STUDY & EVALUATION SCHEME

OF

BACHELOR OF PHYSIOTHERAPY
(BPT-I$^{\text{ST}}$ YEAR/ I$^{\text{ST}}$ SEMESTER)

[Applicable w.e.f. Academic Session 2015-16 till revised]

INTEGRAL UNIVERSITY, LUCKNOW
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LUCKNOW – 226026
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Syllabus approved by Board of Study, Faculty Board, Academic Council, Executive Council of the Integral University, Lucknow
## STUDY & EVALUATION SCHEME
### BACHELOR OF PHYSIOTHERAPY (B.P.T.)
### (w.e.f. July 2015)

### I-Year

<table>
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<tr>
<th>S.No.</th>
<th>Code No</th>
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<th>Periods</th>
<th>Total Credits</th>
<th>Evaluation Scheme</th>
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### I-Semester

**L**: Lecture  
**T**: Tutorials  
**P**: Practical  
**C**: Credit  
**CT**: Class Test  
**TA**: Teacher Assessment  
**ESE**: End Semester Examination

**Sessional Total**: Class Test + Teacher Assessment  
**Subject Total**: Sessional Total + End Semester Examination (ESE)
UNIT-I CELLS, TISSUES & SKIN: (06 Hours)
1. Anatomical Nomenclature.
4. Types of Skin, Epidermis, Dermis, Nerves, Blood Vessels, age related Changes,
5. Appendages of Skin: Pilosebaceous Unit, Nail Unit.

UNIT-II SKELETAL SYSTEM: (12 Hours)
2. Skeletal Connective Tissues: Structure of Cartilage, Bone as a Tissue, Microscopic Structure and Organization of Bone, Blood Vessels and Nerves of Bone.
5. Appendicular Skeleton: upper limb, Lower Limb.

UNIT-III MUSCLE: (06 Hours)
1. Types of Muscle, Attachments of Skeletal Muscle

UNIT-IV NERVOUS SYSTEM: (08 Hours)
1. Regional Organization of Central Nervous System: Spinal Cord, Rhombencephalon, Mesencephalon, Diencephalon, Telencephalon, Basal Nucleii, Fluid Compartments and Fluid Balance in the CNS.

UNIT-V

Embryology & Development: (08 Hours)

1. Early Human Development.
3. Prenatal Growth in Form and Size.
4. Neonatal Anatomy and Growth

BOOKS RECOMMENDED:

1. Anatomy and physiology by Smout and McDowall (Edwad Arnold).
2. Primary castes anatomy by Basmajian (Williams and Willkins Co. Batlimore).
3. An Introduction of fundamental Anatomy by David Sinclair.
4. Anatomy of Chaurasiya- All 3 volumes.
5. Limbs of Dr. Kadasana-All 3 volumes.
6. Anatomy of Grant
UNIT-I GENERAL PHYSIOLOGY: (06 Hours)
Structure and Function of cell, Ionic composition of body fluid, ECF & ICF, Transport across cell member an, Homeostasis, Resting Membrane Potential (RMP)

UNIT-II NERVE PHYSIOLOGY & MUSCLES PHYSIOLOGY: (06 Hours)
NERVE PHYSIOLOGY:
Structure of neuron, Properties of nerve fibre, Types of nerve fibre, Degeneration and regeneration of peripheral neuron, action potential origin, phases, properties, ionic basis and graded potential.
MUSCLES PHYSIOLOGY: (06 Hours)
Structure properties and classification of muscle, excitation contraction coupling, molecular basis of contraction, isometric and isotonic contraction, length tension relationship, motor unit, white and red muscle, energy kinetics of muscular contraction. Difference between smooth, skeletal and cardiac muscle, neuromuscular function and applied physiology.

UNIT-III BLOODS: (06 Hours)
Composition and function of blood, erythropoisis, Haemoglobin, anaemia, function of platelets, haemostasis, Blood group, transfusion, basis of immunity.

UNIT-IV RESPIRATION: (06 Hours)
Introduction and general organization, Mechanics of respiration, Respiration measures, anatomical & physiological dead space, alveolar ventilation, ventilation perfusion ratio, transport of gases, regulation of respiration, pulmonary function test, physiological changes in altitude & acclimatization, hypoxia.

UNIT-V CARDIOVASCULAR SYSTEM & EXERCISE PHYSIOLOGY: (10 Hours)
BOOKS RECOMMENDED

1. Textbook of Physiology: Guyton
2. Textbook of Physiology : Ganong
3. Human Physiology: A.K. Jain
UNIT-I CELL & CHEMISTRY OF BIMOLECULES: (10 Hours)

UNIT-II CARBOHYDRATE: (08 Hours)

UNIT-III NUCLEIC ACID: (06 Hours)
Structure of DNA & RNA, DNA Replication, & Transcription, Advances in Genetic Engineering.

UNIT-IV VITAMINS (FAT & WATER SOLUBLE) & ENZYMES & HORMONES:
VITAMINS (FAT & WATER SOLUBLE) (06 Hours)
Definition, classification, functions dietary sources, daily requirement & Deficiency disorders.
ENZYMES & HORMONES: (10 Hours)

UNIT-V NUTRITION & SPECIAL TOPICS: (10 Hours)
Introduction of Nutrition, Nutrients of their role in human, Nutritional requirements, Balance diet, Nutritional disorder, SDA (special dynamic action). Respiratory quotient (RQ) & Basal Metabolism rate (BMR). Water electrolyte balance & acid base balance.

RECOMMENDED BOOKS
1. Fundamentals of Biochemistry-by Dr. Deb Jyoti Das,
2. Biochemistry-by Dr Satyanarayan
3. Textbook of Biochemistry –Chatterje and Shinde
UNIT-I PHYSICAL PRINCIPLES: (08 Hours)
2. Structure of atom, molecules, elements and compounds
3. Electron therapy static and current electricity.
5. Ohm’s Law – Its application to AC & DC currents.
7. Capacitance condensers and in DC and AC circuits.

UNIT-II EFFECTS OF CURRENT ELECTRICITY: (08 Hours)
1. Chemical effects- ions and electrolytes, ionization, Production of an EMF by chemical actions.
3. Mili Ammeter and voltmeter transformers and choke coil
4. Electromagnetic spectrum.

UNIT-III ELECTRICAL SUPPLY: (08 Hours)
1. Brief outline of main supply of electric current.
2. Dangers- short circuit, electric shocks.
3. Precaution – safety devices, earthing fuses etc.
4. First aid and initial management of electric shock.

UNIT-IV VARIOUS AGENTS: (08 Hours)
1. Electro physical Agents.
2. Thermal agents, Superficial and deep heat.
3. Cryotherapy, Physical Principles of cold,
4. Electro-magnetic Radiation Physical Principles and their Relevance to Physiotherapy.
5. Electric Currents: Physical Principles and their Relevance to Physiotherapy Practice.
UNIT-V CIRCUIT DIAGRAMS AND BASIC KNOWLEDGE OF EQUIPMENTS: (08 Hrs)

1. Shortwave Diathermy (SWD)
2. Ultrasound (US)
3. Microwave Diathermy (MWD)
4. “Light Amplification by Stimulated Emission of Radiation” (LASER)

RECOMMENDED BOOKS

1. Clayton’s Electrotherapy
2. Physical Principles Explained by Low and Reed
3. Physical Agents in Rehabilitation – Cameron
UNIT-1 INTRODUCTION TO COMPUTER: 
Definition, Architecture of Computers, Processor, HDD, FDD, RAM, ROM, firmware & Human 
Ware, Motherboard, Tapes Printers- it types Monitor, Networks types and topology. Application 
of Computers. Maintenance and handling other machines and storage device like CD, Floppy etc.

UNIT-II GENERATIONS OF THE COMPUTERS: 
Features of computers, Data, information, and knowledge-Data processing, latest trends and 
configuration of Computers.

UNIT-III SOFTWARE CONCEPT: 
Definition of S/W types and classification operating system definition, types, installation, 
viruses’ antivirus uses and its use. MS Office – Excel, Word, power point access.

UNIT-IV Basic knowledge of Utility of Multimedia: 

UNIT-V IT Technology: 
Defines uses, Internet, Search Engine, Websites, Email creation & Chat introduction to HTML, 
JAVA, and ASP.

RECOMMENDED BOOKS:
1. Fundamentals of Computer science - M. Afshar Alam
2. Fundamental of Information Technology by ‘D. S. Yadav- New age International
SUBJECT: BASIC PROFESSIONAL COMMUNICATION
SUBJECT CODE: LN-101
(w.e.f. July 2015)

UNIT I: PROFESSIONAL COMMUNICATION (6 Hours)
Professional Communication: Its meaning & importance, Essentials of Effective Communication, Barriers to Effective Communication

UNIT II: LANGUAGE THROUGH LITERATURE (7 Hours)
A. Essays:
   “The Effect of the Scientific Temper on Man” by Bertrand Russell
   “The Aims of Science and Humanities” by Moody E. Prior
B. Short Stories:
   “The Meeting Pool” by Ruskin Bond
   “The Portrait of a Lady” by Khushwant Singh

UNIT III: BASIC VOCABULARY (7 Hours)
Euphemism, One-word Substitution, Synonyms, Antonyms, Homophones, Idioms and Phrases, Common mistakes, Confusable words and expressions

UNIT IV: BASIC GRAMMAR (6 Hours)
Articles, Prepositions, Tenses, Concord (Subject-Verb agreement, Verbs: its Kind & Uses, Degrees of Comparison

UNIT V: BASIC COMPOSITION (6 hours)

BOOKS RECOMMENDED:
1. Lata, Pushp & Kumar, Sanjay. Communication Skills, Oxford University Press-2012
1. Surface Anatomy: Identification and Description of surface land marks on human Specimen.
2. Movement nomenclature.
3. Muscles, Bones, Ligaments, Joints of head, face, trunk, lower and upper extremities, vertebrae, rib cage on a dissected human specimen.
4. Radiology of upper and lower limb, abdomen and thorax.
5. General Histology (Connective Tissue, Epithelial Tissue, Nervous System)

BOOKS RECOMMENDED
1. Primary castes anatomy by Basmajian (Williams and Willkins Co. Baltimore).
2. Anatomy of Chaurasiya- All 3 volumes.
3. Limbs of Dr. Kadasana-All 3 volumes.
4. Anatomy of Grant
5. Human Embryology by Hamilton Body and Mossaman.
1. Introduction of Microscope.
2. Preparations of Peripheral Blood smear.
3. Identification of Blood cell.
5. T.L.C Total Leukocytes Count.
8. Estimation of bleeding time & clotting time.

BOOKS RECOMMENDED:
1. Textbook of Physiology: Guyton
2. Textbook of Physiology : Ganong
3. Human Physiology: A.K. Jain
4. Essentials of Medical Physiology: K.Semubulingam,
SUBJECT: BIOCHEMISTRY LAB
SUBJECT CODE: PT 107
(w.e.f. July 2015)

1. Qualitative estimation of carbohydrates
   a) Benedict’s test
   b) Molishs
   c) Phenol Sulfuric Acid

2. Quantitative estimation of proteins.
   a) Lowry Method
   b) Bradford test

3. Quantitative Estimation of
   a) Glucose concentration
   b) Urea concentration
   c) Cholesterol Concentration

4. Chromatography
   a) TLC (Thin layer chromatography) & Paper chromatography

BOOKS RECOMMENDED:
1. Fundamentals of Biochemistry-by Dr. Deb Jyoti Das,
2. Biochemistry-by Dr Satyanarayan
3. Textbook of Medical Biochemistry -Chatterje and Shinde
Course Description: This course involves a demonstration of some basic physical principles as they relate to the application of electrotherapeutic modalities.

Course Objectives: The student should be able to explain the physical rationale for the use of physical agent modalities.

1. Diode and Triode valves, Transistors, Ammeter, Voltmeter, Galvanometer, Rheostat, Resistance Box, Transformer, etc.
2. Demonstration of Electrotherapy units like Stimulator, Short Wave Diathermy, Micro Wave Diathermy, LASER and Ultrasound, etc.
3. Clinical observation of equipment placement.

RECOMMENDED BOOKS
1. Clayton’s Electrotherapy
2. Physical Principles Explained by Low and Reed
3. Physical Agents in Rehabilitation – Cameron