

# JHARKHAND RAI UNIVERSITY



## **Bachelor of Physiotherapy (BPT)**

### FIRST SEMESTER SYLLABUS

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## DEPARTMENT OF PHYSIOTHERAPY (BPT)

**Duration: Four years Six months**

**Academic Year: 2022 – 2026**

**Syllabus**

<b>COURSE SCHEME</b>											
<b>BATCH 2022-2026</b>											
<b>BACHELOR OF PHYSIOTHERAPY</b>											
<b>CHOICE BASED CREDIT SYSTEM</b>											
<b>SEMESTER I</b>											
<b>S.No</b>	<b>CODE</b>	<b>COURSE TITLE</b>	<b>Periods</b>			<b>Evaluation Scheme</b>				<b>Subject Total</b>	<b>Credit</b>
			<b>L</b>	<b>T</b>	<b>P</b>	<b>Assignment</b>	<b>TA</b>	<b>Total</b>	<b>ESE</b>		
1	23A101	ANATOMY- I	5	0	0	20	10	30	70	100	5
2	23A102	PHYSIOLOGY - I	5	0	0	20	10	30	70	100	5
3	23A103	PSYCHOLOGY	4	0	0	20	10	30	70	100	4
4	23A104	ENERGY & ENVIRONMENTAL SCIENCES	3	0	0	20	10	30	70	100	3
5	40BPT.104	COMMUNICATION SKILLS	2	0	0	20	10	30	70	100	0
<b>PRACTICAL/SESSIONAL</b>											
1	23A101P	ANATOMY - I	0	0	2			30	20	50	1
2	23A102P	PHYSIOLOGY - I	0	0	2			30	20	50	1
									<b>TOTAL</b>	<b>600</b>	<b>19</b>



**Program:** Bachelor of Physiotherapy (BPT)

**Semester:** First

**Course:** Anatomy - I

**Course Code:** 23A101

L	T	P	Credits
5	0	0	5

### **COURSE LEARNING OBJECTIVE:**

**CLO1:** To learn about basic anatomy of upper and lower limb.

**CLO2:** To gain knowledge about movement possible in each joint.

**CLO3:** To give impact knowledge, so that utilize same in future practice.

### **COURSE OUTCOME**

At the end of course, candidate will able to

**CO1:** The student should be able to identify & describe Anatomical aspects of muscle bones & joints, & to understand and analyze movements.

**CO2:** To understand the Anatomical basis of various clinical condition e.g.trauma, deformities, pertaining to limbs.

**CO3:** To be able to localize various surface land-marks.

**CO4:** To identify & describe the source & course of major arterial venous & lymphatic system, with special emphasis to extremities.

**CO5:** To be able to demonstrate the movements of various joints.

**CO6:** Distinguish major arteries, veins & Lymphatic's with special emphases to extremities.

**Unit 1 : General Anatomy:** Introduction to Anatomy, terms and terminology , Regions of Body, cavities and Systems outline , Cell Structure and function of cell organelles (Brief outline only) , Connective tissue & its modification, tendons, membranes, Special connective tissue, **Bone structure** - Structure, blood supply, growth, ossification, **Muscle:** Classification, structure **Nerve:** Structure, classification, Neurons.

**Unit 2: Joints:** Classification, structures of joints, movements, blood supply, nerve supply, applied anatomy, **Circulatory system:** major arteries and veins of the body, **Lymphoid system:** Circulation and function.

**Unit 3: Upper extremity 1:** Bony architecture, Joints – structure, range of movement, Muscles – origin, insertion, actions, nerve supply

**Unit 4: Upper extremity 2:** Major nerves – course, branches and implications of nerve injuries, Development of limb bones, muscles and anomalies, Radiographic identification of bone and joints.

**Unit 5: Lower Extremity 1:** Bony architecture, Joints – structure, range of movement, Muscles – origin, insertion, actions, nerve supply.

**Unit 6: Lower Extremity 2:** Major nerves – course, branches and implications of nerve injuries, Development of limb bones, muscles and anomalies, Radiographic identification of bone and joints.

**Suggested Readings:**

**Text Books:**

1. B.D. Chaurasia, *Human Anatomy- Volume 1, 2, 3*, CBS Publishers & Distributors.
2. Inderbir Singh, *Textbook of Anatomy with colour Atlas – Vol. 1, 2, 3*. Jaypee Brothers.

**Reference Books:**

1. Snell, Richard S, *Clinical Anatomy By Regions-*, Wolters Kluwer, New Delhi.
2. Cunningham *Manual of Practical Anatomy Vol. I, II, III*, Churchill Livingstone.

**Note: Latest editions of all the suggested books are recommended.**



**Program:** Bachelor of Physiotherapy (BPT)

**Semester:** First

**Course:** Physiology - I

**Course Code:** 23A102

L	T	P	Credits
5	0	0	5

**CLO1:** To acquire the knowledge of general physiology.

**CLO2:** To learn about blood, cardiorespiratory physiology.

**CLO3:** To contribution of each organ system in maintenance of Homeostasis.

### **COURSE OUTCOME**

At the end of course, candidate will able to

CO1: Able to identify structure and function of cell.

CO2: Have a knowledge of blood and its components and function.

CO3: Acquire the knowledge of cardiac and respiratory systems of human body.

CO4: Knowledge of ECG and Circulatory System.

**Unit 1: General Physiology:** Structure of cell membrane, Transport across cell membrane, Functional morphology of the cell, Intercellular communication, Homeostasis.

**Unit 2: Blood:** W.B.C., R.B.C., Platelets formation & functions, Plasma, Blood Groups, Haemostasis, Immunity, Plasma proteins and their functions.

**Unit 3: Cardiovascular System:** Dynamics of blood & lymph flow, Anatomical, biophysical consideration of arterial, arteriolar & capillary venous level, Lymphatic circulation, Origin and spread of cardiac excitation.

**Unit 4:** Basic idea of Electrocardiogram, Mechanical events of Cardiac cycle, Cardiac output, its regulation and factors determining it, Local & systemic regulatory mechanisms of CVS- humeral & neural, Cerebral, coronary, splanchnic, skin, Placental & Fetal circulation.

**Unit 5: Respiratory System:** Physiological anatomy of lungs, mechanics of respiration , Pulmonary circulation, Gas exchange in lungs , Oxygen & Carbon dioxide transport, Other function of respiratory system, Neural & chemical control of breathing, Regulation of respiratory activity, non-chemical influences on respiratory activity.

**Unit 6: Cardio respiratory adjustments in health & disease:** Exercise, high altitude, deep sea diving, Hypoxia, hypercapnia, hypocapnia, oxygen treatment, Asthma, emphysema, artificial respiration.

**Suggested Readings:**

**Text Books:**

1. Jain, A K, *Textbook of Physiology: Volume 1 & 2*, Avichal.
2. Sembulingam, K, *Essentials of Medical Physiology*, Jaypee New Delhi.

**Reference Books:**

1. Ghai, *Text book of Practical Physiology*, Jaypee, New Delhi.
2. Guyton Arthur, *Text book of Medical Physiology*, Mosby.

**Note: Latest editions of all the suggested books are recommended.**



**Program:** Bachelor of Physiotherapy (BPT)

**Semester:** First

**Course:** Psychology

**Course Code:** 23A103

L	T	P	Credits
4	0	0	4

### **COURSE LEARNING OBJECTIVE:**

**CLO1:** The primary purpose of this paper is to impart basic knowledge of Psychological maturation.

**CLO2:** To learn about Psychological Human Development & growth.

**CLO3:** To gain the knowledge and alterations during aging process and its importance in healthcare delivery system.

### **COURSE OUTCOME**

At the end of course, candidate will able to

CO1: Able to define the term psychology and its importance in the health delivery system and gain knowledge of psychological maturation during human development and growth and alteration during ageing process.

CO2: Understand the importance of psychological status of the person in the health and diseases, environmental and emotional influence on the mind and personality.

CO3: Acquire the knowledge as to how to deal with the patient. Reference should be made whenever appropriate to the therapist relationship with the patient and with his professional colleagues. Emphasis should be laid on the effects of disease on the patient's behavior.

**Unit 1: Introduction to Psychology Definition, Fields of application of Psychology in relation to following Schools Method and Branches / Schools:** Structuralism, functionalism, behaviorism, psychoanalysis, Methods: Introspection, observation, inventory and experimental method. Branches: General, child, social, abnormal, industrial, clinical, counseling, educational.

**Unit 2: Concepts of Psychology: Learning** – Definition, theories and principles of learning, Learning disabilities, laws of learning, type of learning: classical conditions, operant conditioning, insight observation and trial and error type. Effective ways to learn: Massed Vs. spaced, whole vs. part, Recitation vs reading, and serial Vs. International learning. **Emotions** - Theories of emotions and stress, Emotional and behavioral disorders of childhood and adolescence, Disorders of under and over controlled behavior, Eating disorders. **Democratic and Authoritarian Leadership:** Qualities of leadership, Define attitude & Change of attitude, Defense Mechanisms of the Ego.

**Unit 3: Health Psychology : Psychological reactions of a patient:** Psychological reactions of a patient during admission and treatment anxiety, shock denial, suspicion, questioning, loneliness, regression, shame, guilt, rejection, fear withdrawal, depression, egocentricity, concern about small matters, narrowed interests, emotional over reactions, perpetual changes, confusion disorientation,

hallucination, delusion, illusions anger, hostility, loss of hope. Reaction to loss: Reactions to loss, death and bereavement shock and disbelief.

**Unit 4: Communications and Counseling:** **Communications** type verbal, non-verbal, element in communication, barriers to good communication, developing, effective communication, specific communication techniques. **Counseling:** Definition, Aim differentiates from guidance, principles in counseling and personality qualities of counselors. Geriatric psychology: Specific psychological reactions and needs of geriatric patients. Pediatric psychology: Specific psychological reactions and needs of pediatric patients.

**Unit 5: Clinical Psychology: Mental Disorders:** Definition, sign & synapsing types of psychosomatic complications (Mental retardation, Autistic behavior, Learning disabilities.) **Psychosis:** schizophrenia, delusional disorders, acute and transient psychotic Disorders. **Affective disorders:** depression disorders, mania, bipolar affective disorders. **Anxiety disorders:** agoraphobia, panic disorder, generalized anxiety disorders.

**Unit 6: Miscellaneous:** Dissociative disorders, somatoform disorders, OCD .**Organic conditions:** Dementia, delirium, traumatic. **Special therapies:** Psychotherapy, Group therapy, Shock therapy.

### **Suggested Readings:**

#### **Text Books:**

1. Morgan, Clifford T, *Introduction to Psychology*, Mcgraw Hill.
2. Ahuja, Niraj, *A Short Textbook of Psychiatry*, Jaypee.

#### **Reference Books:**

1. S K Mangal, *General Psychology*, Sterling Publishers.

**Note: Latest editions of all the suggested books are recommended.**



**Program:** Bachelor of Physiotherapy (BPT)  
**Semester:** First  
**Course:** Energy & Environmental Sciences  
**Course Code:** 23A104

L	T	P	Credits
3	0	0	3

**COURSE LEARNING OBJECTIVE:**

**CLO1:** To learn about the basic principles of environmental sciences.

**CLO2:** To makes the students ready for the upcoming problems the planet earth is facing and going to face in future.

**CLO3:** At the end of the course the student will have basic knowledge on natural resources, pollution, ecosystem, biodiversity.

**COURSE OUTCOME:**

At the end of course, candidate will able to

CO1: Will be able to critically examine all sides of environmental issues. To opinions about how to interact with the environment on both a personal and a social level.

CO2: An Environmental Studies major will be able to recognize the physical, chemical, and biological components of the earth’s systems and show how they function.

CO3: To allow students to develop a better sense of not only individual organisms, but of the systems in which these organisms live. Students will also see how natural systems and human-designed systems work together, as well as in conflict with each other.

CO4: Able to do independent research on human interactions with the environment without destroying it.

**Unit 1: The Multidisciplinary nature of environmental studies:-**Definition, scope and importance, Need for public awareness. **Renewable and non-renewable resources:** Natural resources and associated problems. Forest resources: Use and over- exploitation, deforestation. **Water resources:** Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams – benefits and problems. **Mineral resources:** Use and exploitation, environmental effects of extracting and using mineral resources, case studies. **Food resources:** World food problems, fertilizer-pesticide problems, water logging, salinity, case studies. **Energy resources:** Growing energy needs, renewable and nonrenewable energy sources, use of alternate energy sources. Case studies. **Land resources:** Land as a resource, land degradation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

**Unit 2: Ecosystems** Concept of an ecosystem, Structure and function of an ecosystem. Procedures, consumers and decomposers. Energy flow in the ecosystem. Ecological succession. Food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of the following ecosystem:-Forest ecosystem, Grassland ecosystem, Desert ecosystem, Energy flow in the ecosystem, Aquatic ecosystem (ponds, streams, lakes, rivers, oceans, estuaries).



**Unit 3: Biodiversity and its conservation** Introduction- Definition: genetic, species and ecosystem diversity. Biogeographical classification of India. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. Biodiversity at global, national and local levels. India as a mega-diversity nation. Hot-spots of biodiversity. Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

**Unit 4: Environmental Pollution Definition, Causes, effects and control measures of:-**Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear hazards, Solid waste Management: Causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution. Pollution case studies. Disaster management: floods, earthquake, cyclone and landslides.

**Unit 5: Social Issues and the Environment** From unsustainable to sustainable development. Urban problems related to energy. Water conservation, rain water harvesting, watershed management. Resettlement and rehabilitation of people: its problems and concerns. Case studies. Environmental ethics; Issues and possible solutions. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies. Wasteland reclamation. Consumerism and waste products. Environment Protection Act. Air (Prevention and Control of Pollution) Act. Water (Prevention and control of Pollution) Act. Wildlife Protection Act. Forest Conservation Act. Issues involved in enforcement of environmental legislation, Public awareness.

**Unit 6: Human Population and the Environment** Population growth, variation among nations. Population explosion- Family Welfare Program, Environment and human health. Human rights. Value Education. HIV/AIDS .Women and Child welfare. Role of information technology in environment and human health. Case studies. Environmental assets river/forest/grassland/hill/mountain. Local polluted site- Urban/Rural/Industrial/Agricultural, Study of common plants, insects, birds. Study of simple ecosystems-pond, river, hill slopes, etc.

### **Suggested Readings:**

#### **Text Books:**

1. Agarwal, K.C.2001 *Environmental Biology*, Nidhi Publications Ltd. Bikaner
2. Clark R.S.*Marine Pollution*, Clarendon Press Oxford
3. Miller T G.Jr *Environmental Science*, Wadsworth Publishing Co

#### **Reference Books:**

1. Odum, EP.1971 *Fundamentals of Ecology*. W B Saunders Co.
2. Townsend C, Harper J and Michael Begon, *Essentials of ecology*, Blackwell Science.

**Note: Latest editions of all the suggested books are recommended**

**Program:** Bachelor of Physiotherapy (BPT)

**Semester:** First

**Course:** Communication Skills

**Course Code:** 40BPT.104

L	T	P	Credits
2	0	0	0

### Course Learning Objective:

**CLO1:** Identify common communication problems that may be holding learners back.

**CLO2:** Identify what their non-verbal messages are communicating to others.

**CLO3:** Understand role of communication in teaching-learning process.

**CLO4:** Learning to communicate through the digital media.

**CLO5:** Understand the importance of empathetic listening.

**CLO6:** Explore communication beyond language.

### Course Outcome:

By the end of this program participants should have a clear understanding of what good Communication skills are and what they can do to improve their abilities.

### Unit 1: Listening

- Techniques of effective listening
- Listening and comprehension
- Probing questions
- Barriers to listening

### Unit 2: Speaking

- Pronunciation
- Enunciation
- Vocabulary
- Fluency
- Common Errors

### Unit 3: Reading

- Techniques of effective reading
- Gathering ideas and information from a given text
  - i. Identify the main claim of the text
  - ii. Identify the purpose of the text
  - iii. Identify the context of the text



- iv. Identify the concepts mentioned
- Evaluating these ideas and information
  - i. Identify the arguments employed in the text
  - ii. Identify the theories employed or assumed in the text
- Interpret the text
  - i. To understand what a text says
  - ii. To understand what a text does
  - iii. To understand what a text means

#### **Unit 4: Writing and different modes of writing**

- Clearly state the claims
- Avoid ambiguity, vagueness, unwanted generalisations and over simplification of issues
- Provide background information
- Effectively argue the claim
- Provide evidence for the claims
- Use examples to explain concepts
- Follow convention
- Be properly sequenced
- Use proper signposting techniques
- Be well structured
  - i. Well-knit logical sequence
  - ii. Narrative sequence
  - iii. Category groupings
- Different modes of Writing -
  - i. E-mails
  - ii. Proposal writing for Higher Studies
  - iii. Recording the proceedings of meetings
  - iv. Any other mode of writing relevant for learners

#### **Unit 5: Digital Literacy**

- Role of Digital literacy in professional life
- Trends and opportunities in using digital technology in workplace
- Internet Basics
- Introduction to MS Office tools
  - i. Paint
  - ii. Office
  - iii. Excel
  - iv. Power point

**Unit 6: Effective use of Social Media**

- Introduction to social media websites
- Advantages of social media
- Ethics and etiquettes of social media
- How to use Google search better
- Effective ways of using Social Media
- Introduction to Digital Marketing

**Unit 7: Non-verbal communication**

- Meaning of non-verbal communication
- Introduction to modes of non-verbal communication
- Breaking the misbeliefs
- Open and Closed Body language
- Eye Contact and Facial Expression
- Hand Gestures
- Do's and Don'ts
- Learning from experts
- Activities-Based Learning

**Bibliography & Suggested Reading including audio video material:**

**Books**

- Sen Madhucchanda (2010), *An Introduction to Critical Thinking*, Pearson, Delhi
- Silvia P. J. (2007), *How to Read a Lot*, American Psychological Association, Washington DC



**Program:** Bachelor of Physiotherapy (BPT)

**Semester:** First

**Course:** Anatomy - I

**Course Code:** 23A101P

L	T	P	Credits
0	0	2	1

### **COURSE LEARNING OBJECTIVE**

**CLO1:** To gain Knowledge about surface anatomy.

**CLO2:** To learn about upper and lower limb anatomy.

**CLO3:** To makes student ready for future to practice as a qualified Physiotherapist.

### **COURSE OUTCOME**

At the end of course, candidate will able to

CO1: Students would have studied about the gross morphology, structure of skeletal, muscular and nervous system of the human body.

CO2: Students would able to identify the different types of bones in human body especially upper and lower limb.

CO3: Students would be able to identify the various tissues of different systems of human body.

CO4: Student will able to various aspects of joints of upper and lower limb.

CO5: To be able to identify various bony prominence and do surface marking in human body.

CO6: To be able to identify various abnormality and deformities of bone and joint.

CO7: To be able to identify various artery, vein and lymphatic system of human body especially of upper and lower limb.

- **Identification and description** of all anatomical structures.
- **Demonstration ways:** The learning of Anatomy is by demonstration only through dissected parts, slides, models, charts, etc.
- **Demonstration of dissected parts** (upper extremity, lower extremity).
- **Demonstration of skeleton**-articulated and disarticulated.
- During the training more emphasis will be given on the study of bones, muscles, joints, nerve supply of the limbs and arteries of limbs.

**Program:** Bachelor of Physiotherapy (BPT)  
**Semester:** First  
**Course:** Physiology - I  
**Course Code:** 23A102P

L	T	P	Credits
0	0	2	1

### **COURSE LEARNING OBJECTIVE**

**CLO1:** To provide exposure to students with physiological basis of Human body for efficient healthcare delivery system.

**CLO2:** To gain knowledge about microscope and blood.

**CLO3:** To makes student ready for future to practice as a qualified Physiotherapist.

### **COURSE OUTCOME**

At the end of course, candidate will able to

CO1: Student will able to identify parts of microscope and how to study slides under microscope.

CO2: Students would have studied about the gross morphology, structure and functions of cell.

CO3: They would have learnt various techniques like blood group determination, blood cells counting.

- Study of Microscope and its uses.
- Determination of RBC count
- Determination of WBC count.
- Differential leukocyte count
- Estimation of hemoglobin
- Calculation of blood indices