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| **Name of Faculty** | : | Faculty of Nursing |
| **Name of Program** | : | Basic B.Sc. Nursing |
| **Course Code** | : | 1BSN03 |
| **Course Title** | : | Applied Physiology |
| **Type of Course** | : | PC |
| **Year of Introduction** | : | 2023-24 |

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| **Prerequisite** | : | Basic Knowledge of Various system of body and its functions |
| **Course Objective** | : | The course is designed to assists student to acquire comprehensive knowledge of the normal functions of the organ systems of the human body to facilitate understanding of physiological basis of health, identify alteration in functions and provide the student with the necessary physiological knowledge to practice nursing. |
| **Course Outcomes** | : | On completion of the course, the students will be able to |
| | CO1 | Develop understanding of the normal functioning of various organ systems of the body |
| | CO2 | Identify the relative contribution of each organ system towards maintenance of homeostasis |
| | CO3 | Describe the effect of alterations in functions |
| | CO4 | Apply knowledge of physiological basis to analyze clinical situations and therapeutic applications |

**Course Content**

| Unit No. | Topics | Teaching Hours | Weightage | Mapping With COs |
|---|---|---|---|---|
| I | **General Physiology-Basic concepts**<br>• Cell physiology including transportation across cell membrane<br>• Body fluid compartments, Distribution of total body fluid, intracellular and extracellular compartments, major electrolytes and maintenance of homeostasis<br>• Cell cycle<br>• Tissue- formation, repair<br>• Membranes and glands- functions<br>• Application and implication in nursing | 04 | 6.67% | **CO1** |
| II | **Respiratory system**<br>• Functions of respiratory organs<br>• Physiology of respiration<br>• Pulmonary circulation- functional features<br>• Pulmonary ventilation, Exchange of gases<br>• Carriage of oxygen and Carbon- dioxide, Exchange of gases in tissue<br>• Regulation of respiration<br>• Hypoxia, cyanosis, dyspnoea, periodic breathing<br>• Respiratory changes during exercise<br>• Application and implication in nursing | 06 | 10% | **CO2,CO3** |

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| III | **Digestive system**<br>• Functions of the organs of digestive tract<br>• Saliva-composition, regulation of secretion and functions of saliva<br>• Composition and function of gastric juice, mechanism and regulation of gastric secretion<br>• Composition of pancreatic juice, function, regulation of pancreatic secretion<br>• Functions of liver, gall bladder and pancreas<br>• Composition of bile and function<br>• Secretion and Function of small and large intestine<br>• Movements of alimentary tract<br>• Digestion in mouth, stomach, small intestine, large intestine, Absorption of food<br>• Application and implications in nursing | 08 | 13.33% | **CO1, CO4, CO2** |
| IV | **Circulatory and lymphatic system**<br>• Functions of heart, conduction system, cardiac cycle, Stroke volume and cardiac output<br>• Blood pressure and Pulse<br>• Circulation- principles, factors influencing blood pressure, pulse<br>• Coronary circulation, Pulmonary and systemic circulation<br>• Heart rate-regulation of heart rate, | 06 | 10% | **CO1, CO4, CO2** |

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| | Normal value and variations<br>• Cardiovascular homeostasis in exercise and posture<br>• Application and implication in nursing | | | |
| V | **Blood**<br>• Blood-Functions, Physical characteristics, Components<br>• Formation of blood cells<br>• Erythropoiesis, Functions of RBC, RBC life cycle<br>• WBC- types, functions<br>• Platelets-Function and production of platelets<br>• Clotting mechanism of blood, clotting time, bleeding time, PTT<br>• Hemostasis –role of vasoconstriction, platelet plug formation in hemostasis, coagulation factors, intrinsic and extrinsic pathways of coagulation<br>• Blood groups and types<br>• Functions of reticulo- endothelial system, Immunity<br>• Application in nursing | 05 | 8.33% | **CO1, CO4, CO2** |
| VI | **The endocrine system**<br>• Functions and hormones of Pineal Gland, Pituitary gland, Thyroid, Parathyroid, Thymus, Pancreas and Adrenal glands.<br>• Other hormones<br>• Alterations in disease | 05 | 8.33% | **CO1,CO3, CO4, CO2** |

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| | • Application and implication in nursing | | | |
| VII | **The sensory Organs**<br>• Functions of skin<br>• Vision, hearing, taste and smell<br>• Errors of refraction, aging changes<br>• Application and implications in nursing | 04 | 6.67% | **CO1,CO3, CO4, CO2** |
| VIII | **Musculo-skeletal system**<br>• Bones- Functions, movements of bone s of axial and appendicular skeleton, Bone healing<br>• Joints and joint movements<br>• Alteration of joint disease<br>• Properties and Functions of skeletal muscles – mechanism of muscle contraction<br>• Structure and properties of cardiac muscles and smooth muscles<br>• Application and implication in nursing | 06 | 10% | **CO1,CO3, CO4, CO2** |
| IX | **Renal system**<br>• Functions of kidney in maintaining homeostasis<br>• GFR<br>• Functions of ureters, bladder and urethra<br>• Micturition<br>• Regulation of renal function<br>• Application and implication in nursing | 04 | 6.67% | **CO1,CO3, CO4, CO2** |

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| X | **The Reproductive System**<br>• Female reproductive system- Menstrual cycle, function and hormones of ovary, oogenesis, fertilization, implantation, Functions of breast<br>• Male reproductive system- Spermatogenesis, hormones and its functions, semen<br>• Application and implication in providing nursing care | 04 | 6.67% | **CO1,CO3, CO4, CO2** |
| XI | **Nervous system**<br>• Overview of nervous system<br>• Review of types, structure and functions of neurons<br>• Nerve impulse<br>• Review functions of Brain- Medulla, Pons, Cerebrum, Cerebellum<br>• Sensory and Motor Nervous system<br>• Peripheral Nervous system<br>• Autonomic Nervous system<br>• Limbic system and higher mental Functions- Hippocampus, Thalamus, Hypothalamus<br>• Vestibular apparatus<br>• Functions of cranial nerves<br>• Autonomic functions<br>• Physiology of Pain- somatic, visceral and referred<br>• Reflexes | 08 | 13.33% | **CO1,CO3, CO4, CO2** |

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| | • CSF formation, composition, circulation of CSF, blood brain barrier and blood CSF barrier<br>• Application and implication in nursing | | | |

| Suggested Distribution of Theory Marks Using Bloom's Taxonomy | | | | | | |
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| **Level** | Remembrance | Understanding | Application | Analyse | Evaluate | Create |
| **Weightage** | **25** | **30** | **30** | **5** | **5** | **5** |

*NOTE: This specification table shall be treated as a general guideline for the students and the teachers.The actual distribution of marks in the question paper may vary slightly from above table.*

**Reference Books**

| Sr.No. | Name of Reference Books |
|---|---|
| 1 | A textbook of Anatomy &Physiology, B.D.Chaurasia, CBS Publishers & distributors pvt- ltd, 1st edition |
| 2 | A textbook of Anatomy, PR Ashalatha, Jaypee brothers medical publisher Limited , second edition -2018 |
| 3 | A textbook of Anatomy &Physiology, Ross & Wilson, Elsevier Publication, 13th edition-2018 |
| 4 | A textbook of Anatomy &Physiology, S.S. Randhawa, Volume-1, Peevee 2010 edition |
| 5 | A textbook of Anatomy, Dr Jayanthi. V Emmess Publication, First edition |
| 6 | A textbook of Basic Concept and Practice workbook in Human Anatomy, Supriya Anton Kadam, Emmess Publication. First edition-2022 |
| 7 | A textbook of Practice workbook in Anatomy &Physiology, PR Ashalatha, G Deepa, Jaypee Publication, 1st edition- 2015 |
| 8 | A textbook of Anatomy &Physiology, Gary, A. Thibodeau, Kevin. T. Patton, Alison Miller, 14th Edition |