



Estd. 1884

**DES BRIJLAL JINDAL COLLEGE OF  
PHYSIOTHERAPY, PUNE AFFILIATED TO  
MAHARASHTRA UNIVERSITY OF  
HEALTH SCIENCES, NASIK**

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**COURSE OUTCOME**

# **DES'S BRIJLAL JINDAL COLLEGE OF PHYSIOTHERAPY, PUNE**

## **COURSE OUTCOMES**

### **HUMAN ANATOMY**

#### **OBJECTIVES:**

##### **1] MUSCULOSKELETAL ANATOMY**

- i. The student should be able to identify & describe Anatomical aspects of muscles, bones, joints, their attachments & to understand and analyze movements.
- ii. Application of knowledge of anatomy on the living (living anatomy).
- iii. To understand the Anatomical basis of various clinical conditions.

##### **2] NEURO ANATOMY**

- i. To identify & describe various parts of nervous system.
- ii. To describe blood circulation of C.N.S. & spinal cord.
- iii. Be able to identify the Structures of various C.N.S Trans-sections.
- iv. To identify and describe the course of peripheral nerves.
- v. To understand anatomical basis of clinical conditions of nervous system.

##### **3] CARDIOVASCULAR & RESPIRATORY ANATOMY**

- i. To identify & describe various structures of the Cardio Vascular & Respiratory system and the course of blood vessels
- ii. Identify and describe various structures of Thoracic cage and mechanisms of Respiration
- iii. Be able to apply knowledge of Living anatomy with respect to Cardio Vascular & Respiratory system.
- iv. To understand anatomical basis of clinical conditions of cardiovascular & Respiratory system

##### **4] To Obtain Knowledge of OTHER SYSTEMS & SENSORY ORGANS**

### **HUMAN PHYSIOLOGY**

At the end of the course, the candidate will:

1. Acquire the knowledge of the relative contribution of each organ system in maintenance of the Milieu Interior (Homeostasis)
2. Be able to describe physiological functions of various systems, with special reference to Musculo-skeletal, Neuro-motor, Cardio-respiratory, Endocrine, Uro-genital function, & alterations in function with aging
3. Analyze physiological response & adaptation to environmental stresses-with special emphasis on physical activity, altitude, temperature
4. Acquire the skill of basic clinical examination, with special emphasis to Peripheral & Central Nervous system, Cardiovascular & Respiratory system, & Exercise tolerance /Ergography

### **FUNDAMENTALS OF KINESIOLOGY & KINESIOTHERAPY**

#### **OBJECTIVE:**

##### **Cognitive:**

At the end of the course, the candidate will be able to:

- a) Define the various terms used in relation to Mechanics, Biomechanics & Kinesiology



b) Recall the basic principles of Biophysics related to mechanics of movement / motion & understand the application of these principles to the simple equipment designs along with their efficacy in Therapeutic Gymnasium & various starting positions used in therapeutics.

### FUNDAMENTALS OF ELECTROTHERAPY

#### **OBJECTIVES:**

##### **Cognitive:**

At the end of the course, the candidate will be able to:

- a) Recall the physics principles & Laws of Electricity, Electromagnetic spectrum, & ultra sound
- b) Describe effects of environmental & man made electromagnetic field at the cellular level & risk factors on prolonged exposure.
- c) Describe the Main electrical supply, Electric shock, precautions
- d) Enumerate Types & Production of various Therapeutic electrical currents & describe the panel diagrams of the machines

##### **Psychomotor:**

At the end of the course the candidate will be able to –

- a) Test the working of the various electrotherapeutic equipments
- b) Describe in brief, certain common electrical components such as transistors, valves, capacitors, transformers etc & the simple instruments used to test / calibrate these components [ such as potentiometer, oscilloscope , multimeter ] of the circuit ; & will be able to identify such components.
- c) Describe & identify various types of electrodes used in therapeutics, describe electrical skin resistance & significance of various media used to reduce skin resistance.
- d) Acquire knowledge of various superficial thermal agents such as Paraffin wax bath, Cryotherapy, Hydrocollator packs, Home remedies, their physiological & therapeutic effects, Merits / demerits & acquire the skill of application

### PATHOLOGY

**Cognitive:**

- a) Will have sound knowledge of concepts of cell injury & changes produced by different tissues, organs and capacity of the body in healing process.
- b) Acquire the knowledge of general concepts of neoplasia with reference to the Etiology, gross & microscopic features, & diagnosis, in different tissues, & organs of the body.
- c) Acquire knowledge of common immunological disorders & their resultant effects on the human body.

**Psychomotor:**

- a) Recall the Etiology-pathogenesis, the pathological effects & the clinico-pathological correlation of common infections & non-infectious diseases.
- b) Understand in brief, about the common Haematological disorders & investigations necessary to diagnose them.
- c) Correlate normal & altered morphology of different organ systems in different diseases needed for understanding disease process & their clinical significance

**MICROBIOLOGY**

**OBJECTIVES:**

At the end of the course, the candidate will

- 1. Have sound knowledge of prevalent communicable diseases and the agents responsible for causing clinical infections, pertaining to C.N.S, C.V.S, Musculoskeletal system, Respiratory system, Genitourinary system, wound infections and of newer emerging pathogens
- 2. Know the importance and practices of best methods to prevent the development of infections in self and patients (universal safety precautions)

**PHARMACOLOGY**

**OBJECTIVES:** At the end of the course, the candidate will be able to:

**Cognitive:**

- a. Describe Pharmacological effects of commonly used drugs by patients referred for Physiotherapy; list their adverse reactions, precautions, contraindications, formulation & route of administration.
- b. Identify whether the pharmacological effect of the drug interferes with the Therapeutic response of Physiotherapy & viceversa
- c. Indicate the use of analgesics & anti-inflammatory agents with movement disorders with consideration of cost, efficiency, & safety for individual needs.

**Psychomotor:**

Get the awareness of other essential & commonly used drugs by patients-The bases for their use & common as well as serious adverse reactions.



## PSYCHIATRY (INCLUDING PSYCHOLOGY)

### **OBJECTIVES:**

At the end of the course, the candidate will be able to:

#### **Cognitive:**

- a. Define the term Psychology & its importance in the Health delivery system, & will gain knowledge of Psychological maturation during human development & growth & alterations during aging process.
- b. Understand the importance of psychological status of the person in health & disease; environmental & emotional influence on the mind & personality.
- c. Have the knowledge and skills required for good interpersonal communication.

#### **Psychomotor:**

- a. Enumerate various Psychiatric disorders with special emphasis to movement / Pain & ADLs
- b. Acquire the knowledge in brief, about the pathological & etiological factors, signs / symptoms & management of various Psychiatric conditions.
- c. Understand the patient more empathetically.

## KINESIOLOGY

**Objective** –At the end of the course, the candidate will be able to –

1. Understand the principles of Biomechanics.
2. Acquire the knowledge of kinetics and kinematics of Spine, Extremities, Temporo-Mandibular joint, Thoracic cage
3. Acquire the knowledge of Musculo skeletal movements during normal Gait and Activities of Daily Living

## KINESIOTHERAPY

**OBJECTIVES:** At the end of the course, the candidate will be able to

#### **Cognitive:**

Describe the Biophysical properties of connective tissue, & effect of mechanical loading, & factors which influence the muscle strength, & mobility of articular & periarticular soft tissues.

#### **Psychomotor:**

1. Apply the biomechanical principles for the efficacy in the assessment methods for mobility, muscle strength
2. Acquire the skill of subjective and objective assessment of individual & group muscle strength
3. Acquire the skills of subjective and objective methods of muscle strengthening
4. Describe the physiological effects, therapeutic uses, merits / demerits of various exercise modes including Hydrotherapy
5. Demonstrate various therapeutic exercises on self; & acquire the skill of application on models with Home Programs
6. Analyze normal Human Posture [static & dynamic].
7. Acquire the skill of functional re-education techniques on models
8. Acquire the skill of Balance and Coordination Exercises
9. Acquire the skill of using various walking aids for Gait Training
10. Acquire the skill of demonstrating breathing exercises and retraining on self and others

11. Acquire the skill of demonstrating Postural Drainage on models

### ELECTROTHERAPY

#### **OBJECTIVES:**

At the end of the course, the candidate will be able to:

#### **Cognitive:**

1. Acquire the knowledge about the physiology of pain, Pain pathways & Methods of pain modulation, selection of appropriate modality for Pain modulations.
2. Describe the Physiological effects, Therapeutic uses, indication & contraindications of various Low/ Medium & High Frequency modes / Actinotherapy
3. Describe the Physiological Effects & therapeutic uses of various therapeutic ions & topical pharmacotherapeutic agents to be used for the application of iontophoresis & sono/ phonophoresis

#### **Psychomotor:**

1. Acquire the skills of application of the Electro therapy modes on models, for the purpose of Assessment & Treatment.
2. Acquire an ability to select the appropriate mode as per the tissue specific & area specific application.

### SURGERY-I

#### (General Surgery, Cardiovascular & Thoracic Surgery & Plastic/ Reconstructive Surgery)

**OBJECTIVES:** At the end of the course, the candidate will be able to:

1. Describe the effects of surgical trauma & Anaesthesia in general
2. Clinically evaluate & describe the surgical management in brief of
  - a) General Surgery
  - b) Neuro Surgery
  - c) Cardiovascular and Thoracic Surgery
  - d) ENT & Ophthalmic Surgery
  - e) Plastic & Reconstructive Surgery
3. Describe pre-operative evaluation, surgical indications in various surgical approaches, management and post operative care in above mentioned areas with possible complications.
4. Be able to read & interpret findings of the relevant investigations

### **SURGERY-II (ORTHOPAEDICS)**

**OBJECTIVES:** At the end of the course, the candidate will –

- a) Be able to discuss the, aetiology, Pathophysiology, clinical manifestations & conservative / surgical management of various traumatic & cold cases of the Musculoskeletal Conditions.
- b) Gain the skill of clinical examination; apply special tests & interpretation of the preoperative old cases & all the post-operative cases.
- c) Be able to read & interpret salient features of the X-ray of the Spine & Extremities and correlate the radiological findings with the clinical findings.



d) Be able to interpret Pathological / Biochemical studies pertaining to Orthopaedic conditions.

### **MEDICINE-I**

#### **(Cardiovascular Respiratory Medicine, General Medicine & Gerontology)**

**OBJECTIVES:** At the end of the course, the candidate will:

1. Be able to describe Etiology, Pathophysiology, Signs & Symptoms & Management of the various Endocrinal, Metabolic, Geriatric & Nutrition Deficiency conditions.
2. Be able to describe Etiology, Pathophysiology, Signs & Symptoms, Clinical Evaluation & Management of the various Rheumatologic Cardiovascular & Respiratory Conditions.
3. Acquire skill of history taking and clinical examination of Musculoskeletal, Respiratory, Cardio-vascular & Neurological System as a part of clinical teaching.
4. Be able to interpret auscultation findings with special emphasis to pulmonary system.
5. Study Chest X-ray, Blood gas analysis, P.F.T. findings & Haematological studies, for Cardiovascular, Respiratory, Neurological & Rheumatological conditions.
6. Be able to describe the principles of Management at the Intensive Care Unit.
7. Be able to acquire the skills of Basic Life Support.
8. Acquire knowledge of various drugs used for each medical condition to understand its effects and its use during therapy.

### **MEDICINE-II (Neurology & Paediatrics)**

**OBJECTIVES:** At the end of the course, the candidate will:

1. Be able to describe Aetiology, Pathophysiology, signs & Symptoms & Management of the various Neurological & Paediatric conditions.
2. Acquire skill of history taking and clinical examination of Neurological & Paediatric conditions as a part of clinical teaching.
3. Acquire knowledge of various drugs used for each medical condition to understand its effects and its use during therapy.
4. Acquire knowledge in brief about intra-uterine development of the foetus.
5. Be able to describe normal development & growth of a child, importance of Immunization, breast-feeding & psychological aspect of development.
6. Be able to describe neuromuscular, musculoskeletal, cardio-vascular & respiratory conditions related to immunological conditions, nutritional deficiencies, infectious diseases, & genetically transmitted conditions.
7. Acquire skill of clinical examination of a neonate / child with respect to neurological, musculoskeletal & respiratory function.

### **COMMUNITY HEALTH & SOCIOLOGY-COMMUNITY HEALTH**

**OBJECTIVES:** At the end of the course, the candidate shall be able to understand the contents given in the syllabus.

#### **B-SOCIOLOGY**

**OBJECTIVES:** At the end of the course, the candidate shall be able to understand the contents given in the syllabus.

## GYNAECOLOGY & OBSTETRICS(COLLEGE EXAMINATION)

**OBJECTIVES:** At the end of the course, student will be able to describe:

- a) Normal & abnormal physiological events, complications and management during Puberty.
- b) Normal and abnormal physiological events, complications and management of pregnancy (Pregnancy, Labour, Puerperium)
- c) Normal and abnormal physiological events, complications and management of menopause.
- d) Normal and abnormal physiological events, complications and management of uro-genital dysfunction.(Antenatal, Postnatal, during menopause)
- e) The student will be able to acquire the cognitive skill of clinical examination of the pelvic floor.

## DERMATOLOGY(COLLEGE EXAMINATION)

**OBJECTIVES:**

At the end of the course, the student will be able to describe the Pathophysiology, Signs & Symptoms, Clinical Features, Examination & Management of Common Skin Conditions like Leprosy, Psoriasis, Bacterial & Fungal Infections of the skin, connective tissue disorder, hand eczema, drug reaction, cutaneous manifestation of HIV, & Sexually Transmitted Diseases

## FUNCTIONAL DIAGNOSIS & PHYSIOTHERAPEUTIC SKILLS

**OBJECTIVES:**

1. Functional Diagnosis & Physiotherapeutic Skills is a stepping stone to introduce students to actual concepts of PT assessment and later to the treatment concepts
2. Functional Diagnosis focuses on the assessment of all the body systems i.e. Musculoskeletal, Neurological and Cardiovascular-Respiratory in order to study the various impairments and their impact on activity and participation of the individual taking into consideration the contextual factors as well. It also emphasizes on the clinical reasoning of the underlying components of a universal evaluation tool (ICF) for a better understanding of the patient in a holistic manner. The student is also subjected to learn basics of manipulative, cardiovascular-respiratory and neuro-therapeutic skills on models so that he/she will be able to apply these principles eventually on patients.
3. The student will also gain a sound knowledge of electro-diagnosis, which is an integral part of Functional Diagnosis.

## PROFESSIONAL PRACTICE AND ETHICS (COLLEGE EXAMINATION)

**OBJECTIVES:** At the end of the course, the student will be compliant in following domains:

**Cognitive:** The student will

1. Be able to understand the moral values and meaning of ethics
2. Be able to learn and apply ethical code of conduct in fields of clinical practice, learning, teaching, research and physiotherapist-patient relationship
3. Acquire bedside manners and communication skills in relation with patients, peers, seniors and other professionals



4. Will acquire the knowledge of the basics in Managerial & Management skills, & use of information technology in professional Practice

**Psychomotor:** The student will be able to:

1. Develop psychomotor skills for physiotherapist-patient relationship
2. Develop the skill to evaluate and make decisions for plan of management based on sociocultural values and referral practice

**Affective:** The student will be able to:

1. Develop behavioral skills and humanitarian approach while communicating with patients, relatives, society and co-professionals
2. Develop bedside behavior, respect & maintain patients' confidentiality

### ADMINISTRATION, MANAGEMENT & MARKETING (COLLEGE EXAMINATION)

**OBJECTIVES:** At the end of the course the student will be compliant in following domains:

**Cognitive:**

The student will:

- a. Learn the management basics in fields of clinical practice, teaching, research and physiotherapy practice in the community.
- b. Acquire communication skills in relation with patients, peers, seniors and other professionals & the community.
- c. Acquire the knowledge of the basics in Managerial & Management skills, & use of Information technology in professional Practice

**Psychomotor:**

The student will be able to:

- a. Develop psychomotor skills for physiotherapy practice.
- b. Develop skill to evaluate and make decision for plan of management based on sociocultural values and referral practice.

**Affective:**

The student will be able to:

Develop behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals.

### MUSCULOSKELETAL PHYSIOTHERAPY

**OBJECTIVES:** At the end of the course, student will be able to:

**Cognitive:**

- a) Identify, evaluate, analyze & discuss primary and secondary musculo-skeletal dysfunction, based on biomechanical, kinesiological & patho-physiological principles.
- b) Correlate the same with radiological, electrophysiological, biochemical/ haematological investigations as applicable & arrive at the appropriate Physiotherapy diagnosis with skillful evaluation of structure and function with clinical reasoning.
- c) Understand the pharmaco-therapeutics, its interaction with physiotherapeutic measures and modify physiotherapeutic intervention appropriately.



d) Apply knowledge of psychosocial factors (personal and environmental factors in the context of disability associated with the musculo-skeletal system or multiple body systems) for behavioral and lifestyle modification and use appropriate training and coping strategies.

**Psychomotor:**

a) Apply theoretical basis of physiological effects, indications, contraindications; and best available evidence on the effectiveness, efficacy and safe application guidelines for a full range of physiotherapeutic strategies and interventions, including appropriate modes of soft tissue & joint mobilization, electrotherapy, therapeutic exercise, and appropriate ergonomic advice that can be employed to manage problems of the individual's structures, functions, activities and participation, capacity and performance levels associated with the musculo-skeletal system, for relief of pain & prevention, restoration and rehabilitation measures for maximum possible functional independence at home, workplace and in community.

b) Prescribe and train for appropriate orthoses, prostheses and walking aids based on musculoskeletal dysfunction.

**Affective:**

Acquire ethical skills by demonstrating safe, respectful and effective performance of physical handling techniques taking into account the patient's clinical condition, the need for privacy, the physiotherapist, the resources available and the environment.

**NEUROPHYSIOTHERAPY**

**OBJECTIVES:** At the end of the course, student will

**Cognitive:**

a) Be able to identify and analyze movement dysfunction due to neuromuscular skeletal disorders in terms of biomechanical and biophysical basis, correlate the same with the health condition, routine electrophysiological, radiological and biochemical investigations, and arrive at appropriate physical therapy diagnosis using WHO-ICF with clinical reasoning.

b) Be able to plan realistic goals based on the knowledge of prognosis of the disease of the nervous system and prescribe appropriate, safe evidence based physiotherapy interventions with clinical reasoning.

c) Understand infection control principles, best practices and techniques applicable to a range of setting where clients with neurological conditions would receive physiotherapy services.

d) Know determinacy of health (environmental, nutritional, self-management/ behavioral factors) and chronic disease management principles related to neurological health.

**Psychomotor:**

a) Be able to develop psychomotor skills to implement timely and appropriate physiotherapy assessment tools/techniques to ensure a holistic approach to patient evaluation in order to prioritize patient's problems.

b) Be able to select timely physiotherapeutic interventions to reduce morbidity and physiotherapy management strategies, suitable for the patients' problems and indicator conditions based on the best available evidence.

c) Implement appropriate neuro-physiotherapeutic approaches, electrotherapeutic modalities, joint and soft tissue mobilizations and ergonomic advice for neuromuscular skeletal systems, contextual factors to enhance performance of activities and participation in society.

**Affective:**

a) Be able to develop behavioral skills and humanitarian approach while communicating with patients, relatives, society and co-professionals, to promote individual and community health.



## CARDIO-VASCULAR & RESPIRATORY PHYSIOTHERAPY (INCLUDING CRITICAL CARE)

**OBJECTIVES:** At the end of the course, the student will be able to:

### **Cognitive:**

- a. Identify and analyze cardio-vascular & pulmonary dysfunction in terms of bio-mechanical, and Bio-physical basis and correlate the same with the Health condition, routine electrophysiological, radiological, and biochemical investigations and arrive at appropriate Physical therapy diagnosis using WHO-ICF tool (Disability, Functioning and contextual factors) with clinical reasoning.
- b. Plan, prescribe appropriate, safe physiotherapy interventions with clinical reasoning for and prevention of impairments, activity limitations, participation restrictions and environmental barriers related to cardio-vascular & pulmonary dysfunction in acute care settings, at home, work place, in society & in leisure activities.

### **Psychomotor:**

- a. Utilise skills such as executing exercise tests, PFT, Ankle brachial index, arterial & venous insufficiency tests
- b. Utilise psychomotor skills to implement appropriate bronchial hygiene therapy, therapeutic exercise, electrotherapeutic modalities, CPR, Intensive (critical) care, joint and soft tissue mobilisations, offering ergonomic & energy conservation advice for patients with cardio-vascular & pulmonary dysfunction.
- c. Utilise the knowledge about contextual factors to enhance capacity and performance of activities and participation in society
- d. Utilise the skill to deliver cardiac, pulmonary & vascular rehabilitation

### **Affective:**

- a. Develop behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals
- b. Develop bedside behavior, respect & maintain patients' confidentiality

## COMMUNITY PHYSIOTHERAPY

**OBJECTIVES:** At the end of the course the students shall:

### **Cognitive:**

Be able to describe:

- a) The general concepts about health, disease and physical fitness.
- b) Physiology of aging process and its influence on physical fitness.
- c) National policies for the rehabilitation of disabled –role of PT.
- d) The strategies to assess prevalence and incidence of various conditions responsible for increasing morbidity in the specific community –role of PT in reducing morbidity, expected clinical and functional recovery, reasons for non-compliance in specific community environment & solution for the same.
- e) The evaluation of disability and planning for prevention and rehabilitation.
- f) Rehabilitation in urban and rural set up.
- g) Able to be a part of decision making team regarding the policies for the welfare of special communities & on issues of disability

**Psychomotor:**

- a) Be able to identify with clinical reasoning the prevailing contextual {e.g. environmental and psycho-social cultural} factors, causing high risk responsible for various dysfunctions and morbidity related to sedentary life style and specific community like women, children, aged as well as industrial workers and describe planning strategies of interventional policies to combat such problems at community level.
- b) Be able to gain the ability to collaborate with other health professionals for effective service delivery & community satisfaction
- c) Utilize the research methodology knowledge for formulation of a research question (synopsis)

**Affective:**

Be an empathetic health professional, especially for those in the community, who is away from the health institutions and having difficulty in healthcare access

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