Course Code	Course Title	Course ID	L	T	P	Credits	TE	TI	PE	PI	Total
Discipline Specific Courses (DSC)											
240/BOTT/cc/201	General anatomy-II – Theory		3	-	-	3	50	25	-	-	75
240/BOTT/cc/202	General Physiology-II - Theory		3	-	-	3	50	25	-	-	75
240/BOTT/cc/203	General Biochemistry-Theory		3	1	-	4	75	25	-	-	100
240/BOTT/cc/204	General anatomy-II– Practical		-	-	4	2	50	25	-	-	75
240/BOTT/cc/205	General Physiology-II– Practical		-	-	4	2	-	-	35	15	50
240/BOTT/cc/206	General Biochemistry-Practical		-	-	4	2	-	-	35	15	50
240/BOTT/cc/207	Principle of Management-II-Practical		-	-	4	2	-	-	35	15	50
Minor (MIC) / Vocational Courses (VOC)											
240/BOTT/MI/201	Principle of Management-II-Theory		3	-	-	3	-	-	50	25	75
Multidisciplinary courses(MDC)											
240/BOTT/MD/201	Yoga		2	-	-	2	35	15	-	-	50
Ability Enhancement Course (AEC)											
240/BOTT/AE/201	Personality Development & Soft Skills		2	-	-	2	35	15	-	-	50
Skill Enhancement Course (SEC)/ Internship/Dissertation											
240/BOTT/SE/201	Basic in Computer & Information Sciences-Practical.		-	-	4	2	-	-	35	15	50
Value Addition Course(s)											
240/BOTT/VA/201	Extracurricular Activity		2	-	-	2	35	15	-	-	50
Total Credits						**29**	**Total Marks**			**750**	

Ms. Kalpana Bankoti Dr'st

Mr. Pramod Kumar

Md. Imtiyaz Ansari

Dr. Garima Srivastava

Dr. Himanshu Thukral

BOTT 4TH SEM

Course Code	Course Title	Course ID	L	T	P	Credits	TE	TI	PE	PI	Total
Discipline Specific Courses (DSC)											
240/BOTT/CC/401	Clinical Pharmacology- Theory		3	1	-	4	75	25	-	-	100
240/BOTT/CC/402	Basic Techniques of Anesthesia- Theory		3	1	-	4	75	25	-	-	100
240/BOTT/CC/403	Clinical Pharmacology- Practical		-	-	6	3	50	25	-	-	75
240/BOTT/CC/404	Clinical Microbiology- Practical		-	-	6	3	50	25	-	-	75
240/BOTT/CC/405	Basic Techniques of Anesthesia- Practical		-	-	6	3	-	-	50	25	75
Minor (MiC) / Vocational Courses (VOC)											
240/BOTT/MI/401	Clinical Microbiology- Theory		4	-	-	4	75	25	-	-	100
Skill Enhancement Course (SEC)/ Internship/Dissertation											
240/BOTT/SE/401	OT Visit		-	-	4	2	-	-	35	15	50
Value Addition Course(s)											
240/BOTT/VA/401	Environmental Science- Theory		-	-	4	2	35	15	-	-	50
Total Credits						**25**	**Total Marks**			**625**	

BOTT 6TH SEM

Course Code	Course Title	Course ID	L	T	P	Credits	TE	TI	PE	PI	Total
Discipline Specific Courses (DSC)											
240/BOTT/CC/601	Specialized Surgery and Anesthesia- Theory		3	1	-	4	75	25	-	-	100
240/BOTT/CC/602	Electronics And Technology in Surgery and Anesthesia- Theory		3	1	-	4	75	25	-	-	100
240/BOTT/CC/603	Specialized Surgery and Anesthesia-Practical		-	-	6	3	75	25	-	-	100
240/BOTT/CC/604	Electronics And Technology in Surgery and Anesthesia- Practical		-	-	6	3	75	25	-	-	100
Minor (MIC) / Vocational Courses (VOC)											
240/BOTT/MI/601	Work Shop		-	-	-	1	20	5	-	-	25
Skill Enhancement Course (SEC)/ Internship/Dissertation											
240/BOTT/SE/601	Project Work- Practical				100	4	75	25	-	-	100
Total Credits						**19**	**Total Marks**			**525**	

SECONDSEMESTER Syllabus

Course Title: General Anatomy-II- Theory	
Semester: II I Course code:	Credits:03 I Core
No of sessions Lectures/Tutorial:30	Total Marks: 70
Course Pre-requisites:	Timing: 3 Hours

Instructions for paper setter: Examiner is requested to set **one compulsory and eight other questions, two from each unit.** The compulsory question should be of 14 marks and should cover entire syllabus. Student should attempt four other questions i.e. one from each unit.

Course Introduction

Allied and healthcare professionals (AHPs) include individuals involved with the delivery of health or healthcare related services, with qualification and competence in therapeutic, diagnostic, curative, preventive and/or rehabilitative interventions.

They work in multidisciplinary health teams in varied healthcare settings including doctors, nurses and public health officials to promote, protect, treat and manage a person's physical, mental, social, emotional, environmental health and holistic well-being. The study of anatomy helps them inputting into perspective the knowledge that they gain for better good of humanity.

Course learning Outcomes-

CLO- 1 Enumerate the function of brain, Nervous system, motor system, blood supply of brain, anatomy of brain. cranial nerves, CSP formation and about spinal cord.

CL0-2 Enumerate auditory system. Demonstrate anatomy of urinary system, location of kidney.

CLO-3 Enumerate blood vessels of reproductive system. Enumerate hormonese cretiono f glands and blood

Course Pedagogy

The course pedagogy includes a comprehensive study including the study of general structures and the specialized organs in a manner aimed at being student friendly. Various clinical aspects are discussed in relevance to the topic taught so as to relieve the monotony of the subject. Regular doubt clearing sessions, written assignments, quiz, chart and poster making and model making are some of the measures for learning.

Course contents

Unit-1Classification of nervous system

Nerve- structure, classification, microscopy with examples. Neurons, classification with examples. Simple reflex arc.

Parts of a typical spinal nerve/ Dermatome: Central nervous system -disposition, parts and functions Cerebrum, Cerebellum, Midbrain & brain stem Blood supply & anatomy of brain.

Unit 2

Spinal cord-anatomy, blood supply, nerve pathways Pyramidal, extra pyramidal system, Thalamus, hypothalamus, Structure and features of meninges Ventricles of brain, CSF circulation Development of nervous system & defects.

Unit -3 Cranial nerves -(course, distribution, functions and palsy) Sympathetic nervous system, its parts and components Para sympathetic nervous system Applied anatomy

Unit -4 Structure and function of Visual system, Auditory system, Gustatory system, Olfactory system, Somatic sensory system Pelvic floor, innervations Kidney, Ureter, bladder, urethra. Reproductive system of male, Reproductive system of female.

Course Reference Text Books:

- PRA shalatha & G Deepa's Textbook of ANATOMY & PHYSIOLOGY
- B.D. Chaurasia's HUMAN ANATOMY

Course Title: GENERAL PHYSIOLOGY-II- Theory	
Semester :II I Course code:	Credits:03 I Core
No of sessions Lectures/Tutorial: 30	Total Marks: 70
Course Pre-requisites:	Timing: 3 Hours

Instructions for paper setter: Examiner is requested to set **one compulsory and eight other questions, two from each unit.** The compulsory question should be of 14 marks and should cover entire syllabus. Student should attempt four other questions i.e. one from each unit.

Course Introduction

The course comprehensive study including the study of general structures and the specialized organs in a manner aimed at being student friendly. Various clinical aspects are discussed in relevance to the topic taught so as to relieve the monotony of the subject. Regular doubt clearing sessions, written assignments, quiz, chart and poster making and model making are some of the measures for learning.

Course learning Outcomes.

CLO-1 EnumeratePhysiologyofkidney
CLO-2 Explain Physiology of lower Urinarytract

CLO-3 Label Physiology of the endocrine glands

CLO-4 Enumerate Physiology of reproductive

system

Course contents-

Unit -1 Physiology of kidney and urine formation Glomerular filtration rate, clearance, Tubular function, Ureter, bladder, urethra.

Unit-2-Male-Functionsoftestes, pubertal changes in males, testosterone-action& regulations of secretion.

Unit-3- Female-Functions of ovaries and uterus, pubertal changes, menstrual cycle, estrogens and progesterone -action and regulation.

Unit-4- Physiology of the endocrine glands-Hormones' crated by these glands, their Classification

Course Title: GENERAL BIOCHEMISTRY – Theory	
Semester: II I Course code: BOTT 203T	Credits:04 I Core
No of sessions Lectures/Tutorial:40	Total Marks: 70
Course Pre-requisites:	Timing: 3 Hours

Instructions for paper setter: Examiner is requested to set **one compulsory and eight other questions, two from each unit.** The compulsory question should be of 14 marks and should cover entire syllabus. Student should attempt four other questions i.e. one from each unit.

Course outcome-This subject shall give information about all the major metabolic pathways occurring in our body. The students will learn the details about metabolism of carbohydrates, proteins, lipids, nucleic acids, enzymes & the deficiency diseases related to them.

Syllabus

Unit 1: Carbohydrates – Glucose and Glycogen Metabolism
Proteins-Classification of proteins and functions
Lipids- Classification of lipids and functions

Unit 2: Enzymes- Definition, Nomenclature, Classification, Factors affecting enzyme activity, Active site. Coenzyme, Enzyme Inhibition, Units of enzymes, Isoenzymes and Enzyme pattern in diseases Vitamins & Minerals- Fat soluble vitamins (A, D, E, K), water soluble vitamins, Bcomplex vitamins, principal elements (Calcium, Phosphorus, Magnesium, Sodium, Potassium, Chlorine and Sulphur), trace elements, calorific value of foods, Basal Metabolic Rate (BMR), Respiratory Quotient (RQ), Specific Dynamic Action (SDA), balanced diet, Marasmus and Kwashiorkor

Unit 3: Acids and bases-Definition, pH, Henderson – Hassel Balch equation, Buffers, Indicators, Normality, Molarity, Molality
Hormones

Unit 4: Applied Chemistry:

a. Nomenclature of compounds containing Halogen, Alcohols and Phenols, Ethane, Propane, Ether, Aldehydes, Ketones, Carboxylic acid, Cyanides, Isocyanides, Nitrogen compounds and amines.
b. Catalysis. Hemoglobin, Blood and respiration.

Reference Book:

1. Textbook of Medical Laboratory Technology by P.B. Godker
2. Medical Laboratory Technology by K.L. Mukherjee volume III
3. Practical Clinical Biochemistry by Harold Varley
4. Principal of Biochemistry by M.A.Siddiqi
5. Instrumental Analysis by Chatwal Anand

PRACTICALS

Course Title: General Anatomy-II- Practical	
Semester: II Course code: BOTT 204P	Credits:02
Number of sessions:40	Total Marks: 70
Course Pre-requisites:	Timing: 3 Hours

ANATOMYPRACTICAL

i. Identification and description of all anatomical structures.

ii. Demonstration of dissected parts

iii. Demonstration of skeleton-articulated and disarticulated.

iv. Surface anatomy: Surface landmark-bony, muscular and ligamentous. Surface anatomy of major nerves, arteries of the limbs.

Reference books:

- Sampath Madhyastha's Manipal manual of anatomy for allied health sciences
- Krishna Garg & MadhuJoshi's Practical anatomy workbook

Course Title: GENERAL PHYSIOLOGY-II- Practical			
Semester: II	I Course code: BOTT 205P	Credits:02	I Core
Number of sessions:40		Total Marks: 70	
Course Pre-requisites:		Timing: 3 Hours	

Practical:

i. To study circulatory system from charts and transverse section (TS) of artery and vein from permanent slides.

ii. To study digestive system from charts and TS of liver, spleen and pancreas from permanent slides.

iii. Study of Urinary system(charts)

iv. Study of Genital system (male & female) from

charts and TS of testis and ovary from permanent slides.

v. To study nervous system(From models/charts)
vi. To study various body fluids.
vii. Other practical based on the theory paper.

Course Title :GENERAL BIOCHEMISTRY-Practical	
Semester: II I Course code: BOTT 206P	Credits:02 I Core
Numberofsessions:40	Total Marks: 70
Course Pre-requisites:	Timing: 3 Hours

Practical:

1. Benedict's test
2. Heat coagulation tests

Course Title: Principle of Management-Practical	
Semester: II I Course code :BOTT 207P	Credits:02 I Core
Numberofsessions:40	Total Marks: 70
Course Pre-requisites:	Timing: 3 Hours

Practical:

1. Corporate or Strategic Planning – Planning premises – Polices– Strategies as different from policies – Procedures and methods-Limitations of planning.
2. Controlling: Span of control – Factors limiting effective span of control Suppermanagement, General managers, Middles managers and supervisors – Planning andControlling.
3. Other practical based on theory.

Course Title: **Principles of management – II- Theory**	
Semester: II I Course code: BOTT 208T	**Credits:03 I Core**
No of sessions Lectures/Tutorial: 30	**Total Marks: 70**
Course Pre-requisites:	**Timing: 3 Hours**

Instructions for paper setter: Examiner is requested to set **one compulsory and eight other questions, two from each unit.** The compulsory question should be of 14 marks and should cover entire syllabus. Student should attempt four other questions i.e. one from each unit.

Learning Objectives: The objective of this module is to help the students will be made aware of the basic ethics, good lab practices including awareness/safety in a clinical lab & aware various Accrediting body.

Course outcome- The students will be made aware of the basic ethics, good lab practices including awareness/ safety in a clinical lab. In addition, they will understand sample accountability, quality management system, biomedical waste management, calibration and validation of clinical laboratory instruments

Syllabus

Unit1: Principles of management:

1. Development of Management: Definitions of Management – Contributions of F.W. Taylor, Henry Fayol and others.
2. Functions of Management: Planning – Organizing – Directing- Controlling Planning: Types of planning – Short-term and long plans – Corporate or Strategic Planning – Planning premises – Polices – Characteristics and sources – principles of policy making – Strategies as different from policies – Procedures and methods-Limitations of planning.
3. Organizing: Importance of organization Hierarchy – Scalar chain Organization relationship – Line relationship – Staff relationship – Line staff relationship – Functional relationship – Committee organization – Management committees – Depart mentation.
4. Motivation: Motivation theories – McGregor's theory X and theory Y – Maslow's and Herzberg's theory – Porter and Lawler model of complex

view of motivation- Other theories – Diagnostic signs of motivational problems – Motivational Techniques.

Unit 2

1. Communication: Types of communication Barriers of effective communication techniques for improved communication.
2. Directing: Principles relating to Direction process – Principles and theories of leadership – Leadership Styles – Delegation of authority.
3. Controlling: Span of control – Factors limiting effective span of control Supper management, General managers, Middles managers and supervisors – Planning and Controlling relationships – Management control process – Corrective measures- Strategic Control points – Budgetary control – Types of budgets.
4. Co-ordination: Co-ordination and co-operation – Principles of co-ordination – Techniques of co-ordination charts and records – Standard procedure instructions.

Unit 3: Personnel management:

Objective of Personnel Management – Role of Personnel Manager in an organization – Staffing and work distribution techniques – Job analysis and description Recruitment and selection processes – Orientation and training – Coaching and counselling – disciplining – Complaints and Grievances – Termination of employees – Performance appraisal – Health and safety of employees – Consumer Protection Act as applicable to health care services.

Unit 4: Financial management:

Definition of financial Management – Profit maximization – Return maximization- wealth maximization – Short term Financing – Intermediate Financing – Long term Financing – leasing as a source of Finance – cash and Security Management – Inventory Management – Dividend policies – Valuations of Shares – Financial Management in a hospital – Third party payments on behalf of patients. Insurance – health schemes and policies.

Reference Book:

1. Teitz, (2007), FundamentalsofClinicalChemistry,6thedition,Elsevier Publications
2. Bishop(2013,ClinicalChemistry,7thedition,WileyPublications

Course Title: **Yoga and meditation**			
Semester: II	**Course code:**	**Credits:02**	**Core**
Number of sessions: 20		**Total Marks: 70**	
Course Pre-requisites:		**Timing: 3 Hours**	

Instructions for paper setter: Examiner is requested to set **one compulsory and eight other questions, two from each unit.** The compulsory question should be of 14 marks and should cover entire syllabus. Student should attempt four other questions i.e. one from each unit.

Course learning Outcomes

After completing this course, the learner will be able to know/understand:

CLO1- The basic concepts of yoga system

CLO2- The basic concept of mediation

CLO3- The basic steps of asana

CLO4- The relevance of yoga philosophy

Course contents

Unit I

Meaning, definition and nature of yoga

Chitta, cittavratti,and chittabhumi.

Unit II

Type of yoga: karma yoga, gyana yoga, bhakti yoga

Unit III

Astanga Yoga(yam, niyama,aasan, pranayam, pratyaahar, dharna, dhayan and samadhi)

Unit IV

Method, precautions and merit of the following Asana: Vajrasana: sirshasana: Makarasana: Bhujangasana etc.

Course Title: Extracurricular Activity- Practical	
Semester : II I Course code : BMLS	Credits:02 I Core
No of sessions Lectures/Tutorial:	Total Marks: 70
Course Pre-requisites:	Timing: 3 Hours

Instructions for paper setter: examiner is requested to set one compulsory and eight other questions, two from each unit. The compulsory question should be of 14 marks and should cover entire syllabus. Student should attempt four other questions i.e. one from each unit.

Course learning outcomes

After completing this course, the learner will be able to know/understand:

CLO1- Importance of extra-curricular activities

CLO2- Benefits extra-curricular activities

CLO3- Enhance personal growth of student.

CLO4- it will contribute to improved academic performance

Course Contents

Unit I

Co-curricular and extra-curricular activities, importance of extracurricular activities

Unit II

The role of extracurricular activities in student development, benefits of extracurricular activities, best practices for implementing extracurricular activities

Unit III

Participation in extra-curricular activities. Advantages of participation, disadvantages of participation, requirements for activity participation, guidelines for dual-sport participation

Unit IV

Outcome of extracurricular activities

FOURTH SEMESTER

Syllabus

Course Title: - Clinical Pharmacology-Theory	
Semester: IV I Course code:	Credits:04 I Core
No of sessions Lectures/Tutorial: 40	Total Marks: 70
Course Pre-requisites:	Timing: 3 Hours

Instructions for paper setter: Examiner is requested to set **one compulsory and eight other questions, two from each unit.** The compulsory question should be of 14 marks and should cover entire syllabus. Student should attempt four other questions i.e. one from each unit.

Course outcome-

Understand how pharmacology can be applied throughout the human life span.

Gain knowledge how clinical pharmacology enhances the process of drug development and treatment of patients.

Clinical pharmacology

Unit 1: Antisialogogues: Atropine, Glycopyrrolate.
Sedatives 1 Anxiolytics: Diazepam, Midazolam, Phenergan, Lorazepam, Chlorpromazine, andTriclofos.
Narcotics: Morphine, Pethidine, Fentanyl, Pentazocine, tramadol.

Unit 2: Antiemetic's: Metoclopramide, Ondansetron, Dexamethasone
Induction Agent: Thiopentone, Diazepam, Midazolam, Ketamine, Propofol, Etomidate.
Muscle Relaxants: Depolarizing Suxamethonium, Non depolarizing – Vecuronium, Atracurium,Rocuronium
Inhalational Gases: Gases-02, N20, Air, Agents-Ether, Halothane, Isoflurane, Sevoflurane, Desflurane

Unit 3: Reversal Agents: Neostigmine, Glycopyrrolate, Atropine, Naloxone, Flumazenil (Diazepam).
Local Anesthetics: Xylocaine, Bupivacaine Topical, Prilocaine-jelly, Emla – Ointment, Etidocaine, Ropivacaine.

Unit 4: Emergency Drugs: Mode or administration, dilution, dosage and effects

a. Adrenaline, Atropine
b. Ephedrine, Mephentermine

c. Bicarbonate, calcium, potassium.
d. Inotropes: dopamine, dobutamine, amidarone
e. e. Aminophylline, hydrocortisone, antihistaminic,
f. Antihypertensive -Beta-blockers, Ca-channel blockers.
g. Antiarrhythmic-xylocard
h. Vasodilators-nitroglycerin & sodium nitroprusside
i. Respiratory system- Bronchodilators
j. Renal system-Diuretics, frusemide, mannitol

Course Title: - **Clinical Microbiology-Theory**	
Semester: IV I Course code:	**Credits:04** I Core
No of sessions Lectures/Tutorial: 40	**Total Marks: 70**
Course Pre-requisites:	**Timing: 3 Hours**

Instructions for paper setter: Examiner is requested to set **one compulsory and eight other questions, two from each unit.** The compulsory question should be of 14 marks and should cover entire syllabus. Student should attempt four other questions i.e., one from each unit.

Course outcome- Students are able to gain knowledge about the culture media, immune system.

Understand the basic awareness about the lab diagnosis and treatment of bacteria and virus.

Syllabus

Unit 1: Morphology

a. Classification of microorganisms, size, shape and structure of bacteria; Use of microscope in the study of bacteria. Growth and nutrition a. Nutrition, growth and multiplications of bacteria, use of culture media in diagnostic bacteriology.

Unit 2:1) Culture media

Use of culture media in diagnostic bacteriology, antimicrobial sensitivity test. Sterilization and Disinfection.

Principles and use of equipment of sterilization namely hot air oven, autoclave and serum inspissator, pasteurization, antiseptic and disinfectants.

2) Immunology

Immunity, vaccines, types of vaccine and immunization schedule, principles and interpretation of common serological tests namely Widal, VDRL, ASLO, CRP, RF& ELISA. B. Rapid tests for HIV and HBsAg (excluding technical details).

Unit 3: Systematic Bacteriology

-Morphology, cultivation, diseases caused, laboratory diagnosis including specimen collection of the following bacteria (excluding classification, antigenic structure and pathogenicity),

-Staphylococci, Streptococci, Pneumococci, Gonococci, Meningococci, C. diphtheriae, Mycobacteria, Clostridia, Bacillus, Shigella, Salmonella, E. coli, Klebsiella, Proteus, Vibrio cholerae, Pseudomonas & Spirochetes.

Unit 4: Parasitology

-Morphology, life cycle, laboratory diagnosis of following parasites: E. histolytica, Plasmodium, tape worms, Intestinal nematodes. 8. Mycology a. Morphology, diseases caused and lab diagnosis of following fungi. Candida, Cryptococcus, Dermatophytes, opportunistic fungi 9. Virology a. General properties of viruses, diseases caused lab diagnosis and prevention of following viruses, Herpes, Hepatitis, HIV, Rabies and Poliomyelitis.

Course Title: - Basic Techniques of Anesthesia-Theory	
Semester: IV I Course code:	Credits:04 I Core
No of sessions Lectures/Tutorial: 40	Total Marks: 70
Course Pre-requisites:	Timing: 3 Hours

Instructions for paper setter: Examiner is requested to set **one compulsory and eight other questions, two from each unit.** The compulsory question should be of 14 marks and should cover entire syllabus. Student should attempt four other questions i.e., one from each unit.

Course outcome- Understanding about the basic techniques of anesthesia. anesthesia drugs and techniques.

Syllabus

Unit 1: Resuscitation techniques:

a. Basic life support (Airway, breathing, circulation) and the equipment used for it.
b. Drugs used in CPR.
c. AED and Defibrillators.

Unit 2: Anesthesia drugs and techniques:

d. Principles of anesthesia.
e. Basics of general anesthesia depth, mechanism and intubation.
f. Techniques of general anesthesia.
g. Various intravenous and inhalational agents.
a. Regional anesthesia, spinal and epidural, posture and drugs.
b. Local Anaesthetic agents.
c. Neuro muscular blocking agents.

Unit 3

Principles of oxygen administration along with the apparatus.

Care of patient in the recovery room.

Post-operative pain: evaluation and management.

Types of fluid and therapy.

Blood and blood components transfusion.

Preparation of anesthesia machine, intubation kit, suction machine, anesthesia drugs

Unit 4: Patient identification, marking, shifting to OT before surgery and out of OT to recovery room after surgery, complete takeover and handover of the patient with vital signs recording before and after surgical procedure to the nursing staff.

Course Title: -Clinical Pharmacology-Practical	
Semester: IV **I Course code: BOTT 404P**	**Credits:03** **I Core**
Numberofsessions:60	**Total Marks: 70**
Course Pre-requisites:	**Timing: 3 Hours**

Practical:

Emergency Drugs: Mode or administration, dilution, dosage and effects

a. Adrenaline, Atropine
b. Ephedrine, Mephentermine
c. Bicarbonate, calcium, potassium.
d. Inotropes: dopamine, dobutamine, amidarone
e. e. Aminophylline, hydrocortisone, antihistaminic,
f. Antihypertensive -Beta-blockers, Ca-channel blockers.
g. Anti arrhythmic-xylo card

Course Title: -Clinical Microbiology-Practical	
Semester: IV I Course code: BOTT 405P	Credits:03 I Core
Numberofsessions:60	Total Marks: 70
Course Pre-requisites:	Timing: 3 Hours

Practical:

1. Preparation of Culture Media
2. Autoclave
3. Hot air Oven
4. serological tests namely Widal, VDRL, ASLO, CRP, RF& ELISA. B. Rapid tests for HIV and HBsAg

Course Title: - Basic techniques of Anesthesia-Practical	
Semester: IV I Course code: BOTT 406P	Credits:03 I Core
Numberofsessions:60	Total Marks: 70
Course Pre-requisites:	Timing: 3 Hours

Practical:

1. Anesthesia work station
2. Boyle's anesthesia apparatus and other Advanced Anesthesia machines.
3. Apparatus and technique of the intravenous injections:
    a. Selection of the material used for intravenous injection.
    b. Different types of intravenous needles and cannulas.
    c. Theoretical study for testing of the toxicity of the materials.
4. Resuscitation equipment and Resuscitation techniques:
    a. Endotracheal tubes:

-Selection of the material used for the endotracheal tube

-Study of the structure of various types of the endotracheal tubes; Cleaning and sterilization of ETT.

b. Connectors: Various connectors, size and material used.
c. Mask: Material, structure and importance of dead space of face mask.
d. Supraglottic airways.
e. Spinal and epidural blocks: equipment, types of spinal and epidural needles, their structure. Instruments used for spinal and epidural blocks.
f. Laryngeal sprays: Types, structure and material used, mechanism, uses and their Maintenance.

Course Title: Environmental Science- Theory	
Semester :II |Coursecode:BMLS409T	Credits:02 |Core
No of sessions Lectures/Tutorial:20	Total Marks: 70
Course Pre-requisites:	Timing: 3 Hours

Instructions for paper setter: Examiner is requested to set **one compulsory and eight other questions, two from each unit.** The compulsory question should be of 14 marks and should cover entire syllabus. Student should attempt four other questions i.e. one from each unit.

Course Objectives

1. The broad objectives of this course are
2. Togainanunderstandingoftheconceptsfundamentaltoenvironmentalscience
3. Tounderstandthecomplexityofecosystemsandpossiblyhowtosustainthem
4. To understand the relationships between humans and the environment.
5. To understand major environmental problems including their causes and consequences.

Course outcome- The student will be made aware of our environment in general, Natural Resources, Ecosystems, Environmental Pollution, and Social issues related to environment, Human Population and the Environment and understanding the Hospital Environment.

Course Contents

The class would meet twice in a weekforaperiodof10weeksapprox.

Unit1.Introduction

Definition and scope and importance of multidisciplinary nature of environment. Need for public awareness.

Natural Resources and associated problems, use and over exploitation, case studies of forest resources and water resources.

Unit 2.Ecosystems

Concept of Ecosystem, Structure, interrelationship, producers, consumers and decomposers, ecological pyramids-biodiversity and importance. Hotspots of biodiversity

Unit3.EnvironmentalPollution

Definition, Causes, effects and control measures of air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, nuclear hazards, Solid waste management: Causes, effects and control measure of urban and industrial wastes. Role of an individual in prevention of pollution. Pollution case studies, Disaster management: Floods, earthquake, cyclone and landslides.

Unit4.SocialblemishesandtheEnvironment

From Unsustainable to Sustainable development, urban problems related to energy, Water conservation, rain water harvesting, water shed management Resettlement and rehabilitation of people; its pros and concerns. Case studies, Environmental ethics: Issues and possible solutions. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies, Wastel and reclamation, Consumerism and waste products. Environment Protection Act, Air (Prevention and Control of Pollution) Act. Water (Prevention and control of pollution) Act. Wildlife Protection Act, Forest Conservation Act, Issues involved in enforcement of environmental legislation Public awareness.

Human Population and the Environment, Population growth, variation among nations. Population explosion-Family Welfare Programme. Environment and human health, Human Rights, Value Education, HIV/AIDS. Women and child Welfare. Role of Information Technology in Environment and human health. Case studies. Understanding the Hospital Environment

Reference Books:

Reference1: Jadhav, H & Bhosale, V.M., 1995. Environmental Protection and Laws. Himalaya Pub. House, New Delhi.

Reference 2: Gadi R.,Rattan, S., 2006. EnvironmentalStudies, KATSON Books, New Delhi. **Reference**3:Mckinney,M.L.&School,R.M.,1996.EnvironmentalScienceSystems&

Solutions, Web enhanced edition.

Papers:

- Beckerman, W. (1992). Economic growth and the environment: Whose growth? Whose environment? *World Development, 20(4),* 481-496.
- Lorente, D.B., Shahbaz, M., Roubaud, D., Farhani, S. (2018) How economic growth, renewable electricity and natural resources contribute to CO2 emissions? *Energy Policy, 113(C), 356-367.*
- Kumar Reddy D.H., Lee S.M. (2012) Water Pollution and Treatment Technologies, *J Environ Anal Toxicol, 2(5)* el 03.

SIXTH SEMESTER

Course Title: -Specialized Surgery and Anesthesia -Theory	
Semester: VI I Course Code: BOTT 601T	Credits:04 I Core
No of sessions Lectures/Tutorial:40	Total Marks: 70
Course Pre-requisites:	Timing: 3 Hours

Syllabus

Instructions for paper setter: Examiner is requested to set **one compulsory and eight other questions, two from each unit.** The compulsory question should be of 14 marks and should cover entire syllabus. Student should attempt four other questions i.e. one from each unit.

Course outcome- To provide an overview of anesthetic techniques used to obtain pain relief during surgery and to facilitate performance of surgical operations. 2. To teach certain essential psychomotor skills that all physicians may be called upon to perform under controlled and emergent situations.

Unit 1: Cardiovascular and Respiratory System-Techniques, equipment, procedures and instruments

a. Diseases of cardiovascular and respiratory systems.
b. Types of perfusion machines.
c. Techniques of Perfusion and operational capabilities.
d. Intra-aortic Balloon pump.
e. Cell saver techniques.
f. Care, maintenance and working of Heart lung Machine.
g. Patient's record keeping preoperatively, during anesthesia and post-operatively.
h. Principles and techniques of temperature monitoring.
i. Positioning during cardiothoracic surgical procedures.
j. Positioning and techniques for:
    - Radial artery cannulation
    - Central venous cannulation /pulmonary artery catheter

- Femoral artery/venous cannulation

Unit 2: Monitoring Techniques and Equipment:

a. Cardiac monitors, blood pressure and ECG monitoring
b. Respiratory monitors, respiratory rate, Spirometers, SpO2, and EtCO2.
c. Temperature monitors.
d. TEE and echocardiography machine
e. Non-invasive cardiac output machine

2. Positioning
   a. During various neurosurgical procedures including sitting, prone, lateral and position for trans-sphenoidal hypo-physectomy.
   b. Fixation of head during various neurosurgical procedures.
   c. Prone and Knee chest position for spine surgery.

Unit 3:

Requirements during intubation in a case of cervical spine fracture including fiber optic laryngoscopy, awake intubation, LMA family especially ILMA.

Anaesthetic and surgical requirements during aneurysm surgery.

Surgical and Anaesthetic requirements during micro neurosurgery including types of microscopes, principle, structural features, microscopic photography and cameras used.

Anaesthetic and surgical requirements during thyroid surgery, adrenal surgery.

Anaesthetic and surgical requirements during abdominal surgery including Laproscopic surgery, genitourinary surgery including percutaneous nephrolithotomy, Endoscopic surgery, TURP, TURBT, Lithotripsy, ESWL (Extracorporeal shock wave therapy)

Anaesthetic and surgical requirement during renal transplant donor and recipient surgery including care and precautions during operative procedures of hepatitis B & hepatitis C positive patients

Unit 4: Anaesthetic and surgical requirement during pediatric and Neonatal surgical procedures including emergency procedures like tracheo-esophageal fistula. Sub

diaphragmatic hernia, major abdominal and thoracic procedures; Foreign body bronchus and esophagus.

-Apparatus and techniques for measuring blood pressure and temperature.

-Principle and working of direct/Indirect blood pressure monitoring apparatus.

- Intraoperative and postoperative problems and complications of general surgery.

-Management of emergency caesarean section.

-Management of massive obstetrical hemorrhage.

-Surgical management in major burns and craniofacial surgery.

-Surgical management of joint replacement and arthroscopy.

-Surgical management of endoscopies, laryngectomy with RND and cochlear implant.

-Management of PPV and perforating eye injury.

-Care and maintenance of Para-surgical equipment (Cautery, OT Lights, OT Table etc.)

Course Title: - Electronics and technology in surgery and anesthesia-Theory	
Semester: VI I **Course Code: BOTT 602T**	**Credits:04** ICore
No of sessions Lectures/Tutorial: 40	**Total Marks: 70**
Course Pre-requisites:	**Timing: 3 Hours**

Instructions for paper setter: Examiner is requested to set **one compulsory and eight other questions, two from each unit.** The compulsory question should be of 14 marks and should cover entire syllabus. Student should attempt four other questions i.e. one from each unit.

Course outcome- Demonstrate ability to prepare the patient for operative procedures. Provide intra-operative equipment and technical support. Demonstrate skills and knowledge to assist anesthetist in handling emergencies outside of OT Room.

Unit 1; Electronics and electro mechanical techniques

d. Electrical safety precautions in operation theatre. OT tables, OT lights, suction machines, electrodes, pressure transducers, electrical safety, application, handling operation.

Unit 2

Basic electronics, basic principle, care and maintenance and uses of surgical diathermy machine, defibrillator, Boyle's apparatus, anesthesia machine, monitors, pace-makers and stimulators etc.

Engineering aspects of operation theatre equipment, power supplies, CVT,servo stabilizers, and ups etc.

Unit 3; Book keeping and Stock maintenance.

a. Moral aspects and duties of OT technologist.
b. Indenting, Book keeping and storage procedures of different articles.
c. Co-ordination with all working personal in operation Theatre.
d. Psychological aspects of patient, staff and relatives of the patient.
e. Management of operation theatre in routine and emergency.

Unit 4; Computer data processing, software information and Data management a.

a. Logging on and off, Security concepts, Sending and receiving Emails.
b. Hospital information system.

Course Title: -Specialized Surgery and Anesthesia -Practical	
Semester: VI I Course Code: BOTT 603P	**Credits:03 I Core**
Numberofsessions:60	**Total Marks: 70**
Course Pre-requisites:	**Timing: 3 Hours**

Practical:

-Management of emergency caesarean section.

-Management of massive obstetrical hemorrhage.

-Surgical management in major burns and craniofacial surgery.

-Surgical management of joint replacement and arthroscopy.

-Surgical management of endoscopies, laryngectomy with RND and cochlear implant.

-Management of PPV and perforating eye injury.

-Care and maintenance of Para-surgical equipment (Cautery, OT Lights, OT Table etc.)

-Types of perfusion machines.

-Techniques of Perfusion and operational capabilities.

-Intra-aortic Balloon pump.

- Cell saver techniques.

Course Title: - Electronics and technology in surgery and anesthesia-Practical	
Semester: VI I Course Code: BOTT 604P	Credits:03 I Core
Numberofsessions:60	Total Marks: 70
Course Pre-requisites:	Timing: 3 Hours

Practical:

a. Electrical safety precautions in operation theatre. OT tables, OT lights, suction machines, electrodes, pressure transducers, electrical safety, application, handling operation.
b. Basic electronics, basic principle, care and maintenance and uses of surgical diathermy machine, defibrillator, Boyle's apparatus, anesthesia machine, monitors, pace-makers and stimulators etc.
c. Logging on and off, Security concepts, Sending and receiving Emails.
d. Hospital information system.

Course Title: Project- Practical			
Semester: VI	|Coursecode:BOTT605P	Credits:04	| Core
Course Pre-requisites:			

PROJECTREPORT

Students have to carry out a research project (on any topic related to Operation Theater Technology) under the supervision of a faculty. The project report has to be prepared on the basis of the research work carried out. The assessment is done on the basis of the work done and the presentation and viva.