# INTEGRAL UNIVERSITY, LUCKNOW

**INTEGRAL INSTITUTE OF ALLIED HEALTH SCIENCES & RESEARCH**

## DEPARTMENT OF PARAMEDICAL SCIENCES

## BACHELOR OF SCIENCE IN RADIOLOGICAL IMAGING TECHNOLOGY
## (B.Sc. RIT)

## SYLLABUS

## YEAR/ SEMESTER: I/I

Integral University, Lucknow
Department of Paramedical Sciences
Study and Evaluation Scheme

Program: B.Sc. RIT Semester-I

| S. N. | Course code | Course Title | Type of Paper | Period Per hr/week/sem | | | Evaluation Scheme | | | | Sub. Total | Credit | Total Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | L | T | P | CT | TA | Total | ESE | | | |
| **THEORIES** | | | | | | | | | | | | | |
| 1 | RT101 | Human Anatomy- I | Core | 3 | 1 | 0 | 40 | 20 | 60 | 40 | 100 | 3:1:0 | 4 |
| 2 | RT102 | Human Physiology-I | Core | 3 | 1 | 0 | 40 | 20 | 60 | 40 | 100 | 3:1:0 | 4 |
| 3 | RT103 | Basic Physics and Radiation Physics | Core | 3 | 1 | 0 | 40 | 20 | 60 | 40 | 100 | 3:1:0 | 4 |
| 4 | RT104 | Community Healthcare Issues | Core | 3 | 1 | 0 | 40 | 20 | 60 | 40 | 100 | 3:1:0 | 4 |
| 5 | LN101 | Basic Professional Communication | Core | 2 | 1 | 0 | 40 | 20 | 60 | 40 | 100 | 2:1:0 | 3 |
| 6 | CS103 | Introduction to Computers | Core | 2 | 1 | 0 | 40 | 20 | 60 | 40 | 100 | 2:1:0 | 3 |
| **PRACTICAL** | | | | | | | | | | | | | |
| 1 | RT105 | Human Anatomy- I Lab | Core | 0 | 0 | 2 | 40 | 20 | 60 | 40 | 100 | 0:0:1 | 1 |
| 2 | RT106 | Human Physiology-I Lab | Core | 0 | 0 | 2 | 40 | 20 | 60 | 40 | 100 | 0:0:1 | 1 |
| 3 | RT107 | Basic Physics and Radiation Physics-Lab | Core | 0 | 0 | 2 | 40 | 20 | 60 | 40 | 100 | 0:0:1 | 1 |
| **Total** | | | | **16** | **06** | **06** | **360** | **180** | **540** | **360** | **900** | **25** | **25** |

| S. N. | Course code | Course Title | Type of Paper | Attributes | | | | | | | United Nation Sustainable Development Goal (SDGs) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Employability | Entrepreneurship | Skill Development | Gender Equality | Environment & Sustainability | Human Value | Professional Ethics | |
| **THEORIES** | | | | | | | | | | | |
| 1 | RT101 | Human Anatomy- I | Core | √ | √ | √ | √ | | √ | √ | 3,4 |
| 2 | RT102 | Human Physiology-I | Core | √ | √ | √ | √ | | √ | √ | 3,4 |
| 3 | RT103 | Basic Physics and Radiation Physics | Core | √ | √ | √ | √ | | √ | √ | 3,4 |
| 4 | RT104 | Community Healthcare Issues | Core | √ | √ | √ | √ | | √ | √ | 3,4 |
| 5 | LN101 | Basic Professional Communication | Core | | | √ | | | | | 3,4, 11 |
| 6 | CS103 | Introduction to Computers | Core | | | √ | | | | | 3,4, 11 |
| **PRACTICAL** | | | | | | | | | | | |
| 1 | RT105 | Human Anatomy- I Lab | Core | √ | √ | √ | √ | | √ | √ | 3,4 |
| 2 | RT106 | Human Physiology-I Lab | Core | √ | √ | √ | √ | | √ | √ | 3,4 |
| 3 | RT107 | Basic Physics and Radiation Physics-Lab | Core | √ | √ | √ | √ | | √ | √ | 3,4 |
| | | | | | | | | | | | |

**L:** Lecture **T:** Tutorials **P:** Practical **CT:** Class Test **TA:** Teacher Assessment **ESE:** End Semester Examination,
AE= Ability enhancement, DSE- Discipline Specific Elective, **Sessional Total:** Class Test + Teacher Assessment **Subject Total:** Sessional Total + End Semester Examination (ESE)

# Integral University, Lucknow

| Effective from Session: 2017-18 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | **RT101** | **Title of the Course** | **HUMAN ANATOMY- I** | **L** | **T** | **P** | **C** |
| **Year** | **I** | **Semester** | I | **3** | **1** | **0** | **4** |
| **Pre-Requisite** | Nil | **Co-requisite** | Nil | | | | |
| **Course Objectives** | To ensure complete and comprehensive knowledge of all functionalities of body. | | | | | | |

| **Course Outcomes** | |
|---|---|
| **CO1** | To learn about anatomical nomenclature, position, location & their function. |
| **CO2** | To study about classification of bone, Ossification of bone, type of cartilage, classifications of joints. |
| **CO3** | To learn about classification & function about Muscles, nervous & cardiovascular system |
| **CO4** | To learn about superior extremity muscles & superior extremity joints. |
| **CO5** | To learn about inferior extremity muscles & inferior extremity joints. |

| Unit No. | Title of the Unit | Content of Unit | Contact Hrs. | Mapped CO |
|---|---|---|---|---|
| 1 | **GENERALANATOMY** | **a.** Introduction and subdivisions of Anatomy.<br>**b.** Anatomical nomenclature: Terms of Planes, Positions, Body parts and movements.<br>**c.** Basic tissues of the body: Definition, location and their function. | 6 | CO1 |
| 2 | **OSTEOLOGY & ARTHROLOGY(Brief)** | **a.** Introduction, axial & appendicular skeleton, classification of bone based on shape and structure, structure of growing and adult long bone, ossification of bone, Types of cartilage, their characteristics features with example.<br>**b.** Introduction to Arthrology: Definition and classifications of joints with example. Details of synovial joint - characteristics features, type with example, close pack and loose pack position. | 7 | CO2 |
| 3 | **SYSTEMICANATOMY** | **a.** Brief About Myology: Classification of muscles and its characteristics features, Gross features of skeletal muscle, classification of muscle according to shape and fascicular architecture, action of muscles.<br>**b.** Brief About Neurology: Subdivision of nervous system, structural organization of nervous system including types of neurons, ganglion. Introduction to spinal nerves, cranial nerves and autonomic nervous system.<br>**c.** Brief About Cardiovascular System: Components of CVS, types of anastomoses, types of circulation, components of lymphatic systems and its functions. | 7 | CO3 |
| 4 | **SUPERIOREXTREMITY** | **a.** Surface landmarks and Introduction to superior extremity.<br>**b.** Brief about Muscles and fascia, Pectoral region: Pectoral muscles, Scapular region and Back, Muscles of Arm, Forearm and Hand.<br>**c.** Brief about Joints of superior extremity: Brief of shoulder joint, brief account of elbow joint & wrist joint and radioulnar joint. | 10 | CO4 |
| 5 | **INFERIOREXTREMITY** | **a.** Introduction and surface landmarks of lower extremity.<br>**b.** Brief about Muscles and fascia: Thigh: Brief account of thigh muscles.<br>**c.** Brief about Gluteal region: Muscles of gluteal region.<br>**d.** Compartment of leg, name of the muscles of leg, their action and nerve supply. Brief about Joints: Details of Hip and Knee joint, subtalar, tibio fibular joints. | 10 | CO5 |

**Reference Books:**


1. Principles of Anatomy & Physiology – Tortora Gerard J.
2. Chaursia's, A Text Book of Anatomy.
3. Ranganathan, T.S., A Text Book of Human Anatomy
4. Fattana, Human Anatomy, (Description and Applied), Saunder's& C P Prism Publishers, Bangalore
5. Ester. M. Grishcimer, Physiology & Anatomy with Practical Considerations, J.P.Lippin Cott. Philadelphia
6. Principles of Anatomy & Physiology – Tortora Gerard J.
7. Chaursia's, A Text Book of Anatomy.
8. Ranganathan, T.S., A Text Book of Human Anatomy


**e-Learning Source:**

1. https://www.kenhub.com/en/library/education/the-human-anatomy
2. https://www.imaios.com/en/e-anatomy/lower-limb/lower-extremity

**Course Articulation Matrix: (Mapping of COs with POs and PSOs)**

| PO-PSO / CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 3 |
| **CO2** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 |
| **CO3** | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 2 |
| **CO4** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 3 |
| **CO5** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 |

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

| Course Code | Course Title | Attributes | | | | | | | SDGs No. |
|---|---|---|---|---|---|---|---|---|---|
| | | Employability | Entrepreneurship | Skill Development | Gender Equality | Environment & Sustainability | Human Value | Professional Ethics | |
| RT101 | HUMAN ANATOMY- I | √ | √ | √ | | | √ | √ | **3,4** |

# Integral University, Lucknow

| Effective from Session: 2017-18 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | **RT102** | **Title of the Course** | **HUMAN PHYSIOLOGY-I** | **L** | **T** | **P** | **C** |
| **Year** | **I** | **Semester** | **I** | **3** | **1** | **0** | **4** |
| **Pre-Requisite** | **Nil** | **Co-requisite** | **Nil** | | | | |
| **Course Objectives** | To obtain the knowledge of Body systems and blood, cell physiology. | | | | | | |

| **Course Outcomes** | |
|---|---|
| **CO1** | To learn about Cell and cell division, Cellular movement, Osmosis, Dialysis. |
| **CO2** | To study about composition of blood, morphology of cells, Hemoglobin, ESR, MCV, MCH, MCHC, PT, APTT, BT, CT, ABO, Cross matching, etc. |
| **CO3** | Introduction of Respiratory System, Respiration measures, Regulation of respiration. |
| **CO4** | To learn about basic physiology of heart, blood circulation, Cardiac Cycle, etc. |
| **CO5** | To learn about introduction and physiology of digestive system. |

| Unit No. | Title of the Unit | Content of Unit | Contact Hrs. | Mapped CO |
|---|---|---|---|---|
| 1 | **GENERAL AND CELL PHYSIOLOGY** | **a.** Cell and cell division- Structure, Function and classification of cell.<br>**b.** Cellular Movements: Endocytosis and Exocytosis, Molecules of cell.<br>**c.** Transport across the cell membrane, Homeostasis.<br>**d.** Diffusion, Osmosis, Bonding, Filtration, Dialysis, Surface Tension, Adsorption, Colloid. | 8 | CO1 |
| 2 | **BLOOD** | **a.** Introduction of blood, Composition and function of blood, Blood cells morphology and development.<br>**b.** Blood cells types and function, Composition and function of blood plasma and Blood clotting factor, Hemoglobin-structure, normal content, function, types. Erythropoiesis.<br>**c.** Erythrocyte sedimentation rate (ESR) and its significance, Hematocrit, PCV, MCV, MCH, MCHC, Blood volume, Prothrombin time, Clotting time, Bleeding time, Blood Group, ABO and Rh factor, Cross matching, Coagulation and Anticoagulants. | 8 | CO2 |
| 3 | **RESPIRATION** | **a.** Respiratory System Introduction, Structure, Function and Mechanics of Breathing.<br>**b.** Respiration measures (Vital capacity, Total Volume, Reserve volume, Total lung capacity), Mechanism of respiration.<br>**c.** Regulation of respiration, pulmonary function test, physiological changes in altitude & acclimatization, hypoxia. | 8 | CO3 |
| 4 | **CARDIO VASCULAR SYSTEM** | **a.** Basic Physiology of Heart, Blood circulation, Arteries and veins, properties and structure of heart muscle.<br>**b.** Cardiac Cycle and heart sounds.<br>**c.** Conductive system of heart, Blood Pressure definition, Regulation factor affecting blood Pressure. | 8 | CO4 |
| 5 | **DIGESTIVE SYSTEM** | **a.** Digestive system introduction, structure and function.<br>**b.** Basic physiology of organs of digestive systems (Salivary glands, Gastric glands, Pancreas, Liver, Gallbladder).<br>**c.** Composition and function of all digestive juices, Digestion and Absorption of carbohydrate, fat and proteins. | 8 | CO5 |

**Reference Books:**


1. Human Physiology: A.K. Jain.
2. Essentials of Medical Physiology: K. Semubulingam, Jaypee Publishers.
3. Textbook of Physiology: Guyton.
4. Textbook of Physiology: Ganong


**e-Learning Source:**

1. https://samples.jbpub.com/9781284035179/9781284030341_CH01_Secure.pdf
2. https://en.wikipedia.org/wiki/Blood
3. https://en.wikipedia.org/wiki/Respiration_(physiology)

| | **Course Articulation Matrix: (Mapping of COs with POs and PSOs)** | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PO-PSO CO** | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
| **CO1** | 1 | 3 | 1 | 2 | 3 | 2 | 3 | 1 | 2 | 3 | 2 | 2 | 2 | 1 | 3 | 1 |
| **CO2** | 1 | 3 | 1 | 3 | 2 | 3 | 2 | 1 | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 2 |
| **CO4** | 1 | 3 | 1 | 2 | 2 | 3 | 2 | 1 | 3 | 2 | 3 | 3 | 2 | 1 | 2 | 1 |
| **CO5** | 1 | 3 | 1 | 2 | 3 | 2 | 3 | 1 | 2 | 3 | 2 | 2 | 2 | 1 | 3 | 1 |

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

| Course Code | Course Title | Attributes | | | | | | | SDGs No. |
|---|---|---|---|---|---|---|---|---|---|
| | | Employability | Entrepreneurship | Skill Development | Gender Equality | Environment & Sustainability | Human Value | Professional Ethics | |
| RT102 | HUMAN PHYSIOLOGY-I | √ | √ | √ | √ | | √ | √ | 3,4 |

# Integral University, Lucknow

| Effective from Session: 2017-18 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | **RT103** | **Title of the Course** | **BASIC PHYSICS AND RADIATION PHYSICS** | **L** | **T** | **P** | **C** |
| **Year** | **I** | **Semester** | **I** | **3** | **1** | **0** | **4** |
| **Pre-Requisite** | **Nil** | **Co-requisite** | **Nil** | | | | |
| **Course Objectives** | To ensure the knowledge of basic concept of Physics and radiation Physics. | | | | | | |

| **Course Outcomes:** After the successful course completion, learners will develop following attributes: | |
|---|---|
| **CO1** | To study about Units and measurements- Force work power and energy Temperature and heat, SI Units of Force work power and energy Temperature and heat parameter. |
| **CO2** | To study about Electric charges, Coulomb‘s law, Unit of charge; Electric potential, unit of potential Electric induction, capacitance and capacitors, series and parallel. |
| **CO3** | To study about Atoms and molecules, their structure, Nucleus of an Atoms and Atomic numbers b. Isotopes, Isobars & Isomers c. Excitation and Ionization. |
| **CO4** | To study about Discovery of x-rays, properties-production, x-ray spectrum, bremsstrahlung and characteristic x-rays- X-ray tube. |
| **CO5** | To study about. Atomic structure as applied to generation of X-rays b. Radioactivity spectrum of diagnostic imaging and therapy X ray. |

| Unit No. | Title of the Unit | Content of Unit | Contact Hrs. | Mapped CO |
|---|---|---|---|---|
| 1 | **BASIC CONCEPT** | **a.** Units and measurements- Force work power and energy Temperature and heat.<br>**b.** SI Units of Force work power and energy Temperature and heat parameter.<br>**c.** Atomic structure atom model, nucleus, electronic configuration, periodic table.<br>**d.** Isotopes, Ionization, excitation, Binding energy electron volt. | 8 | CO1 |
| 2 | **ELECTRICITY AND MAGNETISM** | **a.** Electric charges, Coulomb‘s law, Unit of charge; Electric potential, unit of potential.<br>**b.** Electric induction, capacitance and capacitors, series and parallel 2 connection; electric current, unit, resistance, Ohm‘s law, electric power, Joule‘s law.<br>**c.** Types of Magnets, Magnetic Induction, materials, Faradays Law of Induction.<br>**d.** Magnetic effects of current, voltmeter, Ammeter (AC &DC). | 8 | CO2 |
| 3 | **ATOMS AND MOLECULES** | **a.** Atoms and molecules, their structure, Nucleus of an Atoms and Atomic numbers.<br>**b.** Isotopes, Isobars &Isomers.<br>**c.** Excitation and Ionization, BE, Elements and compounds.<br>**d.** Type of solids (Insulator, Conductors &Semiconductors). | 8 | CO3 |
| 4 | **X-RAYS** | **a.** Discovery of x-rays, properties-production, x-ray spectrum, bremsstrahlung lung and characteristic x-rays- X-ray tube.<br>**b.** Coolidge tube, tube design, line focus principle, space charge effect, tube cooling- Modern x-ray tubes.<br>**c.** Stationary anode, rotating anode, grid-controlled x-ray tubes.<br>**d.** Heel effect, off focus radiation, tube insert and housing-Tube rating Quality and intensity of x-rays, factors influencing them. | 8 | CO4 |
| 5 | **RADIATION PHYSICS AND QUANTITIES AND UNITS** | **a.** Atomic structure as applied to generation of X-rays.<br>**b.** Radioactivity spectrum of diagnostic imaging and therapy X-ray.<br>**c.** Effects of variation of tube voltage current, filtration, wave form and target material on X-ray production.<br>**d.** Interaction of radiation with matter attenuation absorption and scattering phenomena.<br>**e.** Radiation intensity-exposure, roentgen, its limitations. | 8 | CO5 |

**Reference Books:**


1. Diagnostics X-Ray Imaging Quality Assurance by M.A. Period and P. Chaloner.
2. Textbook of Radiology and imaging- by DavidSutton.
3. Christensen’s Physics of diagnostic radiology.
4. The Essentaila of Physics of Medical Imaging by Bushberg.
5. Radiologic Science for Technologist by Stewart C Bushong.


**e-Learning Source:**

1. https://byjus.com/physics/electricity-and-magnetism/
2. https://byjus.com/chemistry/atoms-and-molecules/
3. https://en.wikipedia.org/wiki/X-ray

**Course Articulation Matrix: (Mapping of Cos with Pos and PSOs)**

| PO-PSO / CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 |
| **CO2** | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 2 | 3 | 3 |
| **CO3** | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 3 |
| **CO4** | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 3 |
| **CO5** | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 3 |

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

| Course Code | Course Title | Attributes | | | | | | | SDGs No. |
|---|---|---|---|---|---|---|---|---|---|
| RT103 | BASIC PHYSICS AND RADIATION PHYSICS | Employability | Entrepreneurship | Skill Development | Gender Equality | Environment & Sustainability | Human Value | Professional Ethics | |
| | | √ | √ | √ | √ | | √ | √ | **3,4** |

# Integral University, Lucknow

| Effective from Session: 2017-18 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | **RT104** | **Title of the Course** | **COMMUNITY HEALTH CARE ISSUES** | **L** | **T** | **P** | **C** |
| **Year** | **I** | **Semester** | **I** | **3** | **1** | **0** | **4** |
| **Pre-Requisite** | **Nil** | **Co-requisite** | **Nil** | | | | |
| **Course Objectives** | Get knowledge of Basic concepts of community healthcare and community issues. | | | | | | |

| **Course Outcomes** | |
|---|---|
| **CO1** | To learn about Definition, Determinants and indicator of health, Various Health Programme. |
| **CO2** | To study about Definition and meaning of family, Family sickness & psychosomatic disease. |
| **CO3** | To learn about Rural & Urban community with health hazards. |
| **CO4** | To learn about human adaptation and social changes. |
| **CO5** | To learn about WHO, UNICEF, FAO, Indian red cross society, World bank.etc |

| Unit No. | Title of the Unit | Content of Unit | Contact Hrs. | Mapped CO |
|---|---|---|---|---|
| 1 | **BASIC CONCEPTS OF COMMUNITY HEALTH CARE** | **a.** Definition of Health, Determinants of Health, Health Indicators of India, Health Team Concept.<br>**b.** National Health Policy, National Health Programmers (Briefly Objectives and Scope).<br>**c.** Population of India and Family welfare programme in India.<br>**d.** Health problem in India, Environment and health. | 8 | CO1 |
| 2 | **FAMILY** | **a.** Family, meaning and definitions, Functions of types of family, changing family patterns.<br>**b.** Influence of family on Individuals Health, family and nutrition.<br>**c.** Effects of sickness in the family and psychosomatic disease.<br>**d.** Concepts of joint family. | 8 | CO2 |
| 3 | **COMMUNITY** | **a.** Rural community, Meaning and features.<br>**b.** Health hazards to rural communities.<br>**c.** Health hazards to tribal community.<br>**d.** Urban community, Meaning and features, Health hazards of urbanities. | 8 | CO3 |
| 4 | **CULTURE ANDHEALTHDISORDERS** | **a.** Social Change: Meaning of social changes, Factors of social changes.<br>**b.** Human adaptation and social changes, social changes and stress.<br>**c.** Social changes and deviance, social changes and health programme.<br>**d.** Role of social planning in the Improvement of health and rehabilitation. | 8 | CO4 |
| 5 | **OBJECTIVE AND ORGANIZATION OF IMPORTANT AGENCIES** | **a.** WHO, UNICEF, FAO, ILO.<br>**b.** Indian red crosSociety.<br>**c.** UNFPA, World Bank.<br>**d.** Ford foundation, Rockefeller foundation. | 8 | CO5 |

**Reference Books:**

1. K. Perks, Sunder Lal, Adarsh Pandey, Textbook of Preventive Social Medicine.
2. Basic Concepts of Community Health Nursing by JAYPEE Publication.

**e-Learning Source:**

1. https://www.britannica.com/topic/family-kinship
2. https://en.wikipedia.org/wiki/Community

| | **Course Articulation Matrix: (Mapping of Cos with Pos and PSOs)** | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PO-PSO CO** | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
| **CO1** | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 |
| **CO2** | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 |
| **CO3** | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 3 |
| **CO4** | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 3 | 2 |
| **CO5** | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 3 |

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

| **Course Code** | **Course Title** | **Attributes** | | | | | | | **SDGs No.** |
|---|---|---|---|---|---|---|---|---|---|
| RT104 | COMMUNITY HEALTH CARE ISSUES | Employability | Entrepreneurship | Skill Development | Gender Equality | Environment & Sustainability | Human Value | Professional Ethics | |
| | | √ | √ | √ | √ | | √ | √ | **3,4** |

# Integral University, Lucknow

| Effective from Session: 2017-18 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | **CS103** | **Title of the Course** | **INTRODUCTION TO COMPUTERS** | **L** | **T** | **P** | **C** |
| **Year** | **I** | **Semester** | **I** | **2** | **1** | **0** | **3** |
| **Pre-Requisite** | **Nil** | **Co-requisite** | **Nil** | | | | |
| **Course Objectives** | The main objective of the course is to provide fundamental knowledge of computers, windows, MS word, and Power point. | | | | | | |

| **Course Outcomes** | |
|---|---|
| **CO1** | After studying this course, the students will know –The fundamentals of computers and computer systems. |
| **CO2** | After studying this course, the students will know –Understanding the basic concepts of DOS commands. |
| **CO3** | After studying this course, the students will know –A Basic understanding of the windows. |
| **CO4** | After studying this course, the students will know –Understanding MS Word. |
| **CO5** | After studying this course, the students will know –Knowledge, understanding, and basic concepts of presentation software. |

| Unit No. | Title of the Unit | Content of Unit | Contact Hrs. | Mapped CO |
|---|---|---|---|---|
| 1 | **COMPUTER FUNDAMENTALS** | What is a computer? Components of a computer system. Classification of computers. Types of computers. A brief history of the evolution of computers and generation of computers. Computer hardware and software. Input/ Output devices. | 6 | CO1 |
| 2 | **DOS** | Elementary knowledge of DOS commands DIR, CLS, DATE, TIME, MD, CD, RD, RENAME, DEL, BACKUP, RESTORE, COPY, SCANDISK, CHKDSK. | 6 | CO2 |
| 3 | **WINDOWS** | Difference between windows and DOS. Basic Features – Date, Time, Time Zone, Display, Screen Saver, Fonts, Mouse, and mouse pointers. Using accessories such as a calculator, paintbrush, CD player, etc. Use of Windows Explorer for moving and copying files. Introduction to MS Office and its integrated nature. | 6 | CO3 |
| 4 | **MS-WORD** | Starting Word, new documents, entering text, changing text, aligning, underlining, and justifying text. Use of tabs. Tables – creation, adding rows and columns, splitting, and combining cells, Borders. Saving, closing, and operating documents. Adding headers and footers. Print preview, and print a document. Mail merge: creating main document and data source. Adding and removing fields from the data source. | 6 | CO4 |
| 5 | **POWERPOINT (PRESENTATION SOFTWARE)** | The basic concept of presentation software. Standard, Formatting, and drawing toolbars in PowerPoint and their use. Creating and opening a presentation. Creating, deleting, opening, and copying slides. Closing and saving a presentation. Use of slide sorter, adding header/footer. Use of master slides and color box. Use of animation features. Inserting pictures, resizing pictures. Inserting organization chart. Use of auto content wizard. | 6 | CO5 |

**Reference Books:**


1. A First Course in Computers: Saxena, Vikas Publishing House.
2. Fundamentals of Computer science – M. Afshar Alam.
3. Fundamental of Information Technology by D. S. Yadav- New age International.


**e-Learning Source:**

1. https://testbook.com/learn/computer-fundamentals/
2. https://en.wikipedia.org/wiki/Microsoft_Word

| | **Course Articulation Matrix: (Mapping of Cos with Pos and PSOs)** | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PO-PSO CO** | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
| **CO1** | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 |
| **CO2** | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 |
| **CO3** | 2 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 2 | 3 | 3 |
| **CO4** | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 |
| **CO5** | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 |

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

| Course Code | Course Title | Attributes | | | | | | | SDGs No. |
|---|---|---|---|---|---|---|---|---|---|
| CS103 | INTRODUCTION TO COMPUTERS | Employability | Entrepreneurship | Skill Development | Gender Equality | Environment & Sustainability | Human Value | Professional Ethics | |
| | | | | √ | | | | | **3,4, 11** |

# Integral University, Lucknow

| Effective from Session: 2017-18 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | **LN101** | **Title of the Course** | **BASICS OF PROFESSIONAL COMMUNICATION** | **L** | **T** | **P** | **C** |
| **Year** | **I** | **Semester** | **I** | **2** | **1** | **0** | **3** |
| **Pre-Requisite** | **Nil** | **Co-requisite** | **Nil** | | | | |
| **Course Objectives** | The major objective of the course is to develop professional communication skills among the students. | | | | | | |

| **Course Outcomes** | |
|---|---|
| **CO1** | After studying this course, the students will know –The meaning & importance of professional communication as well as effective professional communication. |
| **CO2** | After studying this course, the students will know –Understanding the language through literature like essays and short stories. |
| **CO3** | After studying this course, the students will know –Basic concepts and knowledge of vocabulary. |
| **CO4** | After studying this course, the students will know –Understanding and practice of basic grammar. |
| **CO5** | After studying this course, the students will know –Knowledge, understanding, and skills in report writing & business letter writing. |

| Unit No. | Title of the Unit | Content of Unit | Contact Hrs. | Mapped CO |
|---|---|---|---|---|
| 1 | **PROFESSIONAL COMMUNICATION** | 1. Professional Communication: Meaning & importance<br>2. Essentials of Effective Communication<br>3. Barriers to Effective Communication | 6 | CO1 |
| 2 | **LANGUAGE THROUGH LITERATURE** | **1.** Essays:<br>"The Effect of the Scientific Temper on Man" by Bertrand Russell<br>"The Aims of Science and Humanities" by Moody E. Prior<br>**2.** Short Stories:<br>"The Meeting Pool" by Ruskin Bond<br>"The Portrait of a Lady" by Khushwant Singh | 6 | CO2 |
| 3 | **BASIC VOCABULARY** | 1. Euphemism, One-word Substitution, Synonyms, Antonyms<br>2. Homophones, Idioms and Phrases, Common mistakes<br>3. Confusable words and expressions | 6 | CO3 |
| 4 | **BASIC GRAMMAR** | 1. Articles, Prepositions, Tenses<br>2. Concord (Subject-Verb agreement), Verbs: kinds & uses<br>3. Degrees of Comparison | 6 | CO4 |
| 5 | **BASIC COMPOSITION** | 1. Report writing: What is a report? Kinds and objectives of reports, writing reports<br>2. Business Letter Writing: Introduction to business letters, types of business letters, Layout of business letters, Letter of Enquiry / Complaint | 6 | CO5 |

**Reference Books:**


1. Lata, Pushp& Kumar, Sanjay. Communication Skills, Oxford University Press-2012
2. Quintanilla, Kelly M. & Wahl, Shawn T. Business and Professional Communication, Sage Publications India Pvt. Ltd-2011
3. Juneja, Om P & Mujumdar, Aarati.Business Communication: Techniques and Methods, Orient Black Swan-2010
4. Arora, V. N. & Chandra, Lakshmi. Improve Your Writing: From Comprehensive to Effective Writing, Oxford University Press-2010 (For the prescribed essays- "The Effect of the Scientific Temper on Man" by Bertrand Russell & "The Aims of Science and Humanities" by Moody E. Prior)


**e-Learning Source:**

1. https://en.wikipedia.org/wiki/Professional_communication
2. https://www.wallstreetenglish.com/blog/english-vocabulary-for-beginners
3. https://grammar.yourdictionary.com/grammar-rules-and-tips/basic-english-grammar-rules.html

**Course Articulation Matrix: (Mapping of Cos with Pos and PSOs)**

| PO-PSO / CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 1 | 3 | 2 | 3 | 3 | 2 |
| **CO2** | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 |
| **CO3** | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 |
| **CO4** | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 |
| **CO5** | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 3 |

**2- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

| Course Code | Course Title | Attributes | | | | | | | SDGs No. |
|---|---|---|---|---|---|---|---|---|---|
| | | Employability | Entrepreneurship | Skill Development | Gender Equality | Environment & Sustainability | Human Value | Professional Ethics | |
| LN101 | BASICS OF PROFESSIONAL COMMUNICATION | | | √ | | | | | **3,4, 11** |

# Integral University, Lucknow

| Effective from Session: 2017-18 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | **RT105** | **Title of the Course** | **HUMAN ANATOMY- I LAB** | **L** | **T** | **P** | **C** |
| **Year** | **I** | **Semester** | **I** | **0** | **0** | **2** | **1** |
| **Pre-Requisite** | **Nil** | **Co-requisite** | **Nil** | | | | |
| **Course Objectives** | Demonstration of all systems and upper extremity, lower extremity bones. | | | | | | |

| **Course Outcomes** | |
|---|---|
| **CO1** | To learn about anatomical nomenclature, position, location & their function. |
| **CO2** | To study about classification of bone, Ossification of bone, type of cartilage, classifications of joints. |
| **CO3** | To learn about classification & function about Muscles, nervous & cardiovascular system |
| **CO4** | To learn about superior extremity muscles & superior extremity joints. |
| **CO5** | To learn about inferior extremity muscles & inferior extremity joints. |

| Unit No. | Title of the Unit | Content of Unit | Contact Hrs. | Mapped CO |
|---|---|---|---|---|
| 1 | **GENERALANATOMY** | Identification and description of all Anatomical structures. | 6 | CO1 |
| 2 | **OSTEOLOGY & ARTHROLOGY(Brief)** | The learning of Anatomy is by demonstration only through dummy dissected parts, slides, models, charts etc. 3.Demonstration of heart and vessels in the body. | 6 | CO2 |
| 3 | **SYSTEMIC ANATOMY** | Demonstration of dummy dissected parts (upper extremity, lower extremity, thoracic & abdominal viscera, face and brain). 5. Demonstration of parts of respiratory system, Normal radiographs of chest. | 6 | CO3 |
| 4 | **SUPERIOR EXTREMITY** | Demonstration of skeleton – articulated and disarticulated. Demonstration of all plexuses and nerves in the body.7. Demonstration of all part of brain. | 6 | CO4 |
| 5 | **INFERIOR EXTREMITY** | Demo of all bones showing its parts, radiographs of normal bones & joints. 9. Demonstration of all muscles of the body. | 6 | CO5 |

**Reference Books:**


1 Principles of Anatomy & Physiology – Tortora Gerard J.
2 Chaursia's, A Text Book of Anatomy.
3 Ranganathan, T.S., A Text Book of Human Anatomy.
4 Fattana, Human Anatomy, (Description and Applied), Saunder's & C P Prism Publishers, Bangalore.
5 Ester. M. Grishcimer, Physiology & Anatomy with Practical Considerations, J.P. Lippin Cott. Philadelphia.


**e-Learning Source:**

1. https://www.kenhub.com/en/library/anatomy/human-anatomy-terminology
2. http://ecoursesonline.iasri.res.in/mod/page/view.php?id=54210
3. https://byjus.com/question-answer/what-is-meant-by-systemic-anatomy/

| | **Course Articulation Matrix: (Mapping of Cos with Pos and PSOs)** | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PO-PSO CO** | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
| **CO1** | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 1 | 3 | 2 | 3 | 3 | 2 |
| **CO2** | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 |
| **CO3** | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 |
| **CO4** | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 |
| **CO5** | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 3 |

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

| Course Code | Course Title | Attributes | | | | | | | SDGs No. |
|---|---|---|---|---|---|---|---|---|---|
| | | Employability | Entrepreneurship | Skill Development | Gender Equality | Environment & Sustainability | Human Value | Professional Ethics | |
| RT105 | HUMAN ANATOMY- I LAB | √ | √ | √ | √ | | √ | √ | **3,4** |

# Integral University, Lucknow

| Effective from Session: 2017-18 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | **RT106** | **Title of the Course** | **HUMAN PHYSIOLOGY- I LAB** | **L** | **T** | **P** | **C** |
| **Year** | **I** | **Semester** | **I** | **0** | **0** | **2** | **1** |
| **Pre-Requisite** | **Nil** | **Co-requisite** | **Nil** | | | | |
| **Course Objectives** | Measurements of Pulse rate, Heart rate and blood pressure including blood parameters, D.L.C, T.L.C,R.B.C count. | | | | | | |

| **Course Outcomes** | |
|---|---|
| **CO1** | To learn about Cell and cell division, Cellular movement, Osmosis, Dialysis. |
| **CO2** | To study about composition of blood, morphology of cells, Hemoglobin, ESR, MCV, MCH, MCHC, PT, APTT, BT, CT, ABO, Cross matching, etc. |
| **CO3** | Introduction of Respiratory System, Respiration measures, Regulation of respiration. |
| **CO4** | To learn about basic physiology of heart, blood circulation, Cardiac Cycle, etc. |
| **CO5** | To learn about introduction and physiology of digestive system. |

| Unit No. | Title of the Unit | Content of Unit | Contact Hrs. | Mapped CO |
|---|---|---|---|---|
| 1 | **GENERAL AND CELL PHYSIOLOGY** | 1. Measurement of Pulse rate, Heart rate, Blood Pressure. | 6 | CO1 |
| 2 | **BLOOD** | 2. Auscultation for Heart Sounds and Normal Respiratory sounds. Introduction of Microscope, Identification of blood cells by study of peripheral blood smears. D.L.C Differential Leucocytes count. T.L.C Total Leukocytes Count, R.B.C. Count. Estimation of Hemoglobin. | 6 | CO2 |
| 3 | **RESPIRATION** | 1. Respiratory System Introduction, Structure, Function and Mechanics of Breathing.<br>2. Respiration measures (Vital capacity, Total Volume, Reserve volume, Total lung capacity), Mechanism of respiration.<br>3. Regulation of respiration, pulmonary function test, physiological changes in altitude & acclimatization, hypoxia. | 6 | CO3 |
| 4 | **CARDIO VASCULAR SYSTEM** | 1. Basic Physiology of Heart, Blood circulation, Arteries and veins, properties and structure of heart muscle.<br>2. Cardiac Cycle and heart sounds.<br>3. Conductive system of heart, Blood Pressure definition, Regulation factor affecting blood Pressure. | 6 | CO4 |
| 5 | **DIGESTIVE SYSTEM** | 1. Digestive system introduction, structure and function.<br>2. Basic physiology of organs of digestive systems (Salivary glands, Gastric glands, Pancreas, Liver, Gallbladder).<br>3. Composition and function of all digestive juices, Digestion and Absorption of carbohydrate, fat and proteins. | 6 | CO5 |

**Reference Books:**


1. Textbook of Physiology: Guyton.
2. Textbook of Physiology: Ganong.
3. Human Physiology: A.K. Jain.
4. Essentials of Medical Physiology: K.Semubulingam, Jaypee Publishers


**e-Learning Source:**

1. https://samples.jbpub.com/9781284035179/9781284030341_CH01_Secure.pdf
2. https://en.wikipedia.org/wiki/Blood
3. https://en.wikipedia.org/wiki/Respiration_(physiology)

| | **Course Articulation Matrix: (Mapping of COs with POs and PSOs)** | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PO-PSO CO** | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
| **CO1** | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 1 | 3 | 2 | 3 | 3 | 2 |
| **CO2** | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 |
| **CO3** | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 |
| **CO4** | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 |
| **CO5** | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 3 |

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

| Course Code | Course Title | Attributes | | | | | | | SDGs No. |
|---|---|---|---|---|---|---|---|---|---|
| RT106 | HUMAN PHYSIOLOGY- I LAB | Employability | Entrepreneurship | Skill Development | Gender Equality | Environment & Sustainability | Human Value | Professional Ethics | |
| | | √ | √ | √ | √ | | √ | √ | **3,4** |

# Integral University, Lucknow

| Effective from Session: 2017-18 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | **RT107** | **Title of the Course** | **BASIC PHYSICS AND RADIATION PHYSICS-LAB** | **L** | **T** | **P** | **C** |
| **Year** | **I** | **Semester** | **I** | **0** | **0** | **2** | **1** |
| **Pre-Requisite** | **Nil** | **Co-requisite** | **Nil** | | | | |
| **Course Objectives** | Learn about Atomic structure, X-Ray tubes, Circuits and Film screen contact testing, K.V. and Exposure time testing. | | | | | | |

| **Course Outcomes** | |
|---|---|
| **CO1** | To study about Units and measurements- Force work power and energy Temperature and heat, SI Units of Force work power and energy Temperature and heat parameter. |
| **CO2** | To study about Electric charges, Coulomb's law, Unit of charge; Electric potential, unit of potential Electric induction, capacitance and capacitors, series and parallel. |
| **CO3** | To study about Atoms and molecules, their structure, Nucleus of an Atoms and Atomic numbers b. Isotopes, Isobars & Isomers c. Excitation and Ionization. |
| **CO4** | To study about Discovery of x-rays, properties-production, x-ray spectrum, bremsstrahlung and characteristic x-rays- X-ray tube. |
| **CO5** | To study about. Atomic structure as applied to generation of X-rays b. Radioactivity spectrum of diagnostic imaging and therapy X ray. |

| **Unit No.** | **Title of the Unit** | **Content of Unit** | **Contact Hrs.** | **Mapped CO** |
|---|---|---|---|---|
| 1 | **BASIC CONCEPT** | 1. Atomic structure, X-ray tubes, X-ray circuits involving students to present and discuss. | 6 | CO1 |
| 2 | **ELECTRICITY AND MAGNETISM** | 2. Congruence of Radiation and Optical field and beam. | 6 | CO2 |
| 3 | **ATOMS AND MOLECULES** | 3. Determination of focal spot size of diagnostic X-raytube. | 6 | CO3 |
| 4 | **X-RAYS** | 4. K.V. and Exposure time testing and Linearity testing of the Timer. Consistency of M.A. loading and Consistency of Radiation Output. Evaluation of Total filtration of the tube | 6 | CO4 |
| 5 | **RADIATION PHYSICS AND QUANTITIES AND UNITS** | 5. Film screen contact testing. Table top Exposure rate measurement in fluoroscopy. Radiation protection survey, in and around of diagnostic installations. | 6 | CO5 |

**Reference Books:**


1. Diagnostics X-Ray Imaging Quality Assurance by M.A. Periard and P. Chaloner.
2. Textbook of Radiology and imaging- by David Sutton.


**e-Learning Source:**

1. https://byjus.com/physics/electricity-and-magnetism/
2. https://byjus.com/chemistry/atoms-and-molecules/
3. https://en.wikipedia.org/wiki/X-ray

**Course Articulation Matrix: (Mapping of COs with POs and PSOs)**

| PO-PSO / CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 1 | 3 | 2 | 3 | 3 | 2 |
| **CO2** | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 |
| **CO3** | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 |
| **CO4** | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 |
| **CO5** | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 3 |

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

| **Course Code** | **Course Title** | **Attributes** | | | | | | | **SDGs No.** |
|---|---|---|---|---|---|---|---|---|---|
| RT107 | BASIC PHYSICS AND RADIATION PHYSICS-LAB | Employability | Entrepreneurship | Skill Development | Gender Equality | Environment & Sustainability | Human Value | Professional Ethics | **3,4** |
| | | √ | √ | √ | √ | | √ | √ | |

# INTEGRAL UNIVERSITY, LUCKNOW

**INTEGRAL INSTITUTE OF ALLIED HEALTH SCIENCES & RESEARCH**

## DEPARTMENT OF PARAMEDICAL SCIENCES

## BACHELOR OF SCIENCE IN RADIOLOGICAL IMAGING TECHNOLOGY
## (B.Sc. RIT)

## SYLLABUS

## YEAR/ SEMESTER: I/II

Integral University, Lucknow
Department of Paramedical Sciences
Study and Evaluation Scheme

Program: B.Sc. RIT Semester-II

| S. N. | Course code | Course Title | Type of Paper | Period Per hr/week/sem | | | Evaluation Scheme | | | | Sub. Total | Credit | Total Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | L | T | P | CT | TA | Total | ESE | | | |
| **THEORIES** | | | | | | | | | | | | | |
| 1 | RT108 | Human Anatomy-II | Core | 2 | 1 | 0 | 40 | 20 | 60 | 40 | 100 | 21:0 | 3 |
| 2 | RT109 | Human Physiology-II | Core | 2 | 1 | 0 | 40 | 20 | 60 | 40 | 100 | 2:1:0 | 3 |
| 3 | RT110 | Radiation Hazard, Protection & Control | Core | 3 | 1 | 0 | 40 | 20 | 60 | 40 | 100 | 3:1:0 | 4 |
| 4 | RT111 | Radiological Positioning-I | Core | 3 | 1 | 0 | 40 | 20 | 60 | 40 | 100 | 3:1:0 | 4 |
| 5 | RT112 | Medical Law & Ethics | Core | 3 | 1 | 0 | 40 | 20 | 60 | 40 | 100 | 3:1:0 | 4 |
| 6 | LN131 | Effective Communication and Media Studies in English | Core | 2 | 1 | 0 | 40 | 20 | 60 | 40 | 100 | 2:1:0 | 3 |
| **PRACTICAL** | | | | | | | | | | | | | |
| 1 | RT113 | Human Anatomy-II Lab | Core | 0 | 0 | 2 | 40 | 20 | 60 | 40 | 100 | 0:0:1 | 1 |
| 2 | RT114 | Human Physiology-II Lab | Core | 0 | 0 | 2 | 40 | 20 | 60 | 40 | 100 | 0:0:1 | 1 |
| 3 | RT115 | Radiation Hazard, Protection & Control-Lab | Core | 0 | 0 | 2 | 40 | 20 | 60 | 40 | 100 | 0:0:1 | 1 |
| 4 | RT116 | Radiological Positioning-I –Lab | Core | 0 | 0 | 2 | 40 | 20 | 60 | 40 | 100 | 0:0:1 | 1 |
| **Total** | | | | **15** | **06** | **08** | **400** | **200** | **600** | **400** | **1000** | **25** | **25** |

| S. N. | Course code | Course Title | Type of Paper | Attributes | | | | | | | United Nation Sustainable Development Goal (SDGs) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Employability | Entrepreneurship | Skill Development | Gender Equality | Environment & Sustainability | Human Value | Professional Ethics | |
| **THEORIES** | | | | | | | | | | | |
| 1 | RT108 | Human Anatomy-II | Core | √ | √ | √ | √ | | √ | √ | 3,4 |
| 2 | RT109 | Human Physiology-II | Core | √ | √ | √ | √ | | √ | √ | 3,4 |
| 3 | RT110 | Radiation Hazard, Protection & Control | Core | √ | √ | √ | √ | | √ | √ | 3,4 |
| 4 | RT111 | Radiological Positioning-I | Core | √ | √ | √ | √ | | √ | √ | 3,4 |
| 5 | RT112 | Medical Law & Ethics | Core | √ | √ | √ | √ | | √ | √ | 3,4, 11 |
| 6 | LN131 | Effective Communication and Media Studies in English | Core | | | √ | | | | | 3,4, 11, 16 |
| **PRACTICAL** | | | | | | | | | | | |
| 1 | RT113 | Human Anatomy-II Lab | Core | √ | √ | √ | √ | | √ | √ | 3,4 |
| 2 | RT114 | Human Physiology-II Lab | Core | √ | √ | √ | √ | | √ | √ | 3,4 |
| 3 | RT115 | Radiation Hazard, Protection & Control-Lab | Core | √ | √ | √ | √ | | √ | √ | 3,4 |
| 4 | RT116 | Radiological Positioning-I –Lab | Core | √ | √ | √ | √ | | √ | √ | 3,4 |

**L:** Lecture **T:** Tutorials **P:** Practical **CT:** Class Test **TA:** Teacher Assessment **ESE:** End Semester Examination,
AE= Ability enhancement, DSE- Discipline Specific Elective, **Sessional Total:** Class Test + Teacher Assessment **Subject Total:** Sessional Total + End Semester Examination (ESE)

# Integral University, Lucknow

| **Effective from Session:** 2017-18 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | **RT108** | **Title of the Course** | **HUMAN ANATOMY- II** | **L** | **T** | **P** | **C** |
| **Year** | **I** | **Semester** | **II** | 2 | 1 | 0 | **3** |
| **Pre-Requisite** | **Nil** | **Co-requisite** | **Nil** | | | | |
| **Course Objectives** | This syllabus is extension of the part-I. The syllabus justifiably divides the body systems into two semesters to ensure complete and comprehensive knowledge of all functionalities of the body. | | | | | | |

| **Course Outcomes** | |
|---|---|
| **CO1** | Respiratory System: This curriculum can stimulate the students to understand the basic anatomy of included system and the resultant unified organization thereupon. |
| **CO2** | Digestive System: This curriculum can stimulate the students to understand the basic anatomy of included system and the resultant unified organization thereupon. |
| **CO3** | Urinary System: This curriculum can stimulate the students to understand the basic anatomy of included system and the resultant unified organization thereupon. |
| **CO4** | Endocrine Gland: This curriculum can stimulate the students to understand the basic anatomy of included system and the resultant unified organization thereupon. |
| **CO5** | Lymphatic System: This curriculum can stimulate the students to understand the basic anatomy of included system and the resultant unified organization thereupon. |

| **Unit No.** | **Title of the Unit** | **Content of Unit** | **Contact Hrs.** | **Mapped CO** |
|---|---|---|---|---|
| 1 | **RESPIRATORY SYSTEM** | 1. Orientation of Thoracic cage- boundaries, inlet, outlet & wall<br>2. Intercostal muscles - origin, insertion, nerve supply<br>3. Diaphragm - origin, insertion, nerve supply.<br>4. Nose, pharynx, Larynx-- extent, walls. Enumerate associated cartilages & muscles.<br>5. Trachea- extent & brief structure, concept of tracheobronchial tree.<br>6. Lungs- Surfaces, borders, lobes, fissures.<br>Joints of Thorax- enumerate and its type. | 6 | CO1 |
| 2 | **DIGESTIVE SYSTEM** | 1. Oral cavities (boundaries), tongue - parts, enumerate muscles & papillae, salivary glands- brief enumerate & discuss in brief its opening).<br>2. Pharynx (extent, parts & boundaries) and Esophagus (parts, extent, constrictions, sphincters).<br>3. Stomach - location, parts, surfaces, curvatures, nerve supply.<br>4. Small Intestine parts, difference between duodenum, jejunum & ileum, nerve supply.<br>5. Large intestine - parts & their features in brief.<br>6. Liver- location, surfaces, border, lobes, Gall bladder-location, parts & function, Pancreas -location, parts, surfaces, borders & its ducts.<br>Blood vessel and layers of GIT. | 6 | CO2 |
| 3 | **URINARY SYSTEM** | 1. Introduction and Parts of Urinary system.<br>2. Kidney- Structure (surfaces, poles, borders, hilum) & function.<br>3. Structure of nephron.<br>4. Ureter (length, parts, constrictions), Urinary bladder (location, capacity, surfaces, borders, parts, openings) and Urethra (parts). | 6 | CO3 |
| 4 | **ENDOCRINE GLAND** | 1. Introduction and function of Endocrine Gland.<br>2. Pituitary gland locations, parts, enumerate types of cells & hormones secreted.<br>3. Thyroid gland- location, parts, features & blood supply.<br>4. Parathyroid gland - location, enumerate types of cells & hormones secreted.<br>5. Adrenal gland locations, shape, enumerate its components & hormones. | 6 | CO4 |
| 5 | **LYMPHATIC SYSTEM** | 1. Introduction to Lymphatic System.<br>2. Lymph nodes- structure and functions.<br>3. Spleen - location, surfaces, borders, poles, hilum.<br>4. Thymus - location, structure & functions.<br>5. Tonsil – types according to location, palatine tonsil in brief. | 6 | CO5 |

**Reference Books:**


1. Ross & Wilson, (2014), Anatomy & Physiology in health & illness,11th edition, Elsevier Publications.
2. Chaurasia B D, (2016), Human Anatomy, 7th edition, CBS publishers
3. Ross & Wilson, (2014), Anatomy & Physiology in health & illness,11th edition, Elsevier Publications.


**e-Learning Source:**

1 https://my.clevelandclinic.org/health/articles/21205-respiratory-system
2 https://my.clevelandclinic.org/health/body/7041-digestive-system
**3 https://en.wikipedia.org/wiki/Urinary_system**

| | **Course Articulation Matrix: (Mapping of COs with POs and PSOs)** | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PO-PSO CO** | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
| **CO1** | 3 | 2 | 1 | 3 | 1 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 3 | 2 | 3 | 3 |
| **CO2** | 2 | 1 | 2 | 2 | 3 | 2 | 3 | 1 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 3 |
| **CO3** | 3 | 2 | 1 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 2 |
| **CO4** | 2 | 1 | 2 | 2 | 3 | 2 | 3 | 1 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 3 |
| **CO5** | 3 | 2 | 3 | 1 | 2 | 3 | 2 | 2 | 3 | 3 | 1 | 3 | 3 | 3 | 3 | 2 |

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

| **Course Code** | **Course Title** | **Attributes** | | | | | | | **SDGs No.** |
|---|---|---|---|---|---|---|---|---|---|
| RT108 | HUMAN ANATOMY- II | Employability | Entrepreneurship | Skill Development | Gender Equality | Environment & Sustainability | Human Value | Professional Ethics | |
| | | √ | √ | √ | √ | | √ | √ | **3,4** |

# Integral University, Lucknow

| **Effective from Session:** 2017-18 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | **RT109** | **Title of the Course** | **HUMAN PHYSIOLOGY-II** | **L** | **T** | **P** | **C** |
| **Year** | **I** | **Semester** | **II** | 2 | 1 | 0 | **3** |
| **Pre-Requisite** | **Nil** | **Co-requisite** | Nil | | | | |
| **Course Objectives** | This subject imparts the knowledge of the structure and function of included organs and organ systems in normal human body. | | | | | | |

| **Course Outcomes** | |
|---|---|
| **CO1** | Digestive System: Students will able to understand functioning of various systems as well as its applied aspects. |
| **CO2** | Central Nervous System: Students will able to understand functioning of various systems as well as its applied aspects. |
| **CO3** | Endocrine Gland: Students will able to understand functioning of various systems as well as its applied aspects. |
| **CO4** | Reproductive System: Students will able to understand functioning of various systems as well as its applied aspects. |
| **CO5** | Excretory System: Students will able to understand functioning of various systems as well as its applied aspects. |

| **Unit No.** | **Title of the Unit** | **Content of Unit** | **Contact Hrs.** | **Mapped CO** |
|---|---|---|---|---|
| 1 | **DIGESTIVE SYSTEM** | 1. Digestive system introduction, structure of GI wall and functions.<br>2. Basic physiology of organs of digestive system (Salivary glands, Gastric glands, Pancreas, Liver, Gall bladder).<br>3. Physiological functions of Liver.<br>4. Digestion and Absorption of carbohydrate, fat and proteins. | 6 | CO1 |
| 2 | **CENTRAL NERVOUS SYSTEM** | 1. Nervous System: general organization of CNS, function of important structure and spinal cord, neuron, nerve impulse, type of nerves according to function, Autonomic nervous system- organization & function.<br>2. Special senses- general organization & functions. | 6 | CO2 |
| 3 | **ENDOCRINE GLAND** | 1. Introduction of Endocrine system.<br>2. Physiological Functions of Glucagon, Prolactin, Growth Hormones, insulin, oxytocin, ADH, Adrenal PTH, Thyroxin, calcitonin, Vitamin D. | 6 | CO3 |
| 4 | **REPRODUCTIVE SYSTEM** | 1. Introduction of Reproductive Systems in human.<br>2. Spermatogenesis and Oogenesis.<br>3. Physiological functions of Male and female Reproductive Hormones.<br>4. Menstrual Cycle.<br>5. Placental Hormone (Physiological Function). | 6 | CO4 |
| 5 | **EXCRETORY SYSTEM** | Functions anatomy of Kidneys, Urine formation, (Glomerular filtration and tubular Reabsorption), Electrolytes: their balances and imbalances Introduction of acidosis and alkalosis. | 6 | CO5 |

**Reference Books:**


1. Guyton and Hall, (2011) Textbook of Medical Physiology, 12th Edition, Saunder/Elsevier.
2. Sembulingam k, (2012), Essentials of Medical physiology, 6thedition, Jaypee Publication.
3. Sembulingam k, (2012), Essentials of Medical Physiology, 6thedition, Jaypee Publication.
4. Sujit Chaudhury, (2011), Concise Medical Physiology, 6th edition, NCBA.
5. Gerard J.Tortora and Bryan H. Derrickson, (Principles of Anatomy and Physiology, 14thedition, Wiley publications


**e-Learning Source:**

1. https://samples.jbpub.com/9781284035179/9781284030341_CH01_Secure.pdf
2. https://en.wikipedia.org/wiki/Blood
3. https://en.wikipedia.org/wiki/Respiration_(physiology)

| | **Course Articulation Matrix: (Mapping of COs with POs and PSOs)** | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PO-PSO CO** | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
| **CO1** | 3 | 2 | 1 | 3 | 1 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 3 | 2 | 3 | 3 |
| **CO2** | 2 | 1 | 2 | 2 | 3 | 2 | 3 | 1 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 3 |
| **CO3** | 3 | 2 | 1 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 2 |
| **CO4** | 2 | 1 | 2 | 2 | 3 | 2 | 3 | 1 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 3 |
| **CO5** | 3 | 2 | 3 | 1 | 2 | 3 | 2 | 2 | 3 | 3 | 1 | 3 | 3 | 3 | 3 | 2 |

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

| **Course Code** | **Course Title** | **Attributes** | | | | | | | **SDGs No.** |
|---|---|---|---|---|---|---|---|---|---|
| RT109 | HUMAN PHYSIOLOGY-II | Employability | Entrepreneurship | Skill Development | Gender Equality | Environment & Sustainability | Human Value | Professional Ethics | |
| | | √ | √ | √ | √ | | √ | √ | **3,4** |

# Integral University, Lucknow

| Effective from Session: 2017-18 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | **RT110** | **Title of the Course** | **RADIATION HAZARDS, PROTECTION AND CONTROL** | **L** | **T** | **P** | **C** |
| **Year** | **I** | **Semester** | **II** | **3** | **1** | **0** | **4** |
| **Pre-Requisite** | **Nil** | **Co-requisite** | **Nil** | | | | |
| **Course Objectives** | The objective is to learn aim, objective, philosophy and principle of radiation protection to protect oneself from biological effect of radiation and monitoring of radiation exposure. | | | | | | |

| **Course Outcomes** | |
|---|---|
| **CO1** | Students will acquaint with 1. Radiation protection: Definition of radiation hazards 2. Principle, history & development - National & international agencies; AERB, BARC, ICRP, WHO, IAEA and their role 3. Sources of radiation-natural-man made & internal exposures; 4. Permissible dose levels on and around sealed source housing and installation principles of radiation protection. |
| **CO2** | Students will acquaint with 1. Wedge filters, wedge angle, hinge angle 2. Compensator beams flattering filters, scattering foils 3. Physical properties of phantom materials, bolus and substitutes 4. Factor used for treatment dose calculations, Daily treatment time and monitor units calculation |
| **CO3** | 1. Protection from primary, leakage and scattered 4 radiations 2. Concepts of work load use factor, occupancy factor & distance 3. Barrier design- barrier materials-concrete, brick& lead, Primary & secondary barrier design calculations 4. Design of doors. Control of radiation-effects of time, distance and shielding. |
| **CO4** | 1. Principle and objective film badge guidelines for use thermo luminescent dosimeter badge pocket dosimeter 2. Area monitoring and radiation survey, practical use of survey meter, zone monitors and phantoms 3. Survey in teletherapy, brachytherapy and simulator units |
| **CO5** | 1. Biological effects of radiation 2. Direct & Indirect actions of radiation 3. Concept of detriment, Deterministic & stochastic effect of radiation somatic and genetic effects 4. Dose relationship and Effects of antenatal exposure |

| **Unit No.** | **Title of the Unit** | **Content of Unit** | **Contact Hrs.** | **Mapped CO** |
|---|---|---|---|---|
| 1 | **RADIATION HAZARDS, PROTECTION** | 1. Radiation protection: Definition of radiation hazards.<br>2. Principle, history & development - National & international agencies; AERB, BARC, ICRP, WHO, IAEA and their role.<br>3. Sources of radiation-natural-man made & internal exposures.<br>4. Permissible dose levels on and around sealed source housing and installation principles of radiation protection. | 8 | CO1 |
| 2 | **METHODS TO REDUCE RADIATION** | 1. Wedge filters, wedge angle, hinge angle.<br>2. Compensator beams flattering filters, scattering foils.<br>3. Physical properties of phantom materials, bolus and substitutes.<br>4. Factor used for treatment dose calculations, Daily treatment time and monitor units' calculation. | 8 | CO2 |
| 3 | **PLANNING OF RADIATION INSTALLATION** | 1. Protection from primary, leakage and scattered 4 radiations.<br>2. Concepts of work load use factor, occupancy factor & distance.<br>3. Barrier design- barrier materials-concrete, brick& lead, Primary & secondary barrier design calculations.<br>4. Design of doors. Control of radiation-effects of time, distance and shielding. | 8 | CO3 |
| 4 | **PERSONNEL MONITORING SYSTEMS** | 1. Principle and objective film badge guidelines for use thermo luminescent dosimeter badge pocket dosimeter.<br>2. Area monitoring and radiation survey, practical use of survey meter, zone monitors and phantoms.<br>3. Survey in teletherapy, brachytherapy and simulator units. | 8 | CO4 |
| 5 | **BIOLOGICAL ASPECTS OF RADIOLOGICAL PROTECTION** | 1. Biological effects of radiation.<br>2. Direct & Indirect actions of radiation.<br>3. Concept of detriment, Deterministic & stochastic effect of radiation somatic and genetic effects.<br>4. Dose relationship and Effects of antenatal exposure. | 8 | CO5 |

**Reference Books:**


1. Sherer MA, Visconti PJ, Ritenour ER, Haynes K. Radiation Protection in Medical Radiography-E-Book. Elsevier Health Sciences; 2014 Mar 12
2. Brandon AN, Hill DR. Selected list of books and journals in allied health. Bulletin of the Medical Library Association. 1996.
3. Long BW, Frank ED, Ehrlich RA. Radiography Essentials for Limited Practice-E- Book. Elsevier Health Sciences; 2016 Sep 6.
4. Durrani SA, Ilic R, editors. Radon measurements by etched track detectors: applications in radiation protection, earth sciences and the environment. world scientific.
5. Turner JE. Atoms, radiation, and radiation protection. John Wiley & Sons; 2008 Jan 8.
6. www.AERB.com (Guidelines and Details of Quality Control in Radiology).


**e-Learning Source:**

1. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6037814/
2. https://www.safeopedia.com/definition/446/personal-monitoring

**Course Articulation Matrix: (Mapping of COs with POs and PSOs)**

| PO-PSO / CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 |
| **CO2** | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 |
| **CO3** | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 |
| **CO4** | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 3 |
| **CO5** | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 |

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

| **Course Code** | **Course Title** | **Attributes** | | | | | | | **SDGs No.** |
|---|---|---|---|---|---|---|---|---|---|
| RT110 | RADIATION HAZARDS, PROTECTION AND CONTROL | Employability | Entrepreneurship | Skill Development | Gender Equality | Environment & Sustainability | Human Value | Professional Ethics | |
| | | √ | √ | √ | √ | | √ | √ | **3,4** |

# Integral University, Lucknow

| **Effective from Session:** 2017-18 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | **RT111** | **Title of the Course** | **RADIOGRAPHIC POSITIONING-I** | **L** | **T** | **P** | **C** |
| **Year** | **I** | **Semester** | **II** | **3** | **1** | **0** | **4** |
| **Pre-Requisite** | **Nil** | **Co-requisite** | Nil | | | | |
| **Course Objectives** | The objective is to learn basic and special projections for the better and delineation diagnosis of the disease conditions of different anatomical structure. | | | | | | |

| **Course Outcomes** | |
|---|---|
| **CO1** | 1. Cranial bones and facial bones • Related radiological anatomy 2. Basic & special projections • Cranium Base of skull, Sella turcica, Mastoids, Optic foramina and Orbits, Nasal bone, TM joint, Facial bone, Zygomatic arches, Mandible, Para nasal sinuses |
| **CO2** | NECK: • Related radiological anatomy • Positioning- AP, LAT |
| **CO3** | THORAX: • Related radiological anatomy • Chest X-ray –AP, LAT • Special projections |
| **CO4** | ABDOMEN: • Related radiological anatomy. Basic & special projection • Basic: AP supine (KUB) • Special: PA prone, lateral decubitus, Erect AP, Dorsal decubitus, Lateral • Acute abdomen: three way series |
| **CO5** | KUB: • Related radiological anatomy • Positioning- AP |

| **Unit No.** | **Title of the Unit** | **Content of Unit** | **Contact Hrs.** | **Mapped CO** |
|---|---|---|---|---|
| 1 | **SKULL** | **Cranial bones and facial bones**<br>• Related radiological anatomy<br>**Basic & special projections**<br>• Cranium Base of skull, Sella turcica, Mastoids, Optic foramina and Orbits, Nasal bone, TM joint, Facial bone, Zygomatic arches, Mandible, Para nasal sinuses | 8 | CO1 |
| 2 | **NECK** | • Related radiological anatomy<br>• Positioning- AP, LAT | 8 | CO2 |
| 3 | **THORAX** | • Related radiological anatomy<br>• Chest X-ray –AP, LAT<br>• Special projections | 8 | CO3 |
| 4 | **ABDOMEN** | • Related radiological anatomy.<br>**Basic & special projection**<br>• Basic: AP supine (KUB)<br>• Special: PA prone, lateral decubitus, Erect AP, Dorsal decubitus, Lateral<br>• Acute abdomen: three-way series | 8 | CO4 |
| 5 | **KUB** | • Related radiological anatomy<br>• Positioning- AP | 8 | CO5 |

**Reference Books:**


1. Whitley AS, Jefferson G, Holmes K, Sloane C, Anderson C, Hoadley G. Clark's.
2. Positioning in Radiography 13E. CRC Press; 2015 Jul 28
3. Bontrager KL, Lampugnano J. Textbook of Radiographic Positioning and Related.
4. Anatomy-E-Book. Elsevier Health Sciences; 2013 Aug 7.
5. Bontrager KL, Lampugnano J. Bontrager's Handbook of Radiographic Positioning.
6. Techniques-E-BOOK. Elsevier Health Sciences; 2017 Feb 10.


**e-Learning Source:**

1. https://radiopaedia.org/articles/skull-radiography
2. https://radiopaedia.org/cases/normal-soft-tissue-neck-lateral-radiograph
3. https://radiopaedia.org/articles/abdomen-ap-supine-view-1

| | **Course Articulation Matrix: (Mapping of COs with POs and PSOs)** | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PO-PSO CO** | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
| **CO1** | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 |
| **CO2** | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 |
| **CO3** | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 |
| **CO4** | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 3 |
| **CO5** | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 |

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

| **Course Code** | **Course Title** | **Attributes** | | | | | | | **SDGs No.** |
|---|---|---|---|---|---|---|---|---|---|
| RT111 | RADIOGRAPHIC POSITIONING-I | Employability | Entrepreneurship | Skill Development | Gender Equality | Environment & Sustainability | Human Value | Professional Ethics | |
| | | √ | √ | √ | √ | | √ | √ | **3,4** |

# Integral University, Lucknow

| Effective from Session: 2017-18 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | **RT112** | **Title of the Course** | **MEDICAL LAW & ETHICS** | **L** | **T** | **P** | **C** |
| **Year** | **I** | **Semester** | **I** | **3** | **1** | **0** | **4** |
| **Pre-Requisite** | **Nil** | **Co-requisite** | **Nil** | | | | |
| **Course Objectives** | Legal and ethical considerations are firmly believed to be an integral part of medical practice in planning patient care. Advances in medical sciences, growing sophistication of the modern society's legal framework, increasing awareness of human rights and changing moral principles of the community at large, now result in frequent occurrences of healthcare professionals being caught in dilemmas over aspects arising from daily practice. | | | | | | |

| **Course Outcomes** | |
|---|---|
| **CO1** | Students will abide by the rule and regulation of the medicine and have abundant knowledge on professional attitude and communication among the colleague and patients. |
| **CO2** | Students will abide by the rule and regulation of the medicine and have abundant knowledge on professional attitude and communication among the colleague and patients. |
| **CO3** | Students will abide by the rule and regulation of the medicine and have abundant knowledge on professional attitude and communication among the colleague and patients. |
| **CO4** | Students will abide by the rule and regulation of the medicine and have abundant knowledge on professional attitude and communication among the colleague and patients.. |
| **CO5** | Students will abide by the rule and regulation of the medicine and have abundant knowledge on professional attitude and communication among the colleague and patients. |

| Unit No. | Title of the Unit | Content of Unit | Contact Hrs. | Mapped CO |
|---|---|---|---|---|
| 1 | **MEDICAL ETHICS** | 1. Medical ethics, Definition, Goal, Scope.<br>2. Introduction to Code of conduct.<br>3. Basic principles of medical ethics, Confidentiality.<br>4. Malpractice and negligence, Rational and irrational drug therapy. | 8 | CO1 |
| 2 | **RIGHT OF PATIENT** | 1. Autonomy and informed consent.<br>2. Right of patients Care of the terminally ill.<br>3. Euthanasia Organ transplantation, ethics and law | 8 | CO2 |
| 3 | **MEDICO LEGAL ASPECTS** | 1. Medico legal aspects of medical records, Medico legal case and type.<br>2. Records and document related to MLC ownership of medical records.<br>3. Confidentiality Privilege communication, Release of medical information.<br>4. Unauthorized disclosure, retention of medical records, other various aspects. | 8 | CO3 |
| 4 | **PROFESSIONAL INDEMNITY INSURANCE POLICY** | 1. Professional Indemnity insurance policy.<br>2. Development of standardized protocol to avoid near miss or sentinel events obtaining an informed consent | 8 | CO4 |
| 5 | **EMERGENCY CARE AND LIFE SUPPORT** | 1. Basics of emergency care and life support skill.<br>2. Vital signs and primary assessment, Basic emergency care, first aid and triage.<br>3. Ventilations including use of bag-valve-masks (BVMs), Choking, rescue breathing methods.<br>4. One and Two rescuer CPR, using an AED (Automated external defibrillator), Managing an emergency including moving a patient. | 8 | CO5 |

**Reference Books:**


1. Kennedy I, Grubb A. Medical law. London: Butterworths; 2000.
2. Jackson E. Medical law: text, cases, and materials. Oxford University Press.
3. Recent Trends in Medical Imaging (CT, MRI and USG).
4. Bontrager KL, Lampignano J. Bontrager's Handbook of Radiographic Positioning and Techniques-E-BOOK. Elsevier Health Sciences; 2017 Feb 10.
5. Frank ED, Long BW, Smith BJ. Merrill's Atlas of Radiographic Positioning and Procedures-E-Book. Elsevier Health Sciences; 2013 Aug 13.


**e-Learning Source:**

1. https://www.karger.com/Article/FullText/509119
2. https://www.gov.uk/government/publications/nhs-screening-programmes-duty-of-candour/medico-legal-aspects
3. https://www.physio-pedia.com/Basic_Life_Support_(BLS)

**Course Articulation Matrix: (Mapping of COs with POs and PSOs)**

| PO-PSO / CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 |
| **CO2** | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 |
| **CO3** | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 |
| **CO4** | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 3 |
| **CO5** | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 |

**3- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

| Course Code | Course Title | Attributes | | | | | | | SDGs No. |
|---|---|---|---|---|---|---|---|---|---|
| RT112 | MEDICAL LAW & ETHICS | Employability | Entrepreneurship | Skill Development | Gender Equality | Environment & Sustainability | Human Value | Professional Ethics | |
| | | | | √ | | | | | **3,4, 11** |

# Integral University, Lucknow

| **Effective from Session:** 2023-2024 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | **LN131** | **Title of the Course** | **Effective Communication and Media Studies in English** | **L** | **T** | **P** | **C** |
| **Year** | **I** | **Semester** | II | **2** | **1** | **0** | **3** |
| **Pre-Requisite** | 10+2 | **Co-requisite** | UG | | | | |
| **Course Objectives** | The students will be able to:<br>• Developing the art of communication and learning basic skills of conversation.<br>• Knowledge of Professional and Media Skill Development, Career enhancement tips and goal oriented learning.<br>• Basic concept of Phonetics, Voice and Accent.<br>• Students will learn academic learning and descriptive writing. | | | | | | |

| **Course Outcomes** | |
|---|---|
| **CO1** | Students will be able to develop Formal and Informal Spoken skills, learn career development skills and learn to have clear idea of goal setting. |
| **CO2** | Students will learn about the importance and usage of mass media and ways to develop their media skills. |
| **CO3** | Academic Writing will help students to format and structure the content they create which will help them to be professional writers and bloggers. |
| **CO4** | The unit will help students to learn and develop better conversation skills in formal and informal setup. They will learn the proper usage and pronunciation in various accent enabling them to converse in competitive environment. |
| **CO5** | The unit enables students to put all the theoretical knowledge to practice, assuring complete learning and implementation. |

| **Unit No.** | **Title of the Unit** | **Content of Unit** | **Contact Hrs.** | **Mapped CO** |
|---|---|---|---|---|
| 1 | **Communication in Practice** | a. Do's and Don'ts of Formal and Informal Communication<br>b. Tips on Career Management- Setting Clear Goals, Skill Development, Network Building and Professional Relationship Etiquette, Knowing Aptitude and Values.<br>c. Classroom Practice-<br>d. JAM (Just A Minute)<br>e. Extempore, Rebuttal, Forum, Role Play. | 7hrs | CO1 |
| 2 | **Mass Communication and Journalism** | a. Introduction to Mass Communication.<br>b. Types of Mass Communication/ Mass Media<br>c. Impact of Globalization on Mass Media<br>d. Socio Political Impact of Digital Media<br>e. Advertisement- Ethical and Unethical Advertisement, Jingles,Tag Lines, Punch Lines, Media Writing. | 7hrs | CO2 |
| 3 | **Fundamentals of Academic Writing** | a. The four main types of academic writing- Descriptive, Analytical, Persuasive and Critical.<br>b. Writing Book Review,<br>c. Introduction to Descriptive Writing<br>**d.** Techniques and Features of Descriptive Writing - Character, Place and Travel Description, Event, Movie and Food description. | 7hrs | CO3 |
| 4 | **Conversation Skills** | a. Phonetics- Learning Speech Mechanism (Voice and Accent)<br>• Introduction- Self and Other-Guest Speaker / Colleague<br>• Polite Conversational Etiquette<br>b. Varieties of English Language; their difference in terms of Pronunciation, Vocabulary and Spelling:<br>• British<br>• American | 7hrs | CO4 |
| 5 | **Academic Project** | a. Creating News Bytes<br>b. Writing News Report<br>c. Creating Jingles and Tag Lines for Famous Brands.<br>d. Writing Editorial on a Topical Subject<br>e. Writing Film Reviews<br>f. Travelogue | 4hrs | CO5 |

**Reference Books:**


1. Kumar, Sanjay and PushpLata. Communication Skills. Oxford University Press, Oxford 2011.
2. Raman, Meenakshi, and Sangeeta Sharma. *Technical Communication: Principals and Practice*. Second Edition, Oxford University Press, 2012.
3. Raina, Roshan Lal, Iftikhar Alam, and Faizia Siddiqui. *Professional Communication*. Himalaya PublicationHouse2012.
4. Agarwal, Malti.Professional Communication. Krishna'sEducationalPublishers.2016.
5. Carnegie, Dale. *How to Win Friends and Influence People in theDigitalAge*.SimonandSchuster.2012.
6. Covey, Stephen R. *The Seven Habits of Highly SuccessfulPeople*.FreePress.1989.
7. Verma, KC. TheArtofCommunication.Kalpaz.2013.
8. Alred, G. J., Brusaw, C. T., & Oliu, W. E. (2011). Handbook of Technical Writing, Tenth Edition (10th ed.). St. Martin's Press
9. Sherman, Barbara. (2014). Skimming and Scanning Techniques. Liberty University Press.
10. Barker, Alan. (2011). Improve Your Communication Skills. Kogan Page Pub. [later edited version to be added if any]
11Seely, John. (1998). The Oxford Guide to Effective Writing and Speaking. Oxford UP.


**e-Learning Source:**

1. http://www.uptunotes.com/notes-professional-communication-unit-i-nas-104...
2. https://www.docsity.com/en/subjects/professional-communication/
3. https://lecturenotes.in/download/note/22690-note-for-communication-skills-for-profession...
4. https://www.files.ethz.ch/isn/125396/1154_trystnehru.pdf
5. https://kr.usembassy.gov/martin-luther-king-jr-dream-speech-1963/#:~:text=I%20have%20a%20dream%20that,skin%20but%20by%20their%20.

| | Course Articulation Matrix: (Mapping of COs with POs and PSOs) | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PO-PSO CO** | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO4 | PSO5 | PSO6 | PSO7 |
| **CO1** | 3 | 1 | 1 | 2 | 2 | 1 | 2 | 3 | 3 | 1 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 3 |
| **CO2** | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 3 | 3 | 3 |
| **CO3** | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 |
| **CO4** | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 |
| **CO5** | 3 | 2 | 2 | 1 | 2 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 3 | 3 | 2 |

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

| Course Code | Course Title | Attributes | | | | | | | SDGs No. |
|---|---|---|---|---|---|---|---|---|---|
| LN131 | **Effective Communication and Media Studies in English** | Employability | Entrepreneurship | Skill Development | Gender Equality | Environment & Sustainability | Human Value | Professional Ethics | |
| | | √ | √ | √ | | | | √ | **3,4, 6** |

# Integral University, Lucknow

| **Effective from Session:** 2017-18 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | **RT113** | **Title of the Course** | **HUMAN ANATOMY- II LAB** | **L** | **T** | **P** | **C** |
| **Year** | **I** | **Semester** | **II** | 0 | 0 | 2 | **1** |
| **Pre-Requisite** | **Nil** | **Co-requisite** | **Nil** | | | | |
| **Course Objectives** | **Demonstration of Thorax, Abdomen Head and Urinary System.** | | | | | | |

| **Course Outcomes** | |
|---|---|
| **CO1** | Respiratory System: This curriculum can stimulate the students to understand the basic anatomy of included system and the resultant unified organization thereupon. |
| **CO2** | Digestive System: This curriculum can stimulate the students to understand the basic anatomy of included system and the resultant unified organization thereupon. |
| **CO3** | Urinary System: This curriculum can stimulate the students to understand the basic anatomy of included system and the resultant unified organization thereupon. |
| **CO4** | Endocrine Gland: This curriculum can stimulate the students to understand the basic anatomy of included system and the resultant unified organization thereupon. |
| **CO5** | Lymphatic System: This curriculum can stimulate the students to understand the basic anatomy of included system and the resultant unified organization thereupon. |

| **Unit No.** | **Title of the Unit** | **Content of Unit** | **Contact Hrs.** | **Mapped CO** |
|---|---|---|---|---|
| 1 | **Thorax** | • Sternum<br>• Ribs<br>• Vertebre<br>• Demonstration of Lungs<br>• Demonstrtion of Chest X-Ray | 6 | CO1 |
| 2 | **Abdomen** | • Lumbar vertebrae<br>• Stomach<br>• Liver, Gall bladder and Pancreas<br>• Intestine | 6 | CO2 |
| 3 | **Urinary system** | • Sacrum<br>• Articulated<br>• Pelvis Kidney & Urinary bladder | 6 | CO3 |
| 4 | **Head** | Skull – Identification of bones | 6 | CO4 |
| 5 | **Lymphatic System** | Introduction to lymph nodes , structure and function | 6 | CO5 |

**Reference Books:**


1. Ross & Wilson, (2014), Anatomy & Physiology in health & illness,11th edition, Elsevier Publications.
2. Chaurasia B D, (2016), Human Anatomy, 7th edition, CBS publishers.
3. Gerard J. Tortora and Bryan H. Derrickson, (Principles of Anatomy and Physiology, 14th edition, Wiley publications.


**e-Learning Source:**

1. https://my.clevelandclinic.org/health/articles/21205-respiratory-system
2. https://my.clevelandclinic.org/health/body/7041-digestive-system
3. https://en.wikipedia.org/wiki/Urinary_system

| | **Course Articulation Matrix: (Mapping of COs with POs and PSOs)** | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PO-PSO CO** | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
| **CO1** | 2 | 3 | 3 | 2 | 1 | 2 | 3 | 2 | 1 | 1 | 3 | 1 | 2 | 3 | 3 | 2 |
| **CO2** | 1 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 1 | 3 | 2 | 1 | 2 | 2 | 3 | 2 |
| **CO3** | 2 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 3 | 2 |
| **CO4** | 1 | 3 | 2 | 1 | 3 | 3 | 2 | 3 | 1 | 2 | 2 | 1 | 2 | 2 | 3 | 2 |
| **CO5** | 2 | 3 | 2 | 1 | 3 | 2 | 3 | 2 | 1 | 2 | 3 | 1 | 2 | 3 | 3 | 2 |

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

| **Course Code** | **Course Title** | **Attributes** | | | | | | | **SDGs No.** |
|---|---|---|---|---|---|---|---|---|---|
| RT113 | HUMAN ANATOMY- II LAB | Employability | Entrepreneurship | Skill Development | Gender Equality | Environment & Sustainability | Human Value | Professional Ethics | |
| | | √ | √ | √ | √ | | √ | √ | **3,4** |

# Integral University, Lucknow

| Effective from Session: 2017-18 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | **RT114** | **Title of the Course** | **HUMAN PHYSIOLOGY- II LAB** | **L** | **T** | **P** | **C** |
| **Year** | **I** | **Semester** | **II** | 0 | 0 | 2 | 1 |
| **Pre-Requisite** | **Nil** | **Co-requisite** | **Nil** | | | | |
| **Course Objectives** | **Learn how to taking History , general examination andVital Parameters of Patients** | | | | | | |

| **Course Outcomes:** After the successful course completion, learners will develop following attributes: | |
|---|---|
| **CO1** | Digestive System: Students will able to understand functioning of various systems as well as its applied aspects. |
| **CO2** | Central Nervous System: Students will able to understand functioning of various systems as well as its applied aspects. |
| **CO3** | Endocrine Gland: Students will able to understand functioning of various systems as well as its applied aspects. |
| **CO4** | Reproductive System: Students will able to understand functioning of various systems as well as its applied aspects. |
| **CO5** | Excretory System: Students will able to understand functioning of various systems as well as its applied aspects. |

| Unit No. | Title of the Unit | Content of Unit | Contact Hrs. | Mapped CO |
|---|---|---|---|---|
| 1 | **DIGESTIVE SYSTEM** | 1. History taking and general examination. | 6 | CO1 |
| 2 | **CENTRAL NERVOUS SYSTEM** | 2. Examination of Pulse. Measurement of Blood Pressure. | 6 | CO2 |
| 3 | **ENDOCRINE GLAND** | 3. Auscultation for heart sounds and normal respiratory sounds | 6 | CO3 |
| 4 | **REPRODUCTIVE SYSTEM** | 4. . To study about intrauterine contraceptive devices | 6 | CO4 |
| 5 | **EXCRETORY SYSTEM** | 5. . To measure temperature. Calculation & evaluation of daily energy & nutrient intake | 6 | CO5 |

**Reference Books:**


1. Guyton and Hall, (2011) Textbook of Medical Physiology, 12th Edition, Saunder/Elsevier.
1. Sujit Chaudhury, (2011), Concise Medical Physiology, 6th edition, NCBA
2. Sembulingam k, (2012), Essentials of Medical Physiology, 6thedition, Jaypee Publications.
3. Gerard J. Tortora and Bryan H. Derrickson, (Principles of Anatomy and Physiology,14th edition, Wiley publications.


**e-Learning Source:**

1. https://samples.jbpub.com/9781284035179/9781284030341_CH01_Secure.pdf
2. https://en.wikipedia.org/wiki/Blood
3. https://en.wikipedia.org/wiki/Respiration_(physiology)

| | **Course Articulation Matrix: (Mapping of COs with POs and PSOs)** | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PO-PSO CO** | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
| **CO1** | 2 | 3 | 3 | 2 | 1 | 2 | 3 | 2 | 1 | 1 | 3 | 2 | 2 | 3 | 3 | 2 |
| **CO2** | 1 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 2 | 1 | 2 | 2 | 3 | 2 |
| **CO3** | 2 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 1 | 1 | 2 | 3 | 2 | 3 | 3 | 2 |
| **CO4** | 1 | 3 | 2 | 1 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 2 |
| **CO5** | 2 | 3 | 2 | 1 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 1 | 2 | 3 | 3 | 2 |

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

| Course Code | Course Title | Attributes | | | | | | | SDGs No. |
|---|---|---|---|---|---|---|---|---|---|
| RT114 | HUMAN PHYSIOLOGY- II LAB | Employability | Entrepreneurship | Skill Development | Gender Equality | Environment & Sustainability | Human Value | Professional Ethics | |
| | | √ | √ | √ | √ | | √ | √ | **3,4** |

# Integral University, Lucknow

| Effective from Session: 2017-18 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | **RT115** | **Title of the Course** | **RADIATION HAZARD, PROTECTION & CONTROL-LAB** | **L** | **T** | **P** | **C** |
| **Year** | **I** | **Semester** | **II** | 0 | 0 | 2 | 1 |
| **Pre-Requisite** | **Nil** | **Co-requisite** | **Nil** | | | | |
| **Course Objectives** | Demonstration of the method of radiation hazards, protection, personnel monitoring systems and radiation installation. | | | | | | |

| **Course Outcomes:** After the successful course completion, learners will develop following attributes: | |
|---|---|
| **CO1** | Students will acquaint with 1. Radiation protection: Definition of radiation hazards 2. Principle, history & development - National & international agencies; AERB, BARC, ICRP, WHO, IAEA and their role 3. Sources of radiation-natural-man made & internal exposures; 4. Permissible dose levels on and around sealed source housing and installation principles of radiation protection. |
| **CO2** | Students will acquaint with 1. Wedge filters, wedge angle, hinge angle 2. Compensator beams flattering filters, scattering foils 3. Physical properties of phantom materials, bolus and substitutes 4. Factor used for treatment dose calculations, Daily treatment time and monitor units calculation |
| **CO3** | 1. Protection from primary, leakage and scattered 4 radiations 2. Concepts of work load use factor, occupancy factor & distance 3. Barrier design- barrier materials-concrete, brick& lead, Primary & secondary barrier design calculations 4. Design of doors. Control of radiation-effects of time, distance and shielding. |
| **CO4** | 1. Principle and objective film badge guidelines for use thermo luminescent dosimeter badge pocket dosimeter 2. Area monitoring and radiation survey, practical use of survey meter, zone monitors and phantoms 3. Survey in teletherapy, brachytherapy and simulator units |
| **CO5** | 1. Biological effects of radiation 2. Direct & Indirect actions of radiation 3. Concept of detriment, Deterministic & stochastic effect of radiation somatic and genetic effects 4. Dose relationship and Effects of antenatal exposure |

| **Unit No.** | **Title of the Unit** | **Content of Unit** | **Contact Hrs.** | **Mapped CO** |
|---|---|---|---|---|
| 1 | **RADIATION HAZARDS, PROTECTION** | 1. Method of Radiation Hazards, Protection. | 6 | CO1 |
| 2 | **METHODS TO REDUCE RADIATION** | 2. Method of Reduce Radiation. | 6 | CO2 |
| 3 | **PLANNING OF RADIATION INSTALLATION** | 3. Method of Planning of radiation installation. | 6 | CO3 |
| 4 | **PERSONNEL MONITORING SYSTEMS** | 4. Method of Personnel Monitoring Systems. | 6 | CO4 |
| 5 | **BIOLOGICAL ASPECTS OF RADIOLOGICAL PROTECTION** | 5. Method of Biological of Radiological Protection | 6 | CO5 |

**Reference Books:**


1. Sherer MA, Visconti PJ, Ritenour ER, Haynes K. Radiation Protection in Medical Radiography-E-Book. Elsevier Health Sciences; 2014 Mar 12.
2. Brandon AN, Hill DR. Selected list of books and journals in allied health. Bulletin of the Medical Library Association. 1996.
3. Long BW, Frank ED, Ehrlich RA. Radiography Essentials for Limited Practice-E- Book. Elsevier Health Sciences; 2016 Sep 6.
4. Durrani SA, Ilic R, editors. Radon measurements by etched track detectors: applications in radiation protection, earth sciences and the environment. world scientific.
5. Turner JE. Atoms, radiation, and radiation protection. John Wiley & Sons; 2008 Jan 8.
6. www.AERB.com (Guidelines and Details of Quality Control in Radiology).


**e-Learning Source:**

1. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6037814/
2. https://www.safeopedia.com/definition/446/personal-monitoring

**Course Articulation Matrix: (Mapping of COs with POs and PSOs)**

| PO-PSO CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 3 | 3 | 2 | 1 | 2 | 3 | 2 | 1 | 1 | 3 | 1 | 2 | 3 | 3 | 2 |
| **CO2** | 1 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 2 |
| **CO3** | 2 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 1 | 2 | 3 | 2 | 3 | 3 | 2 |
| **CO4** | 1 | 3 | 2 | 1 | 3 | 3 | 2 | 3 | 1 | 2 | 2 | 3 | 2 | 2 | 3 | 2 |
| **CO5** | 2 | 3 | 2 | 1 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 2 |

**2- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

| **Course Code** | **Course Title** | **Attributes** | | | | | | | **SDGs No.** |
|---|---|---|---|---|---|---|---|---|---|
| RT115 | RADIATION HAZARD, PROTECTION & CONTROL-LAB | Employability | Entrepreneurship | Skill Development | Gender Equality | Environment & Sustainability | Human Value | Professional Ethics | |
| | | √ | √ | √ | √ | | √ | √ | **3,4** |

# Integral University, Lucknow

| Effective from Session: 2017-18 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | **RT116** | **Title of the Course** | **RADIOGRAPHIC POSITIONING- I LAB** | **L** | **T** | **P** | **C** |
| **Year** | **I** | **Semester** | **II** | 0 | 0 | 2 | 1 |
| **Pre-Requisite** | **Nil** | **Co-requisite** | **Nil** | | | | |
| **Course Objectives** | **Demonstration of various positioning of Skull, Neck, Thorax and abdomen** | | | | | | |

| **Course Outcomes:** After the successful course completion, learners will develop following attributes: | |
|---|---|
| **CO1** | 1. Cranial bones and facial bones • Related radiological anatomy 2. Basic & special projections • Cranium Base of skull, Sella turcica, Mastoids, Optic foramina and Orbits, Nasal bone, TM joint, Facial bone, Zygomatic arches, Mandible, Para nasal sinuses |
| **CO2** | NECK: • Related radiological anatomy • Positioning- AP, LAT |
| **CO3** | THORAX: • Related radiological anatomy • Chest X-ray –AP, LAT • Special projections |
| **CO4** | ABDOMEN: • Related radiological anatomy. Basic & special projection • Basic: AP supine (KUB) • Special: PA prone, lateral decubitus, Erect AP, Dorsal decubitus, Lateral • Acute abdomen: three way series |
| **CO5** | KUB: • Related radiological anatomy • Positioning- AP |

| Unit No. | Title of the Unit | Content of Unit | Contact Hrs. | Mapped CO |
|---|---|---|---|---|
| 1 | **SKULL** | **SKULL:**<br>• Cranial bones and facial bones<br>• Basic & special projections<br>• Related radiological Pathology | 6 | CO1 |
| 2 | **NECK** | **NECK, THORAX & ABDOMEN:**<br>• Basic & special projection<br>• Related radiological Pathology | 6 | CO2 |
| 3 | **THORAX** | • Related radiological anatomy<br>• Chest X-ray –AP, LAT<br>• Special projections | 6 | CO3 |
| 4 | **ABDOMEN** | • Related radiological anatomy.<br>**Basic & special projection**<br>• Basic: AP supine (KUB)<br>• Special: PA prone, lateral decubitus, Erect AP, Dorsal decubitus, Lateral<br>• Acute abdomen: three-way series | 6 | CO4 |
| 5 | **KUB** | **KUB:**<br>• Basic & special projection<br>• Related radiological Pathology | 6 | CO5 |

**Reference Books:**


1. Whitley AS, Jefferson G, Holmes K, Sloane C, Anderson C, Hoadley G. Clark's Positioning in Radiography 13E. CRC Press; 2015 Jul 28.
2. Bontrager KL, Lampignano J. Textbook of Radiographic Positioning and Related Anatomy-E-Book. Elsevier Health Sciences; 2013 Aug 7.
3. Bontrager KL, Lampignano J. Bontrager's Handbook of Radiographic Positioning and Techniques-E-BOOK. Elsevier Health Sciences; 2017 Feb 10.
4. Frank ED, Long BW, Smith BJ. Merrill's Atlas of Radiographic Positioning and Procedures-E-Book. Elsevier Health Sciences; 2013 Aug 13.


**e-Learning Source:**

1. https://radiopaedia.org/articles/skull-radiography
2. https://radiopaedia.org/cases/normal-soft-tissue-neck-lateral-radiograph
3. https://radiopaedia.org/articles/abdomen-ap-supine-view-1

| | **Course Articulation Matrix: (Mapping of COs with POs and PSOs)** | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PO-PSO CO** | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
| **CO1** | 2 | 3 | 3 | 2 | 1 | 2 | 3 | 2 | 1 | 1 | 3 | 2 | 2 | 3 | 3 | 2 |
| **CO2** | 1 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | 3 | 3 |
| **CO3** | 2 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 1 | 1 | 2 | 3 | 2 | 1 | 3 | 2 |
| **CO4** | 1 | 3 | 2 | 1 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 1 | 2 | 2 | 3 | 3 |
| **CO5** | 2 | 3 | 2 | 1 | 3 | 2 | 3 | 2 | 1 | 2 | 3 | 2 | 2 | 1 | 3 | 3 |

**3- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

| Course Code | Course Title | Attributes | | | | | | | SDGs No. |
|---|---|---|---|---|---|---|---|---|---|
| RT116 | RADIOGRAPHIC POSITIONING- I LAB | Employability | Entrepreneurship | Skill Development | Gender Equality | Environment & Sustainability | Human Value | Professional Ethics | |
| | | √ | √ | √ | √ | | √ | √ | **3,4** |