardiac surgery
- Brief surgical anatomy
- Chest injuries – classification, causes, clinical features, complications & management
- Pulmonary resection – causes, outline of management to improve functional lung capacity.
- Pleura – brief description of clinical presentation, complications, and management of pleural conditions (pneumothorax, hydro pneumothorax, Haemopneumothorax and pleurisy).
- Heart- brief description of various surgical heart diseases with respect to clinical presentation, complications and management (valvular heart disease, ischaemic heart disease – brief description, clinical presentation, complications and management). Outline of postoperative complications in cardiac surgery and their management, restoration of functional capacity in particular.

PART B: OBSTETRICS AND GYNAECOLOGY

Unit V: 16 Lecture hours

Female Reproductive System
- Brief Anatomy.
- Basic principles of clinical examination, investigation, diagnosis, prognosis of female reproductive system disorders.

Obstetrics
- Physiological changes during pregnancy.
- Labor, stages of labor & delivery.
- Musculoskeletal problems in an obstetric/ gynecological patient and its management

Gynecological Conditions
- Pelvic inflammatory diseases.
- Prolapsed uterus, urinary incontinence: causes & management.
- Surgical consideration in obstetrics and gynecology- Caesarean Section, hysterectomy etc.
Mode of Evaluation:

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1=Addressed to small extent  
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3=Major part of course
Course objectives:
The student is expected to study:
- General principles of assessment and principles of application of physical therapy in spinal conditions and fractures of spine
- General principles of assessment and principles of application of physical therapy in clinical situations of dysfunction and musculoskeletal pathology and orthopaedic surgeries
- Basic principles of manual therapy.

Course outcomes:
On completion of the course the student should be able to:
1. To demonstrate the assessment and physiotherapy management of various spinal conditions.
2. To utilize the principles of application of physiotherapy skills in orthopaedic deformities and metabolic, infectious and inflammatory conditions.
3. To demonstrate the assessment and physiotherapy management in various soft tissue injuries of upper and lower limb.
4. To apply the physiotherapy management skills in orthopaedic surgeries.
5. To utilize the principles of manual therapy.

Course Description:
The students will understand how to physically evaluate an orthopaedic patient. They will be taught principles of physiotherapy management in traumatology of spine, soft tissue injuries and identification of various musculoskeletal dysfunctions clinically. They will be explained the general principles of assessment and physiotherapy management in orthopaedic and surgical conditions which will enable them in formulation of goals and application of therapeutic skills in different orthopaedic conditions. Student will be introduced to the basic principles of manual therapy.

Text Books:

Reference Books:
Course Content:

**Unit I: Physiotherapy assessment, goals and management of - 12 Lecture hours**
- Spinal conditions like: Spondylosis, Spondylolisthesis, PIVD, Scoliosis, Kyphosis, Lordosis,
- Spinal fractures

**Unit II: Physiotherapy assessment, goals and management of - 14 Lecture hours**
- Metabolic Conditions - Osteoporosis, Osteomalacia.
- Polio
- Infectious and Inflammatory conditions like – TB, Osteomyelitis
- Deformities: Torticollis, Cervical rib, CTEV, Pes cavus, Pes planus, Coxa vara and valga, Genu-valgum, varum, recurvatum

**Unit III: Soft tissue Injuries 14 Lecture hours**
- Assessment and therapeutic management of Upper Limb Soft Tissue Injuries - Sports Injuries, Sprains, strains, ligament and cartilage tear/rupture.
- Assessment and therapeutic management of Lower Limb Soft Tissue Injuries - Sports Injuries, Sprains, strains, ligament, meniscal and cartilage tear/rupture.

**Unit IV: Physiotherapy in various Orthopaedic surgeries 10 Lecture hours**
- General principles of assessment, physiotherapy management in surgical conditions:
  - Joint replacements
  - Arthrodesis
  - Ilizarov’s technique
  - Osteotomy
  - Tendon transfer
  - Soft tissue release

**Unit V: Introduction to Manual therapy 10 Lecture hours**
- Principles of various schools of thought in manual therapy. (Briefly Maitland and McKenzie).
Mode of Evaluation:

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Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

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1=Addressed to small extent
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3=Major part of course
Course objectives:
The student is expected to study:
- Physiotherapeutic Evaluation, Clinical reasoning and Documentation for patients for general surgery.
- Pre and Post-operative Physiotherapeutic rehabilitation for Cardiopulmonary Surgery patients.
- Rehabilitation for general surgery patients, obstetrics and gynecology, in burns and patients of plastic surgery.
- Physiotherapy in dermatological and ENT conditions.

Course outcomes:
On completion of the course the student is expected to:
1. Illustrate the physiotherapy management after cardiac and pulmonary surgeries.
2. Interpret the assessment protocols after cardiac and pulmonary surgeries.
3. Interpret the physiotherapy management in general and gynecological condition.
4. Utilize therapeutic knowledge in the physiotherapy management of skin diseases.
5. Interpret the assessment process in patients with gynecological conditions and skin diseases.

Course Description:
The students will be explained in detail the physiotherapy evaluation, clinical reasoning and documentation for cardiac, pulmonary, gynaecological and general surgical patients. They will understand the physiotherapy management in cardiac, pulmonary, gynaecological surgeries which will help them in applying various physiotherapeutic procedures in these conditions. They will be made aware of physiotherapy management in dermatological and ENT conditions.

Text Books:

Reference Books:
Course Contents:

**Unit I: Pre and Post operative Physiotherapy for Cardiopulmonary Surgery**

12 Lecture hours

- Principles and techniques of PT management for various traumatic and other surgical conditions of chest, lung, pleura, heart and mediastinum highlighting PT for complications of incisions, anesthesia and cardiopulmonary bypass used during surgery.

**Unit II: Principles of Physical therapy management in Surgical Conditions.**

11 Lecture hours

- Guidelines for preoperative and postoperative management.
- Considerations for preoperative management.
- Considerations for postoperative management including
  - Various Types of Incisions with pain and posture management in them.
  - Bronchial Hygiene and Lung expansion therapy.
  - Post Surgical Mobilization of the patient, precautions and techniques.
- Potential Postoperative Complications.

**Unit III: Physiotherapy in Obstetrics and Gynecology**

12 Lecture hours

- Anatomical and physiological changes of pregnancy.
- Ante natal and post natal physiotherapy care - Normal delivery and Cesarean childbirth.
- Principles of physical therapy management for obstetrics and gynaecological conditions: incontinence, prolapsed uterus, pelvic inflammatory disease, hysterectomy.

**Unit IV: Physiotherapy for Burns and Plastic Surgery**

10 Lecture hours

- Rehabilitation for a burn patient.
- Post surgical Rehabilitation after various surgical procedures including Plastic Surgery.

**Unit V: General principles of Physiotherapy management in:**

11 Lecture hours

- Integumentary Conditions: Chronic ulcers, Dermatological conditions: Psoriasis, Vitiligo, Acne etc.
- ENT: Maxillary Sinusitis, BPPV.
- Bed Rest & De-conditioning.
- HIV/ AIDS
- Leprosy (including Neuro-muscular complications)
Mode of Evaluation:

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### Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

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3=Major part of course
Course objective:
The student is expected to study:
- Muscle, Joint structure and function
- Joint complexes of lower limb.
- Posture and gait.

Course outcomes:
On completion of the course the student is expected to:
1. To determine the basic biomechanical analysis of human joint arthrokinematics and osteokinematics movements and muscular activation during normal and abnormal human activities.
2. Demonstrate application of physical laws to change of motion due to force and torques of human performance.
3. To apply advanced biomechanical testing of the foot and lower limb muscle, including neuromuscular examination and their influence of the foot position during gait.
4. To analysis the kinematics of normal postural control mechanisms and the internal upper and lower extremity forces to maintain various postures during daily functional activity.
5. To analysis the phases of the gait cycle and efficiency the muscular activation patterns at various extremities that occur during the gait cycle.

Course Description:
The students will understand the structure and function of muscles and joints of the human body which will enable them to assess the patient biomechanically. The students will be able to identify the structure at fault which will further help them in determining the treatment protocols.

Text Books:

Reference Books:
Course Contents:

**Unit I: Hip joint complex** 11 Lecture hours
- Brief anatomy
- Biomechanics

**Unit II: Knee joint complex** 11 Lecture hours
- Brief anatomy
- Biomechanics

**Unit III: Ankle-foot complex** 11 Lecture hours
- Brief anatomy
- Biomechanics

**Unit IV: Posture** 11 Lecture hours
- Posture – definition & description, static and dynamic.
- Posture – alignments of various joints, centre of gravity, planes & muscular moments.
- Postural examination
- Abnormal Posture with reference in planes – sagittal, frontal, transverse

**Unit V: Normal Gait** 12 Lecture hours
- Description, Determinants, Spatiotemporal features and analysis
- Gait Deviations – types, causative factors
Mode of Evaluation:

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1=Addressed to small extent  
2= Addressed significantly  
3=Major part of course
Course objectives:
The student is expected to study:
- Physical evaluation of an orthopaedic patient.
- General principles of assessment, physiotherapy management in soft tissue injuries of upper and lower limb.
- General principles of assessment, physiotherapy management in surgical conditions.
- Basic principles of application of physical therapy in treatment of orthopaedic conditions of spine and various orthopaedic deformities

Course outcomes:
On completion of the course the student should be able to:
1. To perform assessment of an Orthopaedic patient.
2. To perform the physiotherapeutic procedures for various orthopaedic conditions.
3. To perform special tests for diagnosing various orthopaedic conditions.
4. To perform physiotherapy management skills in orthopaedic conditions of spine.
5. To perform physiotherapy management skills in orthopaedic surgeries.

Course Description:
The students will learn practical demonstration of physical evaluation of an orthopaedic patient. They will be given practical explanation of principles of physiotherapy management in fracture cases and for identification of various musculoskeletal dysfunctions. They will get to know how to practically demonstrate the general principles of assessment, how to set goals and apply physiotherapy management in orthopaedic and surgical conditions.

Text Books:

Reference Books:
- S. Terry Canale, James H. Beaty. Campbell's Operative Orthopaedics: 4-Volume Set
Course Contents:

- Special test: Spine and Lower limb
- Practical demonstration of basic principles of application of physical therapy in treatment of orthopaedic conditions like:
  - Soft tissue injuries
  - Orthopaedic deformities
  - Spine disorders
  - Various Orthopaedic surgeries
Mode of Evaluation:

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1=Addressed to small extent
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3=Major part of course
Course objectives:
The student is expected to study:

- Physiotherapeutic Evaluation and clinical reasoning and Documentation for cardiac and pulmonary Disorders and patients for general surgery.
- Common Investigations for cardiac and Pulmonary Disorders
- Common Cardiovascular and pulmonary Disorders
- Pre and Post-operative Physiotherapeutic rehabilitation for Cardiopulmonary Surgery patients.

Course outcomes:
On completion of the course the student is expected to:

1. Evaluate the patient after cardiac and pulmonary surgeries.
2. Apply standardized treatment protocols to the post operative patients.
3. Examine patients with gynecological conditions and skin diseases.
4. Apply standardized treatment protocols for gynecological conditions and skin diseases.
5. Apply the protocols for treatment following all the required precautions.

Course Description:
The students will learn in detail the clinical reasoning and documentation for cardiac, pulmonary, gynaecological and general surgical patients. They will learn practical demonstration of the physiotherapy evaluation and physiotherapy management in cardiopulmonary surgery, gynaecological surgeries which will help them in applying various physiotherapeutic procedures in these conditions.

Text Books:

Reference Books:
Course Contents:
- Practical demonstration of basic principles of application of physical therapy in treatment of Cardiopulmonary Surgery.
- Practical demonstration of basic principles of application of physical therapy in Obstetrics and Gynecology.
- Practical demonstration of basic principles of application of physical therapy in treatment of general medical and surgical conditions like:
  - Burns and Plastic Surgery
  - Integumentary & Dermatological conditions
  - Bed Rest & De-conditioning.
  - Leprosy
Mode of Evaluation:

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1=Addressed to small extent
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3=Major part of course
Course objective:
The student is expected to study:

- Interpret the alignment of the body in erect standing posture and its variability
- Illustrate the current understanding of the muscle needed to control erect standing
- Interpret common postural faults
- Analyze the posture in sagittal, frontal plane
- Analyze the basic component of gait cycle
- Illustrate the temporal and distance characteristics of normal gait
- Illustrate the pattern of muscle activity that characterize normal locomotion

Course outcomes:
On completion of the course the student is expected to:
1. Differentiate normal and abnormal posture
2. Interpret common postural faults Analysis
3. Illustrate the pattern of muscle activity during gait cycle (walking, running, stair)
4. Correlate GRF & COG, list the actions at various joints
5. Differentiate normal and abnormal gait

Course Description:
The students will understand the structure and function of muscles and joints of the human body which will enable them to assess the patient biomechanically. The students will be able to identify the structure at fault which will further help them in determining the treatment protocols.

Text Books:

Reference Books:

Course Contents:
- Identify normal and abnormal posture.
- Gait Deviations – types, causative factors
- General features of gait, gait initiation
- Kinematics and kinetics of gait
- Kinematics and kinetics of the trunk and upper extremities in relation to gait Stair and running
- Effects of age, gender, assistive devices, disease, muscle weakness, paralysis, asymmetries of the lower extremities, injuries and malalignments in gait
- Normal gait with it parameters and identify abnormal gait with the problems in it.
- Movement analysis
### Mode of Evaluation:

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3=Major part of course
The student will be posted in the hospitals (Department of Physiotherapy) & he/she will learn the approach, assessment, diagnosis, and Physiotherapy management of patients visiting the department.

The student will be acquainted with the electro therapeutic and exercise equipments used for various physiotherapy interventions in the physiotherapy department. He/she will learn how to apply various treatment modalities to patients while considering the technique of application, indications, contraindications and dangers related to the treatment modality.

The student will be acquainted with the skills of Approach to patient, collection of demographic data, art of history taking, bedside / OPD manners in relation to patient, general assessment of patient from therapeutic point of view, ability to find provisional diagnosis logically, and application of therapeutic skill learned.

Student should submit a clinical log book at the end of the clinical training containing the case sheets of patients assessed and treated during the training.

**Evaluation:**
The student will be evaluated based on the feedback from the Department of Physiotherapy in which he/she was posted.

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**Course objective:**
The student is expected to study:
- The clinical examination of a neurological patient.
- The various circulatory, inflammatory, metabolic, degenerative, traumatic, autonomic disorders of the nervous system.
- The etio-pathogenesis, the clinical features, management of various adult and child psychiatric disorders and mental deficiencies.

**Course outcome:**
On course completion the student will be able to:
1. To evaluate the various neurological dysfunctions clinically and utilize the clinical knowledge in diagnosis and management of disorders of cerebral circulation.
2. To utilize the clinical knowledge in diagnosis and management of inflammatory, demyelinating and extra pyramidal syndromes.
3. Illustrate and demonstrate the cause, pathology, signs-symptoms, differential diagnosis and management of spinal cord disorders and various degenerative disorders.
4. To demonstrate the cause, pathology, signs-symptoms, differential diagnosis and management of peripheral nerve disorders and muscle and neuro-muscular joint disorders.
5. To relate various psychological dysfunctions with neurological conditions.

**Course Description:**
The students will understand how to clinically examine a neurological patient. They will learn about the disorders of the nervous system, psychiatric conditions and mental deficiencies which will help them in better understanding of the co-relation between psychiatric conditions and general health of the patients enabling the students in guiding the patients for proper referrals.

**Text Books:**

**Reference Books:**
Course Contents:

Unit I: 11 Lecture hours
Clinical examination of a neurological patient
- General manifestations
- Principles of diagnosis & management
- Headache, migraine, raised intra-cranial pressure (Brief description)
- Cranial Nerves and special senses.
Disorders of cerebral circulation
- Ischaemia,
- Haemorrhages (CVA)
- HT Encephalopathy

Unit II: 11 Lecture hours
Inflammatory conditions
- Meningitis (bacterial), viral encephalitis
Demyelinating diseases
- Acute disseminated encephalomyelitis, multiple sclerosis, GB syndrome, AIDP
Extra pyramidal syndromes
- Parkinson’s disease, MSA, PSP
- Chorea, Athetosis, Dystonia, Hemi-ballismus (in brief)
Convulsive disorders
- Epilepsy (GM, PM, Psychomotor), tetany

Unit III: 13 Lecture hours
Disorders of Spinal cord and Cauda Equina
- Spinal cord injury
- Spina-bifida, transverse myelitis
- Neurogenic bladder and bowel.
Autonomic nervous system
- Clinical features of autonomic disorders, autonomic dysreflexia and pain
Development and degenerative syndromes
- Cerebral palsy, kernicterus, hereditary ataxias, motor neuron disease, Spinal muscular atrophy, benign congenital hypotonia.

Unit IV: 12 Lecture hours
Peripheral nerve disorders
- Traumatic/ compression or entrapment neuropathy, polyneuritis, diabetic polyneuropathy and spinal radiculopathies
- Special emphasis on brachial and lumbo-sacral plexus and their major branches – radial, ulnar, median, femoral and sciatic nerve
Muscle and Neuromuscular joint disorders
- Myasthenia gravis, floppy infant syndrome

Unit V: 9 Lecture hours
Introduction to Psychiatry
- Principles of psychiatric examination
- Modalities of Psychiatric treatment
Psychosomatic reactions:
- Stress and Depression
- Schizophrenia
- Alzheimer disease
- Hallucination, Delusion
Mode of Evaluation:

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Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

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1=Addressed to small extent  
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3=Major part of course
Course Objectives:
- Community rehabilitation – concept of community rehabilitation, disability, the need of community education and community medicine and principles of rehabilitation in the various communities.
- To enable the student to acquire the knowledge of ethical code of professional practice, its moral & legal aspects, role of IAP, WHO & WCPT.

Course Outcomes:
On completion of the course the student should be able to:
1. To use the concept of community, rehabilitation, team approach in community based rehabilitation
2. To use the concept of disability evaluation and its management
3. To utilize the principles of occupational therapy
4. To use the concept of community medicine and community education program in rehabilitation
5. To practice the professional ethics

Course Description:
The students will understand the objective of community rehabilitation and importance of team approach. They will learn the application of physiotherapy at community level. They will be taught about disability evaluation and its management. Students will understand the concept of ethical and professional conduct.

Text Books:

Reference Books:
Course Contents:

SECTION-A: REHABILITATION

Unit I: 12 Lecture hours
- Introduction of Rehabilitation
- Principles of Rehabilitation & concept of team approach with roles of each individual participant.
- Organization of Rehabilitation unit

Unit II: 12 Lecture hours
- Epidemiology of disability (Impairment, disability, phases of disability process, etc.
- Disability prevention evaluation & principles of Rehabilitation Management (brief)
- Role of Physiotherapy in Rehabilitation (Preventive, treatment & restoration)

Unit III: 12 Lecture hours
- Introduction to Occupational therapy
- Introduction to ICF

Unit IV: 12 Lecture hours
- Brief outline of basic community medicine and community education programme
- Health care delivery system & preventive measure with specific reference to disabling conditions.

Part B – ETHICS

Unit V: 12 Lecture hours
- Constitution and Functions of the Indian Association of Physiotherapists.
- Functioning of the World Confederation of Physical therapy (WCPT) & its various branches.
- Role of WHO & WCPT
Mode of Evaluation:

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1=Addressed to small extent  
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3=Major part of course
**Course objective:**
The student is expected to study:
- Evaluation and examination of a patient with neurological pathology
- General outline of electro diagnostic procedures
- Interpretations and prognosis in different neurological conditions
- Principles of Physiotherapy at various stages of Rehabilitation, establishing the goals of rehabilitation and ADL training

**Course outcomes:**
On completion of the course a student is expected to:
1. To evaluate the various neurological dysfunctions clinically
2. To apply the various therapeutic techniques for the management of neurological conditions.
3. To utilize the knowledge in understanding the assessment and physiotherapy management of various neonatal and developmental disorders
4. To demonstrate the knowledge in understanding the assessment and physiotherapy management of various extra-pyramidal and movement disorders.
5. To illustrate the assessment and physiotherapy management of head injury and cerebro-vascular disorders.

**Course Description:**
The students will learn how to evaluate and examine a patient with neurological dysfunction clinically. They will be made aware of electro diagnostic procedures. They will be taught the formulation of goals of treatment, application of therapeutic skills and principles of physiotherapy at various stages of rehabilitation along with training for activities of daily living.

**Text Books:**

**Reference Books:**
Course Contents:

Unit I: Neurological patient 11 Lecture hours
- Physiotherapy Evaluation
- General outline of electro diagnostic procedures
- Interpretations and prognosis in different neurological conditions

Unit II: Approaches 12 Lecture hours
- Reeducation and retraining techniques
- Approaches like: Bobath’s, Rood’s, PNF, biofeedback, Motor relearning program, Task oriented training etc.

Unit III: Physiotherapy Assessment and management 11 Lecture hours
- Developmental disorders, C.P., Ataxia (all types)
- Neonatal evaluation and early intervention

Unit IV: Physiotherapy Assessment and management 11 Lecture hours
- Parkinson’s disease and movement disorders

Unit V: Physiotherapy Assessment and management of 11 Lecture hours
- Types and Mechanisms of : Head injury , Cerebrovascular accidents & Space occupying lesions
- Clinical features, potential complications
- Principles of immediate and postoperative therapeutic management
Mode of Evaluation:

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1=Addressed to small extent  
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3=Major part of course
Course objective:
The student is expected to study:
- The evaluation of an individual prior to exercise.
- Physiological effects of exercise
- Principles of injury prevention and rehabilitation of sports injury.

Course outcomes:
On completion of the course a student is expected to:
1. To determine the impact of exercise of physiological changes in human body.
2. To apply various methods that is used for assessing and measuring the parameters of fitness.
3. To apply various types of training on athletes to reap the benefits for achieving the short-term and long-term goals.
4. To relate the shortcoming of the individuals and the risk factors that lead to injury and how they can be prevented.
5. To develop basic principles to prevent injuries, maximize performance and decrease the risk of injuries.

Course Description:
The students will learn how to evaluate and examine an athlete pre and post sports injury. They will be explained the effects of exercise, principles of injury prevention and rehabilitation of sports injury enabling the students in formulation of goals of treatment, designing sports specific training program, application of therapeutic skills at various stages of rehabilitation in sports injuries.

Text Books:

Reference Books:
Course Contents:

Unit I: Physiological effects of exercise on body systems  12 Lecture hours
  ❖ Energy systems
  ❖ Neuro-muscular system
  ❖ Endocrine system
  ❖ Cardio-respiratory system

Unit II: Measurement of fitness components and sports skills  11 Lecture hours
  ❖ Measurement of muscular strength and endurance
  ❖ Measurement of flexibility
  ❖ Measurement of aerobic capacity

Unit III: Physiological Principles of training  11 Lecture hours
  ❖ Aerobic training
  ❖ Resistance training

Unit IV: Principles of injury prevention  11 Lecture hours
  ❖ Risk Factors
  ❖ Pre-exercise evaluation
  ❖ Injury Prevention strategies

Unit V: Principles of Rehabilitation in sports injuries  11 Lecture hours
  ❖ Pain management
  ❖ Flexibility and Joint ROM
  ❖ Strength and Endurance
  ❖ Proprioception and Coordination
  ❖ Functional rehabilitation
  ❖ Protective Devices
Mode of Evaluation:

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1=Addressed to small extent  
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3=Major part of course
Course objective:
The student is expected to study the basic principles and application of

- Enumerate the steps of research process
- Explain the different research methods
- Describe the importance and use bio-statistics for research work
- Develop skills of critical thinking and selection of research strategy
- Acquire skills to review literature, formulate problems, research writing and publishing.

Course outcomes:
On completion of the course the student should be able to:
1. To assess the appropriateness of different kinds of research designs and methodology for instance in terms of their appropriateness, transparency and quality.
2. Propose a research study and justify the theory as well as the methodological decisions, including sampling and measurement
3. Choose appropriate quantitative or qualitative method to collect data.
4. To apply advanced knowledge in statistics to experimental and applied research.
5. To assess and critique a published journal article that uses one of the primary research methods in the field.

Course Description:
The students will understand the importance of research in physiotherapy. They will learn about the steps of research process and different research methods. They will be explained the importance and use of bio-statistics for research work. They will acquire skills of critical thinking, to review literature, formulate problems, research writing and publishing.

Text Books:

Reference Books:
Course Contents:

Part A: Research Methodology

Unit I: Research in Physiotherapy

- Introduction
- Clinical research for Physiotherapist: Why? How? And When?
- Research – types, concept, definition.
- Evidence-based practice, levels of evidence

Concepts of Measurements

- Direct and indirect measurement variables.
- Reliability and validity.
- Qualitative & Quantitative, Discrete and Continuous Variables

Unit II: Research Design

- Methods – Descriptive, Exploratory, single subject, others.
- Design models utilized in physiotherapy.

Interpretation of experimental findings

- Data review.
- Interpretation of fundamental and clinical research.

Part B: Biostatistics

Unit III: Presentation of Data

- Tabular Presentation of Data- Statistical Table, Format of a Table.
- Frequency Distribution – construction of Frequency Distribution, cumulative and relative frequency distribution
- Diagrammatic Presentation of Data - Bar Diagrams, Pie Diagram, Line Diagram
- Graphical representation of a Frequency distribution – Histogram, Frequency.

Measures of central tendency or measures of Location

- Mean, Median, Mode in ungrouped & grouped series.

Measures of Dispersion or Variation

- Range, Mean Deviation, Standard Deviation.

Unit IV: Sampling

- Methods of Sampling.

Sampling Variability & significance

- Sampling Distribution, Standard error, null hypothesis, alternative hypothesis,
- Type I & Type II errors, tests of significance, acceptance & rejection of null hypothesis, level of significance,
- Z test, t test (paired & unpaired), chi-square test.

- Estimation of confidence limits & intervals

- Correlation
  - Bivariate distribution,
  - Scatter diagram,
  - Coefficient of correlation,
  - Calculation & interpretation of correlation coefficient..

Unit V: Probability

- Probability of an event,
- Addition & multiplication laws of probability,
- Use of permutations & combinations in calculation of probabilities,
- Random variable, probability distribution of a random variable,
- Binomial Distribution.

Normal Distribution & Characteristics of Normal curve
Mode of Evaluation:

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1=Addressed to small extent  
2= Addressed significantly  
3=Major part of course
Course objective:
The student is expected to study:
- Evaluation and examination of a patient with neurological pathology
- General outline of electro diagnostic procedures
- Interpretations and prognosis in different neurological conditions
- Principles of Physiotherapy at various stages of Rehabilitation, establishing the goals of rehabilitation and ADL training

Course outcomes:
On completion of the course a student is expected to:
1. To interpret the differential diagnosis of various neurological conditions.
2. To evaluate the various neurological dysfunctions clinically.
3. To develop the goals of rehabilitation for neurological pathologies.
4. To apply the various therapeutic techniques for the management of neurological conditions.
5. To apply the clinical knowledge for the assessment of physiological changes Pathological conditions of the Nervous system.

Course Description:
The students will learn practical demonstration of how to clinically examine a neurological patient. They will acquire the skills of functional assessment, formulation of goals of treatment and application of physiotherapeutic skills along with training for activities of daily living in various neurological conditions at various stages of rehabilitation.

Text Books:

Reference Books:
Course Contents:

- Practical demonstration of basic principles of application of physical therapy in treatment of neurological conditions like:
  - Developmental disorders
  - Parkinson’s disease and movement disorders
  - Head injury, Cerebrovascular accidents & Space occupying lesions
- Approaches like: Bobath’s, Rood’s, PNF, biofeedback, Motor relearning program, Task oriented training etc.
Mode of Evaluation:

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### Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

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| 1=Addressed to small extent | 2= Addressed significantly | 3=Major part of course |

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Course objective:
The student is expected to study:

- The evaluation of an individual prior to exercise.
- The diet and nutrition of an athlete.
- Physiological effects of exercise
- Principles of injury prevention and rehabilitation of sports injury.

Course outcomes:
On completion of the course a student is expected to:

1. Identify various sports dysfunctions clinically
2. Set goals and apply therapeutic skills in different sports conditions.
3. Acquire concepts of evaluation of sports and sports injuries.
4. Program sports training and physiotherapy in particular condition
5. Basic principles of application of physical therapy in treatment of sports conditions

Text Books:

Reference Books:

Course Contents:
- Measurement of fitness components and sports skills
- Practical demonstration of basic principles of application of physical therapy in:
  - Principles of training
  - Principles of injury prevention
  - Principles of Rehabilitation in sports injuries
Mode of Evaluation:

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1=Addressed to small extent
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3=Major part of course
The student will be posted in the hospitals (Department of Physiotherapy) & he/she will learn the approach, assessment, diagnosis, and Physiotherapy management of patients visiting the department.

The student will be acquainted with the electro therapeutic and exercise equipments used for various physiotherapy interventions in the physiotherapy department. He/she will learn how to apply various treatment modalities to patients while considering the technique of application, indications, contraindications and dangers related to the treatment modality.

The student will be acquainted with the skills of Approach to patient, collection of demographic data, art of history taking, bedside / OPD manners in relation to patient, general assessment of patient from therapeutic point of view, ability to find provisional diagnosis logically, and application of therapeutic skill learned.

Student should submit a clinical log book at the end of the clinical training containing the case sheets of patients assessed and treated during the training.

The student will plan a project work on a topic assigned to him. It may include a research work, a small study, literature review, a working model etc

**Evaluation:**
The student will be evaluated based on the feedback from the Department of Physiotherapy in which he/she was posted.

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Course objectives:
- Biomedical engineering- brief concepts of orthotics and prosthetics, Biomechanical principles of designing, materials used, usage, advice, precautions, and follow-up of orthotics, prosthetics, walking aids and wheel chairs: prescription, usage advice and follow-up.

Course outcomes:
On completion of the course the student should be able to:
1. To identify the principles of prescription of prosthesis and orthosis.
2. To utilize the principles of application of various orthotic devices.
3. To utilize the principles of application of various prosthetic devices.
4. To practice the principles of application of walking aids.
5. To utilize the principles of application of wheelchairs.

Course Description:
The students will understand the concepts of orthotics and prosthetics and biomechanical principles of designing, materials used, usage, prescription and follow up of orthotics, prosthetics, wheelchair and walking aids.

Text Books:

Reference Books:
Course Contents:

**Unit I:** 12 Lecture hours
- Definition of prosthesis & orthotics
- Rationale of prescribing Prosthetic and Orthotic devices
- Biomechanical principles of designing, materials used & their biomechanical properties

**Unit II:** 14 Lecture hours
- Principles of various types of Orthotic devices (Lower limb, Upper limb and Spine)
- Checkout, usage advice, precautions, and follow-up

**Unit III:** 14 Lecture hours
- Principles of various types of Prosthetic devices (Lower limb and Upper limb)
- Checkout, usage advice, precautions, and follow-up

**Unit IV:** 10 Lecture hours
- Walking aids: prescription, usage advice and follow-up

**Unit V:** 10 Lecture hours
- Wheel chairs: prescription, usage advice and follow-up
Mode of Evaluation:

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Total Marks: 100
Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

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1=Addressed to small extent
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3=Major part of course
Course objective:
The student is expected to study:
- Evaluation and examination of a patient with neurological pathology
- General outline of electro diagnostic procedures
- Interpretations and prognosis in different neurological conditions
- Principles of Physiotherapy at various stages of Rehabilitation, establishing the goals of rehabilitation and ADL training

Course outcomes:
On completion of the course a student is expected to:
1. To apply the knowledge in understanding the assessment and physiotherapy management of spinal cord injury
2. To demonstrate the knowledge in understanding the assessment and physiotherapy management of various spinal cord disorders.
3. To utilize the knowledge in understanding the assessment and physiotherapy management of various Neuropathies and Myopathies.
4. To illustrate the assessment and physiotherapy management of Peripheral Nerve Injuries.
5. To evaluate various post neurosurgery complication and apply the knowledge in its physiotherapy management

Course Description:
The students will learn how to evaluate and examine a patient with neurological dysfunction clinically. They will be made aware of electro diagnostic procedures. They will be taught the formulation of goals of treatment, application of therapeutic skills and principles of physiotherapy at various stages of rehabilitation along with training for activities of daily living.

Text Books:

Reference Books:

Course Contents:

Unit I: Physiotherapy Assessment and management of Spinal cord injury 12 Lecture hours
  ❖ Assessment of Spinal cord injury
  ❖ Principles of Physiotherapy at various stages of Spinal cord injury
  ❖ Rehabilitation goals and ADL training

Unit II: Physiotherapy Assessment and management 11 Lecture hours
  ❖ Disorders of spine: Motor neuron disease, Disseminated sclerosis, transverse myelitis, tumors, spinal cord degeneration & syringomyelia

Unit III: Physiotherapy Assessment and management 10 Lecture hours
  ❖ Neuropathies and myopathies

Unit IV: Physiotherapy Assessment and management of Peripheral nerve injuries 12 Lecture hours
  ❖ Functional assessment, investigation, diagnosis & prognosis of various peripheral nerve injuries
  ❖ Physiotherapeutic management

Unit V: Physiotherapy Assessment and management 11 Lecture hours
  ❖ Physical therapy in various neurosurgical conditions and their complications
Mode of Evaluation:

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### Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

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1=Addressed to small extent  
2=Addressed significantly  
3=Major part of course
Course objective:
The student is expected to study:
• The evaluation and examination of an athlete.
• The diet and nutrition of an athlete.
• Principles of Physiotherapy at various stages of rehabilitation of an athlete.

Course outcomes:
On completion of the course a student is expected to:
1. To interpret the various types of injuries and risk factors associated with upper limb.
2. To interpret the various types of injuries and risk factors associated with lower limb.
3. To interpret the various types of injuries and risk factors associated with head, neck, and spine.
4. To employ different types of diet, the nutritional values and their effects on overall athletic performance.
5. To employ the role of exercise in children, women, older generation and the hazards, and benefits related to them.

Course Description:
The students will learn how to evaluate and examine an athlete pre and post sports injury. They will be made aware of dietary and nutritional requirements of an athlete. They will be explained various sports injuries enabling the students in formulation of goals of treatment, designing sports specific training program, application of therapeutic skills at various stages of rehabilitation in sports injuries.

Text Books:

Reference Books:
Course Contents:

**Unit I: Sports injuries: Upper Limb** 13 Lecture hours
Common Acute, Chronic and overuse injuries of soft tissue, bone & joint
- Shoulder – instability, rotator cuff injury, biceps tendonitis and rupture and acromio-clavicular joint injuries
- Elbow – tennis elbow, golfer’s elbow
- Wrist and hand – carpal tunnel syndrome, gamekeeper’s thumb

**Unit II: Sports injuries: Lower Limb** 13 Lecture hours
Common Acute, Chronic and overuse injuries of soft tissue, bone & joint
- Hip – muscle strain, piriformis syndrome, ITB syndrome
- Knee – menisci, cruciate, collateral, osteochondritis, biceps femoris tendonitis, swimmers knee, patello-femoral pain syndrome
- Leg & ankle – shin splint, Achilles tendonitis & rupture, ankle sprain plantar fasciitis, turf toe syndrome

**Unit III: Sports injuries: Head, Neck and Spine** 12 Lecture hours
Common Acute, Chronic and overuse injuries of soft tissue, bone & joint
- Spine – cervical whiplash injuries, facet joint syndrome, SI joint dysfunction
- Head & face – maxillofacial injuries

**Unit IV: Diet and nutrition** 8 Lecture hours

**Unit V: Sports in Special groups** 10 Lecture hours
- Child and adolescent athlete
- Female athlete
Mode of Evaluation:

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Course outcomes:
On completion of the course a student is expected to:
1. To interpret the differential diagnosis of various neurological conditions.
2. To evaluate the various neurological dysfunctions clinically
3. To develop the goals of rehabilitation for neurological pathologies
4. To apply the various therapeutic techniques for the management of neurological conditions
5. To apply the clinical knowledge for the assessment of physiological changes

Course Description:
The students will learn practical demonstration of how to clinically examine a neurological patient. They will acquire the skills of functional assessment, formulation of goals of treatment and application of physiotherapeutic skills along with training for activities of daily living in various neurological conditions at various stages of rehabilitation.

Text Books:

Reference Books:
Course Contents:

- Practical demonstration of basic principles of application of physical therapy in treatment of neurological conditions:
  - Spinal cord injury
  - Disorders of spine
  - Neuropathies and myopathies
  - Peripheral nerve injuries
  - Various neurosurgical conditions and their complications
Mode of Evaluation:

<table>
<thead>
<tr>
<th>Components</th>
<th>Internal</th>
<th>ETE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marks</td>
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## Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

<table>
<thead>
<tr>
<th>Course Outcomes (COs)</th>
<th>Physiotherapy Knowledge</th>
<th>Problem Analysis</th>
<th>Design &amp; Development of Solutions</th>
<th>Leadership Skills</th>
<th>Professional Identity</th>
<th>The Physiotherapy and Society</th>
<th>Basic Medical Knowledge</th>
<th>Ethics</th>
<th>Individual or Teamwork</th>
<th>Communication</th>
<th>Patient Evaluation &amp; Management</th>
<th>Life-long Learning</th>
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<tbody>
<tr>
<td>CO 1</td>
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<table>
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</tbody>
</table>

1=Addressed to small extent
2=Addressed significantly
3=Major part of course
Course objective:
The student is expected to study:
- The evaluation of an individual prior to exercise.
- The diet and nutrition of an athlete.
- Physiological effects of exercise
- Principles of injury prevention and rehabilitation of sports injury.

Course outcomes:
On completion of the course a student is expected to:
1. To demonstrate the various types of assessment techniques in different types of injuries.
2. To employ different special tests to identify the underlying pathologies.
3. To apply differential diagnosis on the pathologies.
4. To employ sports training program and physiotherapy in particular condition.
5. To utilize the basic principles of application of physical therapy in treatment of sports conditions

Text Books:

Reference Books:

Course Contents:
- Practical demonstration of basic principles of application of physical therapy in treatment of:
  - Common Acute, Chronic and overuse injuries of soft tissue, bone & joint of:
    - Upper and Lower Limb
    - Head, Neck and Spine
  - Practical demonstration of basic principles of application of physical therapy in treatment of Sports conditions in Special groups
Mode of Evaluation:

<table>
<thead>
<tr>
<th>Components</th>
<th>Internal</th>
<th>ETE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marks</td>
<td>30</td>
<td>70</td>
</tr>
<tr>
<td>Total Marks</td>
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## Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

<table>
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<tr>
<th>BPTH4013</th>
<th>PHYSIOTHERAPY IN SPORTS CONDITIONS LAB – II</th>
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<td>12</td>
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</table>

1=Addressed to small extent  
2=Addressed significantly  
3=Major part of course
The student will be posted in the hospitals (Department of Physiotherapy) & he/she will learn the approach, assessment, diagnosis, and Physiotherapy management of patients visiting the department.

The student will be acquainted with the electro therapeutic and exercise equipments used for various physiotherapy interventions in the physiotherapy department. He/she will learn how to apply various treatment modalities to patients while considering the technique of application, indications, contraindications and dangers related to the treatment modality.

The student will be acquainted with the skills of Approach to patient, collection of demographic data, art of history taking, bedside / OPD manners in relation to patient, general assessment of patient from therapeutic point of view, ability to find provisional diagnosis logically, and application of therapeutic skill learned.

Student should submit a clinical log book at the end of the clinical training containing the case sheets of patients assessed and treated during the training.

The student will be doing a project work on a topic assigned to him in the 7th semester. It may include a research work, a small study, literature review, a working model etc. It will help the student in learning project planning, project execution, project documentation etc.

A bonded copy of the project is to be submitted by the student to the institution, after successful completion of the project.

**Evaluation:**
The student will be evaluated based on the feedback from the Department of Physiotherapy in which he/she was posted.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Criteria</th>
<th>Maximum Marks</th>
<th>Marks Obtained</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Punctuality</td>
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<tr>
<td>2</td>
<td>Approach toward patients</td>
<td>10</td>
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<tr>
<td>3</td>
<td>Discipline in the Department</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Approach towards colleagues / superiors</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Knowledge about various therapeutic modalities</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Knowledge about evaluation of conditions</td>
<td>10</td>
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</tr>
<tr>
<td>7</td>
<td>Theoretical knowledge of various conditions</td>
<td>10</td>
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<tr>
<td>8</td>
<td>Performance of therapeutic skills in clinical settings</td>
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<tr>
<td>9</td>
<td>Case Presentation</td>
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<tr>
<td></td>
<td><strong>Total Marks</strong></td>
<td><strong>100</strong></td>
<td></td>
</tr>
</tbody>
</table>
Candidates seeking entry to the internship period must have passed all examinations in all subjects (i.e. He/She must secure total credits of the Program)

Duration: 6 months

During the internship candidate shall have to work full time average 8 hours per day (each working day) for 6 Calendar months.

Each candidate is allowed maximum of 6 holidays during entire internship program and in case of any exigencies during which the candidate remains absent for a period more than 6 days, he/she will have to work for the extra days during which the candidate has remained absent.

Assessment: The interns/candidate shall maintain the record work, which will be verified and certified by the Head of the Department under whom he/she works. Apart from scrutiny of the record of work, assessment and evaluation training shall be undertaken by an objective approach using situation tests in knowledge, skills and attitude during and the end of training. Based on the record of work and date of evaluation the Director/Principal/Program Chair shall issue ‘Certificate of Satisfactory Completion’ of training following which the University shall award the Bachelor of Physiotherapy Degree or declare the candidate eligible for the same.

Evaluation of Students under Practical/Internship

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Description</th>
<th>Satisfactory/ Unsatisfactory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Attendance</td>
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<tr>
<td>2.</td>
<td>Discipline and general Behavior in the Deptt.</td>
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<tr>
<td>3.</td>
<td>Approach to patients</td>
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<tr>
<td>4.</td>
<td>Inquisitiveness regarding the subject</td>
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</tr>
<tr>
<td>5.</td>
<td>Knowledge about evaluation of conditions</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Knowledge about various therapeutic modalities</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Knowledge about actual application of therapeutic skills</td>
<td></td>
</tr>
</tbody>
</table>

In the event of unsatisfactory report, the intern has to repeat the internship or the period to be decided by the Head of the Institution concerned