Maharaja Ranjit Singh Punjab Technical University
Bathinda-151001

FACULTY OF PHARMACY

SYLLABUS

FOR

B.SC. MEDICAL TECHNOLOGY (ANESTHESIA AND OPERATION THEATRE TECHNOLOGY)

(4 YEARS PROGRAMME)

2023 BATCH ONWARDS

SCHEME

1st Semester		Contact Hrs.			Marks			Credits
Subject Code	**Subject**	**L**	**T**	**P**	**Int.**	**Ext**	**Total**	
BAOTS1-101	Anatomy and Physiology-I	3	1	0	40	60	100	4
BAOTS1-102	Microbiology -I	3	1	0	40	60	100	4
BAOTS1-103	Pathology-1	3	1	0	40	60	100	4
BAOTS1-104	Computer Science	2	0	0	20	30	50	2
BAOTS1-105	Anatomy and Physiology -Lab	0	0	4	60	40	100	2
BAOTS1-106	Microbiology -I Lab	0	0	4	60	40	100	2
BAOTS1-107	Pathology I -Lab	0	0	4	60	40	100	2
Total		**11**	**03**	**12**	**320**	**330**	**650**	**20**

2nd Semester		Contact Hrs.			Marks			Credits
Subject Code	**Subject**	**L**	**T**	**P**	**Int.**	**Ext**	**Total**	
BAOTS1-201	Anatomy and Physiology-II	3	1	0	40	60	100	4
BAOTS1-202	Microbiology -II	3	1	0	40	60	100	4
BAOTS1-203	Pathology -II	3	1	0	40	60	100	4
BAOTS1-204	Basics and Advanced Life support	2	0	0	20	30	50	2
BAOTS1-205	Anatomy and Physiology -II Lab	0	0	4	60	40	100	2
BAOTS1-206	Pathology II - Lab	0	0	4	60	40	100	2
BAOTS1-207	Microbiology -II Lab	0	0	4	60	40	100	2
Total		**11**	**03**	**12**	**320**	**330**	**650**	**20**

3rd Semester		Contact Hrs.			Marks			Credits
Subject Code	**Subject**	**L**	**T**	**P**	**Int.**	**Ext**	**Total**	
BAOTS1-301	Anatomy & Physiology related to Anesthesia Technology	3	1	0	40	60	100	4
BAOTS1-302	Applied Pharmacology and Microbiology	3	1	0	40	60	100	4
BAOTS1-303	Medical Ethics and Bio safety	3	1	0	40	60	100	4
BAOTS1-304	Psychology	3	1	0	40	60	100	4
BAOTS1-305	Anatomy & Physiology related to Anesthesia Technology Practical	0	0	4	60	40	100	2
BAOTS1-306	Applied Pharmacology and MicrobiologyPractical	0	0	4	60	40	100	2
Total		**12**	**4**	**8**	**280**	**320**	**600**	**20**

4th Semester		Contact Hrs.			Marks			Credits
Subject Code	**Subject**	**L**	**T**	**P**	**Int.**	**Ext**	**Total**	
BAOTS1-401	Principles Of Anesthesia - I	3	1	0	40	60	100	4
BAOTS1-402	Principles Of Anesthesia - II	3	1	0	40	60	100	4
BAOTS1-403	Biochemistry-1	3	1	0	40	60	100	4
BAOTS1-404	Medical Sociology	2	0	0	20	30	50	2
BAOTS1-405	Principles Of Anesthesia - I Practical	0	0	4	60	40	100	2
BAOTS1-406	Principles Of Anesthesia -II Practical	0	0	4	60	40	100	2
BAOTS1-407	Biochemistry-1 Lab	0	0	4	60	40	100	2
Total		**11**	**03**	**12**	**320**	**330**	**650**	**20**

5th Semester		Contact Hrs.			Marks			Credits
Subject Code	**Subject**	**L**	**T**	**P**	**Int.**	**Ext**	**Total**	
BAOTS1-501	Pharmacology	3	1	0	40	60	100	4
BAOTS1-502	Anesthesia Techniques Including Complications	3	1	0	40	60	100	4
BAOTS1-503	Biochemistry-II	3	1	0	40	60	100	4
BAOTS1-504	Environmental science and community medicine	2	0	0	20	30	50	2
BAOTS1-505	Pharmacology Lab	0	0	4	60	40	100	2
BAOTS1-506	Anesthesia Techniques Including Complications-Lab	0	0	4	60	40	100	2
BAOTS1-507	Biochemistry-II Lab	0	0	4	60	40	100	2
Total		**11**	**03**	**12**	**320**	**330**	**650**	**20**

6th Semester		Contact Hrs.			Marks			Credits
Subject Code	**Subject**	**L**	**T**	**P**	**Int.**	**Ext**	**Total**	
BAOTS1-601	Anesthesia for specialties (including criticalcare assistance and ventilation) paper – I	3	1	0	40	60	100	4
BAOTS1-602	Anesthesia for specialties (including criticalcare assistance and ventilation) paper – II	3	1	0	40	60	100	4
BAOTS1-603	Principles Of Sterilization Techniques	3	1	0	40	60	100	4
BAOTS1-604	Healthcare and basic Principles	2	0	0	20	30	50	2
BAOTS1-605	Anesthesia for specialties (including critical care assistance and ventilation) paper – I Practical	0	0	4	60	40	100	2
BAOTS1-606	Anesthesia for specialties (including criticalcare assistance and ventilation) paper – II-Practical	0	0	4	60	40	100	2
BAOTS1-607	Principles Of Sterilization Techniques-Practical	0	0	4	60	40	100	2
Total		**11**	**3**	**12**	**320**	**330**	**650**	**20**

7th Semester		Contact Hrs.			Marks			Credits
Subject Code	**Subject**	**L**	**T**	**P**	**Int.**	**Ext**	**Total**	
BAOTS1-701	Project/ Dissertation	0	0	40	50	150	200	20
BAOTS1-702	Biostatistics and Research Methodology	2	0	0	20	30	50	2
Total		**2**	**0**	**40**	**70**	**180**	**250**	**22**

The candidates will supervise by the concern faculty & and the project report will be submitted following competitions. The Viva-Voce examination shall be conducted by external expert

8th Semester		Contact Hrs.			Marks			Credits
Subject Code	**Subject**	**L**	**T**	**P**	**Int.**	**Ext**	**Total**	
BAOTS1-801	Internship	0	0	40	80	120	200	20
Total		**0**	**0**	**40**	**80**	**120**	**200**	**20**

The candidate can carry out Dissertation/Major Project working-house/internally or outside/externally and shall submit a report which will be evaluated by external expert at the end of academic year.

Overall Marks / Credits

Semester	Marks	Credits
1st	650	20
2nd	650	20
3rd	600	20
4th	650	20
5th	650	20
6th	650	20
7th	250	22
8th	200	20
Total	**4300**	**162**

FIRST SEMESTER

ANATOMY AND PHYSIOLOGY-I

Subject Code: BAOTS1-101 **L T P C** **Duration: 60 Hrs.**
3 1 0 4

Course Objective

- A study of the anatomical structure of the human body.
- Body structure will be studied by organ systems.
- Form-function relationships with emphasis on clinically relevant anatomy.
- The laboratory study will involve observing and learning from human skeletal collections anddissected cadavers and preserved specimens.

Course Outcome

At the end of the course the student should be able to:

- Describe the structure and functions of the organ systems of the human body.
- Describe how the organ systems function and interrelate.
- Learn basic technical terminology and language associated with anatomy.
- Develop a self-identity of what it means to be "human".

UNIT I (12 Hrs)

Organization of the Human Body

Introduction to the human body
Definition and subdivisions of anatomy
Anatomical position and terminology
Regions and Systems of the body
Cavities of the body and their contents
Levels of organization of the body

Cell and Functions

Definition of a cell, shapes and sizes of cells
Parts of a cell – cell membranes cytoplasm, subcellular organelles and their main function
Cell Division – Definition and main events that occur in different stages of mitosis and meiosis.

UNIT II (12 Hrs)

Tissues and Functions

Tissues of the body
Definition and types of basic tissues
Characteristics, functions and locations of different types of tissues

General Physiology- Concept of Homeostasis**,** Cell structure and functions**,** Transport across membranes

Nerve and muscle- Nerve structure, classification of nerve fibres, Muscles- classification, structure, Neuro-Muscular junction (NMJ). Muscle contraction-mechanism, types.

Blood and body fluids- Body fluid volumes, compartments and composition**,** Blood composition and functions**,** Plasma proteins**,** Erythrocytes -Morphology and functions**,** Leucocytes-Morphology and functions**,** Platelets-Morphology and functions**,** Blood groups.

UNIT III (12 Hrs)

Systems of Support and Movement

Skeletal system- Skeleton – Definition, axial and appendicular skeleton with names and number of bones, Types ofbones. Parts of bones. Functions of bones. Name location and general features of the bones of the body. Joints – Definition and types of joints with examples. Axes and kind of movements possible. Name, location, type, bones forming, movements possible.

Muscular system- Parts of the skeletal muscle. Definition of origin and insertion. Name and location of the skeletal muscles of the body. Origin, insertion, nerve supply and action of large muscles likesternocleidomastoid, pectoralis major, deltoid, Biceps brachii, Triceps brachii, gluteus, gastronemius and diaphragm.

UNIT IV (12 Hrs)

Control Systems of the Body- Nervous system**,** Sub-divisions of the nervous system
Spinal cord – Location, extent, spinal segments, external features and internal structure.
Brain – Sub-divisions, location external features of medulla oblongata, pons, mid-brain, cerebellum and cerebrum. Meninges and spaces around them. Name and location of ventricles of brain and circulation of cerebrospinal fluid. Blood supply of the brain and spinal cord.
Cranial nerves - Name, number, location and general distribution.
Spinal nerves - Typical spinal nerve groups and number of spinal nerves. Name and location of cervical plexus and brachial plexus. Location and general distribution of the branches.
Autonomic Nervous system –definition and functions, Sense organs, Location and features of the nose, tongue, eye, ear and skin

UNIT V (12 Hrs)

Excretory system

Structure of Nephron and its blood supply, JuxtaglomerularApparatus (JGA).
Formation of urine-Filtration, Reabsorption and secretion. Counter -Current mechanism Micturition.
Endocrine system- Names of the endocrine glands. Location and features of pituitary, thyroid, parathyroid, suprarenal, pancreas, ovaries and testes. Names of hormones produced by each gland.
Digestive system- Salivary glands -Nerve supply, functions of saliva**.** Gastric juice-composition &functions of gastric juice. Pancreatic juice-composition, functions and regulation of pancreatic juice. Bile- composition, functions of bile and bile salts. Succus entericus and small intestinal movements. Deglutition, vomiting, functions of large intestine

Reference Books

1. Rizzo DC. Fundamentals of Anatomy and Physiology (Book Only). Cengage Learning; 2009 Oct 1.
2. Waugh A, Grant A. Ross & Wilson Anatomy and physiology in health and illness E-book. Elsevier Health Sciences; 2014 Jun 25.
3. Remington LA, Goodwin D. Clinical Anatomy and Physiology of the Visual System: Clinical Anatomy and Physiology of the Visual System E-Book. Elsevier Health Sciences; 2021 Jun 25.

MICROBIOLOGY-I

Subject Code: BAOTS1-102 **L T P C** **Duration: 60 Hrs.**
3 1 0 4

Course Objective:

- Concepts of sterilization and disinfection procedures and their applications.
- Basic principles of immunology.
- Knowledge about fundamental aspect of bacteria and study the common disease caused by them.

Course Outcome: At the end of the semester the students should be able to

- Know the concepts of sterilization and disinfection procedures and their applications.
- Understand the basic principles of immunology.
- Understand the basic fundamental aspect of bacteria and study the common disease caused by them.

UNIT-I (12 Hrs)

Introduction, history of microbiology, its branches, scope and its importance. Introduction to Prokaryotes and Eukaryotes Study of ultra-structure and morphological classification of bacteria, nutritional requirements, raw materials used for culture media and physical parameters for growth, growth curve, isolation and preservation methods for pure cultures, cultivation of anaerobes, quantitative measurement of bacterial growth (total & viable count). Study of different types of phase constrast microscopy, dark field microscopy and electron microscopy

UNIT-II (12 Hrs)

General Microbiology-History and Introduction of Microbiology, Microscopy and Morphology of bacterial cell and their function, Growth and nutrition of Bacteria, Sterilization and Disinfection, Culture media, Culture methods and Identification ofbacteria.

UNIT-III (12 Hrs)

Immunology-Basic concept about Infection (Source, Portal of entry and Spread),Immunity, Antigen, Antibody, Antigen-Antibody reaction, Hypersensitivity.
Identification of bacteria using staining techniques (simple, Gram's & Acid fast staining) and biochemical tests (IMViC). Study of principle, procedure, merits, demerits and applications of physical, chemical gaseous, radiation and mechanical method of sterilization. Evaluation of the efficiency of sterilization methods. Equipments employed in large scale sterilization. Sterility indicators

UNIT-IV (12 Hrs)

Study of morphology, classification, reproduction/replication and cultivation of Fungi and Viruses. Classification and mode of action of disinfectants Factors influencing disinfection, antiseptics and their evaluation. For bacteriostatic and bactericidal actions Evaluation of bactericidal & Bacteriostatic. Sterility testing of products (solids, liquids, ophthalmic and other sterile products) according to IP, BP and USP.
Systemic bacteriology- Disease caused and lab diagnosis of medically important bacteria (Staphylococcus, Streptococcus, Neisseria, Echerichia coli, Salmonella, Shigella, Vibrio, Mycobacteria, Spirochetes).

UNIT-V (12 Hrs)

Designing of aseptic area, laminar flow equipments; study of different sources of contamination in an aseptic area and methods of prevention, clean area classification. Principles and methods of different microbiological assay. Methods for standardization of antibiotics, vitamins and amino acids. Assessment of a new antibiotic.

Reference Books

1. Marsh PD, Lewis MA, Williams D, Martin MV. Oral microbiology E-book. Elsevier health sciences; 2009 Apr 30.
2. Talaro KP, Talaro A, Delisle G, Tomalty L. Foundations in microbiology. Wm. C. Brown; 1996 Jan.
3. Parker N, Schneegurt M, Thi Tu AH, Foster BM, Lister P. Microbiology (OpenStax). OpenStax; 2016. Crueger W, Crueger A, Brock TD, Brock TD. Biotechnology: a textbook of industrial microbiology

PATHOLOGY-I

Subject Code: BAOTS1-103 **L T P C** **Duration: 60 Hrs.**
3 1 0 4

Course Objective:

- To understand the fundamental mechanisms underlying diseases.
- To develop skills to recognize and diagnose diseases based on clinical and laboratory findings.
- To examine tissue and organ abnormalities through histological analysis.
- To recognize the vital role of pathology in healthcare and research.

Course Outcome:

- Develop the skills needed to diagnose and differentiate diseases.
- Gain the ability to analyze and interpret microscopic and macroscopic pathology findings.
- Comprehend the cellular and molecular processes underlying diseases.
- Apply pathology concepts to inform clinical decision-making and patient care.

UNIT I (12 Hrs)

Introduction to cell- Normal Cell Structure Function Cell injury and Adaptation: Types of cell injury, Adaptation, Necrosis, Apoptosis, Pathological calcification

UNIT II (12 Hrs)

Inflammation and Repair

Acute Inflammation
Chronic Inflammation
Wound Healing and Repair

Infectious Disease

TB
Leprosy

UNIT III (12 Hrs)

Hemodynamic Disorder

Edema
Thrombosis and Embolism
Shock

UNIT IV (12 Hrs)

Neoplasia

Classification
Nomenclature
Characteristics of Benign & Malignant neoplasm
Pathogenesis of cancer
Spread of Cancer

UNIT V (12 Hrs)

Genetic Disorders

Down syndrome

Klinfelter Syndrome

Turner Syndrome

Radiation

Biological Effect of Radiation

Reference Books

1. Kumar V, Abbas A, Aster JC, editors. Robbins basic pathology e-book. Elsevier Health Sciences; 2017 Mar 8.
2. Underwood JC, Cross SS. General and Systematic Pathology E-Book. Elsevier Health Sciences; 2009 May 11.
3. King T. Elsevier's integrated pathology E-book. Elsevier Health Sciences; 2006 Dec 4.
4. Thompson LD, Bishop JA. Head and neck pathology E-book: a volume in the series: foundations in diagnostic pathology. Elsevier Health Sciences; 2017 Dec 8.

COMPUTER SCIENCE

Subject Code: BAOTS1-104 **L T P C** **Duration: 30 Hrs.**
2 0 0 2

Course Objective:

- Acquire the ability to apply computer science principles to solve pharmaceutical and healthcare-related problems.
- Analyze and interpret pharmaceutical data using computer-based methods, enhancing research and decision-making in the field.
- Gain proficiency in designing and implementing computer systems tailored to pharmaceutical and healthcare settings, improving efficiency and patient care.
- Foster collaboration between pharmacy and computer science disciplines to harness technology for optimizing pharmaceutical practices and research.

Course Outcome:

- Learn to apply computer science principles to solve pharmaceutical and healthcare-related problems.
- Learn to analyze and interpret pharmaceutical data using computer-based methods, enhancing research and decision-making in the field.
- Learn to design and implement computer systems tailored to pharmaceutical and healthcare settings, improving efficiency and patient care.

UNIT I (6 Hrs)

History of computers

Definition of computers
Input devices,
Output devices,
Storage devices,
Types of memory,
And units of measurement,
Range of computers,
Generations of computers,
Characteristics of computers

UNIT II (6 Hrs)

System

Hardware,
Software,
System definition,
Fundamentals of Networking,
Internet,
Performing searches and working with search engines,
Types of software and its applications

UNIT III (6 Hrs)

Office application suite

Word processor,
Spreadsheet,
Presentations,
Other utility tools,
Fundamentals of Linux / Windows operating system, functions, interfaces, basic commands, workingwith the shell and other standard utilities.

UNIT IV (6 Hrs)

Language

Comparison chart of conventional language,
Programming languages,
Generations of programming languages,
Compilers and interpreters,
Universal programming constructs based on SDLC,
Variable, constant, identifiers, functions, procedures, if while, do – while,
For and other Structures.

UNIT V (6 Hrs)

Programming in C language

Data types, identifiers, functions and its types, arrays, union, structures and pointers
Introduction to object oriented programming with C++: classes, objects, inheritance
Polymorphism and encapsulation. Introduction to databases, and query languages,
Introduction to Bioinformatics

Reference Books:

1. Huth M, Ryan M. Logic in Computer Science: Modelling and reasoning about systems. Cambridge university press; 2004 Aug 26.
2. Gallier JH. Logic for computer science: foundations of automatic theorem proving. Courier Dover Publications; 2015 Jun 18.
3. Kay J, Barg M, Fekete A, Greening T, Hollands O, Kingston JH, Crawford K. Problem-based learning for foundation computer science courses. Computer Science Education. 2000 Aug 1;10 (2):109-28.

ANATOMY AND PHYSIOLOGY-I LAB

Subject Code: BAOTS1-105 **L T P C** **Duration: 60 Hrs.**
0 0 4 2

Course Objective:

- Gain practical experience in conducting physiological experiments to reinforce theoretical knowledge of body functions.
- Acquires hands-on proficiency in identifying and dissecting anatomical structures, enhancing and understanding of human anatomy.
- Observing anatomical structures and physiological processes while accurately documenting findings.

Course Outcome:

- Knowledge about conducting physiological experiments of body.
- Identifying and dissecting anatomical structures, enhancing and understanding of human anatomy.
- Enhance skills in observing anatomical structures and physiological processes while accurately documenting findings.

CONTENT

1. **Histology** – Epithelium
2. **Axial & Appendicular Skeleton** with Names & Number Of Bones
3. **Muscles**
    1. Trapezius
    2. Lattisimusdorsi
    3. Biceps
    4. Triceps
    5. Deltoid
4. **Nervous System**
    1. Cerebrum
    2. Cerebellum
    3. Brain Stem
    4. Spinal Cord
5. **Special Senses**
    1. Tongue
    2. Ear
    3. Skin
    4. Eye

Reference Books

1. Rizzo DC. Fundamentals of Anatomy and Physiology (Book Only). Cengage Learning; 2009 Oct 1.
2. Waugh A, Grant A. Ross & Wilson Anatomy and physiology in health and illness E-book. Elsevier Health Sciences; 2014 Jun 25.
3. Remington LA, Goodwin D. Clinical Anatomy and Physiology of the Visual System: Clinical Anatomy and Physiology of the Visual System E-Book. Elsevier Health Sciences; 2021 Jun 25.

MICROBIOLOGY-I LAB

Subject Code: BAOTS1-106 **L T P C** **Duration: 60 Hrs.**
0 0 4 2

Course Objective:

- Enable student to acquire essential microbiological laboratory skills and techniques.
- Facilitate the examination and identification of various microorganisms to understand their characteristics and roles.
- Teach students how to perform diagnostic tests emphasizing their clinical and research applications.
- Instill a strong commitment to laboratory safety and ethical conduct while working with microorganisms.

Course Outcome:

- Develop proficiency in aseptic techniques, culturing, and handling microorganisms, fundamental for microbiological research and applications.
- Learn to identify and classify various microorganisms using microscopy, staining and biochemical tests, expanding knowledge of microbial diversity.
- Acquire skills in conducting diagnostic tests, such as antibiotic sensitivity assays, critical for clinical and research settings. Promote a culture for safety by adhering to proper laboratory protocols and enhance the responsible handling of potentially hazardous micro-organisms.

PRACTICALS

I. Gram staining

II. Spotters

Disposable syringe
Sterile cotton swab
Bacteriological loop
Sterile tube
McIntosh fildes Jar
Autoclave

III. Nutrient Agar plate

Mac Conkey agar plate
Mac conkey with LF
Mac conkey with NLF
Blood agar plate
L J Media
RCM
BHI broth
Antibiotics susceptibility
Gram positive Cocci in cluster
Gram negative bacilli
AFB
VDRL Slide
Microtiter plate

Reference Books

1. Marsh PD, Lewis MA, Williams D, Martin MV. Oral microbiology E-book. Elsevier health sciences; 2009 Apr 30.
2. Talaro KP, Talaro A, Delisle G, Tomalty L. Foundations in microbiology. Wm. C. Brown; 1996 Jan.
3. Parker N, Schneegurt M, Thi Tu AH, Foster BM, Lister P. Microbiology (OpenStax). OpenStax; 2016. Crueger W, Crueger A, Brock TD, Brock TD. Biotechnology: a textbook of industrial microbiology

PATHOLOGY-I LAB

Subject Code: BAOTS1-107 **L T P C** **Duration: 60 Hrs.**
0 0 4 2

Course Objective:

- Enable students to acquire hands on skills in identifying and analyzing pathological specimens and tissues.
- Teach students to conduct laboratory tests and examination for the diagnosis and evaluation of disease.
- Improve student's ability to use microscopes for the examination of cellular and tissue level pathological changes.
- Promote a culture of safety and ethical conduct while handling pathological specimens and data in laboratory.

Course Outcome:

- Gain hands-on expertise in the examination and interpretation of pathological specimens and tissues.
- Demonstrate the ability to perform laboratory tests and investigation for disease diagnosis and monitoring.
- Improve proficiency in microscopy to identify and understand cellular and tissue level pathological changes.
- Foster a commitment to safety and ethical standards while handling and analyzing pathological specimens in the laboratory.

PRACTICALS

1. **DIFFERENTIAL COUNT**
   Spotter
2. **GROSS (SPOTTER)**
   Fatty liver
   Lipoma
   Dry gangrene foot
   Wet gangrene bowel
   CVC Spleen
   Hydatid cyst
   TB – Lung
3. **INSTRUMENTS**
   Westergrens ESR tube
   Sahlihemocytometer
   Neaubaur's chamber
   Bone Marrow Needle

Reference Books

1. Kumar V, Abbas A, Aster JC, editors. Robbins basic pathology e-book. Elsevier Health Sciences; 2017 Mar 8.
2. Underwood JC, Cross SS. General and Systematic Pathology E-Book. Elsevier Health Sciences; 2009 May 11.
3. King T. Elsevier's integrated pathology E-book. Elsevier Health Sciences; 2006 Dec 4.
4. Thompson LD, Bishop JA. Head and neck pathology E-book: a volume in the series: foundations in diagnostic pathology. Elsevier Health Sciences; 2017 Dec 8.

SECOND SEMESTER

ANATOMY AND PHYSIOLOGY-II

Subject Code: BAOTS1-201 **L T P C** **Contact Hrs.: 60 Hrs.**
3 1 0 4

Course objectives:

- Describe the structure and functions of the organ systems of the human body.
- Describe how the organ systems function and interrelate.
- Basic technical terminology and language associated with anatomy.
- Develop a self-identity of what it means to be "human".

Course outcome: At the end of the course the student should be able to:

- Understand the structure and functions of the organ systems of the human body.
- Knowledge about the organ systems function and interrelate.
- Learn basic technical terminology and language associated with anatomy.
- Understand self-identity of what it means to be "human".

Unit I (12 Hrs.)

Maintenance of the Human Body

Cardio-vascular system

- Types and general structure and function of blood vessels. Structure and types of arteries and veins. Structureof capillaries. Shape, size, location, coverings, external and internal features of heart. Structure of heart wall, conducting system of the heart.
- Blood supply of the heart. The systemic arteries and veins. Name, location, branches and main- distribution of principal arteries and veins.

Unit II (12 Hrs.)

Lymphatic system

- Lymph, lymphatic vessels, name, location and features and functions of the lymphatic organs.

Respiratory system

- Names of organs of respiration, Location and features of nose, pharynx, larynx, trachea, bronchi, lungs and pleura.

Unit- III (12 Hrs.)

Digestive system

- Names of organs of digestion. Parts of alimentary canal and accessory organs. Location and features of mouth, pharynx, esophagus, stomach, small and large intestines. Location and features of salivary glands, pancreas, liver and gall bladder.

Unit IV (12 Hrs.)

Urinary system

- Names of urinary organs, location and features of kidney, ureter, urinary bladder and urethra.

Anatomical Regions

- Simple ideas about scalp, triangles of neck, axilla, cubital fossa, mediastinum, inguinal canal, femoral triangle, popliteal fossa.

Unit V (12 Hrs.)

- **Reproductive system** Names of male and female organs of reproduction. Location and features of scrotum, testis, epididymis, vas deferens, seminal vesicle, ejaculatory duct, prostate gland, penis and spermatic cord. Location and features of uterus and its supports, uterine tube, ovary vagina vulva and breast.

Reference Books

1. Rizzo DC. Fundamentals of Anatomy and Physiology (Book Only). Cengage Learning; 2009 Oct 1.
2. Waugh A, Grant A. Ross & Wilson Anatomy and physiology in health and illness E-book. Elsevier Health Sciences; 2014 Jun 25.
3. Remington LA, Goodwin D. Clinical Anatomy and Physiology of the Visual System: Clinical Anatomy and Physiology of the Visual System E-Book. Elsevier Health Sciences; 2021 Jun 25.

MICROBIOLOGY-II

Subject Code: BAOTS1-202 **L T P C** **Contact Hrs.: 60 Hrs**
3 1 0 4

Course objective:

- Concepts of sterilization and disinfection procedures and their applications.
- Basic principles of immunology.
- Basic fundamental aspect of bacteria and study the common disease caused by them.

Course outcome:

At the end of the semester the students should be able to

- Know the concepts of sterilization and disinfection procedures and their applications.
- Understand the basic principles of immunology.
- Understand the basic fundamental aspect of bacteria and study the common disease caused by them

UNIT I (12 Hrs.)

Virology: Introduction to virology, List of medically important viruses and diseases(AIDS, Hepatitis, Rabies, Polio) and Lab diagnosis of viral infections

UNIT II (12 Hrs.)

Mycology: Introduction to Mycology, List of medically important fungi and diseases (Candidiasis, Cryptococcosis, Dermatophytes, Aspergillosis and Mucor mycosis) and Lab diagnosis of fungal infections.

UNIT III (12 Hrs.)

Parasitology: Introduction to Parasitology, List of medically important parasites and diseases (E.histolytica, Plasmodium, W. bancrofti, Ascaris, Ancylostoma) and Lab diagnosis of parasitic infections

UNIT IV (12 Hrs.)

Applied Microbiology-Collection and transport of clinical specimen, Sexually transmitted disease, Hospital acquired infection, Urinary tract infection, Skin and Soft tissue infection, Anaerobic infection, Respiratory tract infection and Bloodstream infection, Immunoprophylaxis, Biomedical Waste Management and standard precautions.

UNIT V (12 Hrs.)

Types of spoilage, factors affecting the microbial spoilage of pharmaceutical products, sources and types of microbial contaminants, assessment of microbial contamination and spoilage. Preservation of pharmaceutical products using antimicrobial agents, evaluation of microbial stability of formulations. Growth of animal cells in culture, general procedure for cell culture, Primary, established and transformed cell cultures. Application of cell cultures in pharmaceutical industry and research.

Reference Books

1. Marsh PD, Lewis MA, Williams D, Martin MV. Oral microbiology E-book. Elsevier health sciences; 2009 Apr 30.
2. Talaro KP, Talaro A, Delisle G, Tomalty L. Foundations in microbiology. Wm. C. Brown; 1996 Jan.
3. Parker N, Schneegurt M, Thi Tu AH, Foster BM, Lister P. Microbiology (OpenStax). OpenStax; 2016. Crueger W, Crueger A, Brock TD, Brock TD. Biotechnology: a textbook of industrial microbiology

PATHOLOGY-II

Subject Code: BAOTS1-203 **L T P C** **Contact Hrs.: 60 Hrs**
3 1 0 4

Course objective:

- To understand the fundamental mechanisms underlying diseases.
- To develop skills to recognize and diagnose diseases based on clinical and laboratory findings.
- To examine tissue and organ abnormalities through histological analysis.
- To recognize the vital role of pathology in healthcare and research.

Course outcome:

- Develop the skills needed to diagnose and differentiate diseases.
- Gain the ability to analyze and interpret microscopic and macroscopic pathology findings.
- Comprehend the cellular and molecular processes underlying diseases.
- Apply pathology concepts to inform clinical decision-making and patient care.

Unit I (12 Hrs.)

- **CVS**
  - Atherosclerosis
  - Ischemic heart diease
  - Congenital heart diseae
  - Valvular heart disease
- **RESPIRATORY SYSTEM**
  - Bronchial Asthma
  - Emphysema
  - Bronchiectasis

Unit II (12 Hrs.)

- **GIT**
  - Gastric ulcer
  - Tumors of GIT
- **HEPATOBILIARY**
  - Hepatitis
  - Liver Abscess
  - Cirrhosis
  - Cholecystits

Unit III (12 Hrs.)

- **KIDNEY AND URINARY TRACT**
  - Renal stones
  - UTI and Pyelonephritis
  - Renal cell carcinoma (RCC)
  - Renal Failure

- **REPRODUCTIVE SYSTEM**
  - Diseases of testis, uterus, cervix and ovary

Unit IV (12 Hrs.)

- **CNS**
  - Infections
- **BONES and JOINTS**
  - Septic Arthritis
  - Osteomyelitis
  - Rheumatoid Arthritis

Unit V (12 Hrs.)

- ANEMIA
- AUTOIMMUNE DISEASES

Reference Books

1. Kumar V, Abbas A, Aster JC, editors. Robbins basic pathology e-book. Elsevier Health Sciences; 2017 Mar 8.
2. Underwood JC, Cross SS. General and Systematic Pathology E-Book. Elsevier Health Sciences; 2009 May 11.
3. King T. Elsevier's integrated pathology E-book. Elsevier Health Sciences; 2006 Dec 4.
4. Thompson LD, Bishop JA. Head and neck pathology E-book: a volume in the series: foundations in diagnostic pathology. Elsevier Health Sciences; 2017 Dec 8.

BASIC AND ADVANCED LIFE SUPPORT

Subject Code: **BAOTS1-204** | **L T P C** | **30 Hours**
2 0 0 2

Course Objectives:

- Expected to have basic knowledge on basic medical sciences
- To develop in depth knowledge on concepts of pathological conditions.
- To develop exhaustive ideology of techniques in regional and general anesthesia

Course Outcome:

- Gain knowledge on history of anesthesia, pre and post - operative assessment.
- Learn the investigations and pre-anesthetic orders required for patient to be anesthetized.
- Gain knowledge on the management of complications and anesthetic considerations.

UNIT-I (6 Hours)

- BLS
- TRIAGE
- Primary Survey
- Secondary Survey
- Airway & Ventilatory management
- Shock
- Central & peripheral venous access
- Thoracic trauma – Tension pneumothorax
- Other thoracic injuries
- Abdominal trauma – Blunt injuries

UNIT-II (6 Hours)

- Abdominal trauma – Penetrating injuries
- Spine and spinal cord trauma
- Head trauma
- Musculoskeletal trauma
- Electrical injuries
- Thermal burns
- Cold injury
- Pediatric trauma
- Trauma in pregnant women
- Workshop BLS

UNIT-III (6 Hours)

- Workshop cervical spine immobilization
- Imaging studies in trauma
- The universal algorithm for adult ECC
- Ventricular fibrillation/Pulseless ventricular tachycardia algorithm
- Pulseless electrical activity (PEA) / asystole algorithm

UNIT-VI (6 Hours)

- Bradycardia treatment algorithm
- Tachycardia Treatment algorithm
- Hypotension / Shock
- Acute myocardial infarction
- Pediatrics Advanced life support

UNIT-V (6 Hours)

- Defibrillation
- Drugs used in ACLS
- Emergency cardiac pacing
- AED
- Techniques for oxygenation and ventilation

Reference books

1. Ferguson, J. "Advanced paediatric life support, 3rd edn: Advanced Life Support Group.(£ 25). BMJ Books, 2001. ISBN 0-7279-1554-1." (2002): 186-186.
2. Samuels, Martin, and Sue Wieteska, eds. *Advanced paediatric life support: a practical approach to emergencies*. John Wiley & Sons, 2016.

ANATOMY AND PHYSIOLOGY-II LAB

Subject Code: BAOTS1-205 **L T P C** **Contact Hrs.: 60 Hours**
0 0 4 2

Course objectives:

- Describe the structure and functions of the organ systems of the human body.
- Describe how the organ systems function and interrelate.
- Basic technical terminology and language associated with anatomy.
- Develop a self-identity of what it means to be "human".

Course outcome: At the end of the course the student should be able to:

- Understand the structure and functions of the organ systems of the human body.
- Knowledge about the organ systems function and interrelate.
- Learn basic technical terminology and language associated with anatomy.
- Understand self-identity of what it means to be "human".

PRACTICALS

- **Endocrine System**
  - Pituitary gland
  - Pineal body
  - Thyroid & parathyroid gland
  - Adrenal
  - Pancreas
  - Gonads – Ovary & Testis
- **Cardio-Vascular System**
  - Heart
- **Lymphatic system**
  - Spleen
  - Respiratory System
  - Lungs
  - Larynx
  - Trachea
- **Digestive System**
  - Salivary glands
  - Esophagus
  - Pharynx
  - Stomach
  - Liver, Gall bladder
  - Duodenum
  - Small intestine
  - Large intestine
- **Urinary system**
  - Kidneys
  - Ureter
  - Urinary bladder

- **Reproductive System**
  - Saggital section – Male & Female pelvis
  - Uterus & ligaments
  - Ovary
  - Prostate
  - Seminal vesicals
  - Vas deferens
  - Testis

Reference Books

1. Rizzo DC. Fundamentals of Anatomy and Physiology (Book Only). Cengage Learning; 2009 Oct 1.
2. Waugh A, Grant A. Ross & Wilson Anatomy and physiology in health and illness E-book. Elsevier Health Sciences; 2014 Jun 25.
3. Remington LA, Goodwin D. Clinical Anatomy and Physiology of the Visual System: Clinical Anatomy and Physiology of the Visual System E-Book. Elsevier Health Sciences; 2021 Jun 25.

MICROBIOLOGY-II LAB

Subject Code: BAOTS1-207 **L T P C** **Contact Hrs:. 60 Hours**
0 0 4 2

Course Objective:

- Concepts of sterilization and disinfection procedures and their applications.
- Basic principles of immunology.
- Basic fundamental aspect of bacteria and study the common disease caused by them.

Course outcome:

At the end of the semester the students should be able to

- Know the concepts of sterilization and disinfection procedures and their applications.
- Understand the basic principles of immunology.
- Understand the basic fundamental aspect of bacteria and study the common disease caused by them

PRACTICALS

I. SPOTTERS

1. Ascarislumbricoides
2. Taenia
3. Gram stained smears showing Candida
4. Universal container
5. Vaccine-OPV
6. BCG
7. Hepatitis
8. DPT
9. TT
10. MMR
11. Virology –Embryonated egg
12. Tissue culture
13. Rhabdovirus
14. Polio virus
15. HIV

II.Clinical case discussion with charts

1. Skin and soft tissue infections
2. Ring worm/ Tinea infections
3. Food poisoning
4. Gastroenteritis

Reference Books

1. Marsh PD, Lewis MA, Williams D, Martin MV. Oral microbiology E-book. Elsevier health sciences; 2009 Apr 30.

2. Talaro KP, Talaro A, Delisle G, Tomalty L. Foundations in microbiology. Wm. C. Brown; 1996 Jan.
3. Parker N, Schneegurt M, Thi Tu AH, Foster BM, Lister P. Microbiology (OpenStax). OpenStax; 2016. Crueger W, Crueger A, Brock TD, Brock TD. Biotechnology: a textbook of industrial microbiology

PATHOLOGY-II LAB

Subject Code: BAOTS1-206 **L T P C** **Contact Hrs:. 60 Hours**
0 0 4 2

Course objective:

- To understand the fundamental mechanisms underlying diseases.
- To develop skills to recognize and diagnose diseases based on clinical and laboratory findings.
- To examine tissue and organ abnormalities through histological analysis.
- To recognize the vital role of pathology in healthcare and research.

Course outcome:

- Develop the skills needed to diagnose and differentiate diseases.
- Gain the ability to analyze and interpret microscopic and macroscopic pathology findings.
- Comprehend the cellular and molecular processes underlying diseases.
- Apply pathology concepts to inform clinical decision-making and patient care.

PRACTICALS

INSTRUMENT TEST

- RBC Pipette
- WBC Pipette
- Sahli's Pipette
- Wintrobe's PCV tube
- Hb Estimation
- Blood grouping

SPECIMEN

- Chronic Pyelonephritis
- RCC
- SCC – Foot
- Leiomyoma – Fibroid uterus
- Gall stones
- Appendicitis
- Liver absces

Reference Books

1. Kumar V, Abbas A, Aster JC, editors. Robbins basic pathology e-book. Elsevier Health Sciences; 2017 Mar 8.
2. Underwood JC, Cross SS. General and Systematic Pathology E-Book. Elsevier Health Sciences; 2009 May 11.
3. King T. Elsevier's integrated pathology E-book. Elsevier Health Sciences; 2006 Dec
4. Thompson LD, Bishop JA. Head and neck pathology E-book: a volume in the series: foundations in diagnostic pathology. Elsevier Health Sciences; 2017 Dec 8.

THIRD SEMESTER

ANATOMY & PHYSIOLOGY RTELATED TO ANESTHESIA TECHNOLOGY

Subject Code: **BAOTS1-301** **L T P C** **Duration: 60 Hrs.**
3 1 0 4

COURSE OBJECTIVES:

- Expected to have basic knowledge on human anatomy and physiology
- To develop in depth knowledge on anatomy of various organs and structures
- To develop exhaustive ideology of various functions of various structures.

COURSE OUTCOME:

- Will be able to explain anatomy of various organs with better knowledge on terminologies.
- Will be able to explain to physiological processes with understanding.
- Will be able to provide better support during surgery.

UNIT – I (12 Hours)

Respiratory System- Structure and function of the respiratory tract in relation to anaesthesia - Nose,Pharynx, Larynx, Trachea & Bronchial tree – vessels, nerve supply, respiratory tract. Respiratory Physiology-Respiratory muscles – diaphragm, intercostals, Lung volumes-dead space, vital capacity,FRC .Oxygen: properties, storage, supply, hypoxia

UNIT II (12 Hours)

Cardiovascular System - Anatomy – Chambers of the heart, circulation, ECG, Blood Pressure. Howto measure? Hypotension & Hypertension

UNIT – III (12 Hours)

Fluids And Electrolytes/ Blood Transfusion-Body Fluids – Composition, I.V Fluids – composition& administration, I.V Cannulation, Blood grouping, Cross matching, Transfusion indications, hazards.

UNIT – IV (12 Hours)

Nervous System- Parts of Central & Peripheral Nervous System, Cerebro spinal fluid

UNIT – V (12 Hours)

Reproductive System: Physiological changes in pregnancy and labour

Text Books:

1. Human Anatomy, B.D. Chaurasia, Vol 1, 2, 3, Sixth edition, CBS Publishers & Distributors, 2013
2. Textbook of physiology : A.K. Jain, Fifth edition, Avichal Publishing Company , 2014

APPLIED PHARMACOLOGY AND MICROBIOLOGY

Subject Code: **BAOTS1-302** **L T P C** **Duration: 60 Hrs.**

3 1 0 4

COURSE OBJECTIVES:

- Expected to have basic knowledge on anatomy, physiology and pharmacology.
- To develop knowledge on various drugs and their mechanism of actions.
- To impart knowledge on the adverse effects on various drugs.

COURSE OUTCOME:

- Gain knowledge on the mechanism of actions of various drugs along with their adverse effects.
- Able to identify the drug to be used in emergency situations during a surgical procedure.
- Gain knowledge on various NSAIDs and anticoagulants.

UNIT-I (12 Hours)

- ANTISIALAGOGUES
- Atropine, Glycophyrrolate
- SEDATIVES I ANXIOLYTICS
- Diazepam, Midazolam, Phenergan, Lorazepam, Chloropromazine, Trichlopho
- NARCOTICS
- Morphine, Pethidine, Fentanyl, Pentazozine
- ANTIEMETICS
- Metaoclopramide, Ondanseteron, Dexamethasone
- ANTACIDS
- Na citrate, Gelusil, Mucaine gel.

UNIT-II (12 Hours)

- **H2 BLOCKERS**
  Cimetidine, Ranitidine, Famotidine
- **INDUCTION AGENT**
  Thiopentone , Diazepam, Midazolam, Ketamine, Propofol, Etomidate.
- **MUSCLE RELAXANTS**
  Depolarising - Suxamethonium,
  Non depolar:sing -Pancuronium, Vecuronium, Atracurium, rocuranium

UNIT-III (12 Hours)

- **INHALATIONAL GASES**
  Gases - 02, N20, Air
  Agents - Ether-, Halothane, Isofllurane, Saevoflurane, Desflurane
- **REVERSAL AGENTS**
  Neostigmine, Glycopyrrolate, Atropine, Nalorphine, Naloxone, Flumazenil (Diazepam)
- **LOCAL ANAESTHETICS**
  Xylocaine, Preparation, Local – Bupivacaine

- Topical, Prilocaine-jelly, Emla - Ointment,
Etidocaine. Ropivacaine

UNIT-IV (12 Hours)

EMERGENCY DRUGS

- Adrenaline : Mode or administration, dilution, dosage,
- Effects, Isoprenaline
- Atropine, bicarbonate, calcium, ephedrine, xylocard,
- Ionotropes : dopamine, dobutamine, amidaron
- Aminophylline, hydrocortisone, antihistamlnics, potassium.
- Cardiovascular drugs
- Antihypertensives
- Antiarhythmics
- Beta - Blockers
- Ca - Channel blockers.
- Vasodilators - nitroglycerin & sodium nitroprusside
- Respiratory system - Bronchodilators, respiratory stimulants Broncholytic agents
- Renal system - Diuretics, furosemide, mannitol
- Obstetrics - oxoytocin, methergin
- Miscellaneous - Antibiotics NSAIDS Anticoagulants and Insulin

UNIT-V (12 Hours)

APPLIED MICROBIOLOGY

- Sterilization &decontamination-I Dry
- Filtration
- Wound Infection & Urinary Tract Infections
- Blood stream Infections
- Respiratory tract Infcetion
- S.Typhi, Salmonel1a Paratyphi 'A', Salmonella Typhimurium
- Catheter, IV associated Infections
- Hospital acquired infections & prevention of hospital acquired infections
- Hepatitis C, HBV, HIV
- Hyper sensitivity reaction – Type I, II, III, IV

Text Books:

1. Pharmacology for Dental and Allied Health Sciences, Padmaja
2. Udaykumar, Third Edition, Jaypee Brothers Medical Publishers, 2013

Reference Books:

1. Essentials of medical pharmacology, Tripathi, 7th edition, Jaypee Brothers Medical Publishers, 2013

MEDICAL ETHICS AND BIO SAFETY

Subject Code: **BAOTS1-303** **L T P C** **Duration: 60 Hrs.**

3 1 0 4

COURSE OBJECTIVES:

- Expected to have basic knowledge on Ethics
- To develop knowledge on various Ethical issues in applied medicine
- To impart knowledge on Genetic testing genetic screening

COURSE OUTCOME:

- Gain knowledge about ethics on general practice
- Gain knowledge about primary & Secondary Ethical principles
- Gain knowledge on Assisted reproduction and Ethics

UNIT-I (15 Hours)

- Definition & key terms – ethics Vs law
- Define Negligence, Malpractice & Liability
- Influence of Ethics on general practice
- Professional codes of Ethics

UNIT-II (15 Hours)

- Describe primary & Secondary Ethical principles
- Describe the Moral basis of Informed consent & advance directives
- Euthanasia and physician – assisted suicide

UNIT-III (15 Hours)

- Physicians, patients and other: autonomy, Truth Telling & Confidentiality
- Reproductive control: Assisted reproduction and Ethics
- Workers compensation

UNIT-IV (15 Hours)

- Ethical issues in applied medicine
- Fertility & Birth control
- Genetic testing genetic screening.
- Research Ethics

Reference books

1. Salerno, Reynolds M., and Jennifer Gaudioso, eds. *Laboratory biorisk management: biosafety and biosecurity*. CRC Press, 2015.
2. Timms, Olinda. *Bio-Medical Ethics-E-Book*. Elsevier Health Sciences, 2016.

PSYCHOLOGY

Subject Code: **BAOTS1-304**	**L**	**T**	**P**	**C**	**Duration: 60 Hrs.**
3	**1**	**0**	**4**

COURSE OBJECTIVES:

- Expected to have basic knowledge on Ethics
- To develop knowledge on various Ethical issues in applied medicine
- To impart knowledge on Genetic testing genetic screening

COURSE OUTCOME:

- Gain knowledge about ethics on general practice
- Gain knowledge about primary & Secondary Ethical principles
- Gain knowledge on Assisted reproduction and Ethics

UNIT I (12 Hours)

Basic Concepts of Psychology

Definition of Psychology, Origin of Psychology - Philosophical roots of psychology, Schools of Psychology–Structuralism – Gestalt – Functionalism – Behaviorism - Psychoanalysis – Humanistic. Fields ofPsychology - Work of a psychologist – Applications of psychology.

Learning principles and methods

Definition of learning, Factors In The Process of Learning Classical conditioning - Operant Conditioning – The principle of reinforcement and Punishment. Theory of learning. Cognitive learning- Latent learning, Insight learning, and Imitation.

UNIT II (12 Hours)

Motivation, Emotion, Memory and forgetting

Motivation - Definition of motivation – Theories of motivation - Physiological basis of motivation – Motivational factors in aggression – Self-actualization motivation. Emotion – Emotional expression – Theories of emotions. Kinds of remembering – Retrieval processes – The nature of forgetting – Two process theories of memory – Improving memory –Language and thought – Symbols and concepts – Structure – Forms of thought - Thinking and reasoning – Concept formation.

UNIT III (12 Hours)

Development, Sensory Processes and Perception.

Erikson's stages of psychosocial development Lawrence Kohlberg's stages of moral development Freud’s Stages of Psychosexual Development Physiological basis of behavior – The brain and nervous system –The sensory process , Some general characteristic of senses – Five senses ,Perception: Organization – The role of learning in perception – Perception and attention – Perceptual process.

UNIT IV (12 Hours)

Intelligence & Personality

Theories of intelligence – Measuring Intelligence – Kinds of intelligence tests – Ability – Formation of aptitude and attitude – Aptitude tests –Creativity and its tests. Personality –

Definition of Personality – Theories of Personality – Assessment of Personality. Social Factors Influencing Personality.

Inter-Personal Relations. Inter-personal attraction – Love and Companionship. Prosocial-behavior. Modes of empathy: self – other differentiation and development of empathy. Social influence: attitude and conformity. Definition - Characteristics and Classification of Crowd. Leadership: Definition and characteristics, Defense Mechanisms, frustration and conflict, sources of frustration and conflict, types of conflicts. Aggression and Types of aggression.

UNIT V (12 Hours)

Health Psychology

Definition of Health Psychology -Relating Health Psychology to other fields Clinical Health Psychology, Public Health Psychology, Community Health Psychology, Critical Health Psychology

Abnormal Psychology: Concepts of normality and abnormality, causation of mental illness, neuroses, psychoses, psychosomatic disorders, measures to promote mental health.

Stress - Definitions- Models of Stress – Theories of Stress - Stress reactions – Coping and Stress Management techniques, Pain and its management - Psychological reactions of a patient to loss – Stages of Acceptance by Kubler-Ross.

REFERENCES:

1. Clifford T. Morgan, Richard a. King, John R. Weis and John Schopler,"**Introduction to Psychology"** –
2. **7th Edition**. Tata McGraw Hill Book Co. New Delhi, 1993.
3. Baron, R. A., & Byrne, D (2006), "**Social psychology"**, New Delhi: Prentice hall of India private limited.
4. Elliot Aronson, Timothy D. Wilson, Robin M. Akert, Samuel R. Sommers, **"Social psychology" 9th edition** published by Pearson education, Inc.,2006

ANATOMY & PHYSIOLOGY RELATED TO ANESTHESIA TECHNOLOGY PRACTICAL

Subject Code: **BAOTS1-305**	**L**	**T**	**P**	**C**	**Duration: 4 Hours/week**
0	**0**	**4**	**2**

COURSE OBJECTIVES:

- Expected to have basic knowledge on human anatomy and physiology
- To develop in depth knowledge on anatomy of various organs and structures
- To develop exhaustive ideology of various functions of various structures.

COURSE OUTCOME:

- Will be able to explain anatomy of various organs with better knowledge on terminologies.
- Will be able to explain to physiological processes with understanding.
- Will be gaining hand on training in setting up things for IV cannulation.

PRACTICALS/ DEMONSTRATIONS

1. Model of respiratory tract
2. Spotters –pictures in anatomy and physiology of various systems
3. How to measure blood pressure
4. How to set up things for IV cannulation

Text Books:

1. Human Anatomy, B.D. Chaurasia, Vol 1, 2, 3, Sixth edition, CBS Publishers & Distributors,2013
2. Textbook of physiology : A.K. Jain, Fifth edition, Avichal Publishing Company, 2014

APPLIED PHARMACOLOGY AND MICROBIOLOGY PRACTICAL

Subject Code: **BAOTS1-306** **L T P C** **Duration: 4 Hours/week**

0 0 4 2

COURSE OBJECTIVES:

- Expected to have basic knowledge on anatomy, physiology and pharmacology.
- To develop knowledge on various drugs and their mechanism of actions.
- To impart knowledge on the adverse effects on various drugs.

COURSE OUTCOME:

- Gain knowledge on the mechanism of actions of various drugs along with their adverse effects.
- Able to identify the drug to be used in emergency situations during a surgical procedure.
- Gain knowledge on various NSAIDs and anticoagulants.

PRACTICALS/ DEMONSTRATIONS

- Spotters
- Charts
- Anesthetic induction agents
- Inhalation agents

Text Books:

1. Pharmacology for Dental and Allied Health Sciences, Padmaja Udaykumar, ThirdEdition, Jaypee Brothers Medical Publishers, 2013

Reference Books:

1. Essentials of medical pharmacology, Tripathi, 7th edition, Jaypee Brothers Medical Publishers,2013

FOURTH SEMESTER

PRINCIPLES OF ANESTHESIA-I

Subject Code: **BAOTS1-401** | **L T P C** | **Duration: 60 Hrs.**
3 1 0 4

COURSE OBJECTIVES:

- Expected to have basic knowledge on basic medical sciences
- To develop ideology of various Equipment used in anesthesia technology.
- To develop knowledge on the principles involved in OT and OT techniques.

COURSE OUTCOME:

- Gain knowledge on various codes and safety devices.
- Learn the importance of endotracheal tubes and laryngoscopes in anesthesia.
- Learn about the machines and gain knowledge on OT and OT techniques.

UNIT-I (12 Hours)

MEDICAL GAS SUPPLY

- Compressed gas cylinders
- Colour coding
- Cylinder valves; pin index.
- Gas piping system
- Recommendations for piping system
- Alarms & safety devices.

UNIT-II (12 Hours)

ANAESTHESIA MACHINE

- Hanger and yoke system
- Cylinder pressure gauge
- Pressure regulator
- Flow meter assembly
- Vaporizers - types, hazards, maintenance, filling and draining, etc

UNIT-III (12 Hours)

BREATHING SYSTEM

- General considerations: humidity & heat
- Common components - connectors, adaptors, reservoir bags
- Pulse oximetry
- $EtCo_2$ & Capnography
- Methods of humidification.
- Classification of breathing system Mapleson system – a, b, c, d, e, f ,Jackson Rees system, Baincircuit
- Non rebreathing valves - ambu valves
- The circle system Components Soda lime, indicators

UNIT-IV (12 Hours)

FACE MASKS & AIRWAY LARYNGOSCOPES

- Types, sizes
- Endotracheal tubes - Types, sizes.
- Cuff system
- Fixing, removing and inflating cuff, checking tube position complications.
- Bougie
- LMA

UNIT-V (12 Hours)

- Anesthesia Ventilators and Working Principles.

MONITORING

- ECG
- Sp02
- Temperature
- IBP
- CVP
- PA Pressure
- LA Pressure
- Bio Medical engineering of Trouble sorting Management, care of cleaning

Text Books:

1. The Anesthesia Technician and Technologist's Manual, Glenn Woodworth, Jeffrey R. Kirsch,Shannon Sayers-Rana, 1st edition, Lippincott Williams & Wilkins, 2012

Reference Books:

1. Anesthesia Equipment, Principles and Applications (Expert Consult: Online and Print),
2. Anesthesia Equipment Clinical Key 2012.

PRINCIPLES OF ANESTHESIA-II

Subject Code: **BAOTS1-402** **L T P C** **Duration: 60 Hrs.**

3 1 0 4

COURSE OBJECTIVES:

- Expected to have basic knowledge on basic medical sciences
- To develop in depth knowledge on concepts of pathological conditions.
- To develop exhaustive ideology of techniques in regional and general anesthesia

COURSE OUTCOME:

- Gain knowledge on history of anesthesia, pre and post – operative assessment.
- Learn the investigations and pre-anesthetic orders required for patient to be anesthetized.
- Gain knowledge on the management of complications and anesthetic considerations.

UNIT-I (12 Hours)

BASIC ANAESTHETIC TECHNIQUES INTRODUCTION TO ANAESTHESIA

- General Anesthesia * Regional Anesthesia * Local Anesthesia* Intravenous Anesthesia
- Minimum standard of anesthesia
- Who should give anesthesia?

UNIT-II (12 Hours)

PRE-OP PREPARATION:

- Pre anesthetic assessment~ History – , past history - disease / Surgery / and personal history -Smoking / alcohol
- General physical assessment, systemic examination – CVS, RS, CNS

UNIT-III (12 Hours)

INVESTIGATIONS

- Routine - Urine
    - Hematological - their significance
    - E.C.G.
    - Chest X – ray
    - Echocardiography
    - Angiography
    - Liver function test
    - Renal function test
    - Others
- Case acceptance: ASA grading - I, II, III, IV.

PRE - ANAESTHETIC ORDERS: Patient - Informed consent

- Npo guidelines
- Premedication - advantages, drugs used
- Special instructions - if any

- **Machine -Checking the machine02, N20, suction apparatus Laryngoscopes, et tubes, airways**
  - Things for IV accessibility
  - Other monitoring systems
    Drug Emergency drugs Anesthetic drugs

UNIT-IV (12 Hours)

INTRAOPERATIVE MANAGEMENT

- Confirm the identification of the patient
- Monitoring - minimum
- Noninvasive & Invasive monitoring
- Induction - drugs used
- Endotracheal intubation
- Maintenance of anaesthesia
- Positioning of the patient
- Blood / fluid & electrolyte balance
- Reversal from anaesthesia - drugs used
- Transferring the patient
- Recovery room – set up and things needed

UNIT-V (12 Hours)

POST OPERATIVE COMPLICATIONS & MANAGEMENT

- Recovery and Delayed recovery
- Hypoxia and Oxygen Therapy
- PONV

Text Books:

1. The Anesthesia Technician and Technologist's Manual, Glenn Woodworth, Jeffrey R. Kirsch,Shannon Sayers-Rana, 1st edition, Lippincott Williams & Wilkins, 2012.

Reference Books:

Anesthesia Equipment, Principles and Applications (Expert Consult: Online and Print), AnesthesiaEquipment Clinical Key 2012.

BIOCHEMISTRY-I

Subject Code: **BAOTS1-403** | **L T P C** | **Duration: 60 Hrs.**

3 1 0 4

Course objectives:

- To have a knowledge about the chemistry and metabolism of various macromolecules-carbohydrate, protein and lipids
- To learn about enzymes, vitamins, minerals and nutrition
- To know the structure and function of Hemoglobins, Nucleic acids.
- To learn about the organ function tests like Liver Function Tests and Renal Function Tests.

Unit I (15 Hrs.)

CARBOHYDRATES

Carbohydrates: Classification of carbohydrates and their biological importance, reducing property of sugars.

Metabolism of Carbohydrates: Digestion and Absorption of carbohydrates, Steps of Glycolysis and energetics, Steps of TCA cycle and energetics, Steps of Glycogen synthesis and breakdown, Significance of HMP shunt pathway, Definition and steps of Gluconeogenesis, Galactose metabolism Galactosemia. Diabetes mellitus

Bioenergetics: Importance of ATP, Outline of respiratory chain.

Unit II (15 Hrs.)

LIPIDS

Lipids: Classification of lipids, Essential fatty acids, Functions of cholesterol, Triglycerides, Phospholipids

Metabolism of Lipids: Digestion and Absorption of lipids, Fatty acid synthesis & Steps of β oxidation of fatty acids, Types and functions of lipoprotein, Lipid profile, hyper cholesterolemia

Unit III (15 Hrs.)

VITAMINS

Vitamins: Vitamins, its classification

Vitamin A

Vitamin D

Vitamin E & K

Vitamin B complex

Vitamin C

Unit IV (15 Hrs.)

ENZYMES

Enzymes: Definition, Classification, Coenzymes, Factors affecting enzyme activity, Types and examples of enzyme inhibition

MEDICAL SOCIOLOGY

Subject Code: **BAOTS1-404** **L T P C** **Duration: 30 Hrs.**

2 0 0 2

COURSE OBJECTIVES:

- Expected to have basic knowledge on basic medical sciences
- To develop in depth knowledge on concepts of pathological conditions.
- To develop exhaustive ideology of techniques in regional and general anesthesia

COURSE OUTCOME:

- Gain knowledge on history of anesthesia, pre and post - operative assessment.
- Learn the investigations and pre-anesthetic orders required for patient to be anesthetized.
- Gain knowledge on the management of complications and anesthetic considerations.

UNIT I (6 Hours)

NATURE AND SCOPE OF SOCIOLOGY

Definition, Historical background, subject matter of sociology, Nature and scope, Importance, Sociology of India, Relationship of sociology with other social sciences

UNIT-II (6 Hours)

FUNDAMENTAL CONCEPTS OF SOCIOLOGY

Society and Individual, Community, Social structure and functions of Institutions, Association, Organization, Social system, social order, Social control, social groups, Social Process, Social change

UNIT III (6 Hours)

CLASSICAL THINKERS AND THEIR CONTRIBUTIONS

Augustecomte, Emile Durkheim, Karl Marx, Max Weber, Herbert Spencer

UNIT-IV (6 Hours)

SOCIOLOGY OF INDIA

Characteristics of Indian society, Racial linguistic, Religious and demographic, Hindu social organization-ashramas, varnas, dharma and karma, purushartha, Caste system, Problems of SC&ST, Sanskritisation, Westernization and Modernization,

UNIT V (6 Hours)

ANTHROPOLOGY AND CULTURAL ANTHROPOLOGY

Definition of anthropology, Subfield of anthropology, Cultural Anthropology yesterday and today, Anthropological Perspectives, Early Anthropologist

Environment and culture, Kinship, Clan Ethno methodology, Gender, Subsistence and Exchange, Social Organization and evolution of political system

Reference:

1. Bottomore. T.B., Sociology: A guide to problems and Literature, 1971, Random House
2. Gisbert P. Fundamentals of sociology, 3rd Edition,2004, Orient Longman publications
3. Neil J. Smelser, Handbook of sociology, 1988 sage publication
4. Johnson R.M, Systematic Introduction to Sociology, 1960, Allied Publishers Cultural Anthropology, Barbara D. Miller, 2006 Pearson/Allyn and Bacon Co.

PRINCIPLES OF ANESTHESIA-I PRACTICAL

Subject Code: **BAOTS1-405** **L T P C** **Duration: 4 Hours/week**

0 0 4 2

COURSE OBJECTIVES:

- Expected to have basic knowledge on basic medical sciences
- To develop in depth knowledge on concepts of pathological conditions.
- To develop exhaustive ideology of techniques in regional and general anesthesia

COURSE OUTCOME:

- Gain knowledge on various codes and safety devices.
- Learn the importance of endotracheal tubes and laryngoscopes in anesthesia.
- Learn about the machines and gain knowledge on OT and OT techniques

PRACTICALS/ DEMONSTRATION:

1. Cylinders,
2. Suction apparatus,
3. Endotracheal tubes,
4. Laryngoscopes,
5. LMA,
6. Oropharyngeal airway, Nasopharyngeal airway
7. Anesthesia machine- description, parts, safety features

Text Books:

1. The Anesthesia Technician and Technologist's Manual, Glenn Woodworth, Jeffrey R. Kirsch,Shannon Sayers-Rana, 1st edition, Lippincott Williams & Wilkins, 2012

Reference Books:

Anesthesia Equipment, Principles and Applications (Expert Consult: Online and Print), Anesthesia Equipment Clinical Key 2012

PRINCIPLES OF ANESTHESIA-II PRACTICAL

Subject Code: **BAOTS1-406** **L T P C** **Duration: 4 Hours/week**

0 0 4 2

COURSE OBJECTIVES:

- Expected to have basic knowledge on basic medical Sciences
- To develop knowledge on the principles of sterilization.
- To impart the techniques involved in sterilization in relation to anesthesia

COURSE OUTCOME:

- Gain knowledge on various codes and safety devices.
- Learn the importance of endotracheal tubes and laryngoscopes in anesthesia.
- Learn about the machines and gain knowledge on OT and OT techniques

COURSE SYLLABUS

PRACTICALS/ DEMONSTRATIONS

1. Checking the machine
2. 02, N20, suction apparatus
3. Laryngoscopes, Endotracheal tubes, airways
4. Things for IV accessibility
5. Other monitoring systems
6. Case acceptance: ASA grading - I, II, III, IV. V
7. Specific Learning Outcome (SLO).
8. Learn the preparation of OT based of the type of patients and methods of sterilization.
9. Gain knowledge on various positions in surgery.
10. Gain knowledge on disinfectants and their importance.

Text Books:

1. The Anesthesia Technician and Technologist's Manual, Glenn Woodworth, Jeffrey R. Kirsch,Shannon Sayers-Rana, 1st edition, Lippincott Williams & Wilkins, 2012

Reference Books:

Anesthesia Equipment, Principles and Applications (Expert Consult: Online and Print), Anesthesia Equipment Clinical Key 2012

BIOCHEMISTRY-I PRACTICAL

Subject Code: **BAOTS1-407**	**L**	**T**	**P**	**C**	**Duration: 4 Hours/week**
0	**0**	**4**	**2**

PRACTICALS

1. Reactions of Glucose
2. Reactions of Fructose
3. Reactions of Maltose
4. Reactions of Lactose
5. Tests for Sucrose
6. Tests for Starch
7. Identification of unknown Carbohydrates
8. Spotters: The student must identify the spotter and write some important uses of the spotter.
   i. CRYSTALS- Maltosazone, Lactosazone, Glucosazone/Fructosazone
   ii. REAGENTS- Benedict's reagent, Barfoeds reagent, Foulgers reagent, Seliwanoff reagent, Fouchets reagent
   iii. CHEMICALS- Sodium Acetate, Phenylhydrazine, αNaphthol
   iv. STRUCTURES- Structure of Cholesterol, Structure of Glucose, Structure of Fructose
   v. VITAMINS- Carrots, Rickets, Scurvy, Egg

FIFTH SEMESTER

PHARMACOLOGY

Subject Code: **BAOTS1-501** | **L T P C** | **Duration: 60 Hrs.**
3 1 0 4

Course objective:

1. To understand the terminologies and basic principles of pharmacokinetic and pharmacodynamic involved inthe use of drugs.
2. To understand the pharmacological action and mechanism of action of common drugs used for differentdisease conditions.
3. To know the therapeutic uses and adverse effects of common drugs used for different disease conditions.

Unit I (12 Hrs.)

- Pharmacodynamics-Adverse drug effects
- Drugs acting on Autonomic Nervous System, Peripheral Nervous System and Drugs acting onCentral Nervous system
- General considerations-Cholinergic system & drugs-Anticholinergic drugs
- Adrenergic drugs- antiadrenergic drugs-Drugs acting on autonomic ganglia.

Unit II (12 Hrs.)

- Skeletal muscle relaxants-Local anaesthetics, General anaesthetics-Ethyl & Methyl alcohol- Sedatives-Hypnotics-Antiepileptics-Antiparkinsonian drugs-Drugs used in mental illness- Opioid analgesics and Non opioid Analgesics-Nonsteroidal Antiinflammatory drugs

Unit III (12 Hrs.)

- Cardiovascular drugs , Drugs affecting Blood & Blood formation and Drugs on Respiratory system
- Cardiac glycosides, Antiarrhythmic drugs, Antianginal drugs, Antihypertensives and Diuretics, Haematinics, Erythropoietin, Drugs affecting-coagulation, Fibrinolytic and Antiplatelet drugs, Treatment of cough and antiasthmatic drugs.

Unit IV (12 Hrs.)

- Antimicrobial drugs
- General consideration- Antibiotics - Antibacterial agents - Antitubercular drugs - Antifungal- Antileprotic- Antiviral- Antimalarial- Antiamoebic- Antiprotozoal drugs- Cancer Chemotherapy, Antiseptic- Disinfectant-others.

Unit V (12 Hrs.)

- Hormones & related Drugs, Drugs used in Gastrointestinal diseases & Miscellaneous drugs
- Corticosteroids, Antithyroid drugs and Drugs for Diabetes Mellitus, Treatment of Vomiting, Constipation, Diarrhoea and Treatment of peptic ulcer
- Vitamins, Vaccines, Sera and chelating agents.

ANESTHESIA TECHNIQUES INCLUDING COMPLICATIONS

Subject Code: **BAOTS1-502** **L T P C** **Duration: 60 Hrs.**

3 1 0 4

COURSE OBJECTIVES:

- Expected to have basic knowledge on anatomy, physiology, pathology and pharmacology.
- To develop in depth knowledge on anesthesia techniques for various procedures.
- To develop exhaustive ideology of the complications associated with various anesthesia techniques.

COURSE OUTCOME:

- Gain knowledge on the setup of required Equipment for anesthesia.
- Gain knowledge on monitoring and diagnostic procedures for anesthesia.
- Learn the general idea on the care of patients for various procedures.

UNIT – I (12 Hours)

To setup the required equipment's for general anesthesia, spinal, epidural, nerve block.

UNIT II (12 Hours)

Monitoring during anesthesia and complications.

UNIT – III (12 Hours)

Monitoring and diagnostic procedures in ICU, Central venous access, ECG monitoring, Invasivehemodynamic monitoring

UNIT – IV (12 Hours)

General care of patient in ICU-Eye, GI tract, Bladder, skin, Case of mechanically ventilated patient, Tracheotomy, humidification, Vascular lines – arterial, venous line, Radiography, Physiotherapy – chest physiotherapy

UNIT – V (12 Hours)

Regional anesthesia-Introduction, Indication, Contraindication, Check list, Procedure, Complications, Management, Spinal, Epidural, Nerve Block 15.

Text Books:

1. **Regional Anesthesia And Pain Management**: Current Perspectives, Dureja, 3rd edition, ElsevierIndia, 2007

Reference Books

1. Clinical Anesthesia, Paul G. Barash, 6th edition, Lippincott Williams & Wilkins, 2009

BIOCHEMISTRY-II

Subject Code: **BAOTS1-503** | **L T P C** | **Duration: 60 Hrs.**
3 1 0 4

Course objective:

- To have a knowledge about the chemistry and metabolism of various macromolecules-carbohydrate, protein and lipids
- To learn about enzymes, vitamins, minerals and nutrition
- To know the structure and function of Hemoglobins, Nucleic acids.
- To learn about the organ function tests like Liver Function Tests and Renal Function Tests.

Unit I (15 Hrs.)

PROTEINS

- Classification of amino acids,
- Structure of proteins,
- Plasma proteins,
- Immunoglobulins.

Metabolism of Proteins:

- Digestion and absorption of proteins,
- Ttransamination,
- Deamination,
- Steps of urea cycle,
- Phenylketonuria,
- Alkaptonuria,
- Transmethylation,
- Products derived from Glycine and tyrosine

Unit II (15 Hrs.)

NUCLEIC ACIDS

- Structure & Function of DNA,
- Structure, Its types & Functions of RNA
- Nucleic Acid Metabolism

HAEMOGLOBIN

- Structure & Function of Haemoglobin
- Haemoglobin Metabolism

Unit III (15 Hrs.)

MINERALS

Minerals: Macro & Minor Minerals & Metabolism

NUTRITION

- BMR, SDA & Glycemic Index
- Dietary Fibers & Balanced Diet
- Protein Energy Malnutrition

Unit IV (15 Hrs.)

ORGAN FUNCTION TEST

- RFT

ACID BASE BALANCE

- pH Homeostasis
- Buffers
- Buffers
- Acidosis
- Alkalosis

ENVIRONMENTAL SCIENCE AND COMMUNITY MEDICINE

Subject Code: **BAOTS1-504** **L T P C** **Duration: 30 Hrs.**
2 0 0 2

COURSE OBJECTIVES:

- Expected to have basic knowledge on **Natural Resources**
- To develop in depth knowledge on **Biodiversity and pollutions**
- To develop exhaustive ideology of the complications associated with **health & disease**

COURSE OUTCOME:

- Gain knowledge on the setup of Cycles in The Ecosystem
- Gain knowledge about the effect, control measures Learn the general idea on the care of patients for various procedures.

UNIT-I (6 Hours)

Natural Resources: Introduction, Multi-disciplinary nature of environmental studies, Earth Resources and Man, Renewable And Non-Renewable Resources, Water Resources, MineralResources: Food Resources: Effects of modern agriculture, Fertilizer/ pesticide problems, Water logging, and salinity, Energy Resources.

Ecosystems: Concept of an Ecosystem, Structure And Functions of an Ecosystem, Producers, Consumers and Decomposers, Cycles in The Ecosystem

UNIT-II (6 Hours)

Biodiversity: Introduction, Definition: Genetic, Species, Ecosystem Diversity, India as a Mega Diversity Nation, Hotspots of Biodiversity Threats to Biodiversity. Poaching of Wildlife, Man-Wildlife Conflicts, Endangered and Endemic

Pollution: Definition, Causes, Effects and Control Measures of Air Pollution, Water Pollution, Pollution, Marine Pollution, Noise Pollution, Thermal Pollution, Nuclearhazards, Solid Waste Management role of Individuals in Pollution Prevention.

UNIT-III (6 Hours)

Social Issues Human, Population and Environment: From Unsustainable to Sustainable Development, Urban Problems Related To Energy, Water Conservation, Rain Water Harvesting, global warming, acid rain, ozone layer depletion, nuclear accidentsand nuclear holocaust.

Concept of health & disease: Concept of health, Definition of health, Philosophy of health- Dimension of health - Concept of wellbeing, Spectrum of health, Responsibility of health - Determinates of health & Indicators of health - Concepts of disease & Concepts of cessation –Natural history of Disease- Iceberg Phenomenon, Concept of control- Concept of Prevention- Modes of Intervention, Changing pattern of disease.

UNIT-IV (6 Hours)

Epidemiology: Definition & Explanation, Aims, Epidemiologic approach, Basic measurement in epidemiology & tools of measurement – of Mortality , Epidemiologic methods – Descriptive epidemiology – Analytical epidemiology -Cohort study – Experimental epidemiology – RCT- Association & Caution Uses of epidemiology (Criteria for judging causality) – Infection disease epidemiology Definitions Dynamic of disease transmission & Mode of Transmission – Disinfection – Definitions Types Agents used Recommended disinfection procedures – Investigation of an epidemic.

UNIT-V (6 Hours)

Environmental & health: Definition & Components (environment sanitation environmental sanitation) Water: Safe & Whole some water Requirements Uses source of water supply (sanitary well) – Purification (1).Large scale purification, (2). Small scale purification – Waterquality – Special treatment of water Air: Composition the air of occupied room discomfort. Air pollution & its effects. Prevention & Control of air pollution
Ventilation: Definition Standards of ventilation Types of Ventilation. Light, Noise & Radiation, Meteorological environment, Housing, Disposal of waste Excreta disposal

PHARMACOLOGY LAB

Subject Code: BAOTS1-505	L	T	P	C	Duration: 4 Hours/week
	0	0	4	2	

PRACTICALS

INSTRUMENTS:

- Needles: Intravenous, intrathecal, spinal, intra arterial
- Syringes: Tuberculin, insulin
- I.V cannula
- Vein set
- Inhalers
- Spacers
- Nebulizers
- Tablets- Enteric coated, sustained release, sub-lingual
- Topical preparation, ointment, lotion, powder, drops- eye/ear
- Charts- mechanism of action of drugs, adverse effects, toxicology
- Spotters- drugs

ANASTHESIA TECHNIQUESIA INCLUDING COMPLICATIONS LAB

Subject Code: **BAOTS1-506** **L T P C** **Duration: 4 Hours/week**

0 0 4 2

COURSE OBJECTIVES:

- Expected to have basic knowledge on anatomy, physiology, pathology and pharmacology.
- To develop in depth knowledge on anesthesia techniques for various procedures.
- To develop exhaustive ideology of the complications associated with various anesthesia techniques.

COURSE OUTCOME:

- Gain knowledge on the setup of required Equipment for anesthesia.
- Gain knowledge on monitoring and diagnostic procedures for anesthesia.
- Learn the general idea on the care of patients for various procedures.

PRACTICALS/ DEMONSTRATIONS

1. How to assist anesthetists?
2. Monitoring during anesthesia and post-operative period
3. General care of patient in ICU
4. How to assist anesthetist for central venous cannulation

Text Books:

1. **Regional Anesthesia And Pain Management**: Current Perspectives, Dureja, 3rd edition, ElsevierIndia, 2007

Reference Books

1. Clinical Anesthesia, Paul G. Barash, 6th edition, Lippincott Williams & Wilkins, 2009

BIOCHEMISTRY-II LAB

Subject Code: BAOTS1-507	L	T	P	C	Duration: 4 Hours/week
	0	0	4	2	

PRACTICALS

1 Non- Protein Nitrogenous Substances
2 Analysis Constituents of normal urine
3 Analysis Constituents of abnormal urine
4 Identification of abnormal constituents in urine
5 Estimation of Glucose in blood
6 Estimation of Urea in blood.

Spotters

Spotters: The student must identify the spotter and write some important uses of the spotter.

1. Urinometer
2. Lactometer
3. Centrifuge
4. Spectroscope
5. Colorimeter
6. pH meter
7. Ryles's Tube
8. Chromatography apparatus
9. Electrophoresis apparatus
10. Micropipette
11. Fluorosis
12. Inborn Errors of Metabolism
13. Protein Energy Malnutrition
14. Benzidine powder
15. Sulphur powder
16. Fouchet's Reagent
17. Structure of t RNA
18. Egg White
19. Jaundice
20. Gout

SIXTH SEMESTER

ANESTHESIA FOR SPECIALTIES (INCLUDING CRITICALCARE ASSISTANCE AND VENTILATION) PAPER-I

Subject Code: **BAOTS1-601** **L T P C** **Duration: 60 Hrs.**

3 1 0 4

COURSE OBJECTIVES:

- Expected to have basic knowledge on anesthesia techniques and principles
- To develop knowledge on anaesthetic techniques for cardiac and Neuroanesthesia.
- To develop knowledge on anaesthesia for shock and trauma.

COURSE OUTCOME:

- Gain knowledge on cardiac anesthesia including monitoring setup and management.
- Learn the signs of raised ICT and induction of patient and positioning for neuro Anesthesia.
- Gain knowledge on anesthetic management and rapid sequence induction for trauma and Shock.

UNIT – 1 (12 Hours)

Cardiac anesthesia –PART 1 NYHA classification, Arrhythmias, Angina, Dyspnoea-Premedication, Setting up of monitoring system, Monitoring – invasive and non-invasive,

UNIT II (12 Hours)

Cardiac anesthesia –PART 2 Getting ready for the case, Induction of cardiac patient, precautions to be taken, Transferring the patient to ICU, Care to be taken, ICU management.

UNIT – III (12 Hours)

Neuro Anesthesia- Glasgow coma scale, Signs of raised ICT, Premedication, Check list, Induction of a patient Positioning in neuro surgery, I.C.P monitoring , Air embolism, Transferring to I.C.U / ward

UNIT – IV (12 Hours)

Anaesthesia for Trauma & Shock Resuscitation, Pre-opinvestigation/assessment, Circulatory management, Management of anaesthesia, Rapid sequence induction, other problems.

UNIT – V (12 Hours)

CPR- BLS, ACLS

Reference

Text Books:

1 Nurse Anesthesia, John J. Nagelhout, Karen L. Plaus, 5th edition, Elsevier Health Sciences, 2014
2 Basics of Anesthesia, Ronald D. Miller, Manuel Pardo, 6th edition, Elsevier Health Sciences, 2011

ANESTHESIA FOR SPECIALTIES (INCLUDING CRITICALCARE ASSISTANCE AND VENTILATION) PAPER-II

Subject Code: **BAOTS1-602** **L T P C** **Duration: 60 Hrs.**
3 1 0 4

COURSE OBJECTIVES:

- Expected to have basic knowledge on anesthesia techniques and principles.
- To develop knowledge on anesthetic techniques for obstetric and pediatric anesthesia.
- To develop knowledge on an aesthesia outside the O.R.

COURSE OUTCOME:

- Gain knowledge on obstetric anesthesia including precautions, induction, reversaland emergencies.
- Learn the theatre setting, monitoring and pain management for pediatric anesthesia.
- Gain knowledge on situations, natural calamities and complications of anesthesia outsidethe OR.

UNIT-I (12 Hours)

Obstetric Anesthesia (Part 1) - Differences between a pregnant and a normal lady, Risksfor anesthesia, Precautions to be taken, Check list, Regional vs general anesthesia,Induction / maintenance

UNIT-II (12 Hours)

Obstetric Anaesthesia (Part 2)- Resuscitation of the new born, APGAR score, Reversal and extubation, Emergencies – Manual removal of placenta, A.P.H,- P.P.H., Ruptured uterus, Ectopic pregnancy, Labour, Epidural analgesia

UNIT-III (12 Hours)

Paediatric Anaesthesia - Theatre setting ,Check list, Premedication ,Induction, Intubations-securing the ETT, Monitoring, Reversal & extubation – problems, Transferring / IC management, Pain management.

UNIT-IV (12 Hours)

Day Care Anaesthesia - Special features, Set up, Advantages, Disadvantages, Complications, Future

UNIT-V (12 Hours)

Anesthesia Outside the O.R- Situations, Cath lab, Radiology and Imaging Science Technology natural calamities, E.C.T, Features, Shortcomings, Complications

Text Books:

Nurse Anesthesia, John J. Nagelhout, Karen L. Plaus, 5th edition, Elsevier Health Sciences,2014

Reference Books:

Basics of Anesthesia, Ronald D. Miller, Manuel Pardo, 6th edition, Elsevier Health Sciences, 2011

PRINCIPLES OF STERILIZATION TECHNIQUES

Subject Code: **BAOTS1-603** **L T P C** **Duration: 60 Hrs.**

3 1 0 4

COURSE OBJECTIVES:

- Expected to have basic knowledge on basic medical Sciences
- To develop knowledge on the principles of sterilization.
- To impart the techniques involved in sterilization in relation to anesthesia

COURSE OUTCOME:

- Gain knowledge on the design of operation theatres.
- Learn the preparation of OT based of the type of patients and methods of sterilization.
- Gain knowledge on the care and maintenance of operation records in OT.

UNIT – I (8 Hours)

Layout of OT and Lighting of OT

UNIT II (11 Hours)

Cleanliness and sterilization of OT and Anesthesia- Carbolization, fumigation, principles of sterilization – autoclaving, pressure sterilization, boiling, dry heat, gas chemical sterilization, gamma rays' sterilization

UNIT – III (14 Hours)

OT preparation- Preparation of spinal /epidural/nerve block tray. Preparation of patients for various types of anesthesia including laying out of trolleys, preparation of Boyle's apparatus for administration of anesthesia, precaution to reduce antistatic friction hazards, preparation of sterile field, special precautions in handling patients with sepsis, blood borne infections – Hepatitis B, HCV, HIV, etc, Cleaning and Disinfection of articles and OT various positions during surgeries - lithotomy/kidney/beach chair/lateral/prone

UNIT – IV (12 Hours)

Electrical and fire hazards- Prevention of physical, electrical, chemical injuries and hazards to patientsOT pollution and scavenging

UNIT – V (15 Hours)

Care and Maintenance of Operation records of OT- Maintenance of septic OT, Use and maintenance of defibrillator, cautery, OT light, suction, emergency light etc., Admission and transfer procedures

Text Books:

Principles and Methods of Sterilization in Health Sciences, John J. Perkins, 2nd edition, Charles CThomas Pub Limited, 1983

Reference Books:

Fundamentals of Surgical Practice, Aljafri A. Majid, Andrew N. Kingsnorth, 1st edition, CambridgeUniversity Press, 1998

HEALTHCARE AND BASIC PRINCIPLES

Subject Code: **BAOTS1-604** **L T P C** **Duration: 30 Hrs.**
2 0 0 2

COURSE OBJECTIVES:

- Expected to have basic knowledge on anaesthesia techniques and principles.
- To develope knowledge on anaesthetic techniques for obstetric and pediatric anesthesia.
- To develope knowledge on an aesthesia outside the O.R.

COURSE OUTCOME:

- Gain knowledge on obstetric anesthesia including precautions, induction, reversal and emergencies.
- Learn the theatre setting, monitoring and pain management for pediatric anesthesia.
- Gain knowledge on situations, natural calamities and complications of anesthesia outside the O.R.

Unit I (10 Hrs.)

Concept of Health Care and Health Policy
Health in Medical Care
Indigenous systems of Health Care & their relevance
Framework for Health Policy Development

Health Organization
Historical development of Health Care System in the third world &India
Organization & Structure of Health Administration in India
Type of Health Organization including International Organizations
Private & Voluntary Health care provider
Distribution of Health Care Services
Health Care System in Public Sector Organization
Health systems of Various Countries

Unit II (10 Hrs)

Health Policy and National Health Programme
National Health Policy
Drug Policy
National Health Programs (Malaria, T.B., Blindness, AIDS etc.)
Evaluation of Health Programs (Developing indicators for evaluation)
Medical Education & Health Manpower Development

Health Economics Fundamentals of Economics
Scope & Coverage
Demand for Health Services
Health as an Investment

Population, health of Economic Development

Unit III (10 Hrs.)

Methods & Techniques of Economic Evaluation of Health Program

Cost Benefit & Cost Effective Methods

Household & Health

Health Expenditure & Outcome

Rationale for Government action

Household capacity, income and schooling

Economics of Health

Population based health services

Economics of Communicable and Non Communicable diseases

ANESTHESIA FOR SPECIALTIES (INCLUDING CRITICALCARE ASSISTANCE AND VENTILATION) PAPER-I PRACTICAL

Subject Code: **BAOTS1-605**	**L**	**T**	**P**	**C**	**Duration: 4 Hours/week**
0	**0**	**4**	**2**

COURSE OBJECTIVES:

1. Expected to have basic knowledge on anaesthesia techniques and principles.
2. To develope knowledge on anaesthetic techniques for cardiac and Neuro anesthesia.
3. To develope knowledge on anaesthesia for shock and trauma.

COURSE OUTCOME:

1. Gain knowledge on cardiac anesthesia including monitoring setup and management.
2. Learn the signs of raised ICT and induction of patient and positioning forneuro-anasesthesia.
3. Gain knowledge on BLS chain of survival.

COURSE SYLLABUS:

PRACTICALS/ DEMONSTRATIONS

- Spotters –basic anaesthetic considerations in cardiac and neurosurgery
- Charts- BLS chain of survival
- Demonstration- transferring of post-operative patient to ICU

ANESTHESIA FOR SPECIALTIES (INCLUDING CRITICALCARE ASSISTANCE AND VENTILATION) PAPER-II PRACTICAL

Subject Code: **BAOTS1-606** **L T P C** **Duration: 4 Hours/week**

0 0 4 2

COURSE OBJECTIVES:

1. Expected to have basic knowledge on anaesthesia techniques and principles.
2. To develope knowledge on anaesthetic techniques for obstetric and pediatric anesthesia.
3. To develope knowledge on anaesthesia outside the O.R.

COURSE OUTCOME:

1. Gain knowledge on obstetric anaesthesia including precautions, induction, reversaland emergencies.
2. Learn the theatre setting, monitoring and pain management for pediatric anesthesia.
3. Gain knowledge on situations, natural calamities and complications of anaesthesia outside the O.R.

COURSE SYLLABUS:

PRACTICALS/DEMONSTRATIONS

1) Spotters –common obstetric emergencies
2) Charts- situations requiring anesthesia outside operation theatre
3) Demonstration-how is pediatric anesthesia different from adult.

PRINCIPLES OF STERILIZATION TECHNIQUES - PRACTICAL

Subject Code: **BAOTS1-607** **L T P C** **Duration: 4 Hours/week**

0 0 4 2

COURSE OBJECTIVES:

- Expected to have basic knowledge on basic medical Sciences
- To develop knowledge on the principles of sterilization. in relation to anesthesia
- To impart the techniques involved in sterilization.

COURSE OUTCOME:

- Learn the preparation of OT based of the type of patients and methods of sterilization.
- Gain knowledge on various positions in surgery.
- Gain knowledge on disinfectants and their importance

COURSE SYLLABUS:

PRACTICALS/ DEMONSTRATIONS

1. Disinfectants
2. Methods of sterilization
3. Various positions in surgery

Text Books:

Principles and Methods of Sterilization in Health Sciences, John J. Perkins, 2nd edition, Charles CThomas Pub Limited, 1983

Reference Books:

Fundamentals of Surgical Practice, Aljafri A. Majid, Andrew N. Kingsnorth, 1st edition, CambridgeUniversity Press, 1998

SEVENTH SEMESTER

BIOSTATISTICS AND RESEARCH METHODOLOGY

Subject Code: **BAOTS1-702** **L T P C** **Duration: 30 Hrs.**

2 0 0 2

COURSE OBJECTIVES:

- Expected to have basic knowledge on anaesthesia techniques and principles.
- To develope knowledge on anaesthetic techniques for obstetric and pediatric anesthesia.
- To develope knowledge on an aesthesia outside the O.R.

COURSE OUTCOME:

- Gain knowledge on obstetric anesthesia including precautions, induction, reversal and emergencies.
- Learn the theatre setting, monitoring and pain management for pediatric anesthesia.
- Gain knowledge on situations, natural calamities and complications of anesthesia outside the O.R.

Unit I (6 Hrs.)

- **What is statistics** – Importance of statistics in behavioural sciences – Descriptive statistics and inferential statistics – Usefulness of quantification in behavioural sciences.
- **Measurements** – Scales of measurements – Nominal, Ordinal, Interval and Ratio scales.

Unit II (6 Hrs.)

- **Data collection** – Classification of data – Class intervals – Continuous and discrete measurements – Drawing frequency polygon – types of frequency polygon – Histogram.
- **Cumulative frequency curve** – Ogives – Drawing inference from graph.

Unit III (6 Hrs.)

- **Measures of central tendency** – Need – types: Mean, Median, Mode – Working outthese measures with illustrations.
- **Measures of variability** – Need – Types: Range, Quartile deviation, Average deviation, Standard deviation, Variance – Interpretation.

Unit IV (6 Hrs.)

- **Normal distribution** – General properties of normal distribution – Theory of probability – Illustration of normal distribution – area under the normal probability curve.
- **Variants from the normal distribution** – skewness – Quantitative measurement of skewness – kurtosis – measurement of kurtosis – factors contributing for non-normal distribution.

Unit V (6 Hrs.)

- **Correlation** – historical contribution – meaning of correlation – types: Product, moment, content correlation, variation of product, movement correlation, rank correlation, Regression analysis.
- **Tests of significance-** need for – significance of the mean – sampling error – significance of differences between means – interpretation of probability levels – smallsamples – large samples.