2nd Semester

HUMAN ANATOMY- PART II

Subject Code: **BDLTS1-201** **L T P C** **Duration: 30 (Hrs.)**
2 0 0 2

Teaching Objective:

- To teach the students the basic anatomy of Reproductive, Lymphatic Endocrine, Nervous system and Special senses.

Learning Outcomes:

- Demonstrate and understand the basic anatomy of Reproductive and Lymphatic system.
- Demonstrate and understand the basic anatomy of Endocrine, Nervous system.
- Demonstrate and understand the basic anatomy of Special senses.

Unit 1 **(5 hrs)**

- **Reproductive system:** Male- Testis, Spermatic Cord, Female- Ovaries & Fallopian tube, Uterus

Unit 2 **(10 hrs)**

- **Lymphatic system:** Lymphoid Organs, Lymph node groups- Cervical, Axillary, Inguinal
- **Endocrine system:** Thyroid, Parathyroid, Adrenal, Pituitary

Unit 3 **(10 hrs)**

- **Nervous system:** Introduction to nervous system(Neuron, ANS, PNS) Meninges, Cerebrum I, Cerebrum II, Cerebellum, Blood supply of Brain, Brain stem, Spinal cord, Cranial and peripheral nerves, CSF & Ventricles.

Unit 4 **(5 hrs)**

- **Sensory system:** Eye (Gross anatomy), Ear

HUMAN PHYSIOLOGY PART II

Subject Code: **BDLTS1-202** **L T P C** **Duration: 30 (Hrs.)**
2 0 0 2

Teaching Objective:

- To teach basic physiological concepts related to Renal physiology, Endocrinology& Reproductive physiology, CNS, Special senses.

Learning Outcomes:

- To understand the basic physiological concepts of Renal physiology
- To understand the basic physiological concepts of Endocrinology& Reproductive physiology
- To understand the basic physiological concepts of CNS, Special senses

Unit 1 **(16 hrs)**

- **Nervous system:** Functions of Nervous system, Neuron – Conduction of Impulses, factors affecting, Synapse- transmission, Receptors, Reflexes Ascending tracts, Descending tracts, Functions of various parts of the Brain. Cerebro-Spinal Fluid (CSF): Composition, functions & Circulation, Lumbar Puncture, Autonomic Nervous System (ANS): Functions.
- **Special senses: Vision:** Structure of Eye, functions of different parts, Refractive errors of Eye and correction, Visual Pathway, Colour vision & tests for colour Blindness, Hearing: Structure and function of ear, Mechanism of Hearing, Tests for Hearing (Deafness).

Unit 2 **(6 hrs)**

- **Skin:** Structure and function, Body temperature, Regulation of Temperature & fever.
- **Endocrine System:** Short description of various endocrine glands and their functions.

Unit 3 **(4 hrs)**

- **Reproductive systems:** Structure & Functions of Reproductive system, Male Reproductive System: spermatogenesis, Testosterone, Female reproductive system: Ovulation, Menstrual cycle, Oogenesis, Tests for Ovulation, Oestrogen & Progesterone, Pregnancy test, Parturition. Contraceptives, Lactation: Composition of Milk, advantages of breast Feeding

Unit 4 **(4 hrs)**

Excretory System- General Introduction, structure & functions of kidney, Renal circulation, Glomerular filtration & tubular reabsorption, Nephron, Juxta Glomerular Apparatus, Mechanism of Urine formation, Micturition, Cystomatrogram. Diuretics, Artificial Kidney.

GENERAL MICROBIOLOGY

Subject Code: **BDLTS1-203** **L T P C** **Duration: 45 (Hrs.)**
3 0 0 3

Teaching Objective:

- To introduce basic principles and then applies clinical relevance in four segments of the academic preparation for paramedical: immunology, bacteriology, mycology, and virology. This rigorous course includes many etiological agents responsible for global infectious diseases.

Learning Outcomes:

- Upon completion, students should be able to demonstrate knowledge of microorganisms and the Disease process as well as aseptic and sterile techniques.
- Perform microbiological laboratory procedures according to appropriate safety standards

Unit 1 **(15 hrs)**

- **Concepts and Principles of Microbiology:** Historical Perspective, Koch's Postulates, Importance of Microbiology, Microscopy, Classification of Microbes.
- **General Characters of Microbes:** Morphology, staining methods, Bacterial growth & Nutrition, Culture media and culture methods +ABS, Collection of specimen, transport and processing, Antimicrobial mechanism and action, Drug Resistance minimization.
- **Sterilization and Disinfection:** Concept of sterilization, Disinfection asepsis, Physical methods of Sterilization, Chemical methods (Disinfection), OT Sterilization, Biological waste and Biosafety & Biohazard.

Unit 2 **(15 hrs)**

- **Infection and Infection Control:** Infection, Sources, portal of entry and exit, Standard (Universal) safety Precautions & hand hygiene, Hospital acquired infections & Hospital Infection Control.
- **Immunity:** Types Classification, Antigen, Antibody – Definition and types, Ag-Ab reactions –Types and examples, Procedure of Investigation & Confidentiality, Immunoprophylaris – Types of vaccines, cold chain, Immunization Schedule.
- **Systemic Bacteriology (Morphology, diseases caused, specimen collection & lists of laboratory tests)** Introduction, Gram Positive Cocci & Gram Negative Cocci, Enterobacteraecea & Gram negative bacilli, Mycobacteria, Anaerobic bacteria & Spirochaetes, Zoonotic diseases, Common Bacterial infections of eye

Unit 3 **(10 hrs)**

- **Mycology:** Introduction, Classification, outline of lab diagnosis, List of Fungi
- **Causing:** Common fungal infections of eyes, Superficial Mycoses, Deep mycoses & opportunistic, Fungi.
- **Virology:** Common Viral infection of eye, Introduction, General Properties, outline of lab diagnosis& Classification, HIV Virus, Hepatitis -B Virus.

Unit 4 **(5 hrs)**

Parasitology: Morphology, Life Cycle & Outline of Lab Diagnosis & Classification, Common Parasite infection of eye, Protozoa- E, histolytica, Malarial Parasite, General properties, classification, List of diseases caused by: Cestodes and Trematodes, Intestinal Nematodes & Tissue Nematodes, Vectors.

BASIC PATHOLOGY & HEMATOLOGY

Subject Code: **BDLTS1-204** **L T P C** **Duration: 60 (Hrs.)**
3 1 0 4

Teaching Objective:

- Understand the importance of clinical information in supporting a timely, accurate pathological diagnosis.
- Describe normal and disordered hematopoiesis
- Develop implement and monitor a personal continuing education strategy and critically appraise sources of pathology related medical information.
- Describe mechanisms of on cogenesis & demonstrate an understanding of genetics and cytogenetics pertaining to hematology

Learning Outcomes:

- The student should submit the appropriate tissue sections per protocol to demonstrate the lesion and other clinically-relevant information needed for the final pathologic report.
- To aid hematology in the reference ranges for hemoglobin, hematocrit, erythrocytes, and leukocytes in infants, children and adult.

Unit 1 **(13 hrs)**

- Introduction to Pathology
- Working and maintenance of instruments
- General principles of Haematology techniques, blood collection, anticoagulants, fixation,

processing, routine staining, Haemoglobin, TLC, DLC, Peripheral smear (CBC report), platelet counts, cell counter working.

Unit 2 **(18 hrs)**

- General principles of Histopathology techniques collection, fixation, processing & routine staining.
- General principles of Cytopathology techniques collection, fixation, processing & routine staining.
- General principles of Clinical Pathology techniques sample collection, Processing for routine test, Normal urine & urine examination, urine strip, introductions to body fluids (Distinguish between Transudate and exudate)

Unit 3 **(09 hrs)**

- General principles of Blood Bank techniques antigen, antibody, ABO & Rh system
- General principles of Autopsy & Museum.

Unit 4 **(16 hrs)**

- **General Pathology including introduction to :**Cell Injury (Reversible, Irreversible cell injury) Inflammation (Acute inflammation, cells, chronic inflammation, granuloma and examples Circulatory disturbances (Thrombosis, Embolism, Edema- ascetic, pleural, pericardial- effusions, Shock, Allergy, Anaphylaxis-Definition, Morphological features and distinguishing features) Neoplasia (Definition of Anaplasia, dysplasia, metaplasia and metastasis and difference between benign and malignant lesions).

Unit 5 **(04 hrs)**

- Maintenance and medico legal importance of records and specimens, Lab information system (LIMS).
- Biomedical Waste, Universal Safety Precaution (Protocol to be followed after-Needle injury, chemical Injury).

INTRODUCTION TO QUALITY AND PATIENT SAFETY

Subject Code: **BDLTS1-205** **L T P C** **Duration: 45 (Hrs.)**
3 0 0 3

Teaching Objective:

- The objective of the course is to help students understand the basic concepts of quality in health Care and develop skills to implement sustainable quality assurance program in the health system.
- To understand the basics of emergency care and life support skills.
- To Manage an emergency including moving a patient
- To help prevent harm to workers, property, the environment and the general public.
- To provide a broad understanding of the core subject areas of infection prevention and control
- To provide knowledge on the principles of on-site disaster management

Learning Outcomes:

- Upon completion, Students should be able to apply healthcare quality improvement and patient safety principles, concepts, and methods at the micro-, meso-, and macro-system levels

Unit 1 **(14 hrs)**

- **Quality assurance and management:** Concepts of Quality of Care, Quality Improvement Approaches, Standards and Norms, Introduction to NABH guidelines
- **Basics of emergency care and life support skills:** Basic life support (BLS), Vital signs and primary assessment, Basic emergency care – first aid and triage, Ventilations including use of bag-valve-masks (BVMs), Choking, rescue breathing methods, One- and Two-rescuer CPR.

Unit 2 **(16 hrs)**

- **Bio medical waste management and environment safety:** Definition of Biomedical Waste, Waste minimization, BMW – Segregation, collection, transportation, treatment and disposal (including Color coding), Liquid BMW, Radioactive waste, Metals / Chemicals / Drug waste, BMW Management & methods of disinfection, Modern technology for handling BMW, Use of Personal protective Equipment (PPE), Monitoring & controlling of cross infection (Protective devices).
- **Infection prevention and control:** Evidence-based infection control principles and practices [such as sterilization, disinfection, effective hand hygiene and use of Personal protective equipment (PPE)], Prevention & control of common healthcare associated infections, Components of an effective infection control program, Guidelines (NABH and JCI) for Hospital Infection Control.

Unit 3 **(10 hrs)**

- **Antibiotic Resistance:**History of Antibiotics, How Resistance Happens and Spreads, Types of resistance- Intrinsic, Acquired, Passive, Trends in Drug Resistance, Actions to Fight Resistance, Bacterial persistence, Antibiotic sensitivity, Consequences of antibiotic resistance

Unit 4 **(5 hrs)**

- **Disaster preparedness and management:** Fundamentals of emergency management, Psychological impact management, Resource management, Preparedness and risk reduction, information management, incident command and institutional mechanisms.

Reference Books:

- Washington Manual of Patient Safety and Quality Improvement Paperback – 2016 by Fondahn (Author)
- Understanding Patient Safety, Second Edition by Robert Wachter(Author)
- Handbook of Healthcare Quality& Patient Safety Author : Girdhar J Gyani, Alexander Thomas
- Researching Patient Safety and Quality in Healthcare: A Nordic Perspective Karina Aase, LeneSchibevaag
- Old) Handbook Of Healthcare Quality & Patient Safety by GyaniGirdhar J (Author)
- Handbook of Healthcare Quality & Patient Safety by .Gyani G J/Thomas A

Quality Management in Hospitals by S. K. Jos

HUMAN ANATOMY PART II (DEMONSTRATION)

Subject Code: **BDLTS1-206** **L T P C** **Duration: 4 Hrs./week**
0 0 4 2

Experiments

- **Reproductive system:** Male- Testis, Spermatic Cord, Female- Ovaries & Fallopian tube, Uterus
- **Lymphatic system:** Lymphoid Organs, Lymph node groups- Cervical, Axillary, Inguinal
- **Endocrine system:** Thyroid, Parathyroid, Adrenal, Pituitary
- **Nervous system:** Introduction to nervous system (Neuron, ANS, PNS) Meninges, Cerebrum I, Cerebrum II, Cerebellum, Blood supply of Brain, Brainstem, Spinal cord, Cranial and peripheral nerves, CSF & Ventricles
- **Sensory system:** Eye (Gross anatomy), Ear

Textbooks:

- Manipal Manual of Anatomy for Allied Health Sciences courses: Madhyastha S.
- G.J. Tortora& N.P Anagnostakos: Principles of Anatomy and Physiology
- B.D. Chaurasia: Handbook of General Anatomy

Reference books:

- B.D. Chaurasia : Volume I-Upper limb & Thorax,
  Volume II- Lower limb, Abdomen & Pelvis
  Volume III- Head, Neck, Face
  Volume IV- Brain-Neuroanatomy
- Vishram Singh: Textbook of Anatomy Upper limb & Thorax Textbook of Anatomy Abdomen & Lower limb Textbook of Head neck and Brain
- Peter L. Williams And Roger Warwick:- Gray's Anatomy - Descriptive and Applied, 36th Ed; Churchill Livingstone.
- T.S. Ranganathan : Text book of Human Anatomy
- Inderbirsingh, G P Pal : Human Embryology
- Textbook of Histology, A practical guide:- J.P Gunasegaran

HUMAN PHYSIOLOGY PART II – (DEMONSTRATION)

Subject Code: **BDLTS1-207** **L T P C** **Duration: 4 Hrs./week**
0 0 2 1

Experiments

- Recording of body temperature
- Examination of sensory system
- Examination of motor system
- Examination of Eye
- Examination of ear

Textbooks:

- Basics of medical Physiology –D Venkatesh and H.H Sudhakar, 3rd edition.
- Principles of Physiology – DevasisPramanik, 5th edition.
- Human Physiology for BDS –Dr A.K. Jain, 5th edition.
- Textbook of human Physiology for dental students-Indukhurana 2nd edition.
- Essentials of medical Physiology for dental students –Sembulingum.

Reference books:

- Textbook of Medical Physiology, Guyton , 2nd South Asia Edition.
- Textbook of Physiology Volume I & II (for MBBS) – Dr. A. K. Jain.
- Comprehensive textbook of Medical Physiology Volume I & II – Dr. G. K. Pal.

GENERAL MICROBIOLOGY (DEMONSTRATION)

Subject Code: **BDLTS1-208** **L T P C** **Duration: 4 Hrs./week**
0 0 4 2

Experiments

- Concepts and Principles of Microbiology
- General Characters of Microbes
- Sterilization and Disinfection
- Infection and Infection Control
- Immunity
- Systemic Bacteriology (Morphology, diseases caused, specimen collection & lists of laboratory test)
- Mycology
- Virology
- Parasitology

Text Book:

- Text Book of Microbiology for Nursing Students, Anant Narayan Panikar
- Text Book of Ophthalmology, Khurana

Reference Book:

- Text Book of Microbiology, Baveja.

BASIC PATHOLOGY & HEMATOLOGY (DEMONSTRATION)

Subject Code: **BDLTS1-209** **L T P C** **Duration: 4 Hrs./week**
0 0 4 2

Experiments

- Working and maintenance of instruments.
- General principles of Haematology techniques, blood collection, anticoagulants, fixation, processing, routine staining, Haemoglobin, TLC, DLC, Peripheral smear (CBC report),

platelet counts, cell counter working.

- General principles of Histopathology techniques collection, fixation, processing & routine staining.
- General principles of Cytopathology techniques collection, fixation, processing &routine staining
- General principles of Clinical Pathology techniques sample collection, processing for routine test, normal Urine & urine examination, urine strip, introductions to body fluids (Distinguish between Transudate and exudate).
- General principles of Blood Bank techniques antigen, antibody, ABO & Rh system.
- General principles of Autopsy & Museum.

Reference Books:

- A *Handbook of Medical* Laboratory (Lab) Technology: *Editor*) *Second Edition*. *V.H. Talib*(Ed.).
- Comprehensive Textbook of Pathology for Nursing: Pathology Clinical Pathology Genetics. AkMandalShramana Choudhury, Published by Avichal Publishing Compnay | Language English
- Textbook of Medical Laboratory Technology- PrafulB. Godkar, Darshan P. Godkar
- Medical Laboratory Technology. Methods and Interpretations – RamnikSood (volume 1&2)
- Medical Laboratory technology a procedure manual for routine diagnostic test – vol – I, II, III. Kanai

  L. Mukharjee Tata Mc graw hill pub. New Delhi.
- Practical Pathology P. Chakraborty Gargi Chakraborty New Central Book Agency, Kolkata.
- Theory & Practice of Histological Techniques John D. Bancroftet.al. Churchill Livingstone Printed in China.
- Histochemistry in Pathology M.I. Filipeet.al. Churchill Livingstone, London
- Hand Book of Histopathological & Histochemical Techniques C.F.A. Culling Butterworths Company Ltd. London.
- A Handbook of Medical Laboratory (Lab) Technology. By V.H Talib

ENVIRONMENTAL SCIENCES

Subject Code: **BDLTS1-210** **L T P C** **Duration: 45 (Hrs.)**
3 0 0 3

Teaching Objective:

- To understand and define terminology commonly used in environmental science.
- To teach students to list common and adverse human impacts on biotic communities, soil, water, and air Quality.
- To understand the processes that govern the interactions of organisms with the biotic and abiotic.
- Understand the relationship between people and the environment; Differentiate between key ecological terms and concepts

Learning Outcomes:

- Current environmental issues and highlight the importance of adopting an interdisciplinary approach.
- Sample an ecosystem to determine population density and distribution Create food webs and analyze possible disruption of feeding relationships.

Unit 1 **(13 hrs)**

- **Components of Environment:** Hydrosphere, lithosphere, atmosphere and biosphere – definitions with examples; Interaction of man and environment;
- **Ecosystem:** Basic concepts, components of ecosystem, Tropic levels, food chains and food webs, Ecological pyramids, ecosystem functions, Energy flow in ecological systems, Characteristics of terrestrial fresh water and marine ecosystems
- **Global Environmental Problems:** Green House Effect, Acid rain, El Nino, Ozone depletion, deforestation, desertification, salination, biodiversity loss; chemical and radiation hazards.

Unit 2 **(14 hrs)**

- **Environmental pollution and degradation:** Pollution of air, water and land with reference to their Causes, nature of pollutions, impact and control strategies; perspectives of pollution in Urban, industrial and rural areas. Habitat Pollution by Chlorinated Hydrocarbons (DDT, PCBs, Dioxin etc, Endocrine
  Disrupting chemicals, Nutrient pollution.
- **Environmental Management:** Concept of health and sanitation, environmental diseases – infectious (Water and air borne) and pollution related, spread and control of these diseases, Health hazards due to pesticide and metal pollution, waste treatment, solid waste management, environmental standards and quality monitoring.

Unit 3 **(18 hrs)**

- **Environmental Protection Act:** Environmental Laws, national movements, environmental ethics – Holistic approach of environmental protection and conservation, IUCN – role in environmental Protection. Concept with reference to UN – declaration, aim and objectives of human right policies With reference to India, recent north-south debate on the priorities of implementation, Environmental Protection Agency (EPA)
- **Bioremediation:** Oil spills, Wastewater treatment, chemical degradation, heavy Metals.

Books

- Gleeson, B. and Low, N. (eds.) 1999. Global Ethics and Environment, London, Routledge.
- Gleick, P. H. 1993. Water in Crisis. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.
- Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. Principles of Conservation Biology. Sunderland: Sinauer Associates, 2006.
- Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from Indidum, E.P., Odum,
- , I.L., Gerba, C.
- Rao, M.N. &Datta, A.K. 1987. Waste Water Treatment. Oxford and IBH Publishing Co. Pvt. Ltd.
- Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012. Environment. 8th edition. John Wiley & Sons.
- Rosencranz, A., Divan, S., & Noble, M. L. 2001. Environmental law and policy in India. Tripathi 1992.
- Sengupta, R. 2003. Ecology and economics: An approach to sustainable development. OUP.
- Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. Ecology, Environmental Science and Conservation. S. Chand Publishing, New Delhi.
- Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. Conservation Biology: Voices from the Tropics. John Wiley & Sons.
- Thapar, V. 1998. Land of the Tiger: A Natural History of the Indian Subcontinent.
- Warren, C. E. 1971. Biology and Water Pollution Control. WB Saunders.
- Wilson, E. O. 2006. The Creation: An appeal to save life on earth. New York: Norton.
- World Commission on Environment and Development. 1987. Our Common Future. Oxford University Press

COMPUTER FUNDAMENTAL

Subject Code: **BDLTS1-211** **L T P C** **Duration: 60 (Hrs.)**
2 0 0 2

Course Objectives:

- Upon completion of the course the student shall be able to know the various types of application of computers in pharmacy
- know the various types of databases
- Know the various applications of databases in pharmacy.

Course Outcomes:

- This subject deals with the introduction Database, Database Management system, computer application in clinical studies and use of databases.

Unit -1 **(5 hrs)**

- **Number system: Binary number system, Decimal number system, Octal number system, Hexadecimal number systems, conversion decimal to binary, binary to decimal, octal to binary etc, binary addition, binary subtraction – One's complement ,Two's complement method, binary multiplication, binary division.**
- **Concept of Information Systems and Software:** Information gathering, requirement and feasibility analysis, data flow diagrams, process specifications, input/output design, process life cycle, planning and managing the products.

Unit-2 **(5 hrs)**

- **Web technologies**: Introduction to HTML, XML, CSS and Programming languages, introduction to web servers and Server Products.
- **Introduction to databases**: MYSQL, MS ACCESS, Pharmacy Drug Database

Unit 3 **(7.5 hrs)**

- **Computer networks: Introduction**- Types of network (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid), components of network.
- **Internet and its Applications**: definition, brief history, basic services (E-Mail, File Transfer
- **Protocol**, telnet, the World Wide Web (WWW)), www browsers, use of the internet.

Unit-4 **(12.5 hrs)**

- **Introduction to MS-Word:** introduction, components of a word window, creating, opening and inserting files, editing a document file, page setting and formatting the text, saving the

document, spell checking, printing the document file, creating and editing of table, mail merge. **Introduction to Excel:** Introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs.

- **Introduction to power-point:** introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.
- **Introduction of Operating System: I**ntroduction, operating system concepts, types of Operating system.
- **Computers as data analysis in Preclinical development**. Chromatographic dada analysis (CDS), Laboratory Information management System (LIMS) and Text Information Management System (TIMS).