



**SRI MANAKULA VINAYAGAR**  
**ENGINEERING COLLEGE**  
(An Autonomous Institution)

Puducherry

**COLLEGE OF PHYSIOTHERAPY**

**BACHELOR OF PHYSIOTHERAPY**

**CURRICULUM AND SYLLABI**  
**(R-2021)**



## CURRICULUM STRUCTURE

### I (a). FIRST YEAR (1150 hrs)

#### Semester – I

| Sl. No.                          | Course Code | Course Name                     | Theory<br>(in hours) | Practical<br>(in hours) | Total<br>(in hours) |
|----------------------------------|-------------|---------------------------------|----------------------|-------------------------|---------------------|
| 1.                               | U21BPTT11   | Psychology (General and Health) | 130                  | -                       | 130                 |
| 2.                               | U21BPTT12   | Sociology                       | 130                  | -                       | 130                 |
| 3.                               | U21BPTT13   | Functional English              | 80                   | 20                      | 100                 |
| 4.                               | U21BPTT14   | Computer and its applications   | 40                   | 60                      | 100                 |
| <b>Non – Examination Courses</b> |             |                                 |                      |                         |                     |
| 5.                               | U21BPTT15   | Physiotherapy Orientation       | 50                   | -                       | 50                  |
| 6.                               | U21BPTP16   | Physical Education              | -                    | 40                      | 40                  |
| <b>Total Hours</b>               |             |                                 |                      |                         | <b>550</b>          |

#### Semester – II

| Sl. No.                         | Course Code | Course Name                     | Theory<br>(in hours) | Practical<br>(in hours) | Total<br>(in hours) |
|---------------------------------|-------------|---------------------------------|----------------------|-------------------------|---------------------|
| 1.                              | U21BPTT21   | Anatomy (Systemic and Regional) | 150                  | 50                      | 200                 |
| 2.                              | U21BPTT22   | Physiology                      | 150                  | 30                      | 180                 |
| 3.                              | U21BPTT23   | Nutrition                       | 100                  | -                       | 100                 |
| 4.                              | U21BPTT24   | Environmental Studies           | 100                  | -                       | 100                 |
| <b>Non – Examination Course</b> |             |                                 |                      |                         |                     |
| 5.                              | U21BPTP25   | Physical Education              | -                    | 20                      | 20                  |
| <b>Total Hours</b>              |             |                                 |                      |                         | <b>600</b>          |

**I (b).SECOND YEAR (1200 hrs)****Semester – III**

| Sl. No.                          | Course Code | Course Name                              | Theory (in hours) | Practical (in hours) | Total (in hours) |
|----------------------------------|-------------|--|-------------------|----------------------|------------------|
| 1.                               | U21BPTT31   | General Medicine, Pediatrics and Surgery | 180               | -                    | 180              |
| 2.                               | U21BPTT32   | Microbiology and Pathology               | 100               | -                    | 100              |
| 3.                               | U21BPTT33   | Biochemistry and Pharmacology            | 100               | -                    | 100              |
| 4.                               | U21BPTB34   | Soft tissue manipulation                 | 40                | 60                   | 100              |
| <b>Non – Examination Courses</b> |             |  |                   |                      |                  |
| 5.                               | U21BPTT35   | Therapeutic Yoga                         | 10                | 30                   | 40               |
| 6.                               | U21BPTT36   | Physiotherapy ethics                     | 20                | -                    | 20               |
| 7.                               | U21BPTP37   | Physical Education                       | -                 | 10                   | 10               |
| 8.                               | U21BPTP38   | Clinical Training                        | -                 | 50                   | 50               |
| <b>Total Hours</b>               |             |  |                   |                      | <b>600</b>       |

**Semester – IV**

| Sl. No.                          | Course Code | Course Name                     | Theory (in hours) | Practical (in hours) | Total (in hours) |
|----------------------------------|-------------|---------------------------------|-------------------|----------------------|------------------|
| 1.                               | U21BPTB41   | Exercise Therapy – I            | 100               | 95                   | 195              |
| 2.                               | U21BPTB42   | Electrotherapy – I              | 100               | 95                   | 195              |
| 3.                               | U21BPTT43   | Biomechanics and Kinesiology    | 100               | -                    | 100              |
| <b>Non – Examination Courses</b> |             |                                 |                   |                      |                  |
| 4.                               | U21BPTT44   | Basic physics for Physiotherapy | 40                | -                    | 40               |
| 5.                               | U21BPTP45   | Physical Education              | -                 | 20                   | 20               |
| 6.                               | U21BPTP46   | Clinical Training               | -                 | 50                   | 50               |
| <b>Total Hours</b>               |             |                                 |                   |                      | <b>600</b>       |

**I (c).THIRD YEAR (1200 hours)****Semester – V**

| Sl. No.                          | Course Code | Course Name                           | Theory (in hours) | Practical (in hours) | Total (in hours) |
|----------------------------------|-------------|---------------------------------------|-------------------|----------------------|------------------|
| 1.                               | U21BPTB51   | Exercise Therapy – II                 | 80                | 100                  | 180              |
| 2.                               | U21BPTB52   | Electrotherapy - II                   | 80                | 100                  | 180              |
| 3.                               | U21BPTT53   | Community Health and Rehabilitation   | 60                | -                    | 60               |
| <b>Non – Examination Courses</b> |             |                                       |                   |                      |                  |
| 4.                               | U21BPTP54   | Physical Education                    | -                 | 20                   | 20               |
| 5.                               | U21BPTP55   | Clinical training                     | -                 | 60                   | 60               |
| 6.                               | U21BPTP56   | Community Health Training/ Field work | -                 | 100                  | 100              |
| <b>Total Hours</b>               |             |                                       |                   |                      | <b>600</b>       |

**Semester – VI**

| Sl. No.                          | Course Code | Course Name                        | Theory (in hours) | Practical (in hours) | Total (in hours) |
|----------------------------------|-------------|------------------------------------|-------------------|----------------------|------------------|
| 1.                               | U21BPTT61   | Clinical Orthopedics               | 100               | -                    | 100              |
| 2.                               | U21BPTT62   | Clinical Neurology                 | 100               | -                    | 100              |
| 3.                               | U21BPTT63   | Clinical Cardio- Thoracic Medicine | 100               | -                    | 100              |
| <b>Non – Examination Courses</b> |             |                                    |                   |                      |                  |
| 4.                               | U21BPTT64   | Clinical Obstetrics and Gynecology | 30                | -                    | 30               |
| 5.                               | U21BPTT65   | Radiodiagnosis for Physiotherapist | 10                | 20                   | 30               |
| 6.                               | U21BPTP66   | Physical Education                 | -                 | 20                   | 20               |
| 7.                               | U21BPTP67   | Co-curricular activities           | -                 | 20                   | 20               |
| 8.                               | U21BPTP68   | Clinical Training                  | -                 | 200                  | 200              |
| <b>Total Hours</b>               |             |                                    |                   |                      | <b>600</b>       |

**I (d) FOURTH YEAR (1200 hrs)****Semester – VII**

| <b>Sl. No.</b>                   | <b>Course Code</b> | <b>Course Name</b>                             | <b>Theory<br/>(in hours)</b> | <b>Practical<br/>(in hours)</b> | <b>Total<br/>(in hours)</b> |
|----------------------------------|--------------------|--|------------------------------|---------------------------------|-----------------------------|
| 1.                               | U21BPTB71          | Physiotherapy in Orthopedic conditions         | 60                           | 60                              | 120                         |
| 2.                               | U21BPTB72          | Physiotherapy in Neurology conditions          | 60                           | 60                              | 120                         |
| 3.                               | U21BPTB73          | Physiotherapy in Cardio-respiratory conditions | 60                           | 60                              | 120                         |
| <b>Non – Examination Courses</b> |                    |  |                              |                                 |                             |
| 4.                               | U21BPTT74          | Research Methodology and Bio-statistics        | 30                           | -                               | 30                          |
| 5.                               | U21BPTP75          | Co-curricular activities                       | -                            | 10                              | 10                          |
| 6.                               | U21BPTP76          | Clinical Training                              | -                            | 200                             | 200                         |
| <b>Total Hours</b>               |                    |  |                              |                                 | <b>600</b>                  |

**Semester – VIII**

| <b>Sl. No.</b>                   | <b>Course Code</b> | <b>Course Name</b>                                | <b>Theory<br/>(in hours)</b> | <b>Practical<br/>(in hours)</b> | <b>Total<br/>(in hours)</b> |
|----------------------------------|--------------------|---|------------------------------|---------------------------------|-----------------------------|
| 1.                               | U21BPTT81          | Rehabilitation Medicine (Community and Geriatric) | 90                           | 30                              | 120                         |
| 2.                               | U21BPTT82          | Sports Physiotherapy                              | 60                           | 20                              | 80                          |
| 3.                               | U21BPTP83          | Project work                                      | -                            | 200                             | 200                         |
| <b>Non – Examination Courses</b> |                    |   |                              |                                 |                             |
| 4.                               | U21BPTT84          | Physiotherapy in Obstetrics and Gynecology        | 20                           | 20                              | 40                          |
| 5.                               | U21BPTT85          | Clinical reasoning and evidence based practice    | 20                           | 10                              | 30                          |
| 6.                               | U21BPTT86          | Principles of Management                          | 20                           | -                               | 20                          |
| 7.                               | U21BPTT87          | Education Technology                              | 20                           | 10                              | 30                          |
| 8.                               | U21BPTP88          | Clinical Training                                 | -                            | 80                              | 80                          |
| <b>Total Hours</b>               |                    |   |                              |                                 | <b>600</b>                  |

## COMPULSORY ROTATORY INTERNSHIP

The candidates should undergo compulsory rotatory internship training in the following departments/specialties\* of Physiotherapy for the duration prescribed against each.

|     |  |                 |
|-----|--|-----------------|
| 1.  | Orthopaedics   | - 20 days       |
| 2.  | Neurology & Neurosurgery                                 | - 20 days       |
| 3.  | Cardiology   | - 20 days       |
| 4.  | Physiotherapy & Rehabilitation                           | - 15 days       |
| 5.  | Critical care units                                      | - 15 days       |
| 6.  | General Medicine   | - 15 days       |
| 7.  | General & Plastic Surgery                                | - 15 days       |
| 8.  | Obstetrics & Gynaecology                                 | - 15 days       |
| 9.  | Paediatrics & Paediatric surgery                         | - 15 days       |
| 10. | Community Physiotherapy                                  | - 15 days       |
| 11. | Elective (any one of the above, or Sports Physiotherapy) | - 15 days       |
|     | <b>Total</b>   | <b>180 days</b> |

\*The above listed departments are not limited and it can be extended to any other advanced facilities available, which has to be decided by Dean, COPT.

**Syllabi**  
**(Semesters - I and II)**

## PSYCHOLOGY (GENERAL AND HEALTH)

**Course Code:** U21BPTT11

**Instruction hours:** Theory – 130 hours

**Course description:** The course is designed to assist the students to acquire knowledge of fundamentals of psychology and develop an insight into behaviour of self and others. Further it is aimed at helping them to practice the principles of understanding the mental status and behaviour of patients in clinical settings.

**General Psychology – 80 hours**

**Health Psychology – 50 hours**

### GENERAL PSYCHOLOGY [80 hours]

| Unit | Hrs (T) | Content  | Teaching method    |
|------|---------|--|--------------------|
| I    | 4       | INTRODUCTION<br>Definition<br>Schools of Psychology<br>Methods of Psychology<br>Branches of Psychology   | Lecture Discussion |
| II   | 6       | HEREDITY AND ENVIRONMENT<br>Twins<br>Importance of heredity and environment<br>Role in relation to physical characteristics<br>Intelligence and personality<br>Nature-nature controversy   | Lecture Discussion |
| III  | 8       | DEVELOPMENT AND GROWTH BEHAVIOUR<br>Infancy, Childhood,<br>Adolescence,<br>Adulthood, Middle<br>age, Old age.  | Lecture Discussion |
| IV   | 6       | INTELLIGENCE<br>Definitions of Intelligence Quotient, Mental Age,<br>List of various intelligence tests – WAIS, WISC,<br>Bhatia's performance test, Raven's Progressive Matrices<br>test.  | Lecture Discussion |
| V    | 6       | MOTIVATION<br>Definitions of motive,<br>drive, incentive and reinforcement,<br>Basic information about primary needs: Hunger, Thirst,<br>Sleep, Elimination activity, Air, Avoidance of pain,<br>Attitude to sex.<br>Psychological needs                       | Lecture Discussion |
| VI   | 6       | EMOTIONS<br>Definition, differentiate from feelings, physiological<br>changes of emotion, role of RAS, hypothalamus, cerebral<br>cortex, sympathetic nervous system, adrenal gland,<br>heredity and emotion, Nature and control of anger, fear<br>and anxiety. | Lecture Discussion |



| Unit | Hrs (T) | Content   | Teaching method    |
|------|---------|---|--------------------|
| VII  | 10      | <p><b>PERSONALITY</b><br/> Definition<br/> List of components: Physical characteristics, character, abilities, temperament interest, attitudes.</p> <p>Role of heredity, nervous system, physical characteristics, abilities, family and culture on personality development.</p> <p>Basic concepts of Freud: Unconscious, conscious, Id, Ego and Superego.</p> <p>List and the define 8 stages as proposed by Erickson<br/> Concepts of learning as proposed by Dollard and Miller; drive, cue, response and reinforcement.<br/> Personality assessment<br/> Projective tests</p> | Lecture Discussion |
| VIII | 6       | <p><b>LEARNING</b><br/> Definition<br/> Types of learning<br/> Effective ways to learn<br/> Role of language in learning</p>  | Lecture Discussion |
| IX   | 4       | <p><b>THINKING</b><br/> Definition &amp; creativity<br/> Creativity: Steps, traits<br/> Delusions</p>   | Lecture Discussion |
| X    | 4       | <p><b>FRUSTRATION</b><br/> Definition, sources and solution.<br/> Conflicts</p>   | Lecture Discussion |
| XI   | 8       | <p><b>SENSATION, ATTENTION &amp; PERCEPTION</b><br/> Senses: various senses and their functions<br/> Attention: Definition, factors determining attention<br/> Perception: Definition, principles.<br/> Illusion &amp; hallucination: types</p>   | Lecture Discussion |
| XII  | 4       | <p><b>LEADERSHIP</b><br/> Qualities and types of leadership<br/> Attitude and its changes</p>   | Lecture Discussion |
| XIII | 4       | <p><b>DEFENCE MACHANISMS</b><br/> Defence Mechanisms of the ego<br/> List of various defence mechanisms</p>   | Lecture Discussion |
| XIV  | 4       | <p><b>COMMUNITY PSYCHOLOGY</b><br/> Social psychology<br/> Community Psychology</p>   | Lecture Discussion |

## HEALTH PSYCHOLOGY [50 hours]

| Unit | Hrs (T) | Content  | Teaching method    |
|------|---------|--|--------------------|
| I    | 4       | PSYCHOLOGICAL REACTIONS OF A PATIENT<br>Various Psychological reactions of a patient during admission in hospital and treatment.   | Lecture Discussion |
| II   | 4       | REACTIONS TO LOSS<br>Reactions to loss, death and bereavement<br>Stages of acceptance  | Lecture Discussion |
| III  | 6       | STRESS<br>Physiological and psychological changes during stress<br>Relations to health and sickness<br>Relaxation methods  | Lecture Discussion |
| IV   | 8       | COMMUNICATIONS<br>Types of communication<br>Elements in communications,<br>Barriers to good communications<br>Developing effective communication, specific communication techniques  | Lecture Discussion |
| V    | 6       | COUNSELLING<br>Definition and aims<br>Guidance and counselling<br>Principles in counseling<br>Personality of counsellors   | Lecture Discussion |
| VI   | 4       | COMPLIANCE<br>Nature of compliance<br>Factors contributing to non-compliance<br>Means to improve compliance  | Lecture Discussion |
| VII  | 8       | EMOTIONAL NEEDS<br>Emotional needs and psychological factors in relation to unconscious patients, handicapped persons, bed-ridden patients, patients with chronic patients, cerebral palsy children, burns, leprosy, Parkinson's disease, incontinence and mental illness. | Lecture Discussion |
| VIII | 10      | MISCELLANEOUS<br>Geriatric psychology<br>Paediatric psychology<br>Behaviour modification in patients<br>Personality styles of patients<br>Substance abuse  | Lecture Discussion |

### Recommended text books:

1. Ramalingam & Bid (2009). Psychology for Physiotherapists. Jaypee Brothers, New Delhi.
2. General Psychology by S.K. Mangal
3. Atkinson (1996). Dictionary of Psychology.

## SOCIOLOGY

**Course Code:** U21BPTT12

**Instruction hours:** Theory – 130 hours

**Course description:** The course is designed to introduce the basics of sociological concepts, principles and social process, social institutions in relation to individual, family and community in India and its relationship with health, illness and handicap.

| Unit | Hrs (T) | Content  | Teaching method    |
|------|---------|--|--------------------|
| I    | 6       | INTRODUCTION<br>Definition<br>Sociology – a science of society<br>Application of sociology in physiotherapy  | Lecture Discussion |
| II   | 14      | SOCIOLOGY AND HEALTH<br>Social factors affecting health status<br>Social consciousness and meaning of illness<br>Perception of illness<br>Decision making in taking treatment<br>Institutions of health and their role in the improvement of health of the people  | Lecture Discussion |
| III  | 10      | SOCIALISATION<br>Meaning of socialisation<br>Influence of social factors on personality<br>Socialisation in hospitals<br>Socialisation in rehabilitation of patients   | Lecture Discussion |
| IV   | 10      | SOCIAL GROUPS<br>Concept of social group<br><br>Influence of formal and informal groups on health on health and sickness<br><br>Role of primary and secondary groups in the hospital and rehabilitation settings.  | Lecture Discussion |
| V    | 16      | FAMILY & COMMUNITY<br>Influence of family on human personality Changes in the functions of a family<br><br>Influence of the family on the individual's health, family and nutrition<br><br>Effects of sickness on family, family and psychosomatic disease<br>Concept of community<br><br>Role of rural and urban communities in public health<br>Role of community in determining beliefs, practices and home remedies in treatment | Lecture Discussion |

| Unit | Hrs (T) | Content  | Teaching method    |
|------|---------|--|--------------------|
| VI   | 10      | <p><b>CULTURE &amp; CASTE SYSTEM</b><br/>Components of culture</p> <p>Impact of culture on human behaviour<br/>Cultural meaning &amp; response of sickness, Choice of treatment</p> <p>Culture induced symptoms and disease Sub-culture of medical workers</p> <p>Caste system: Features of modern caste system &amp; its trends</p> | Lecture Discussion |
| VII  | 14      | <p><b>SOCIAL CHANGE</b><br/>Meaning of social change</p> <p>Factors of social change on human adaption, stress, deviance and health programmes</p> <p>Role of social planning in the improvement of health and rehabilitation.</p>   | Lecture Discussion |
| VIII | 12      | <p><b>SOCIAL CONTROL</b><br/>Meaning of social control, Role of norms<br/>Folkways, customs, morals, religion, law and other means of social control in the regulation of human behaviour.<br/>Social deviance and disease.</p>  | Lecture discussion |
| IX   | 12      | <p><b>SOCIAL PROBLEMS OF THE DISABLED</b><br/>Consequences of the following social problems in relation to sickness and disability.</p> <p>Remedies to prevent the following problems: Population explosion, poverty and employment, beggary, juvenile delinquency, prostitution, alcoholism, problems of women in employment.</p>   | Lecture Discussion |
| X    | 16      | <p><b>SOCIAL SECURITY</b><br/>Social security and social legislation in relation to the disabled.</p>  | Lecture Discussion |
| XI   | 10      | <p><b>SOCIAL WORKER</b><br/>Role of a medical social worker</p>  | Lecture Discussion |

**Recommended Books:**

1. Bid D. (2006). Sociology for Physiotherapists. Jaypee Brothers, New Delhi.
2. Sachdeva and Vidyabushan: Introduction to the study of Sociology.
3. K. Parks Textbook of Preventive & Social Medicine.
4. Textbook of Preventive & Social Medicine – P.K. Mahajan & M.C.Gupta

## FUNCTIONAL ENGLISH

**Course Code:** U21BPTT13

**Instruction hours:** Theory – 80 hours  
Practical – 20 hours

**Course description:** The course is designed to enable to enhance ability to comprehend spoken and written English (and use English) required for effective communication in their professional work. Students will practice their skills in verbal and written English during clinical and classroom experiences.

| Unit | Hrs<br>(T+P) | Content   | Teaching method   |
|------|--------------|---|---|
| I    | 10+3         | INTRODUCTION<br>Study techniques<br>Logical processes of analysis and synthesis<br>Use of dictionary<br>Effective diction   | Lecture,<br>Demonstration &<br>Exercises to<br>students         |
| II   | 15+3         | APPLIED GRAMMAR<br>Review of grammar & correct usage<br>Building vocabulary<br>Structure of sentences & paragraphs<br>Phonetics<br>Public speaking                          | Lecture,<br>Demonstration,<br>Conversation &<br>Public speaking |
| III  | 15+5         | FORMS OF COMPOSITION<br>Letter writing<br>Note taking<br>Précis writing<br>Essay writing<br>Anecdotal records<br>Diary writing<br>Reports<br>Resume / Curriculum vitae etc. | Demonstration &<br>Exercises to<br>students                     |
| IV   | 15+3         | COMMUNICATION<br>Oral report<br>Discussion<br>Lecture / seminar<br>Debate<br>Summary<br>Telephonic conversation   | Demonstration &<br>Exercises to<br>students                     |
| V    | 10+3         | READING COMPREHENSION<br>Selected materials, articles, magazines, journals etc.   | Demonstration &<br>Exercises to<br>students                     |
| VI   | 15+3         | LISTENING COMPREHENSION<br>Media, Audio, Video, Speeches etc.   | Demonstration &<br>Exercises to<br>students                     |

**Recommended Books:**

1. Communicative English for Engineers and Professionals. Author, Nitin Bhatnagar
2. English for physiotherapy , Joanna Ciecierska

## COMPUTER AND ITS APPLICATIONS

**Instruction hours:** Theory – 40 hours  
Practical – 60 hours

**Course Code:** U21BPTT14

**Course description:** This course is designed for students to develop basic knowledge of fundamentals of computer and its application in Physiotherapy.

| Unit | Hrs<br>(T+P) | Content   | Teaching method                                     |
|------|--------------|---|---|
| I    | 4+0          | INTRODUCTION TO COMPUTERS<br>Concepts & features of computer<br>Application areas of computers in health services<br>Hardware and software  | Lecture   |
| II   | 8+15         | HARDWARE<br>Architecture of computers<br>Types of storage devices<br>Characteristics of disks, terminals, printers, network etc.<br>Disk operating system: DOS, Windows<br>Applications of networking concepts  | Lecture Discussion<br>Demonstration &<br>Practicals |
| III  | 8+15         | SOFTWARE<br>Classification of software<br>Application of software<br>Operating system, computer system<br>Computer virus: Precautions & dealing   | Lecture<br>Demonstration<br>& Practical             |
| IV   | 10+20        | PROGRAMMES<br>MS – Word<br>MS – Excel with pictorial presentations<br>MS – Access<br>MS – PowerPoint  | Lecture<br>Demonstration &<br>Practicals            |
| V    | 10+10        | COMPUTER APPLICATIONS<br>Multimedia: Types & uses<br>Computer aided teaching & testing<br>Use of internet: web pages & e-mail<br>Principles in scientific research: Work processing,<br>Health care systems, libraries, education,<br>information system<br>Application in Physiotherapy: E.M.G., Biofeedback,<br>Exercise testing equipments, Spirometry, etc. | Visit,<br>Demonstration &<br>Practicals             |

### Recommended Books:

1. Basic Computer Knowledge Fundamental of Computer system- Reema Thareja
2. Basic Computer Knowledge - Maluth John Monyjok
3. A New Approach to Basic Computer Education - D. P. Nagpal

## PHYSIOTHERAPY ORIENTATION

**Course Code:** U21BPTT15

**Instruction hours:** Theory – 50 hours

**Course description:** The course is designed to help the students to develop an understanding of the philosophy, objectives and process of physiotherapy in various clinical settings. It is aimed at helping the students to acquire knowledge, understanding and skills in physiotherapy techniques in clinical settings.

| Unit | Hrs<br>(T) | Content  | Teaching method                                 |
|------|------------|--|---|
| I    | 5          | INTRODUCTION TO HEALTH<br>Health and Health care delivery system   | Lecture   |
| II   | 10         | INTRODUCTION TO HEALTH SCIENCE<br>Overview of Health Science, Health Professions & their specialties   | Lecture   |
| III  | 10         | PHYSIOTHERAPY PROFESSION<br>History of Medical Therapeutics<br>History of Physiotherapy<br>Overview of impairment, disability, handicap<br>Health – levels of prevention & Rehabilitation<br>Physiotherapy in medical rehabilitation | Lecture,<br>Demonstration                       |
| IV   | 10         | PHYSIOTHERAPY IN MEETING HEALTH CARE NEEDS OF INDIA<br>Needs versus demands<br>Need for physiotherapy<br>Scope of the profession<br>Role of Physiotherapist in health care delivery system and prevention of disability              | Lecture,<br>Demonstration,<br>Group discussions |
| V    | 15         | PHYSIOTHERAPEUTIC METHODS<br>Physical agents in therapy<br>Exercise therapy<br>Electrotherapy<br>Specialties in physiotherapy<br>Areas of physiotherapy services & training  | Lecture<br>Demonstration &<br>Visit             |

## PHYSICAL EDUCATION

**Course Code:** U21BPTT16

**Instruction hours:** – 40 hours Practical

**Course description:** The purpose of the course is to acquire knowledge and understand various components in physical fitness and training methods.

| Unit | Hrs (P) | Content  | Teaching method                     |
|------|---------|--|-------------------------------------|
| I    | 5       | INTRODUCTION<br>Physical fitness   | Lecture Discussion                  |
| II   | 15      | TRAINING METHODS<br>Definition<br>Motor component<br>Warming up<br>Conditioning<br>Cool down   | Lecture Discussion & Demonstration. |
| III  | 20      | PHYSICAL FITNESS & TRAINING<br>Physical Fitness and Training of Motor components:<br>Strength<br>Speed<br>Endurance<br>Mobility<br>Co-ordination | Lecture Discussion & Demonstration. |



## ANATOMY (SYSTEMIC AND REGIONAL)

**Course code:** U21BPTT21

**Instruction hours:** Theory –150hours  
Practical –50 hours

**Course description:** The course is designed to enable the students to acquire knowledge of normal structure of various human body systems particularly on musculoskeletal, nervous and cardio-pulmonary systems and understand their application in the practice of physiotherapy.

### I - SYSTEMIC ANATOMY [70 HOURS]

| Unit | Hrs<br>(T+P) | Content  | Teaching<br>method       |
|------|--------------|--|--------------------------|
| I    | 6+0          | INTRODUCTION TO ANATOMICAL TERMS<br>Definitions, subdivisions, systems of the body<br><br>Cell: Structure, composition, function, cell division<br>Tissues: Definition, types, characteristics, classification, location, functions.<br>Genes and chromosomes. | Lecture<br>Demonstration |
| II   | 8+0          | CARDIO VASCULAR SYSTEM<br>Structure of heart, blood vessels<br>Blood and nervous supply of the heart<br>Major blood vessels  | Lecture<br>Demonstration |
| III  | 2+0          | LYMPHATIC SYSTEM<br>Structure of Lymphatic organs and vessels<br>Functional roles  | Lecture<br>Demonstration |
| IV   | 8+0          | RESPIRATORY SYSTEM<br>Structure of the organs of the respiratory system<br><br>Muscles of respiration, tracheobronchial tree, bronchopulmonary segments  | Lecture<br>Demonstration |
| V    | 5+0          | DIGESTIVE SYSTEM<br>Structure of the alimentary tract and organs of digestive system<br>Anatomy of the liver and pancreas  | Lecture<br>Demonstration |
| VI   | 3+0          | GENITO-URINARY SYSTEM<br>Structure of the organs of the genito-urinary system  | Lecture<br>Demonstration |
| VII  | 3+0          | ENDOCRINE SYSTEM<br>Structure of endocrine glands  | Lecture<br>Demonstration |
| VIII | 20+0         | NERVOUS SYSTEM<br>Division of the nervous system and their organs<br>Structure and functions of nerve cell<br><br>Structure of brain, spinal cord and peripheral nerves (in detail)<br>Structure & location of autonomic nervous system                        | Lecture<br>Demonstration |

| Unit | Hrs (T+P) | Content  | Teaching method                         |
|------|-----------|--|---|
| IX   | 5+0       | <b>OSTEOLOGY</b><br>Definition and types of skeletal system<br>Classification of bones<br>Ossification: definition, types and process  | Lecture<br>Discussion,<br>Demonstration |
| X    | 5+0       | <b>ARTHROLOGY</b><br>Definition and classification of joint<br>Functions of joints: mobility & stability   | Lecture<br>Discussion,<br>Demonstration |
| XI   | 5+0       | <b>MYOLOGY</b><br>Structure and types of muscles<br><br>Skeletal muscles: classification, forms & groups<br>Position, origin, insertion, nerve supply and action of skeletal muscles | Lecture<br>Discussion,<br>Demonstration |

## II - REGIONAL ANATOMY [Theory-80 Hours, Practical-50 Hours]

| Unit | Hrs (T+P) | Content   | Teaching method                       |
|------|-----------|---|---------------------------------------|
| XII  | 25+15     | <b>UPPER EXTREMITY</b><br>Osteology, arthrology, myology of the following:<br>Pectoral region<br>Scapular region<br>Axilla<br>Shoulder girdle and arm<br>Elbow and forearm<br>Wrist and hand<br>Nerves of upper limb<br>Blood vessels of upper limb | Lecture<br>Demonstration & Practicals |
| XIII | 25+15     | <b>LOWER EXTREMITY</b><br>Osteology, arthrology, myology of the following:<br>Pelvic & gluteal region<br>Hip & thigh region<br>Knee & leg<br>Ankle & foot<br>Nerves & Blood vessels of lower limb   | Lecture<br>Demonstration & Practicals |
| XIV  | 15+10     | <b>TRUNK</b><br>Osteology, Arthrology, myology and their relations of:<br>Vertebral Column<br>Thoracic cage<br>Abdomen<br>Pelvis  | Lecture<br>Demonstration & Practicals |
| XV   | 15+10     | <b>HEAD &amp; NECK</b><br>Musculoskeletal and neurovascular features of neck and cranium<br><br>Cranial nerves  | Lecture<br>Demonstration & Practicals |

## **PRACTICALS AND DEMONSTRATION:**

1. Upper extremity including surface Anatomy. Demonstration of the muscles of the upper extremity, movements in joints, identification of body prominences on inspection and by palpation, points of palpation of nerves and arteries. Identification of the bones of the upper extremity, side determination, parts, attachment of the muscles, nerves and vessels relation to bone.
2. Lower extremity including surface Anatomy. Demonstration of the muscles of the lower extremity, movements in joints, identification of body prominences on inspection and by palpation, points of palpation of nerves and arteries. Identification of the bones of the lower extremity, side determination, parts, attachment of the muscles and relation of nerves and vessels to bone.
3. Demonstration of the Head & Neck and Spinal cord & Brain including surface Anatomy.
4. Demonstration of the muscles of the back, pelvic girdle, pre and para vertebral muscles, movements in joints, identification of body prominences on inspection and by palpation.
5. Identification of the bones of the vertebral column (cervical, thoracic, lumbar, sacral and coccygeal) parts, attachment of the muscles and relation of nerves and vessels to bone.
6. Surface Markings of Various Organs and Bony Prominences
7. Radiographic Identification of Bone and Joints

## **Recommended Text books:**

1. SNELL [ Richard S], Clinical Anatomy for Medical students: Ed. 5. Little Brown and Company Boston.
2. B.D Chaurasia's Human Anatomy – Regional and Applied; Volume I, Volume II and Volume III.
3. SINGH [Inderbir], Human Osteology. JP Brothers, New Delhi 1990.
4. SINGH [Inderbir], Text book of Anatomy with colour atlas: Vol I, II, III.
5. SINGH [Inderbir], Essentials of Anatomy JP Brothers, New Delhi
6. Anatomy and Physiology - Dr. Minakshi Pathak
7. The carnial Nerves Anatomy, Pathology, Pathophysiology Diagnosis Treatment- M. Samii, P.J Jannetla
8. Anatomy by Vishram Singh

## **Recommended Text books for Practical:**

1. ROMANES [ G J], Cunningham manual of practical anatomy: Vol I, II, III

## **Reference Books:**

1. PODAR - Handbook of Osteology: Ed. 11 Scientific book co.
2. Gray's Anatomy
3. McMinn – McMinn's color atlas of Human Anatomy.

## PHYSIOLOGY

**Course Code:** U21BPTT22

**Instruction hours:** Theory – 150 hours  
Practical –30 hours

**Course description:** The course is designed to assist the students to acquire knowledge of normal physiology of various human body systems and understand the alterations in physiology in diseases for physiotherapy practice.

| Unit | Hrs (T+P) | Content   | Teaching method                                |
|------|-----------|---|--|
| I    | 10+0      | CELL PHYSIOLOGY<br>Cell: Structure & functions of components<br>Functions of membranes & glands   | Lecture  |
| II   | 15+6      | CIRCULATORY SYSTEM<br>Blood: Component and their functions, blood groups, coagulation, blood volume and its regulation<br><br>Functions and regulations of the heart, cardiac cycle, cardiac output, E.C.G., heart sounds.<br><br>Blood pressure: Maintenance and regulation. Effects of exercises on postural changes. | Lecture Discussion, Demonstration & Practicals |
| III  | 20+6      | RESPIRATORY SYSTEM<br>Functions of the respiratory organs<br><br>Physiology of respiration<br>Pulmonary ventilation, volume<br>Mechanics of respiration<br><br>Gaseous exchange in lungs<br>Regulation of respiration<br>Effects of exercises on respiration  | Lecture Discussion, Demonstration & Practicals |
| IV   | 10+0      | DIGESTIVE SYSTEM<br>Functions of organs of digestive tract<br>Movements of the alimentary tract<br>Digestion in mouth, stomach, intestines<br>Absorption of food<br>Metabolism of carbohydrates, proteins and fat   | Lecture Discussion, Demonstration              |
| V    | 10+0      | EXCRETORY SYSTEM<br>Functions of organs of excretory tract<br>Composition of urine<br><br>Mechanism of urine formation & Micturition<br>Functions of skin   | Lecture Discussion, Demonstration              |
| VI   | 10+0      | ENDOCRINE SYSTEM<br>Functions of the various endocrine glands<br>Endocrine Hormones: Functions and their abnormalities.   | Lecture Discussion, Demonstration              |

| Unit | Hrs (T+P) | Content  | Teaching method                                |
|------|-----------|--|--|
| VII  | 10+0      | <b>REPRODUCTIVE SYSTEM</b><br>Functions of male reproductive system<br>Functions of female reproductive system<br>Outline of pregnancy, parturition, lactation<br>Contraceptive measures<br>Physiology of foetal growth  | Lecture Discussion, Demonstration              |
| VIII | 20+6      | <b>NERVOUS SYSTEM</b><br>Properties and functions of Neuron<br>Mechanism of Stimulus and nerve impulse<br>Functions of brain, spinal cord, cranial and spinal nerves.<br>Synaptic transmission, reflexes, control of postures and voluntary motor activity.<br>Autonomic Nervous System  | Lecture Discussion, Demonstration & Practicals |
| IX   | 5+2       | <b>SENSORY ORGANS</b><br>Functions of the skin, eye, ear, nose and tongue  | Lecture Discussion, Demonstration & Practicals |
| X    | 20+6      | <b>MUSCULAR SYSTEM</b><br>Microscopic structure of muscle tissue, myoneural junction<br>Physiology of Muscle contraction<br>Exercise metabolism<br>Muscular activity based on metabolism and fatigue<br>Physiological changes on aging<br>Exercise physiology  | Lecture Discussion, Demonstration & Practicals |
| XI   | 20+4      | <b>APPLIED PHYSIOLOGY</b><br>Heart and circulation: Normal ECG, blood pressure, cardiovascular compensation for postural and gravitational changes, determinants of cardiac performance.<br><br>Neuromuscular system: Degeneration and re-generation of nerves, control of posture and voluntary movement, neuromuscular transmission, electrical phenomenon.<br><br>Respiratory system: Normal breath sound, volume and compliance, effects of exercise on respiration, artificial respiration. | Lecture Discussion, Demonstration & Practicals |

## **PRACTICALS AND DEMONSTRATION:**

### **1. Hematology:**

- a. Study of Microscope and its uses
- b. Determination of RBC count
- c. Determination of WBC count
- d. Differential leukocyte count
- e. Estimation of hemoglobin
- f. Calculation of blood indices

### **2. Blood pressure**– palpatory and auscultatory method: Variation of blood pressure in posture.

3. Auscultation of Normal breath sound & heart sound
4. Spirometry: Recording of Lung volumes & capacities.
5. Breathe holding time
6. Mercury column test (40 mm Hg test)
7. Clinical Examination: Chest expansion, Pulse rate and Respiratory rate.

### **3. Central Nervous System:**

1. Testing of peripheral sensations and cranial nerves.
2. Superficial and deep reflexes.
3. Tests for Cerebral and Cerebella functions- Equilibrium and Nonequilibrium Tests

### **4. Graphs:**

1. Skeletal muscle-properties.
2. Cardiac muscle-properties

### **5. Clinical examination-**

Higher functions, memory, time, orientation, reflexes, motor & sensory system

### **Recommended text books:**

1. Anatomy and Physiology - Dr. Minakshi Pathak
2. Text book of medical physiology – Guyton Arthur\
3. Essentials of medical physiology sembulingam
4. Concise medical physiology – Chaudhuri SujitK.
5. Human Physiology – ChatterjeeC.C.
6. Text book of practical Physiology –Ranade.
7. Text book of Physiology – A. K.Jain.

### **Reference:**

1. Review of Medical Physiology – Ganong WilliamF.
2. Physiological basis of Medical practice – Best &Taylor

## NUTRITION

**Course Code:** U21BPTT23

**Instruction hours:** Theory – 100 hours

**Course description:** The course is designed to assist the students to acquire knowledge of nutrition for maintenance of optimum health and its application for different ages, activities in metabolic disorders.

| Unit | Hrs (T) | Content  | Teaching method    |
|------|---------|--|--------------------|
| I    | 10      | <b>FOOD &amp; NUTRITION</b><br>Introduction<br>Nutrition: Concepts & various aspects<br>Role of nutrition in healthy body<br>National nutritional policy<br>Food: Role in nutritional & medicinal values<br>Elements of nutrition: Macro & micro nutrients<br>Calorie & Basal Metabolic Rate | Lecture Discussion |
| II   | 20      | <b>CARBOHYDRATES, PROTEINS, FATS</b><br>Classification & caloric value<br>Recommended daily allowance<br>Dietary sources<br>Functions<br>Digestion, Absorption & Storage<br>Malnutrition: Deficiencies & Over consumption  | Lecture Discussion |
| III  | 15      | <b>WATER &amp; ELECTROLYTES</b><br>Water: Daily requirement, sources, regulation of water<br>Metabolism<br><br>Electrolytes: Types, sources, composition of body fluids  | Lecture Discussion |
| IV   | 20      | <b>VITAMINS &amp; MINERALS</b><br>Classification<br>Recommended daily allowance<br>Dietary sources<br>Functions<br>Absorption and storage<br>Deficiencies & Hypervitaminosis   | Lecture Discussion |
| V    | 15      | <b>ENERGY</b><br>Requirements of different categories of people<br>Measurement of energy<br>Body Mass Index and basic metabolism<br>Basal Metabolic Rate – determination and factors affecting it  | Lecture Discussion |

| Unit | Hrs<br>(T) | Content  | Teaching method       |
|------|------------|--|-----------------------|
| VI   | 20         | BALANCED DIET<br>Concept<br>Recommended Daily Allowance<br>Nutritive value of foods<br>Planning balanced diets for different categories of people<br>Budgeting of food | Lecture<br>Discussion |

**Recommended text books:**

1. Comprehensive Textbook of Nutrition for BSc Nurses- Rishi Avasthi



## ENVIRONMENTAL STUDIES

**Course Code:** U21BPTT24

**Instruction hours:** Theory – 100 hours

**Course description:**

The course is designed as per the UGC regulation for all under graduate courses of branches of higher education. The subject is designed to refresh the student regarding the multidisciplinary nature of the environment and conservation of the ecosystem.

**Course Objectives:** at the end of the course, the candidate should

1. Know about the environment
2. Understand the surrounding
3. Know about the biotic interaction

| Unit | Hrs<br>(T) | Content  | Teaching method    |
|------|------------|--|--------------------|
| I    | 6          | <p>THE MULTIDISCIPLINARY NATURE OF ENVIRONMENT STUDIES:</p> <ul style="list-style-type: none"> <li>• Definition, scope and importance</li> <li>• Need for public awareness.</li> </ul>   | Lecture Discussion |
| II   | 18         | <p>RENEWABLE AND NON-RENEWABLE RESOURCES</p> <ul style="list-style-type: none"> <li>• Forest resources: Use and over-exploitation, deforestation, case studies, timber extraction, mining, dams, and their effects on forests and tribal people.</li> <li>• Water Resources: Use and over-utilization of surface and ground water, floods drought, conflicts over water, dam benefits and problems.</li> <li>• Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies</li> <li>• Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer – pesticide problems, water logging, salinity, case studies.</li> </ul> | Lecture Discussion |

| Unit | Hrs (T) | Content  | Teaching method    |
|------|---------|--|--------------------|
|      |         | <ul style="list-style-type: none"> <li>• Energy resources: Growing energy needs, renewable and non-renewable energy resources, use of alternate energy sources, case studies.</li> <li>• Land resources: Land as a resource, land degradation, man induces landslides, soil erosion and desertification</li> </ul> <p>Role of an individual in conservation of natural resources.</p> <p>Equitable use of resources for sustainable lifestyles.</p>  | Lecture Discussion |
| III  | 16      | <p><b>ECOSYSTEMS</b></p> <ul style="list-style-type: none"> <li>• Concept of an ecosystem</li> <li>• Structure and function of an Ecosystem</li> <li>• Producer, consumers, and decomposers</li> <li>• Energy flow in the ecosystem</li> <li>• Ecological succession</li> </ul> <p>Food chains, food webs and ecological pyramids<br/>Introduction, types, characteristic features, structure and function of the ecosystem</p> <p>Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystem (ponds, streams, lakes, estuaries)</p> | Lecture Discussion |
| IV   | 14      | <p><b>BIODIVERSITY AND ITS CONSERVATION</b></p> <p>Introduction – Definition of genetics, species, and ecosystem diversity</p> <p>Biogeographical classification of India<br/>Value of Biodiversity: consumptive use, productive use, social, ethical aesthetic, and option views.</p>   | Lecture Discussion |

| Unit | Hrs (T) | Content   | Teaching method    |
|------|---------|---|--------------------|
| V    | 14      | <p>ENVIRONMENTAL POLLUTION:</p> <ul style="list-style-type: none"> <li>• Air pollution</li> <li>• Water Pollution</li> <li>• Soil Pollution</li> <li>• Marine Pollution</li> <li>• Noise Pollution</li> <li>• Thermal Pollution</li> <li>• Nuclear hazards</li> </ul> <p>Soil waste management: Causes, effects and control measures of urban and industrial wastes.</p> <p>Role of an individual in prevention of pollution.</p> <p>Pollution case studies.</p> <p>Disaster management: floods, earthquake, cyclone and landslides.</p>  | Lecture Discussion |
| VI   | 16      | <p>SOCIAL ISSUES AND THE ENVIRONMENT</p> <ul style="list-style-type: none"> <li>• From Unsustainable to Sustainable development</li> <li>• Urban problems related to energy</li> <li>• Water conservation, rain water harvesting, watershed management</li> <li>• Resettlement and rehabilitation of people; its problems and concerns. Case Studies</li> <li>• Environmental ethics: Issues and possible solutions.</li> <li>• Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies.</li> <li>• Wasteland reclamation.</li> <li>• Consumerism and waste products.</li> <li>• Environment Protection Act.</li> <li>• Air (Prevention and Control of Pollution) Act</li> <li>• Water (Prevention and control of Pollution) Act</li> <li>• Wildlife Protection Act</li> <li>• Forest Conservation Act</li> <li>• Issues involved in enforcement of environmental legislation.</li> <li>• Public awareness</li> </ul> | Lecture Discussion |

| Unit | Hrs (T) | Content   | Teaching method    |
|------|---------|---|--------------------|
| VII  | 16      | HUMAN POPULATION AND THE ENVIRONMENT <ul style="list-style-type: none"> <li>• Population growth, variation among nations.</li> <li>• Population explosion – Family Welfare Programme.</li> <li>• Environment and human health.</li> <li>• Human Rights.</li> <li>• Value Education.</li> <li>• HIV/AIDS</li> <li>• Women and Child Welfare.</li> <li>• Role of Information Technology in Environment and human health</li> <li>• Case Studies.</li> </ul> | Lecture Discussion |

**Recommended text books:**

1. Textbook of Environmental Studies for Undergraduate Courses-Erach Barucha

**Reference:**

1. Agarwal, K.C.2001 Environmental Biology, Nidhi Publications Ltd. Bikaner
2. Odum, EP.1971 Fundamentals of Ecology. W B Saunders Co

## PHYSICAL EDUCATION

**Course Code:** U21BPTT25

**Instruction hours:** – 20 hours Practical

**Course description:** The purpose of the course is to acquire knowledge and understand various components in physical fitness and training methods.

| Unit | Hrs (P) | Content   | Teaching method                                      |
|------|---------|---|--|
| I    | 2       | INTRODUCTION<br>Sports and Wellness   | Lecture Discussion                                   |
| II   | 10      | TRAINING METHODS<br>Imitating Method<br>Visual Method<br><br>PERIODIZATION<br>1. Preparatory phase<br>2. Competitive phase<br>3. Relaxation or Recovery phase | Lecture Discussion<br>Demonstration &<br>Practicals. |
| III  | 8       | ACTIVITIES<br>Weight Lifting<br>Weight Training   | Lecture Discussion<br>Demonstration &<br>Practicals. |