

**MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WB**  
**Syllabus of B.SC. (PHYSIOTHERAPY MANAGEMENT & HEALTHCARE SCIENCE)**  
**(Effective for 2020-2021 Admission Session)**  
**Choice Based Credit System**

## **B.SC.(PHYSIOTHERAPY MANAGEMENT & HEALTHCARE SCIENCE)**

**Objective:**

This course is designed to help healthcare professionals understand the scale of the problem of physical inactivity, the benefits of physiotherapy in treatment and prevention. The course also aims to understand Healthcare organizations.

**Course:**

- Three - Year full-time B.Sc. in Physiotherapy & Healthcare Management course (Six - Semester).
- Minimum number of class room contact teaching for B.Sc. in Physiotherapy & Healthcare Management programme should be 128 credits (one credit equals 10 hours) and Two Internship/ Project should be 06 credits each i.e., Total 128 + 12 = 140 credits.
- Specialization: Students can opt for any one functional specialization from **Healthcare Administration, Physiotherapy Management and Management of Human Movement & Locomotion**.
- As per UGC guidelines, a student can opt for Honors in a specific stream for which he/she needs to acquire 140 credit points along with additional 20 credit points that can be accrued by undertaking online courses as prescribed by the university under MOOCs basket.

**Eligibility Criteria:**

In order to be eligible for admission to B.Sc. Physiotherapy & Healthcare Management program a student must hold a 10+2 or equivalent degree from a recognized board of education with English as compulsory subject.

**Course Structure:**

Subject Type	Semester I	Semester II	Semester III	Semester IV	Semester V	Semester VI
<b>CC</b>	C1, C2	C3, C4	C5, C6, C7	C8, C9, C10	C11, C12	C13, C14
<b>DSE</b>					DSE1, DSE2	DSE3, DSE4
<b>GE</b>	GE1	GE2	GE3	GE4	Capstone Project Evaluation	
<b>AECC</b>	AECC 1	AECC 2				
<b>SEC</b>			SEC 1	SEC 2		
	4 (20)	4 (20)	5 (26)	5 (26)	4 (24)	4 (24)

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## **B.SC. (PHYSIOTHERAPY MANAGEMENT & HEALTHCARE SCIENCE)**

<b>Sl. No.</b>	<b>Program Outcome</b>	<b>Courses</b>
1	Understanding the basic principles of Healthcare Management	C1, C4, C8, C13, DSE A, GE1, GE3, GE4, SEC2
2	Understanding the concept of Physiotherapy Management	C2, C9, C10, C11, DSE B
3	Understanding the application of Physiotherapy and Psychology in Healthcare Management	C3, C7, C13, DSE C
4	Learning Medical Microbiology, Bio chemistry & Nutrition	GE5, GE6
5	Learning basic nursing and first aid techniques	SEC1
6	Learning Health Economics, Basis of Accounting & Finance in Healthcare Management	GE2, GE3
7	Learning Principles of Management & Organizational Behavior	GE1
8	Learning Entrepreneurial Issues, Environmental concerns & Ethical practices in Physiotherapy	C6, GE4, AECC1
9	Learning Business Communication	AECC2
10	Learning Computer Application & Health Information System	C5, SEC2

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**COURSE STRUCTURE**

<b>BPHM SEMESTER I</b>						
<b>SUBJECTS</b>	<b>SUBJECT NAME</b>	<b>CONTACT HOURS</b>				<b>CREDITS</b>
		<b>L</b>	<b>T</b>	<b>P</b>	<b>TOTAL</b>	
		<b>(Hrs)</b>	<b>(Hrs)</b>	<b>(Hrs)</b>	<b>(Hrs)</b>	
C1	Basic concept of Health (BPHM 101)	40	20	0	60	6
C2	Human Anatomy & Physiology (General) (BPHM 102)	30	10	20	60	6
GE1	Any <b>ONE</b> from the list of GE Basket					6
AECC1	Environmental Studies (BPHM 104)	20	0	0	20	2
<b>TOTAL</b>					<b>200</b>	<b>20</b>

<b>BPHM SEMESTER II</b>						
<b>SUBJECTS</b>	<b>SUBJECT NAME</b>	<b>CONTACT HOURS</b>				<b>CREDITS</b>
		<b>L</b>	<b>T</b>	<b>P</b>	<b>TOTAL</b>	
		<b>(Hrs)</b>	<b>(Hrs)</b>	<b>(Hrs)</b>	<b>(Hrs)</b>	
C3	Essentials of Exercise Therapy (BPHM 201)	20	10	30	60	6
C4	Marketing of Healthcare Services (BPHM 202)	40	20	0	60	6
GE2	Any <b>ONE</b> from the list of GE Basket					6
AECC2	Business Communication & Language Lab (BPHM 204)	10	0	10	20	2
<b>TOTAL</b>					<b>200</b>	<b>20</b>

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<b>BPHM SEMESTER III</b>						
<b>SUBJECTS</b>	<b>SUBJECT NAME</b>	<b>CONTACT HOURS</b>				<b>CREDITS</b>
		<b>L</b>	<b>T</b>	<b>P</b>	<b>TOTAL</b>	
		<b>(Hrs)</b>	<b>(Hrs)</b>	<b>(Hrs)</b>	<b>(Hrs)</b>	
C5	Hospital Management Information System (BPHM 301)	40	20	0	60	6
C6	Ethical Practices in Physiotherapy (BPHM 302)	40	20	0	60	6
C7	Application of Electrotherapy (BPHM 303 & 393)	20	10	30	60	4+2
GE3	Any <b>ONE</b> from the list of GE Basket					6
SEC1	Computer Application (BPHM 305)	10	0	10	20	2
<b>TOTAL</b>					<b>260</b>	<b>26</b>

<b>BPHM SEMESTER IV</b>						
<b>SUBJECTS</b>	<b>SUBJECT NAME</b>	<b>CONTACT HOURS</b>				<b>CREDITS</b>
		<b>L</b>	<b>T</b>	<b>P</b>	<b>TOTAL</b>	
		<b>(Hrs)</b>	<b>(Hrs)</b>	<b>(Hrs)</b>	<b>(Hrs)</b>	
C8	Fundamentals of Research in Healthcare Management (BPHM 401)	40	20	0	60	6
C9	Physiotherapy Management in Orthopedic Conditions (BPHM 402)	30	10	20	60	6
C10	Physiotherapy Management in General Conditions (BPHM 403)	30	10	20	60	6
GE4	Any <b>ONE</b> from the list of GE Basket					6
SEC2	Basic Nursing and First Aid Techniques (BPHM 405)	10	0	10	20	2
<b>TOTAL</b>					<b>260</b>	<b>26</b>

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<b>BPHM SEMESTER V</b>						
<b>SUBJECTS</b>	<b>SUBJECT NAME</b>	<b>CONTACT HOURS</b>				<b>CREDITS</b>
		<b>L</b>	<b>T</b>	<b>P</b>	<b>TOTAL</b>	
		<b>(Hrs)</b>	<b>(Hrs)</b>	<b>(Hrs)</b>	<b>(Hrs)</b>	
C11	Rehabilitation on Medicine (BPHM 501)	30	10	20	60	6
C12	Muscular & Skeletal System (BPHM 502C)	40	20	00	60	6
DSE 1	Management of Pediatric Physiotherapy (BPHM 503B)	40	20	0	60	6
DSE 2	Project/Internship –I (BPHM 581)*	30	10	20	60	6
<b>TOTAL</b>					<b>240</b>	<b>24</b>

<b>BPHM SEMESTER VI</b>						
<b>SUBJECTS</b>	<b>SUBJECT NAME</b>	<b>CONTACT HOURS</b>				<b>CREDITS</b>
		<b>L</b>	<b>T</b>	<b>P</b>	<b>TOTAL</b>	
		<b>(Hrs)</b>	<b>(Hrs)</b>	<b>(Hrs)</b>	<b>(Hrs)</b>	
C13	Application of Psychology in Healthcare Management (BPHM601)	40	20	0	60	6
C14	Physiotherapy in Community based Rehabilitation (BPHM 602)	40	20	00	60	6
DSE 3	Biomechanics & Kinesiology (BPHM 603C3)	40	20	0	60	6
DSE4	Project/Internship –I (BPHM 681)*	40	0	20	60	6
<b>TOTAL</b>					<b>240</b>	<b>24</b>

\*Project/Internship in lieu of one of the elective core discipline papers.

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**LIST OF SKILL ENHANCEMENT COURSES (SEC):**

SEC 1: Computer Application

SEC 2: Basic Nursing and First Aid Techniques

**LIST OF CORE COURSES (CC):**

**Semester I:**

C1: Basic Concept of Health

C2: Human Anatomy & Physiology (General)

**Semester II:**

C3: Essentials of Exercise Therapy

C4: Marketing of Healthcare Services

**Semester III:**

C5: Hospital Management Information System C6:

Ethical Practices in Physiotherapy

C7: Application of Electrotherapy

**Semester IV:**

C8: Fundamentals of Research in Healthcare Management

C9: Physiotherapy Management in Orthopedic Conditions

C10: Physiotherapy Management in General Conditions

**Semester V:**

C11: Rehabilitation on Medicine C12:

Practice Management

**Semester VI:**

C13: Application of Psychology in Healthcare Management

C14: Physiotherapy in Community based Rehabilitation

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**FIRST SEMESTER**  
**BPHM 101: BASIC CONCEPT OF HEALTH**

**Credit Point: 6**  
**Total Credit Hours: 60 Hrs**

**Course Objectives:**

1. Describe the structure of the human body in terms of six levels of organization
2. To understand the concept of organ systems of the human body and Identify and define body mechanics, body posture, and the common body rest positions.
3. To understand the concept of Medical Terminology and Identify basic word elements individually and within medical terms
4. To understand the socio-economic explanations for health inequalities in morbidity and mortality.
5. To understand the concept of Health, Illness, and Healing
6. To understand Institutional and Organizational perspective of Medical Sociology
7. To understand the methods used in health seeking behavior

**Course Outcomes (CO):**

<b>Sl. No</b>	<b>Course Outcome</b>	<b>Mapped modules</b>
1	Ability to gain the knowledge of life processes of the human body.	Module I - Unit 1
2	Ability to define the concept of organ system of the human body	Module I - Unit 2
3	Develop a basic understanding of medical words and phrases commonly used in a medical office or similar environment	Module I - Unit 3
4	Ability to gain the knowledge of socio-economic explanations for health inequalities.	Module II - Unit 5
5	Ability to define the key diagnostic and imaging tests of disease	Module II - Unit 6
6	Ability to understand Institutional and Organizational perspective of Medical Sociology	Module II - Unit 7
7	Ability to define methods used in health seeking behavior	Module II - Unit 8

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**Module I**

**Unit 1: Human Body and Level of Organization [10L]**

Introduction to Human Anatomical Terms, Human Physiology, Organization of the Human Body, Human Cell Structure, Tissues – Definition, Types Characteristics, Classification. Membranes and glands – classification and structure, Key Points about the Human Body and list of Human Body parts and structure.

**Unit2: Body Plans and Basic Examination Position [6L]**

Bone structure, blood supply, growth, ossification, and classification. Muscle classification, structure and functional aspect. Joints – classification, structures of joints, movements, range, limiting factors.

**Unit 3: Basics of Medical Terminology [14L]**

Medical Terminology word formation And Syntax Greek: Alphabet, Greek and Latin Prepositional and Adverbial Prefixes. Commonly Used Prefixes in Medical Terminology, Commonly Used Suffixes in Medical Terminology, Commonly Used in Root Words in Medical Terminology, Commonly Used Medical Terms to Define Different Part of the Body, Basics of Prescription Writing.

**Module II**

**Unit 4: Medical Sociology [6L]**

Nature and scope of sociology, Historical background, subject matter of sociology, Importance, Sociology of India, Relationship of sociology with other social institution and sciences,

**Unit5: Sociological Perspective of Health Illness and Healing [8L]**

Illness Behavior, Stigma, Embodiment, Chronic illness and disability, Illness narratives, Risk, The Sick Roll Practitioner-Client Relationships, Uncertainty, Compliance and Concordance, Quality of Life, Dying Trajectories.

**Unit6: Institutional and Organizational Perspective of Medical Sociology [8L]**

Role of medical sociology in an organization, Organizational chart of medical sociology, implementation of medical sociology in the field of physiotherapy.

**Unit7: Health Seeking Behavior of Various Social Groups [8L]**

Factors Influencing Health - Seeking Behavior, Social Determinants of Health and Health-Seeking Behavior, Health seeking behaviors of different communities and population groups.



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**Suggested Readings:**

1. Preventive And Social Medicine - Dr. K .Park
2. Human Anatomy - Dr. Samar Mitra
3. Text Book of Human Physiology - Dr. C.C. Chatterjee
4. Text Book Of community Medicine - V.K Mahajan

Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (if applicable)	Remarks (If any)
Module I Unit 1	Basic of Human Body and Level of Organization of Human body	10	17	1	1		
Module I Unit 2	Body Plans And Basic Examination Position	6	10	2	1		
Module I Unit 3	Basics of Medical Terminology	15	25	3	1		
Module II Unit 4	Medical Sociology	5	8	4	1		
Module II Unit 5	Sociological Perspective Of Health Illness And Healing	8	13	5	1		
Module II Unit 6	Institutional and Organizational Perspective Of Medical Sociology	8	13	6	1		
Module II Unit 7	Health Seeking Behavior Of Various Social Groups	8	13	7	1		

## **BPHM 102: HUMAN ANATOMY AND PHYSIOLOGY**

**Credit Point: 6**

**Total Credit Hours: 60 Hrs**

### **Course Objectives:**

1. To develop understanding of general, special and functional embryology; development of cells, tissue and organs.
2. Students will understand the structures and purposes of basic components of prokaryotic and eukaryotic cells, especially macromolecules, membranes, and organelles.
3. To understand chromosome structure and organization in eukaryotic cells and to identify the stages of the cell cycle, by picture and by description of major milestones
4. To understand different variety of tissues
5. To understand the components and blood grouping of the blood vascular system.
6. To identify and describe the interior and exterior parts of the human heart and describe the path of blood through the cardiac circuits
7. To understand the structure and function of the renal system.
8. To understand the nervous system and their function.

### **Course Outcomes: (CO)**

<b>Sl. No.</b>	<b>Course Outcome</b>	<b>Mapped Modules</b>
1	Ability to demonstrate understanding of embryology	Module I - Unit 1
2	Ability to enlist the main components of cells	Module I - Unit 2
3	Ability to understand cell division functions	Module I - Unit 3
4	Ability to understand different variety of tissues	Module I - Unit 4
5	Ability to understand the protocols of blood transfusion and different types of blood tests.	Module II - Unit 5
6	Ability to understand the ECG testing procedure and interpret the results.	Module II - Unit 6
7	After studying the students will understand the abnormal conditions of the renal system.	Module II - Unit 7
8	After studying the student may understand the physiological properties of the nervous system.	Module II - Unit 8

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**Module I**

**Unit 1: Embryology - General** **[4L]**

Gametogenesis (spermatogenesis & oogenesis) – Structure of testis, ovary & sperm – Phases of embryonic development – formation of three germ layers- derivatives of germ layers –Embryonic or Foetal membrane (chorion, amnion, allantois, yolk sac) & placenta & its functions

**Unit 2: Cell Structure** **[4L]**

Ultra structure and functions of cell - Plasma membrane- Nucleus – Mitochondria- Centrosome-Ribosome -Endoplasmic reticulum- Golgi body & lysosome. Nucleus – Ultra structure & functions.

**Unit 3: Cell Division** **[2L]**

Amitosis- Mitosis- Meiosis- Significance of mitosis & meiosis- Cell cycle

**Unit 4: Tissues** **[4L]**

Structure, position and functions of epithelial, connective, muscular & nervous tissue.

**Module II**

**Unit 5: Blood Vascular System** **[10L]**

Structures and functions of blood vessel types and their differences. Composition and functions of blood. Plasma proteins-types, origin, normal values, functions. Bone marrow-types and functions. Formed elements of blood-origin, formation, function, life span and fate, abnormalities of formed elements (both size and number) and related disease. Haemoglobin - structure, function and types of haemoglobin, abnormal haemoglobin and related diseases. Blood coagulation-factors, process, anticoagulants, CT and BT. Blood groups-ABO system, Rh factors, blood transfusion and consequences of incompatible blood transfusion. Terminologies-TC, DC, ESR, PCV, MCV, MCH, MCHC, ESR and their significances.

**Unit 6: Cardio vascular system** **[10L]**

Structure and functions of heart. Blood circulation types - special functional tissues of heart and their importance. ECG. Cardiac cycle. Heart sounds. Cardiac output. Blood pressure-definition, types, measurement method, significance of blood pressure measurement, controlling factors and regulation of blood pressure

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**Unit 7: Renal System**

[10L]

Structure and functions of kidney. Structure and functions of nephron. Formation of urine (filtration, reabsorption, secretion). Anomalies of urine concentration. Counter current system of urine concentration.

**Unit 8: Neuro-physiology**

[16L]

Structure and functions of neuron /nerve cell. Neuroglia. Myelinated and unmyelinated nerve fibre with their conduction velocity. Properties of nerve fibre. Synapse-structure, types, synaptic transmission, synaptic potential, neurotransmitter. ANS- Introduction, types, comparison of autonomic and somatic nervous system. NMJ-structure and events in transmission.

**Suggested Readings:**

1. Anatomy and Physiology in Health and Illness by Ross and Wilson, Waugh
2. Human Physiology by C.C. Chatterjee
3. Gray's Anatomy: The Anatomical Basis of Clinical Practice by Standring
4. Gray's Anatomy for Students by Richard Drake PhD FRCGS, A. Wayne Vogl PhD FRCGS, et al.

Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (If applicable)	Remarks (If any)
Module I Unit 1	Embryology	3	5	1	2		
Module I Unit 2	Cell Structure	3	5	2	2		
Module I Unit 3	Cell Division	4	10	3	2		
Module II Unit 4	Tissues	4	10	4	2		
Module II Unit 5	Blood vascular system	10	20	5	2		
Module II Unit 6	Cardio vascular system	10	15	6	2		
Module II Unit 7	Renal system	10	15	7	2		
Module II Unit 8	Neuro-physiology	16	20	8	2		

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## **BPHM 104: ENVIRONMENTAL STUDIES**

**Credit Point: 2**

**Total Credit Hours: 20 Hrs**

### **Course Objectives:**

1. To understand the concept of Environment and sustainable development
2. To understand the concept of ecology and eco system
3. To understand the different types of natural resources – renewable and non-renewable
4. To understand the concept of biodiversity and conservation of resources
5. To understand the reasons behind environmental pollution – its effects and control measures
6. To understand environmental laws, policies and acts.
7. To understand the impact of environment on human health and different types of disasters.

### **Course Outcomes: (CO)**

<b>Sl. No.</b>	<b>Course Outcome</b>	<b>Mapped Modules</b>
1	Ability to gain an understanding of the environment	Module I – Unit 1
2	Ability to define ecology and knowledge of eco system	Module I – Unit 2
3	Ability to determine renewable and non-renewable natural resources	Module I – Unit 3
4	Ability to understand biodiversity and its relationship with natural resources	Module II – Unit 4
5	Ability to determine the reasons behind environmental pollution and means of controlling the same.	Module II – Unit 5
6	Ability to understand the different environmental laws	Module II – Unit 6
7	Ability to understand the impact of environment on human health and disaster.	Module II – Unit 7

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**Module I**

**Unit 1: Introduction to Environmental Studies** - Multidisciplinary nature of environmental studies, Scope and importance; Concept of sustainability and sustainable development. [2L]

**Unit 2: Ecology and Ecosystems** - Concept of ecology and ecosystem, Structure and function of ecosystem; Energy flow in an ecosystem; food chains, food webs; Basic concept of population and community ecology; ecological succession. Characteristic features of: a) Forest ecosystem b) Grassland ecosystem c) Desert ecosystem d) Aquatic ecosystems (ponds, streams, lakes, wetlands, rivers, oceans, estuaries) [4L]

**Unit 3: Natural Resources** - Concept of Renewable and Non-renewable resources, Land resources and land use change; Land degradation, soil erosion and desertification. Deforestation: Causes, consequences and remedial measures, Water: Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state). Energy resources: Environmental impacts of energy generation, use of alternative and nonconventional energy sources, growing energy needs. [4L]

**Module II**

**Unit 4: Biodiversity and Conservation** - Levels of biological diversity: genetic, species and ecosystem diversity; Biogeographic zones of India; Biodiversity patterns and global biodiversity hot spots, India as a mega-biodiversity nation; Endangered and endemic species of India, Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity: In-situ and Ex-situ conservation [2L]

**Unit 5: Environmental pollution:** concepts and types, Air, water, soil, noise and marine pollution- causes, effects and controls, Concept of hazards waste and human health risks, Solid waste management: Control measures of Municipal, biomedical and e-waste of biodiversity. Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value [2L]

**Unit 6: Environment Laws:** Wildlife Protection Act; Forest Conservation Act. Water (Prevention and control of Pollution) Act; Air (Prevention & Control of Pollution) Act;

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Environment Protection Act; Biodiversity Act. International agreements: Montreal Protocol, Kyoto protocol and climate negotiations; Convention on Biological Diversity (CBD). Protected area network, tribal populations and rights, and human wildlife conflicts in Indian context. [2L]

**Unit 7: Human Communities and the Environment** - Human population growth: Impacts on environment, human health and welfare, Environmental Disaster: Natural Disasters-floods, earthquake, cyclones, tsunami and landslides; Manmade Disaster-Bhopal and Chernobyl. Environmental movements: Bishnois, Chipko, Silent valley, Big dam movements. [4L]

**Suggested Readings:**

1. Text Book of Environmental Studies - Asthana, D. K. (2006). S. Chand Publishing
2. Fundamentals of Environmental Studies - Basu, M., Xavier, S. (2016). Cambridge University Press, India
3. Textbook of Environmental Studies for Undergraduate Courses - Bharucha, E. (2013), Universities Press
4. Environmental Chemistry, 6th Edition - De, A.K., (2006), New Age International, New Delhi

Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (If applicable)	Remarks (If any)
Module I Unit 1	Introduction to Environmental Studies	2	10	1	8		
Module I Unit 2	Ecology and Ecosystems	4	20	2	8		
Module I Unit 3	Natural Resources	4	20	3	8		
Module II Unit 4	Biodiversity and Conservation	2	10	4	8		
Module II Unit 5	Environmental pollution	2	10	5	8		
Module II Unit 6	Environment Laws	2	10	6	8		
Module II Unit 7	Human Communities and the Environment	4	20	7	8		

**SECOND SEMESTER**  
**BPHM 201: ESSENTIALS OF EXERCISE**  
**THERAPY**

**Credit Point: 6**  
**Total Credit Hours: 60 Hrs**

**Course Objectives:**

1. To understand the concept of Exercise Therapy.
2. To understand the different types of Movements.
3. To understand the concept of Positions.
4. To understand the concept of Balance.
5. To understand the concept of Neuromuscular Coordination.
6. To understand the concept of Manual Muscle Testing.
7. To understand the practical application of different types of muscle and joints movements

**Course Outcomes: (CO)**

<b>Sl. No.</b>	<b>Course Outcome</b>	<b>Mapped Modules</b>
1	Ability to gain an understanding of the Exercise Therapy	Module I – Unit 1
2	Ability to determine different types of Movements	Module I – Unit 2
3	Ability to understand concept of Positions	Module I – Unit 3
4	Ability to determine the concept of Balance	Module I – Unit 4
5	Ability to understand the different Neuromuscular Coordination.	Module I – Unit 5
6	Ability to understand the concept of Manual Muscle Testing	Module I – Unit 6
7	Ability to understand the concept of different types muscle and joints movements	Module II – Unit 7



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**Module I**

**Unit 1: Introduction to Exercise Therapy** [8L]

Mechanical principle applied in human body – gravity, centre of gravity, line of gravity, base of support, equilibrium, axis and planes, Disability models – ICIDH model of disability, Nagi model of disability, ICF model, Effect of exercise in various systems - musculoskeletal, neuromuscular, cardiovascular, respiratory systems

**Unit 2: Human Movements** [6L]

Passive movements – definition, classification, indications, contra indications, advantages, limitations, techniques - emphasize PROM to upper, lower, neck and trunk muscle, Active movements - definition, classification, indications, contra indications, advantages, limitations, techniques - emphasize active movements to upper, lower, and neck and trunk muscles.

**Unit 3: Muscular Positions** [6L]

Muscle work, effect and uses and derived positions, Relaxation–definition, types of relaxation, relaxation techniques, Suspension -definition, types, uses and therapeutic applications.

**Unit 4: Basic concept of Balance** [2L]

Static and dynamic balance, mechanism of balance control, balancing exercises

**Unit 5: Neuromuscular Coordination** [2L]

Causes of coordination, exercises to improve coordination – Frenkle exercise, Joint range measurement – Goniometer, types and techniques of measuring joint ROM, Measurement of limb length, girth

**Unit 6: Manual Muscle Testing** [6L]

Grading system, techniques- emphasize on skill to grade upper, lower, neck and trunk muscles, Mobility aids – crutches, canes, walker, soft tissue manipulation (massage) – history, types, techniques, physiological effects, therapeutic uses, contra-indications

**Module II**

**Unit 7: Practical Application of Exercise Therapy** [30L]

Starting positions and derived positions  
Range of motion (PROM, AROM, and AAROM) exercises to all joints  
Measurement of joint range using goniometer

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General and local Relaxation techniques  
 Suspension exercise to all major joints  
 Massage – upper limb, lower limb, back, face, Manual muscle testing of individual muscles, Coordination exercises, balancing exercises

**Suggested Readings**

1. Practical Exercise Therapy Hollis- Blacwell Scientific Publications.
2. Therapeutic Exercise – Basmajian- Williams and Wilkins.
3. Therapeutic Exercises Foundation and Techniques – Kisner and Colby-F.A Davis
4. Principle of Exercise Therapy- Gardiner – C.B.S Delhi.

Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (If applicable)	Remarks (If any)
Module I Unit 1	Introduction To Exercise Therapy	8	15	1	3		
Module I Unit 2	Human Movements	6	10	2	3		
Module I Unit 3	Muscular Positions	6	10	3	3		
Module I Unit 4	Basic Concept of Balance	2	2	4	3		
Module I Unit 5	Neuromuscular Coordination	2	3	5	3		
Module I Unit 6	Manual Muscle Testing	6	10	6	3		
Module II Unit 7	Practical Application of Exercise Therapy	30	50	7	3		

## **BPHM 202: MARKETING OF HEALTHCARE SERVICES**

**Credit Point: 6**  
**Total Credit Hours: 60 Hrs**

### **Course Objectives:**

1. To provide an exposure to the conceptual framework of marketing in general and specific to hospitals.
2. To enable the students to understand the need, relevance and necessity of service quality dimensions.
3. Identify the major basis of market segmentation.
4. To understand consumer behaviour in healthcare services.
5. To understand product life cycle.
6. To know the factors affecting pricing objectives.
7. To understand the concept of advertising and how this effect buying habits of consumers.
8. To understand how to promote sale.

### **Course Outcomes (CO):**

<b>Sl. No.</b>	<b>Course Outcome</b>	<b>Mapped Modules</b>
1	Ability to understand marketing concept	Module I – Unit 1
2	Ability to develop an understanding of the roles of relationship marketing and customer service in adding value to the customer's perception of a service.	Module I – Unit 2
3	Ability to describe the customer segmentation, target marketing and positioning.	Module I – Unit 3
4	Ability to identify how consumer behaves differently.	Module I – Unit 4
5	Ability to understand product marketing decisions based on product life cycle and product portfolio structure.	Module II – Unit 5
6	Ability to understand the importance of pricing decisions.	Module II – Unit 6
7	Ability to understand the importance of distribution system.	Module II – Unit 7
8	Ability to understand different methods of sale promotion.	Module II – Unit 8

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**Module I**

**Unit 1: Introduction to Marketing** [6L]

Meaning and importance of marketing, role of marketing in modern organizations, evolution of marketing department, concepts of marketing, marketing environment, major concepts in demand measurement and marketing research.

**Unit 2: Definition of service** [6L]

Definition of service, distinctive nature of service management, characteristics of services, services marketing (3 P's of services), service quality dimension – Assurance, Responsiveness, Empathy, Reliability, Zone of Tolerance

**Unit 3: Market Segmentation** [6L]

Bases of segmentation, STP concept, developing a positioning strategy with example of hospitals with various packages of operations

**Unit 4: Consumer behaviour in services** [6L]

Factors influencing consumer behaviour, service expectation, service perception, consumer purchase evaluation, post purchase evaluation, dissonance, handling of patient and publicity management

**Module II:**

**Unit 5: Product** [8L]

Constituents of a product, classification of products, product mix decisions, levels of product, product life cycle as a tool for marketing strategy, classification of new products.

**Unit 6: Pricing of healthcare services** [8L]

Definition of price, cost, value, factors to be considered for pricing of services, pricing objectives – profit oriented, marketing skimming, market penetration, pricing strategies.

**Unit 7: Distribution and Communication strategies** [10L]

Importance of distribution system in an economic system, channel management decisions, trends in retailing, communication-mix, managing advertising, sales promotion, publicity and public relations, sales force and sales agency, e-commerce.

**Unit 8: Promotion** [10L]

Definition and need for internal marketing, marketing communication for health care services, promotion Mix, Word of mouth communication, promotional methods in service sector – Medical camp, conferences, website development, image building programme etc.

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**Suggested Readings:**

1. Marketing Management by Philip Kotler, Pearson publishers, 2003
2. Marketing Management by Rajan Saxena, TMH, 2005.
3. Marketing-the best practices by K. Douglar, Hoffman & Czinkota, Thomson, 2004
4. Basic Marketing by William D. Rerreult & Mc Carthy, TMH, 2005

Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (if applicable)	Remarks (if any)
Module I Unit 1	Introduction to Marketing	6	10	1	1		
Module I Unit 2	Definition of service	6	10	2	1		
Module I Unit 3	Market Segmentation	6	10	3	1		
Module I Unit 4	Consumer behaviour in services	6	10	4	1		
Module II Unit 5	Product	8	14	5	1		
Module II Unit 6	Pricing of Healthcare services	8	14	6	1		
Module II Unit 7	Distribution and Communication strategies	10	16	7	1		
Module II Unit 8	Promotion	10	16	8	1		

## **BPHM 204: BUSINESS COMMUNICATION & LANGUAGE LAB**

**Credit Point: 2**  
**Total Credit Hours: 20 Hrs**

### **Course Objectives:**

1. To understand the nature, process and importance of communication.
2. To understand the different types of business correspondences and letter writing
3. To learn the basic format, steps and different types of reports
4. To develop English vocabulary and learn the common mistakes
5. To gain an understanding of interview and presentation skills for personal grooming.

### **Course Outcomes: (CO)**

<b>Sl. No.</b>	<b>Course Outcome</b>	<b>Mapped Modules</b>
1	Ability to understand importance of communication	Module I – Unit 1
2	Ability to understand different business correspondences, write letters, notices, circulars and other written communication	Module I – Unit 2
3	Ability to write different types of report	Module I – Unit 3
4	Ability to develop English vocabulary and oral communication	Module II – Unit 4
5	Ability to appear in interviews and deliver effective presentations	Module II – Unit 5

### **Module I**

**Unit 1: Introduction to Business Communication:** Nature, Process and Importance of Communication, Types of Communication (verbal and Non Verbal), Different forms of Communication. Barriers to Communication [2L]

**Unit 2: Business Correspondence and Technical Writing:** Letter Writing, presentation, living quotations, Sending quotations, placing orders, inviting tenders, Sales Letters, claim & adjustment letters and social correspondence. Notice writing, advertisement writing, précis writing, essay writing, letter writing (applications), Business letter formats (letters of enquiry, replies and complaints); Resume writing, covering letter. [4L]

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**Unit 3: Report Writing:** types of reports, basic format of a report, steps of report writing, process of writing a report. [2L]

**Module II**

**Unit 4: Vocabulary building:** One word substitution, synonyms and antonyms, idioms and phrases, Common Errors in English [2L]

**Unit 5: Business language and presentation:** Importance of business language, Oral Presentation Importance, Characteristics, Soft Skills – Self introduction, Presentation Plan, Interview skill. [10L]

**Suggested Readings:**

1. Technical Communication, M.H. Rizvi, Tata McGraw-Hill
2. Effective Business Communication, Asha Kaul
3. Functional Grammar and Spoken and Written Communication in English, Bikram K. Das, Orient Blackswan
4. Communication Skills, Sanjay Kumar and Pushplata, Oxford Publication

Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (If applicable)	Remarks (If any)
Module I Unit 1	Introduction to Business Communication	2	10	1	9		
Module I Unit 2	Business Correspondence and Technical Writing	4	40	2	9		
Module I Unit 3	Report Writing	2	20	3	9		
Module II Unit 4	Vocabulary building	2	10	4	9		
Module II Unit 5	Business language and presentation	10	20	5	9		

**THIRD SEMESTER**  
**BPHM 301: HOSPITAL MANAGEMENT**  
**INFORMATION SYSTEM**

**Credit Point: 6**  
**Total Credit Hours: 60 Hrs**

**Course Objectives:**

1. To understand foundational concepts of information systems
2. To understand the concept of business in context of Information Technology
3. To understand the concept of E-Commerce
4. To identify the importance of information system in hospitals and the managerial effectiveness of information system in hospitals
5. To implement the critical thinking and decision making ability with the help of hospital information system

**Course Outcomes:**

<b>Sl. No.</b>	<b>Course Outcome</b>	<b>Mapped Modules</b>
1	Understand foundational concepts of information systems	Module I – Unit 1
2	The concept of business in context of Information Technology must be clear	Module I – Unit 2
3	Must be able to define E-Commerce	Module I – Unit 3
4	Applying the concepts of information system in medical records department	Module II – Unit 4
5	Applying critical thinking and decision making ability with the help of hospital information system	Module II – Unit 5

**Module I**

**Unit 1: Introduction to Information Systems in Business [12L]**

The need for Information systems, the Increasing Value of Information Technology, the Networking of computing, Business Process Re-engineering, IT as a tool for competitive advantage

**Unit 2: Managerial Overview - Hardware / Software [14L]**

Computer Peripherals, Input Technology Trends, Voice Recognition and Response Optical Scanning, Output Technology and Trends, Video Output, Storage Trends



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Application software for End Users, systems Software, Database Management Approach, types of Databases, benefits and limitations of Database management.

**Unit 3: The Internet and Electronic Commerce [8L]**

Business Use of the Internet, Interactive marketing, E-Commerce Application, Business to Consumer, Business to Business Commerce.

**Module II**

**Unit 4: Medical Records [14L]**

Role of Medical Records in Health Care Delivery, General Medical Records Standards and Policies, Legal Aspects of Medical Records, Medical Audit Computerization of Medical Records, Information Needs in the Hospital, sources of Health Information, User of Health and Hospital Data.

**Unit 5: Hospital Information Systems [12L]**

Management decision and Related Information Requirement, Clinical Information Systems, Administration Information systems, Support Service, Technical Information Systems, Medical Transcription.

**Suggested Readings:**

1. E-Commerce - C. S. V. Murthy, Himalaya Publishing House
2. Management Information System, James A. O'Brien, Tata McGraw Hill
3. Managing a Modern Hospital, A. V. Srinivasan, Response Books
4. Health Management Information System, Jack Smith, Open University Publication, U.K.

Module No.	Content	Total Hours	% age of questions	Covered CO	Covered PO	Blooms Level (If applicable)	Remarks (If any)
Module I Unit 1	Introduction to information systems in business	12	20	1	10		
Module I Unit 2	Managerial overview – hardware / software	14	23	2	10		
Module I Unit 3	The internet and electronic commerce	8	14	3	10		
Module II Unit 4	Medical records	14	23	4	10		
Module II Unit 5	Hospital information systems	12	20	5	10		

## **BPHM 302: ETHICAL PRACTICES IN PHYSIOTHERAPY**

**Credit Point: 6**  
**Total Credit Hours: 60 Hrs**

### **Course Objectives:**

1. To understand the nature, process and importance of Ethics.
2. To understand the ethical principles of physiotherapy profession.
3. To learn the basic format, steps and different types of Medical Ethics.
4. To understand and implement confidentiality and responsibility
5. To gain an understanding of Rules of professional conduct and abiding laws
6. To understand the role of Indian Association of Physiotherapists
7. To Understand the term Morality
8. To gain Knowledge on Indian Value System.
9. To learn the Impact of Social and Cultural Factors on Business

### **Course Outcomes: (CO)**

<b>Sl. No.</b>	<b>Course Outcome</b>	<b>Mapped Modules</b>
1	Ability to understand importance of Ethics	Module I – Unit 1
2	Ability to understand different Rules of professional conduct	Module I – Unit 2
3	Ability to understand Medical ethics	Module I – Unit 3
4	Ability to understand Confidentiality and Responsibility of medical ethics	Module I- Unit 4
5	Ability to understand the Legal aspects	Module II – Unit 5
6	Ability to understand the Constitution & Functions of the Indian Association of Physiotherapists	Module II- Unit 6
7	Ability to learn Morality	Module II- Unit 7
8	Ability to learn Indian value System	Module II- Unit 8
9	Ability to understand the Impact of Social and Cultural Factors on Business	Module II -Unit 9

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**Module I**

**Unit 1: History of physiotherapy** [8L]

Ethical principles in health care, Ethical principles related to physiotherapy, Scope of practice, enforcing standards in health profession-promoting quality care, Professional ethics in research, education and patient care delivery,

**Unit 2: Rules of professional conduct** [8L]

Physiotherapy as a profession, Relationship with patients, Relationship with health care institutions, Relationship with colleagues and peers, Relationship with medical and other professional

**Unit 3: Medical ethics** [4L]

Types of Medical ethics, basic format of Economics in clinical decision-making.

**Unit 4: Confidentiality and Responsibility** [4L]

Malpractice and negligence, Provision of services and, advertising.

**Module II**

**Unit 5: Legal aspects** [8L]

Consumer protection act, Legal responsibility of physiotherapist for their action in professional context and understanding liability and obligations in case of medico-legal action .

**Unit 6: Constitution & Functions of the Indian Association of Physiotherapists** [8L]

Functioning of the World Confederation of Physical therapy [WCPT] & its various branches, Special Interest groups in brief

**Unit 7: Concepts of Morality** [8L]

Ethics & Legality, rules of professional conduct & Medico- legal & moral implications. The need of Council Act for Physiotherapy

**Unit 8: Indian value System** [8L]

Indian Values in management, Four ashrams, Purushartha, Varna and Caste system , : Nature and Scope of Ethics, Psychological Basis of Ethics, Indian Ethical Theories (a) Kautilya (b) Manu, An outline of Ancient Legal System and its utility in present, in India , Impact of Social and Cultural Factors on Business: Guilds (Shreni) and their role in business promotion in Ancient India, Role of Indian Culture in Business Promotion,

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Indian traditions for decision-making and management of stress, Philosophy of Yoga and its modern relevance

**Unit 9: Impact of Social and Cultural Factors on Business**

**[4L]**

Guilds (Shreni) and their role in business promotion in Ancient India, Role of Indian Culture in Business Promotion, Indian traditions for decision-making and management of stress, Philosophy of Yoga and its modern relevance

**Suggested Readings:**

1. The Story of Physiotherapy in Canada: Head, Heart and Hands;, Can. 2008 Winter; 61(1): 48. Published online 2009 Feb.
2. Physical Therapy Ethics, Donald L. Gabard, Paperback
3. Medical Ethics by C M Francis.
4. Current Problems in Medical Ethics - George V Lobo

Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (If applicable)	Remarks (If any)
Module I Unit 1	History of physiotherapy	8	10	1	9		
Module I Unit 2	Professional Conduct	8	20	2	9		
Module I Unit 3	Medical Ethics	4	20	3	9		
Module I Unit 4	Confidentiality and Responsibility	4	10	4	9		
Module II Unit 5	Legal Aspects	8	10	5	9		
Module II Unit 6	Constitution & Functions of the Indian Association of Physiotherapists	8	10	5	5		
Module II Unit 7	Concepts of Morality	8	5	6	8		
Module II Unit 8	Indian value System	8	10	9	5		
Module II Unit 9	Ability to learn the Impact of Social and Cultural Factors on Business	4	5	6	5		

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## **BPHM 303 & 393: APPLICATION OF ELECTROTHERAPY**

**Credit Point: 4+2**

**Total Credit Hours: 60 Hrs**

### **Course Objectives:**

1. To understand the basic concept of electricity and electrical stimulation
2. To understand therapeutic approach of current
3. To understand Faradic Type Current
4. To understand Interrupted Direct Current
5. To understand Selection Of Current in electrotherapy
6. To understand Electro diagnostic procedure
7. To understand Bio-Feedback mechanism
8. To understand Tens method
9. To understand Iontophoresis methodology
10. To understand Interferential Current method

### **Course Outcomes: (CO)**

<b>Sl. No.</b>	<b>Course Outcome</b>	<b>Mapped Modules</b>
1	Ability to understand the basic concept of electricity and electrical stimulation	Module I – Unit 1
2	Ability to understand therapeutic approach of current	Module I – Unit 2
3	Ability to understand the Faradic Type Current	Module I – Unit 3
4	Ability to understand the Interrupted Direct Current	Module I – Unit 4
5	Ability to understand the Selection Of Current in electrotherapy	Module I – Unit 5
6	Ability to understand the Electro diagnostic procedure	Module II – Unit 6
7	Ability to understand the Bio-Feedback mechanism	Module II – Unit 7
8	Ability to learn the Tens method	Module II – Unit 8
9	Ability to learn the Iontophoresis methodology	Module II – Unit 9
10	Ability to learn the Interferential Current method	Module II – Unit 10

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**Module I**

**Unit 1: Electricity and Electrical Stimulation [4L]**

Definition and types, Therapeutic uses, Basic physics, Working, Importance of current in treatment, Uses of electricity, Resting Membrane Potential, Action Potential, Propagation of Action Potential, Motor Unit

**Unit 2: Therapeutic Approach of Current [8L]**

Types –Low Frequency current and Medium Frequency current, Types of Low Frequency Current, Interrupted Galvanic Current/Modified Direct Current/Interrupted Direct Current, Faradic Type Current, Tens Iontophoresis, Sinusoidal Current, High Voltage Pulse Galvanic Stimulation (HVPGS), Diadynamic Current, Functional Electrical Stimulation (FES), Types of Medium Frequency Current, Interferential Current-1.2 Pole IFC (Russian Current-2000HZ, Medium Frequency, Current-4000HZ) 2.4 Pole IFC (4000HZ-4100HZ)-Classical & Vector

**Unit 3: Faradic Type Current [6L]**

Production, Surging of Faradic Current, Physiological effects & Therapeutic effects of Faradic Current, Technique of application of Faradic Current, Motor Point, Preparation of apparatus (Assembling, Testing), Preparation of patient, Stimulation of motor point.

**Unit 4: Interrupted Direct Current [6L]**

Production, Physiological effect & Therapeutic effect of Interrupted direct current, Effect of IGC on Innervated muscle & Denervated muscle, Technique of application of IGC, Motor Point, Preparation of apparatus (Assembling, Testing), Preparation of patient, Stimulation of motor point

**Unit 5: Selection of Current [2L]**

Differentiate between types of current, duration, shape, frequency used in stimulating nerve and muscle

**Module II**

**Unit 6: Electro diagnosis [8L]**

Physiological basis, Principles of electro diagnosis, SD Curve Rheobase, Chronaxie Electromyography (EMG), Recording electrodes, Myoelectrical signal, amplifiers, display devices, Basic wave pattern of an EMG signal, Nerve Conduction Test (MCV, NCV), H reflex, F Wave, Faradic-IDC test, Galvanic tetanus ratio, SD Curve Test, Type of current used, shape, frequency, Procedure, Characteristic of curve (Normal, Partial, Complete denervation), Factors that affect accuracy of SD curve

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**Unit 7: Bio-Feedback** **[4L]**

Basis of biofeedback, Principles of biofeedback, Uses of biofeedback, EMG bio feedback

**Unit 8: Tens Method** **[8L]**

Neurophysiology of pain, Acute pain & chronic pain, Pain pathway, Neuromodulation of pain, Pain modulation- Gate control theory, descending pain suppression, Parameter of Tens-Waveform, Frequency, Pulse width, amplitude, Type of Tens - High Frequency Low Intensity Tens or Conventional Tens, Acupuncture like Tens, Brief Intense Tens, Burst Mode Tens, Electrode Placement, Advantage & Disadvantage of Tens, Uses of Tens and Contraindication of Tens

**Unit 9: Iontophoresis** **[6L]**

Physics of iontophoresis, Technique of application of iontophoresis, Ions commonly used in iontophoresis and their clinical indication, Physiological effect & Therapeutic effect of iontophoresis, Dosage of iontophoresis, Dangers & Contraindication of iontophoresis

**Unit 10: Interferential Current** **[8L]**

Production of interferential current, Types of interferential current, Static interferential current or Classical interferential current (4 pole method), Dynamic interferential current or Isoplanar vector field (4 pole method) or Four electrodes with rotating vector, Parameters of IFT, Quadripolar or Bipolar application, Vector or Scanning mode, Suction versus Plate electrode, Current intensity, Frequency sweep, Amplitude modulated frequency, Treatment duration, Indications & contraindication of IFC, Physiological effects of IFC, Dangers of IFC

**Suggested Readings:**

1. Textbook of Electrotherapy by Jagmohan Singh
2. Claytons Electrotherapy Theory and Practice by Forster A.
3. Electrotherapy Simplified by Nanda Basanta Kumar
4. Electrotherapy Explained: Principles and Practice by Val Robertson PhD, Alex Ward PhD, et al.

Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (If applicable)	Remarks (If any)
Module I Unit 1	Electricity and Electrical Stimulation	4	5	1	3		
Module I Unit 2	Therapeutic approach of current	8	15	2	3		

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Module I Unit 3	Faradic Type Current	6	10	3	3		
Module I Unit 4	Interrupted Direct Current	6	10	4	3		
Module I Unit 5	Selection of Current in electrotherapy	2	15	5	3		
Module II Unit 6	Electro diagnosis	8	10	6	3		
Module II Unit 7	Bio-Feedback	4	10	7	3		
Module II Unit 8	Tens	8	10	8	3		
Module II Unit 9	Iontophoresis	6	5	9	3		
Module II Unit 10	Inferential Current	8	10	10	3		

## **BPHM 305: COMPUTER APPLICATION**

**Credit Point: 2**

**Total Credit Hours: 20 Hrs**

### **Course Objectives:**

1. Introduced students to computer, its need, use, characteristics, generation and classification.
2. To learn the computer organization and memory.
3. Knowledge of computer equipment, including both hardware and software.
4. Introduced different operating systems and their characteristics.
5. To learn word processing system.
6. To learn the concepts of presentation package.
7. Knowledge of Internet and security.
8. Introduced hospital management system.



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**Course Outcomes: (CO)**

Sl. No.	Course Outcome	Mapped Modules
1	Understand the concept of computer, its need, use, characteristics, generation and classification	Module I – Unit 1
2	Learned computer organization and memory.	Module I – Unit 2
3	Able to identify the computer equipment, including both hardware and software.	Module I – Unit 3
4	Understand various operating systems i.e. windows, Linux etc.	Module I – Unit 4
5	Learned word processing system.	Module II – Unit 5
6	Recognize concepts of presentation package.	Module II – Unit 6
7	Learned Internet and security.	Module II – Unit 7
8	Understand the concept of hospital management system.	Module II – Unit 8

**Module I**

**Unit 1: Introduction to Computer Application [2L]**

Introduction to Computer - Advantages of computers, Limitations of computers, Application of Computer in Different Fields of Life, Computer Generations, and Classification of Computers; Characteristics of computers; Computer System.

**Unit 2: Computer Organization and Memory [2L]**

Overview of Computer Organization; Central Processing Unit; Control Unit; Arithmetic Unit; Instruction Set - Difference between RISC and CISC; Register; Processor Speed; Overview of Storage Devices; Main Memory; Storage Evaluation Criteria – Access Time, Memory Cycle Time, Effective Access Time; Memory Organization – Addressing Strategies, Organization of Memory Units, Content-Addressable Memories; Memory Capacity; Random Access Memories; Read Only Memory; Secondary Storage Devices.

**Unit 3: Computer Input and Output Devices [4L]**

Keyboard; Mouse; Trackball; Joystick - Joystics in aviation, Joystics in Gamming, Analog Joystick, Digital Joystick; Scanner - Characteristics of a scanner, Types of scanner; Optical Mark Reader; Bar-code reader - Types of barcode; Magnetic Ink Character Reader (MICR); Digitizer; Card reader; Voice recognition; Web Cam; and Video Cameras;

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Monitors - Characteristics of VDU, Types of VDU; Printers; Dot Matrix Printers; Inkjet Printers; Laser Printers; Plotters; Computers Output Micro Files (Com) – COM to CD Service, Benefits of COM; Multimedia Projector; Criteria to evaluate suitable Projector.

**Unit 4: Operating System** **[2L]**

Microsoft Windows - An Overview of different version of windows, Basic Windows Elements, File Management through Windows 7; Using Essential Accessories – Disk Cleanup and Disk Defragmenter, Entertainment, Calculator, Note pad, Paint, Wordpad, Recycle Bin, Windows Explorer, and Creating Folder Icons.

**Module II**

**Unit 5: Word Processing** **[4L]**

Word Processing Concepts; Working with Documents - Create a New Document, Opening an Existing Document, Saving a Document, Renaming Documents, Working on Multiple Documents, Views and Close a Document; Working with Text in Word - Selecting text, Editing Text, Finding and replacing text; Printing Documents; Formatting - Bullets and Numbering in Word, Alignment, Page designs and Layout, Editing and Proofreading; Working With Graphics - Inserting Clip Art Images, Moving Images in Word, Deleting images in Word, Text wrapping in Word, Creating Lines and Arrows in Word, Drawing Shapes in Word, Adding a Text Box; Working with Tables.

**Unit 6: Presentation Package** **[2L]**

Creating a New and Opening an Existing Presentation; Creating the look of your Presentation; Working with Slides - Adding and formatting Text, Formatting PowerPoint; Printing Handouts with Notes making; Images and Clip Art; Slide Shows.

**Unit 7: Internet and Email** **[2L]**

Definition about the World wide web & brief History; Use of Internet and Email – Internet, Email; Internet – Terminology, Protocols, Routing; Websites; The Mail Protocol Suite; Using Search Engine and beginning Google search; Exploring the next using Internet Explorer and Navigator; Uploading and Downloading of Files and Images; E-mail ID creation - Opening the E-mailbox, Sending Messages, and Attaching Files in E-mails.

**Unit 8: Hospital Information System** **[2L]**

Hospital Information System; Architecture of a Hospital Information System; Aim and Uses of HIS - Aim of HIS, Uses of HIS; Types of HIS; Benefits of using a Hospital

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Information Systems; Advanced Hospital Management System – XO Hospital Management System, LCS Hospital Management Information System, NVISH Hospital Management System.

**Suggested Readings:**

1. Introduction to Computers: Peter Norton, McGraw Hill
2. Computer Fundamental: AnithaGoel, Pearson
3. Fundamental of Computers: Balaguruswamy, McGraw Hill
4. Hospital Information Systems: a Concise Study: Kelkar S. A, PHI

Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (If applicable)	Remarks (If any)
Module I Unit 1	Introduction to Computer Application	2	10	1	1		
Module I Unit 2	Computer Organization and Memory	2	10	2	1		
Module I Unit 3	Computer Input and Output Devices	4	20	3	1		
Module I Unit 4	Operating System	2	10	4	1		
Module II Unit 5	Word Processing	4	20	5	1		
Module II Unit 6	Presentation Package	2	10	6	1		
Module II Unit 7	Internet and Email	2	10	7	1		
Module II Unit 8	Hospital Information System	2	10	8	1		

**FOURTH SEMESTER**  
**BPHM 401: FUNDAMENTALS OF RESEARCH IN**  
**HEALTHCARE MANAGEMENT**

**Credit Point: 6**  
**Total Credit Hours: 60 Hrs**

**Course Objectives:**

1. To understand the basic concept, meaning and types of research and its applications in various domains of health care.
2. To formulate research problems and hypotheses, know about different types of hypotheses and write a research proposal. Should be able to identify the overall process of designing a research study from its inception to its report.
3. To understand research design as the blue print of the research process, in depth understanding of different types of research design with their implications.
4. To understand the concept and types of data used in research, and also to know about different types of data collection processes.
5. To familiarize students with different types of scaling techniques. Students should be able to distinguish between categorical and continuous measures.
6. To understand questionnaire designing and its type. Should be able to understand types of questions to be included in a questionnaire. Learn various advantages and disadvantages of the instrument.
7. To gain the concept of population, sampling, sampling frame, sampling design etc. Determination of sample size, understanding of sampling and non-sampling error.
8. To formulate research hypotheses, to understand different ways to conduct a statistical test of a hypothesis, criteria to select an appropriate statistical test to answer a research question or hypothesis.
9. Able to understand the way of writing a research report, its type, structures and the guidelines for visual representation.
10. To gain knowledge with ethical issues in research, including those issues that arise in using quantitative and qualitative research

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**Course Outcomes:**

Sl. No.	Course Outcome	Mapped Modules
1	Apply Research & Development to solve managerial problems.	Module I – Unit 1
2	Identify research problems and formulate hypotheses for effective outcome. Write an appropriate research proposal to conduct the research.	Module I – Unit 2
3	Formulate research design by understanding different types of design and its implementation in different problem situation.	Module I – Unit 3
4	Select appropriate type of data and design relevant data collection process.	Module I – Unit 4
5	Use suitable scaling techniques for attitude measurement. Classify numerical and categorical variables for data analysis.	Module I – Unit 5
6	Design fitting questionnaire for data collection purpose.	Module II – Unit 6
7	Select appropriate sample units, sample size and types of sampling method. Design proper sampling design.	Module II – Unit 7
8	Formulate and test hypotheses using appropriate statistical technique. Estimate population parameter with sample statistic. Concept of point and interval estimation, type I and type II errors.	Module II – Unit 8
9	Write a research report maintaining all its structure to present the research output.	Module II – Unit 9
10	Conduct research ethically maintaining all the integrity for an unbiased outcome.	Module II – Unit 10

**Module I**

**Unit I: Introduction**

[4L]

Meaning, Process and Types of Research. Concept of Data and Information, Validity and Reliability, Deduction and Induction, Quantitative and Qualitative Methods. Application of research methods in various domains of health care management.

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**Unit 2: Research Problems & Hypotheses Formulation** [6L]

Defining research problems, problem identification process, components of the research problem, Formulating hypotheses, types of hypotheses, contents and types of research proposals.

**Unit 3: Research Design** [8L]

Types of research design, Exploratory Studies, Descriptive Studies, Causal studies, constructing an appropriate Research Design, errors affecting research design.

**Unit 4: Data Collection** [6L]

Types of Data, Methods of Data Collection, Sources of secondary Data, Collecting Data Using Attitudinal Scales, Content analysis, Observation, Secondary data. Errors in Data: Measurement Error Introduction, Error identification, Problem of Outlier, Sources of Non-sampling Error, Response and Non-Response error, Other checks on data.

**Unit 5: Measurement and Scaling Technique** [6L]

Introduction, Measurement scales, Scaling of Techniques, More on Specialized Scales – Ordinal scale and Thurstone Scale, classification of scales: single item v/s multi item scales, comparative v/s non – comparative scales, criteria for good measures.

**Module II**

**Unit 6: Questionnaire Design** [4L]

Types of Questionnaire, process of Questionnaire designing, Pros & Cons of Questionnaire designing.

**Unit 7: Sampling Designs** [6L]

Sample survey and Complete Enumeration, Concept of sampling design, steps in sampling design, cost effective and optimum size. The basic framework and different methods of sampling.

**Unit 8: Estimation and Testing of Hypotheses** [10 L]

Basics of Bio statistics, Probability & distribution, concepts of unbiasedness / consistency / efficiency / sufficiency, introduction to various methods of estimation like method of moments / maximum likelihood / least squares, concepts of linear models and BLUE, error of estimates, point and interval estimation, concepts of tests of hypotheses, power of tests, type I and type II errors, examples of test design – tests of equality of means / standard deviation / proportions / goodness of fit tests etc.

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**Unit 9: Report Writing**

[6L]

Formatting, Title Page, Abstract, Body, Introduction, Methods, Sample, Measures, Design, Results, Conclusions, References, Tables, Figures, and Appendices.

**Unit 10: Ethics in Research**

[4L]

Concepts of Ethics and ethics in research, **Good research practice, research integrity and scientific misconduct**, Responsibility for research and the results and consequences of research. Introduction and guidelines of plagiarism. The limits of responsibility, risks and the precautionary principle.

**Suggested Readings**

1. Research Methodology: Taylor, Bill, Sinha, G and Ghoshal, Taposh, Prentice Hall of India.
2. Research Methodology – Methods and Techniques: Kothari C.K, New Age International.
3. Applied Statistics & probability for Engineers: Montgomery, Douglas C. & Runger, George C., Wiley India
4. Research Methodology – Ranjit Kumar, Sage Publication

Module Number	Contents	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (If applicable)	Remarks (If any)
Module I Unit 1	Introduction	4	7	1	1		
Module I Unit 2	Research Problems & Hypotheses Formulation	6	10	2	1		
Module I Unit 3	Research Design	8	13	3	1		
Module I Unit 4	Data Collection	6	10	4	1		
Module I Unit 5	Measurement and Scaling Technique	6	10	5	1		
Module II Unit 6	Questionnaire Design	4	7	6	1		
Module II Unit 7	Sampling Design	6	10	7	1		
Module II Unit 8	Estimation and Testing of Hypotheses	10	16	8	1		
Module II Unit 9	Report Writing	6	10	9	1		
Module II Unit 10	Ethics in Research	4	7	10	1		

## **BPHM 402: PHYSIOTHERAPY MANAGEMENT IN ORTHOPEDIC CONDITIONS**

**Credit Point: 6**  
**Total Credit Hours: 60 Hrs**

### **Course Objectives:**

1. To understand the concept of Orthopedics
2. To understand the concept of Fractures
3. To understand the concept of Inflammation of bones & joints
4. To understand the concept of Spine deformities & Infections of Musculoskeletal system
5. To understand the concept of congenital malformation
6. To understand the concept of Upper Limb.
7. To understand the concept of Lower Limb.
8. To understand the concept of Neuro-vascular Diseases
9. To understand the concept of Amputations
10. To understand the concept of Orthopedic Condition

### **Course Outcomes:**

<b>Sl. No.</b>	<b>Course Outcome</b>	<b>Mapped Modules</b>
1	Ability to gain an understanding of Orthopedics	Module I – Unit 1
2	Ability to define Fractures	Module I – Unit 2
3	Ability to understand concept of Inflammation of bones & joints	Module I – Unit 3
4	Ability to determine different types of Spine deformities & Infections of Musculoskeletal system	Module I– Unit 4
5	Ability to determine the concept of congenital malformations	Module II – Unit 5
6	Ability to understand the concept of Upper Limb	Module II – Unit 6
7	Ability to understand the concept of Lower Limb	Module II – Unit 7
8	Ability to understand the concept of Neuro-vascular Diseases	Module II – Unit 8
9	Ability to understand the concept of Amputations	Module II – Unit 9
10	Ability to understand the concept of Orthopedic Condition	Module II – Unit 10



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**Module I**

**Unit 1: Introduction to Orthopedics** [4L]

An Orthopedic patient, history taking, clinical features, clinical examination, and investigation (X- ray, CT scans, MRI scan, Bone scan), Injuries of muscle & tendons: Bony & Soft tissue injuries: Injury & repair, Clinical presentation, evaluation & general principles of rehabilitation management, Tenosynovitis, Bursitis etc.

**Unit 2: Concepts of Fractures** [4L]

Types, healing, complications, general principles of treatment. Fracture of Spine, pelvis, hip joint, femur, patella, knee joint, cartilage and ligaments, tibia, fibula, ankle, calcaneum, metatarsals, clavicle, scapula, ribs, humerus, elbow joint, radius, ulna, scaphoid, metacarpals & phalanges. Fracture separation of epiphysis.

**Unit 3: Inflammation** [2L]

Inflammation of bones & joints (Clinical features, evaluation, conservative & surgical management)

**Unit 4: Spine deformities** [4L]

Clinical features, diagnosis, management of Scoliosis, Kyphosis, Lordosis, Spondylosis, prolapse of intervertebral disc, cord compression, sacralization and traumatic deformities (paraplegia & quadriplegia). Infections of Musculoskeletal system

**Unit 5: Congenital malformations** [2L]

Types, Forms and outline of treatment

**Unit 6: Upper Limb** [8L]

Clinical presentation, evaluation, conservative & surgical management of rotator cuff injuries, adhesive capsulitis, bursitis, biceps tendonitis, shoulder dislocation, snapping & winged scapula, tennis and golfer elbow, olecranon bursitis, soft tissue injuries, sprains and strains, Arthritic conditions, tenosynovitis, Carpal tunnel syndrome, wrist drop, claw hand, mallet finger, Duputyren's contracture, reflex sympathetic dystrophy, common fractures and dislocations.

**Unit 7: Lower Limb** [6L]

Clinical presentation, evaluation, conservative & surgical management of Arthritic conditions, soft tissue injuries, sprains and strains, achillis tendonitis, bursitis, plantar fasciitis, deformities, reflex sympathetic dystrophy, neuropathic Joints, common fractures

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and dislocations.

**Unit 8: Basic concept of Neuro-vascular Diseases** **[2L]**

Orthopedic aspects and treatment of - Nerve injuries (major nerves), Plexus injuries

**Unit 9: Basic concept of Amputations** **[8L]**

Justification, outline of surgical approaches, incisions, procedures, indications, contraindications, complications & management. Operations: Reconstructive arthroplasty, arthodesis, bone grafting, osteotomy, tendon transplantation & transfer, nerve-neurolysis, suture, graft and decompression. Orthopedic splints and appliances.

**Unit 10: Practical Application of Orthopedic Physiotherapy** **[20L]**

1. Pain assessment
2. Sensory and motor assessment
3. Balance assessment
4. Assessment of tone, flexibility and tightness
5. Muscle Length Testing
6. Reflex testing
7. Functional assessment X-Ray, MRI, CT report reading & analysis
8. Clinical Orthopedic testing combined movement therapy Muscle energy techniques Positional release techniques Myofascial release Group exercises Physiotherapy in home setting External aids, appliances, and adaptive self-help devices: Prescription, biomechanics, checkout and training.
9. Limb length measurement
10. Postural assessment
11. Examination of movements, Range of Motion
12. Clinical Gait assessment. Community based rehabilitation in musculoskeletal disorders. Wheelchair prescription Wheel chair skills- advanced Transfer techniques

**Suggested Readings:**

1. Watson- Zones, Fractures and Joint Injuries-Wilson- Churchill Livingstone.
2. Clinical Orthopaedics Examination- Merae- Churchill Livingstone.
3. Outline of Fractures- Adam- Churchill Livingstone.
4. Clinical Orthopaedics Diagnosis- Pandey & Pandey- Jaypee Brothers.

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Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (If applicable)	Remarks (If any)
Module I Unit 1	Introduction to Orthopedics	4	5	1	2		
Module I Unit 2	Fractures	4	5	2	2		
Module I Unit 3	Inflammation	2	4	3	2		
Module I Unit 4	Spine deformities	4	8	4	2		
Module II Unit 5	Congenital malformations	2	4	5	2		
Module II Unit 6	Upper Limb	8	13	6	2		
Module II Unit 7	Lower Limb	6	13	7	2		
Module II Unit 8	Neuro-vascular Diseases	2	4	8	2		
Module II Unit 9	Amputations	8	10	9	2		
Module II Unit 10	Practical Application	20	34	10	2		

## **BPHM 403: PHYSIOTHERAPY MANAGEMENT IN GENERAL CONDITIONS**

**Credit Point: 6**

**Total Credit Hours: 60 Hrs**

### **Course Objectives:**

1. To understand the concept of different disease
2. Develop knowledge of the principles of physiotherapeutic management
3. To understand the concept of Diseases of Respiratory System
4. To understand physiotherapy assessment for various condition
5. To understand the Physical therapy is the treatment of disease, injury, or deformity by physical methods Health and other conditions
6. To understand the issues related to the environment which helps for development and implementation of disease

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**Course Outcomes (CO):**

Sl. No	Course Outcome	Mapped modules
1	Ability to gain the knowledge of management of physical therapy	Module I- Unit 1
2	Ability to understand the appropriate electrotherapeutic and exercise therapy management for the patients.	Module I - Unit 2
3	Ability to gain an understanding of Diseases of Respiratory System	Module I - Unit 3
4	Ability to understand the problem identification and treatment planning of physiotherapy	Module II - Unit 4
5	Ability to understand the different methods and application of physical therapy	Module II - Unit 5
6	Ability to know the impact of environmental factor on diseases.	Module II - Unit 6

**Module I**

**Unit1: Introduction to Pathology** **[10L]**

Definition, Aetio-pathogenesis, Pathology, Clinical Features, Diagnosis, Differential Diagnosis.

**Unit 2: Principles of Physiotherapeutic Management:** **[8L]**

Introduction of Medicine, General principles of assessment and management including physiotherapeutic management. Elementary idea about use of laboratory and imaging techniques.

**Unit 3: Diseases of Respiratory System and its management** **[12L]**

Approach to a patient with Respiratory Disease, Chronic Obstructive Pulmonary Disease. Bronchial Asthma, Pneumonia, Lung Abscess, Pleural Effusion & Emphysema.

**Module II**

**Unit 4: Pulmonary diseases and its Management** **[12L]**

Pneumothorax, Pulmonary tuberculosis, Respiratory Failure, Interstitial Lung Disease, Pulmonary Embolism.

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**Unit 5. Gastro-intestinal system and its Management [11L]**

Diseases of GI system & Hepato-Biliary Disorders, Diseases of Kidney, Nutritional Diseases, Endocrine& Metabolic Diseases.

**Unit6. Environmental Disease: [6L]**

Definition, Diseases due to Environmental factors & Poisons, Symptoms of environmental diseases, treatment and prevention.

**Suggested Readings:**

1. Cash's Textbook of General Medical and Surgical Conditions for Physiotherapists by Joan E. Cash (Author), Patricia A. Downie (Editor)
2. Principles Of Physiotherapy In General Medical & Surgical Conditions by A T Ramalingam (Author) 1st/2016
3. Textbook Of Physiotherapy In Surgical Conditions by Pushpal K Mitra
4. Essentials of Orthopedics & Applied Physiotherapy October 2016 by Prakash P. Kotwal

Module Number	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (if applicable)	Remarks (If any)
Module I Unit 1	Introduction of Pathology	10	16	1	2		
Module I Unit 2	Principles of physiotherapeutic management	8	13	2	2		
Module I Unit 3	Diseases of Respiratory System	13	21	3	2		
Module II Unit 4	Introduction to Pulmonary diseases	12	20	4	2		
Module II Unit 5	Basic of Gastro-intestinal system	11	18	5	2		
Module II Unit 6	Environmental Disease	6	10	6	2		

## **BPHM 405: BASIC NURSING AND FIRST AID TECHNIQUES**

**Credit Point: 2**  
**Total Credit Hours: 20 Hrs**

### **Course Objectives:**

1. To understand the basic concept of Nursing – Principles, Etiquettes, Ethics, Duties and responsibilities
2. To understand different nursing procedures and techniques
3. To understand the basic nursing care needs of patients
4. To understand the application of hot and cold compress
5. To understand the concept of First Aid in different situations

### **Course Outcomes:**

<b>Sl. No.</b>	<b>Course Outcome</b>	<b>Mapped Modules</b>
1	Ability to understand the basic concept of Nursing – Principles, Etiquettes, Ethics, Duties and responsibilities	Module I – Unit 1
2	Ability to understand different nursing procedures and techniques	Module I – Unit 2
3	Ability to understand the basic nursing care needs of patients	Module I– Unit 3
4	Ability to understand the application of hot and cold compress	Module I – Unit 4
5	Ability to understand the concept of First Aid in different situations	Module II – Unit 5

### **Module I**

#### **Unit 1: Basic Concept of Nursing**

**[4L]**

Principles of nursing, development of nursing, etiquettes of nursing profession, ethics of nursing, duties and responsibilities of a nurse, qualities of a nurse, nursing and legislation, goals and scope of nursing, interpersonal relationships.

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**Unit 2: Nursing Procedure and Techniques** **[2L]**

Nursing procedures and techniques, important factors of a procedure, Steps of undertaking a procedure.

**Unit 3: Nursing care needs of patients** **[4L]**

Psychological, social and spiritual needs, physical comfort, hygienic needs, nutritional needs, elimination needs, observation, medication needs.

**Unit 4: Hot and Cold Applications** **[4L]**

Hot water bag, Formentation, Different types of formentation, Ice Bag, Cold compress, Cold Sponge.

**Module II**

**Unit 5: Application of Basic First Aid** **[6L]**

First Aid and First Aider – Duties and responsibilities, Artificial respiration,, Electric Shock, Burns, Scalds, Shock, Control of Bleeding, Unconsciousness, Bleeding from nose and ear, Epileptic Fits, Fractures and injuries, dislocation, High Fever, Something get stuck in the throat, drowning, insect bite, dog bite, snake bite, food poisoning, chemical poisoning

**Suggested Readings:**

1. Competitive Handbook of Nursing: Indian Book House, Jaipur
2. Potter and Perry’s Fundamentals of Nursing: Suresh. K. Sharma, Elsevier
3. Medical Surgical Nursing – I & II: Deepak Sethi and Capt. Kirti Rani, Jaypee Brothers Medical Publishers
4. Advanced First Aid and Emergency Care by American National Red Cross

Module No.	Content	Total Hours	% age of questions	Covered CO	Covered PO	Blooms Level (If applicable)	Remarks (If any)
Module I Unit 1	Basic Concept of Nursing	4	20	1	5		
Module I Unit 2	Nursing Procedure and Techniques	2	10	2	5		
Module I Unit 3	Nursing care needs of patients	4	20	3	5		
Module I Unit 4	Hot and Cold Applications	4	20	4	5		
Module I Unit 5	Application of Basic First Aid	6	30	5	5		

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**FIFTH SEMESTER**  
**BPHM 501: REHABILITATION ON MEDICINE**

**Credit Point: 6**  
**Total Credit Hours: 60 Hrs**

**Course Objectives:**

1. To get an idea on the Rehabilitation in detail with a proper knowledge on epidemiology in relation to impairment, disability and their process.
2. To gain a knowledge on rehabilitation disability and prevention.
3. To understand the concept of community rehabilitation and relatively the role of various health organizations.
4. To achieve a vivid idea on Occupational therapy & community educational programs.
5. To attain a knowledge on health care delivery system and National District Level Rehabilitation Programs.

**Course Outcomes:**

<b>Sl. No.</b>	<b>Course Outcome</b>	<b>Mapped Modules</b>
1.	Ability to gain an understanding on Rehabilitation and Epidemiology of disability.	Module I – Unit 1
2.	Ability to receive idea on rehabilitation disability & disability prevention.	Module I—Unit 2
3.	Ability to understand community rehabilitation & the relative role of health organizations.	Module I – Unit 3
4.	Ability to define occupational therapy & community educational programs.	Module I—Unit 4
5.	Ability to determine health care delivery system & National rehabilitation programs.	Module I – Unit 5
6.	Ability to gain a practical understanding of rehabilitation methods	Module II – Unit 6



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**Module I:**

**Unit 1: Introduction to Rehabilitation unit & Epidemiology of disability [10L]**

Organization & principles of rehabilitation, epidemiology of disability (Impairment, disability, phases of disability process, Concept of team approach with roles of each individual participant.

**Unit 2: Rehabilitation Disability and Disability Prevention: [6L]**

Preventive, treatment & restoration, Disability prevention evaluation & principles of Rehabilitation Management, implications on Rehabilitation process.

**Unit 3: Community Rehabilitation & Role of Health Organizations in CBR [10L]**

Communication disorder, psychosocial & vocational aspects of Rehabilitation, basic community medicine with special reference to community based Rehabilitation infrastructure and role of CBR, Application and need of Physiotherapy skills at community and rural level. Role of voluntary Organizations in CBR: Charitable Organizations, Voluntary health agencies, National level and International NGO's, Multilateral and Bilateral agencies –International Health Organizations: WHO, UNICEF, UNDP, UNFPA,ILO, World bank, Ford foundation, REDCROSS.

**Unit 4: Occupational Therapy & Community Education Program [8L]**

Assessment of disability in rural & urban setups & functional assessment & training for functional independence.

**Unit5: Health Care Delivery System & National District Level Rehabilitation Program [6L]**

Primary rehabilitation unit, Regional training center, District rehabilitation center, Primary Health center, Village rehabilitation worker, Anganwadi worker.

**Module II: [20L]**

**Unit 6: Practical Application**

1. Demonstration of methods of using orthotics & prosthetics devices.
2. Methods of organization of community based rehabilitation centers.
3. Visit of different rehabilitation centres and preparing a report of the visit & viva-voce of the aforesaid report.

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**Suggested Readings:**

1. Physical Medicine & Rehabilitation: Ian Maitin --Lange
2. Occupational Therapy : Glen Gilen – Walter Kluwer
3. Preventive And Social Medicine, K. Park --- Bhanot
4. Sports Medicine and Rehabilitation, Buschbacher R – LWW

Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (If applicable)	Remarks (If any)
Module I Unit 1	Introduction to Rehabilitation unit & Epidemiology of disability	8	13	1	2		
Module I Unit 2	Rehabilitation Disability & Disability Prevention	10	17	2	2		
Module I Unit 3	Community Rehabilitation & Role of Health Organizations in CBR	10	17	3	2		
Module I Unit 4	Introduction to Occupational Therapy & Community Education Program	7	11	4	2		
Module I Unit 5	Health Care Delivery System & National District Level Rehabilitation Program	10	17	5	2		
Module II Unit 6	Practical Application	15	25	6	2		

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## **BPHM 581: PROJECT/ INTERNSHIP - I**

**Credit Point: 6**

**Total Credit Hours: 60 Hrs**

**Course Objective:**

To understand the concept of an organization's functions where theoretical knowledge can be made applicable and provide hands on experience.

**Course Outcome:**

Ability to implement theoretical knowledge in the organizational context and gain practical experience.

## **SIXTH SEMESTER**

# **BPHM 601: APPLICATION OF PSYCHOLOGY IN HEALTHCARE MANAGEMENT**

**Credit Point: 6**

**Total Credit Hours: 60 Hrs**

### **Course Objectives:**

1. To introduce students to the basic concepts of the field of psychology with an emphasis on applications of psychology in everyday life.
2. To identify the possible roles and contributions of health psychology
3. To understand the spectrum of health and illness for better health management.
4. To learn to make adjustments and manage to cope with stress more effectively.
5. To understand the relationship between psychological factors and physical health and learn how to enhance well-being
6. To understand, use, and manage their own emotions & others also.
7. To understand the process of sensing in a meaningful way the stimuli we attend to.
8. To develop an awareness of the concepts related to learning, memory.
9. To equip the learner with an understanding of the concept and process of human development across the life span and impart an understanding of the various domains of human development
10. To develop self-understanding, strengthen interpersonal relationships, effective communication skills in today's life.
11. To understand psychopathology and dispel myths regarding symptoms and etiology of various psychological disorders.
12. To impart basic psychological skills relevant for a practitioner in an organizational context

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**Course Outcomes (CO):**

Sl. No.	Course Outcome	Mapped modules
1	Ability to identify the primary objectives (goals) of psychology and demonstrate knowledge of psychology	Module I – Unit 1
2	Ability to understand the spectrum of health and illness for better health management	Module I—Unit 2
3	Ability to understand how psychological, behavioral, and cultural factors contribute to physical health and illness.	Module I – Unit 3
4	Ability to break apart the association between the stressor and the symptoms of anxiety.	Module I—Unit 4
5	Ability to understand and promote health, prevent illness and improve health care systems	Module I – Unit 5
6	Ability to understand, use, and manage emotions	Module I – Unit 6
7	Ability to understand the process of sensing in a meaningful way the stimuli	Module II—Unit 7
8	Ability to develop an awareness of the concepts related to learning and memory	Module II—Unit 8
9	Ability to understand various domains of human development	Module II—Unit 9
10	Ability to develop self-understanding, strengthen interpersonal relationships, effective communication skills	Module II—Unit 10
11.	Ability to understand the etiological understanding and therapeutic interventions for the various psychological disorders	Module II—Unit 11
12	Ability to understand the applications of psychology	Module II—Unit 12

**Module I:**

**Unit 1: Introduction to Psychology**

[2L]

What is psychology? Perspectives on behaviour; Methods of psychology; Subfields of psychology; Psychology in modern India.

**Unit 2: Basic Concepts of Health Psychology**

[4L]

Introduction to Health Psychology: components of health: social, emotional, cognitive and physical aspects, mind-body relationship, goals of health psychology

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- Unit 3: Health Behaviour** [2L]  
Health-enhancing behaviors: Exercise, Nutrition, Health compromising behaviours;  
Health Protective behaviours, Illness Management
- Unit 4: Stress and Coping** [4L]  
Nature and sources of stress; Effects of stress on physical and mental health; Managing  
stress: Methods - yoga, meditation, relaxation techniques.
- Unit 5: Health and Well-being** [2L]  
Happiness; Life satisfaction; Resilience; Optimism and Hope
- Unit 6: Managing Emotion** [6L]  
Physiological Changes of emotion, Emotional Intelligence; Models of Emotional  
Intelligence; EQ competencies: self-awareness, self-regulation, motivation, empathy, and  
interpersonal skills; Importance of Emotional Intelligence
- Module II:**
- Unit 7: Attention and Perception** [4L]  
Nature of attention, factors determining attention, nature of perception, principle of  
perceptual grouping; Illusions and Hallucination.
- Unit 8: Learning & Memory** [8L]  
Principles and applications of Classical conditioning, Operant conditioning, and  
Observational learning; Cognitive influences on learning; memory types, models of  
memory and forgetting, methods to improve memory.
- Unit 9: Stages of Life Span Development** [4L]  
Prenatal Development, Birth and Infancy, Childhood, Adolescence, Adulthood
- Unit 10: Personality** [6L]  
Theories of personality, factors influencing personality, Common defensive mechanism:  
Identification, regression, repression, projection, sublimation and rationalization.
- Unit 11: Clinical Picture** [8L]  
Personality Disorder; Borderline Personality Disorder/ Anti-Social Personality  
Disorders; Disorders of Development: Learning disorder/ Mental Retardation, ADHD/  
Autism

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**Unit 12: Practicum**

[10L]

Practicum based on topics in Memory, Intelligence, Personality.

**Suggested Readings:**

1. Introduction to Psychology: Study guide for Morgan and King, Fifth edition  
Morgan, C. T., Rosen, J. W., Morgan, C. T., & King, R. A. (1975). New York: McGraw-Hill.
2. Psychology: Baron, R. & Misra. G. (2013). Pearson, New Delhi.
3. Applied Social Psychology: Understanding and addressing social and practical problems, Schneider, F.W., Gruman, A., Coult, L .M. (Eds.). (2012). New Delhi: Sage publications.
4. Psychology, Santrock, J (2006).New Delhi : Tata Mc Graw Hill

Module Number	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (if applicable)	Remarks (If any)
Module I Unit 1	Introduction	2	3	1	3		
Module I Unit 2	Basic Concepts of Health Psychology	4	6	2	3		
Module I Unit 3	Health Behaviour	2	3	3	3		
Module I Unit 4	Stress and Coping	4	6	4	3		
Module I Unit 5	Health and Well-being	2	3	5	3		
Module I Unit 6	Managing Emotion	6	10	6	3		
Module II Unit 7	Attention and Perception	4	6	7	3		
Module II Unit 8	Learning & Memory	8	12	8	3		
Module II Unit 9	Stages of Life Span Development	4	6	9	3		
Module II Unit 10	Personality	6	10	10	3		
Module II Unit 11	Clinical Picture	8	12	11	3		
Module II Unit 12	Practicum	10	33	12	3		

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## **BPHM 602: PHYSIOTHERAPY IN COMMUNITY BASED REHABILITATION**

**Credit Point: 6 Total**  
**Credit Hours: 60 Hrs**

**Course Objectives:**

8. Describe the structure of the human body of women in terms of six levels of organization
9. To understand the concept of organ systems of the human body and Identify and define body mechanics, body posture, and the common body rest positions.
10. To understand the concept of Medical Terminology and Identify basic word elements individually and within medical terms
11. To understand the socio-economic explanations for health inequalities in morbidity and mortality.
12. To understand the concept of Health, Illness, and Healing
13. To understand Institutional and Organizational perspective of Medical Sociology

**Course Outcomes (CO):**

Sl. No	Course Outcome	Mapped modules
1	Ability to gain the knowledge of life processes of the Human body of women	Module I - Unit 1
2	Ability to define the concept of organ system of the human body	Module I - Unit 2
3	Develop a basic understanding of fitness and health promotion	Module I - Unit 3
4	Ability to gain the knowledge of socio-economic explanations for health inequalities and community health	Module II - Unit 4
5	Ability to define the key diagnostic and imaging tests of disease and social responsibility	Module II - Unit 5



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**Module I:**

**Unit I: Women Health**

**[10L]**

Anatomical and physiological variations associated with pregnancy and menopause, Antenatal, perinatal and postnatal physiotherapy and PT advice on labor positions, pain relief and PT Management of various problems faced in this period, Urogenital dysfunctions: Infections, prolapse, Polycystic Ovarian Disease, incontinence and their therapeutic interventions, Common Gynecological surgeries and role of physiotherapy, Physical fitness in women during pregnancy & menopause, Radical mastectomy and therapeutic intervention. Legal rights & benefits for women.

**Unit II: Industrial Health**

**[12L]**

Job description, Job demand analysis, Task analysis, Ergonomic evaluation, Injury prevention, Employee fitness program, Disability management, Environmental stress in the industrial area - Occupational Hazards: Physical agents- Heat, cold, light, noise, Vibration, U.V. radiation, Ionizing radiation, Chemical agents-Inhalation, local action & ingestion, Mechanical hazards-overuse, fatigue. Psychological hazards - monotonic, dissatisfaction in job, anxiety of work completion with quality, mechanical stress in various occupations for e.g. Sedentary table work in executives, clerk, Inappropriate seating arrangement- e.g. Vehicle drivers, Constant standing- e.g. Watchman, Defense forces, surgeons, e.g. Exhaustion in laborers. Biological Hazards - Role of P.T. in industrial set up & Stress management with relaxation mode. Vocational Training and Rehabilitation, Industrial Laws: Legal Right and benefits

**Unit III: Fitness & Health Promotion**

**[8L]**

Physiological effects of aerobic and anaerobic exercise. Assessment of Fitness, Fitness training and clinical reasoning for advocating aerobic exercise as preventive measures in special population: Elderly, Women, Children Obesity, Diabetes Mellitus, Renal Failure, Hypertension, De-conditioning effects of prolonged bed rest. Exercise Testing & Prescription

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**Module II:**

**Unit IV: Community Health**

**[16L]**

WHO definition of health & disease, Health care delivery system - 3 tier System - \*Rehabilitation: definition, types and Team,\* Community: Definition, Community based approach, \* Community entry strategies, Community initiated v/s Community oriented programme, Introduction to CBR: Definition, Historical review, Concept, Need, Objectives, Scope, Members, Models, CBR strategies in Health Promotion Urban area - UHC - Community centre, clubs, mahila mandals, social centers. Schools, Industries, Sport centers. Rural area by using PHC, rural hospital, district hospital. Principles of CBR, Difference between Community v/s Institutional Based Rehabilitation, Extension services and mobile units: Introduction, Need, Camp approach, Planning and management of CBR programme, Disaster management and role of PT, Disability: Evaluation, types & prevention & role of physiotherapy, National policies for rehabilitation of disabled, Architectural barriers for disabled and their modification.

**Unit V: Social Responsibility and Health**

**[14L]**

Sharing of benefits, Highest attainable standard of health as a fundamental human right - Universal Declaration of Human Rights - WHO Constitution of Duty, obligation and responsibility of physiotherapists for Highest attainable standard of health as a fundamental human right, Responsibilities for governments and various sectors of society on Health and contemporary challenges to global justice, Access to essential health services, The protection of vulnerable populations, Providing health care services across national boundaries, Sharing of benefits - Models of benefit-sharing agreements, Fair and equitable options for research subjects, Bio piracy and fair sharing of benefits of genetic resources, Patents and intellectual property, Valid options for promoting fair and equitable access to new diagnostic and therapeutic modalities or to products stemming from them, Integration of capacity-building components to externally funded research and other initiative.

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**Suggested Readings:**

1. Physiotherapy in Gynaecological & Obstetrical conditions - by Poldon - Jaypee
2. Text book of Work Physiology - Astrand P A Rodahe K
3. Therapeutic Exercise - By Kisner & Colby.
4. Text book of community medicine & Community Health - by Bhaskar Rao.
5. Industrial Therapy - by Glenda Key

Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (if applicable)	Remarks (If any)
Module I Unit 1	Women Health	10	25	1	1		
Module I Unit 2	Industrial Health	12	25	2	1		
Module I Unit 3	Fitness & Health Promotion	8	10	3	1		
Module II Unit 4	Medical Sociology Community Health	16	25	4	1		
Module II Unit 5	Social Responsibility and Health	14	15	5	1		

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## **BPHM 681: PROJECT/ INTERNSHIP - II**

**Credit Point: 6**

**Total Credit Hours: 60 Hrs**

**Course Objective:**

To understand the concept of an organization's functions where theoretical knowledge can be made applicable and provide hands on experience.

**Course Outcome:**

Ability to implement theoretical knowledge in the organizational context and gain practical experience.

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**BPHM 502C: MUSCULAR & SKELETAL SYSTEM**

**Credit Point: 6**

**Total Credit Hours: 60 Hrs.**

**Course Objectives:**

1. The objective of this course is to be able to demonstrate an understanding of skeletal conditions causing disability and their management.
2. The objective of the lectures and demonstrations, practical and clinical, the student will be able to identify disability due to skeletal dysfunction.
3. To understand different variety of joints
4. To understand Muscular physiology
5. To understand Anatomy of muscular system
6. To understand Fractures and Dislocation
7. To set treatment goals and apply their skills in exercise therapy, electro therapy and massage in clinical situation to restore muscular skeletal function.

**Course Outcomes (CO):**

<b>Sl.No.</b>	<b>Course Outcome</b>	<b>Mapped Modules</b>
1	After studying the students will understand the skeletal system.	Module I – Unit 1
2	The student will learn the structure of the skull	Module I – Unit 2
3	The student will learn the structure of the joints	Module I – Unit 3
4	The student will learn the physiology of the muscle	Module II – Unit 4
5	The student will learn the structure of the muscular system	Module II – Unit 5
6	The student will learn the Fractures and Dislocation of the skeletal system	Module II – Unit 6
7	The student will learn different rehabilitation methods of the musculoskeletal system	Module II – Unit 7

**Module I**

**Unit 1: The skeleton**

**[10L]**

Axial & appendicular (over view), Cavities of body- (cranial, thoracic, abdominal, pelvic). Structure of bone, Type & function of bone, Blood & nerve supply of the bone, Planes of the body, Anatomical terminology.

**Unit 2: Skull**

**[10L]**

General features, Cranial bones (frontal, parietal, temporal, Occipital, sphenoid, ethmoid). Facial bone – (nasal, maxilla, zygomatic, lacrimal, palatine, inferior nasal conchae, vomer, mandible). Special feature of the skull (sutures, paranasal sinuses, foramina, fontanelles, nasal septum).

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**Unit 3: Joints** **[10L]**

Classification, fibrous joints, cartilaginous joints, synovial joints (structure & types).  
 Types of movement at synovial joints.

**Module II**

**Unit 4: Muscular Physiology** **[10L]**

Microscopic structure of skeletal, smooth and cardiac muscles and their differences.  
 Properties of muscle. Red and white muscle. Single unit and multi-unit smooth  
 muscles. Motor point. Slow and fast muscle fibers. Isotonic and Isometric contractions.  
 The Sarcotubular system. Muscle contraction-E.C. Coupling, Rigor mortis.

**Unit 5: Anatomy of Muscular System** **[10L]**

Skeletal muscle structure. Important skeletal muscle (muscles of facial expression,  
 mastication. Muscle that move the head). Over view of Trunk muscles, upper limb  
 muscles, lower limb muscles.

**Unit 6: Fractures and Dislocation** **[5L]**

Fractures and Dislocation of hip (congenital), traumatic posterior and central,  
 Shoulder (anterior and recurrent), Patella, Joint replacement – Knee and Hip

**Unit 7: Rehabilitation** **[5L]**

Rehabilitation for the following conditions (5L)- Cervical and lumbar spondylosis,  
 Spondylolisthesis, TB spine, Postural deformities of spine – kyphosis, lordosis,  
 scoliosis, Ankylosing spondylitis, Intervertebral disc prolapsed, Periarthritis  
 shoulder, Amputation, Poliomyelitis, Osteoarthritis, Rheumatoid arthritis, Leprosy,  
 Cerebral palsy, Burns.

**Suggested Readings:**

1. Ross and Wilson Anatomy and Physiology in Health and Illness, Waugh
2. Human Physiology, C.C. Chatterjee
3. Gray's Anatomy: The Anatomical Basis of Clinical Practice, Standring
4. Gray's Anatomy for Students, Richard Drake PhD FRCGS, A. Wayne Vogl PhD  
 FRCGS, et al.

Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (If applicable)	Remarks (If any)
Module I – Unit I	Skeletal system	10	15	1	1		
Module I – Unit 2	Skull	10	15	2	1		
Module I – Unit 3	Joints	10	15	3	1		

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Module II – Unit 4	Muscular physiology	10	15	4	1		
Module II – Unit 5	Anatomy of muscular system	10	15	5	1		
Module II – Unit 6	Fractures and Dislocation	5	13	6	1		
Module II – Unit 7	Rehabilitation	5	12	7	1		

## **BPHM 503B: MANAGEMENT OF PEDIATRIC PHYSIOTHERAPY**

**Credit Point: 6**

**Total Credit Hours: 60 Hrs.**

### **Course Objectives:**

1. To understand the concept on Paediatric Neurological & Orthopaedic Conditions.
2. To understand the concept of Growth and & motor development & Principles of laboratory investigations for differential diagnosis.
3. To understand Physiotherapy for Paediatric Cardio Respiratory Conditions & Reflex maturation, Genetic basis of Paediatric disorders. Clinical symptomatology and patho-physiology of locomotors and cardiopulmonary disorders. Embryology & genetic counseling.
4. To obtain idea on developmental assessment and diagnosis & screening using various scales
5. To increase knowledge on Maturation, Pathophysiological and recovery process in the CNS, Paediatric surgeries and its post-operative management.
6. To understand CBR in pediatric conditions.
7. To understand the importance & role of Sports and fitness in pediatrics.

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8. To gain the concept of Physical therapy in public schools.
9. To understand the significance of Adaptive equipment for physically challenged children
10. To develop an idea on Recent Advances in Pediatric Physiotherapy.

**Course Outcomes (CO):**

<b>Sl.No.</b>	<b>Course Outcome</b>	<b>Mapped Modules</b>
1.	Ability to gain an understanding on Pediatric Neurological & Orthopedic Conditions.	Module I – Unit 1
2.	Ability to define Growth and & motor development & Principles of laboratory investigations for differential diagnosis.	Module I—Unit 2
3.	Ability to determine Physiotherapy for Pediatric Cardio Respiratory Conditions & Reflex maturation, Genetic basis of Pediatric disorders. Clinical symptomatology and pathophysiology of locomotors and cardiopulmonary disorders. Embryology & genetic counseling.	Module I – Unit 3
4.	Ability to understand developmental assessment and diagnosis & screening using various scales.	Module I—Unit 4
5.	Ability to determine the importance of Maturation, Pathophysiological and recovery process in the CNS, Pediatric surgeries and its post-operative management.	Module I – Unit 5
6.	Ability to gain an understanding on importance & role of Sports and fitness in pediatrics.	Module II – Unit 6
7.	Ability to understand the concept of Physical therapy in public schools.	Module II – Unit 7
8.	Ability to understand the significance of Adaptive equipment for physically challenged children.	Module II – Unit 8
9.	Ability to understand the significance of Adaptive equipment for physically challenged children.	Module II – Unit 9
10.	Ability to develop an idea on Recent Advances in Pediatric Physiotherapy.	Module II – Unit 10

**Module I**

**Unit 1: Types of Pediatric Physiotherapy**

**[4L]**

Physiotherapy for Pediatric Neurological & Orthopedic Conditions.

**Unit 2: Child development & Laboratory Investigations**

**[5L]**

Growth and & motor development (development during Prenatal, Infancy, and childhood), Principles of laboratory investigations for differential diagnosis.



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**Unit 3: Pediatric Cardio Respiratory Physiotherapy & Pediatric disorders [12L]**

Cardio Respiratory Conditions & Reflex maturation, Genetic basis of pediatric disorders. Clinical symptomatology and pathophysiology of locomotors and cardiopulmonary disorders, Maturational, Pathophysiological and recovery process in the CNS

**Unit 4: Embryo Genetic Testing & Developmental Test & Scales [4L]**

Embryology & genetic counseling, Developmental assessment and diagnosis & screening using various scales

**Unit 5: Pediatric Surgery and care [5L]**

Pediatric surgeries and its post-operative management

**Module II**

**Unit 6: Role of Pediatric CBR [6L]**

CBR in pediatric conditions, role of community based rehabilitation worker, role of family in CBR, Objectives of Pediatric CBR.

**Unit 7: Sports and fitness in pediatrics [6L]**

Importance of Sports & Exercise, levels of childhood fitness, Exercise effects on Children's health, daily physical activity recommendations for children.

**Unit 8: School- Based Physical Therapy [8L]**

Role of Physical therapy in public schools, role of Physical therapist in school, Benefits and goals of Physical therapist, Need for school-based physical therapy

**Unit 9: Assistive Technology [5L]**

Adaptive equipment for physically challenged children, Benefits of assistive technology, adaptive tools, Mobility aids, Types of assistive devices, requirements of assistive technology.

**Unit 10: New Age of Pediatric Physiotherapy [5L]**

Recent Advancement in Pediatric Physiotherapy, sectors gained popularity in the field of physiotherapy.

**Suggested Readings:**

1. Women's Health: A Textbook for physiotherapists, Ruth Sapsford
2. Physiotherapy in Obstetrics and Gynecology; Margaret Polden Jill Mantle Jay Pee
3. Textbook of Physiotherapy for Obstetric and Gynecological Conditions: Madhuri - Jay Pee
4. Role of Physiotherapist in Obstetric and Gynecological Conditions: Changela Purvi

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K, Jay Pee

5. Text book of Obstetrics, D.C. Dutta

<b>Module No.</b>	<b>Content</b>	<b>Total Hours</b>	<b>%age of questions</b>	<b>Covered CO</b>	<b>Covered PO</b>	<b>Blooms Level(If applicable)</b>	<b>Remarks (If any)</b>
Module I Unit 1	Types of Pediatric Physiotherapy	4	6	1	2		
Module I Unit 2	Child development & Laboratory Investigations	5	8	2	2		
Module I Unit 3	Pediatric Cardio Respiratory Physiotherapy & Pediatric disorders	12	20	3	2		
Module I Unit 4	Embryo Genetic Testing & Developmental Test & Scales	4	7	4	2		
Module I Unit 5	Pediatric Surgery and care	5	9	5	2		
Module II Unit 6	Role of Pediatric CBR	6	10	6	2		
Module II Unit 7	Pediatric Physical fitness	6	10	7	2		
Module II Unit 8	School-based physical therapy	8	13	8	2		
Module II Unit 9	Assistive Technology	5	9	9	2		
Module II Unit 10	New Age of Pediatric Physiotherapy	5	8	10	2		

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**BPHM603C3: BIOMECHANICS & KINESIOLOGY**

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**Credit Point: 6 Total**

**Credit Hours: 60 Hrs.**

**Course Objectives:**

1. To understand the concept of Mechanics
2. To understand the concept of Motion
3. To understand the concept of Force
4. To understand the concept of Friction
5. To understand the concept of Gravity
6. To understand the concept of equilibrium.
7. To understand the concept of Levers .
8. To understand the concept of Pulleys
9. To understand the concept of Elasticity
10. To understand the concept of springs
11. To understand the concept of Biomechanics & Kinesiology

**Course Outcomes (CO):**

<b>Sl.No.</b>	<b>Course Outcome</b>	<b>Mapped Modules</b>
1	Ability to gain an understanding of Mechanics	Module I – Unit 1
2	Ability to define Motion	Module I – Unit 2
3	Ability to determine concept of Force	Module I – Unit 3
4	Ability to understand concept of Friction	Module I– Unit 4
5	Ability to determine the concept of Gravity	Module I – Unit 5
6	Ability to understand the concept of Equilibrium	Module I – Unit 6
7	Ability to understand the concept of Levers	Module I – Unit 7
8	Ability to understand the concept of Pulleys	Module I – Unit 8
9.	Ability to understand the concept of Elasticity	Module I – Unit 9
10.	Ability to understand the concept of springs	Module I – Unit 10
11.	Ability to understand the concept of Biomechanics & Kinesiology	Module II – Unit 11

**Module I**

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**Unit 1: Basic concept of Mechanics** [1L]

Mechanics - Definition of mechanics and Biomechanics

**Unit 2: Introduction to Motion** [1L]

Motion: definition, types of motion, plane and axis of motion, factor determining the kind and modification of motion.

**Unit 3: Introduction to Force** [4L]

Force - Definition, diagrammatic representation of force, point of application, classification of forces, concurrent, coplanar and co-linear forces, composition and resolution of forces, angle of pulls of muscle.

**Unit 4: Basic concept of Friction** [2L]

Types of Friction, variations of Friction

**Unit 5: Basic concept of Gravity** [4L]

Gravity - Definition, line of gravity, Centre of gravity

**Unit 6: Basic concept of Equilibrium** [6L]

Equilibrium - Supporting base, types, and equilibrium in static and dynamic state

**Unit 7: Introduction to Lever** [6L]

Levers- Definition, function, classification and application of levers in physiotherapy & order of levers with example of lever in human body

**Unit 8: Introduction to Pulleys** [6L]

Pulleys - system of pulleys, types and application

**Unit 9: Introduction to Elasticity** [4L]

Elasticity - Definition, stress, strain, HOOKE'S Law

**Unit 10: Basic concept of springs** [6L]

Springs - properties of springs, springs in series and parallel, elastic materials in use, Muscular system

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**Module II**

**Unit 11: Practical**

[20L]

1. Goniometry – measurement of joint ROM
2. Identify Muscle work of various movements in body at different angle.
3. Identify normal and abnormal posture.
4. Normal gait with its parameters and identify abnormal gait with the problems in it

**Suggested Readings:**

1. Joint Structure and Function- A Comprehensive Analysis, Norkins & Levenson – F.A Davis
2. Measurement of Joint Motion – A guide to Goniometry, Norkins & White - F. A Davis
3. Brunstrom's Clinical Kinesiology, Smith et al –F.A Davis
4. Basic Biomechanics explained, Low & Reed –Butterworth Heinmann
5. Kinesiology Applied to Pathological Motion, Soderberg Lippineou

Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (If applicable)	Remarks (If any)
Module I	Basic concept of	1	2	1	3		
Unit 1	Mechanics						
Module I	Introduction to	1	2	2	3		
Unit 2	Motion						
Module I	Introduction to	4	7	3	3		
Unit 3	Force						
Module I	Basic concept of	2	4	4	3		
Unit 4	Friction						
Module I	Basic concept of	4	6	5	3		
Unit 5	Gravity						
Module I	Basic concept of	6	10	6	3		
Unit 6	Equilibrium						
Module I	Introduction to	6	10	7	3		
Unit 7	Lever						
Module I	Introduction to	6	10	8	3		
Unit 8	Pulleys						
Module I	Introduction to	4	6	9	3		
Unit 9	Elasticity						
Module I	Basic concept of	6	10	10	3		
Unit 10	springs						
Module II	Practical	20	33	11	3		
Unit 11							