



**DEPARTMENT OF OPERATION THEATRE AND ANESTHESIA TECHNOLOGY**

**Study scheme & syllabi**

**As per choice based credit system (CBCS)**

**For**

**B.Sc. in Operation Theatre and Anesthesia Technology  
(B.Sc. OTAT)**

**(First to sixth semester)**

**(Program Code: OTAT-301)**

**(FROM 2019-2020)**

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## **Section 1**

### **Vision and Mission of the University**

#### **VISION**

To become one of the most preferred learning places a centre of excellence to promote and nurture future leaders who would facilitate in desired change in the society

#### **MISSION**

- To impart teaching and learning through cutting edge technologies supported by the world class infrastructure
- To empower and transform young minds into capable leaders and responsible citizens of India instilled with high ethical and moral values
- To develop human potential to its fullest extent and make them emerge as world class leaders in their professions and enthuse them towards their social responsibilities

## **Section 2**

### **Vision and Mission of the Department**

#### **VISION**

To provide the highest quality care and safety for patients undergoing surgery and other procedures that require anesthesia. This department plays a critical role in ensuring that patients receive optimal care during their surgical experience, from preoperative assessment and preparation to intraoperative management and postoperative recovery.

In order to achieve this vision, the operation theatre and anesthesia technology department must stay up-to-date with the latest technologies and techniques in surgical and anesthesia care. This includes maintaining state-of-the-art equipment and facilities, as well as investing in ongoing training and education for staff.

The department also has a responsibility to collaborate with other healthcare professionals, including surgeons, nurses, and other support staff, to ensure that all aspects of patient care are coordinated and integrated. This includes providing expert guidance and consultation to help optimize patient outcomes and ensure that all aspects of the surgical experience are managed effectively.

#### **MISSION.**

The mission of the Operation Theatre and Anesthesia Technology Department is to provide specialized support and expertise in the administration of anesthesia and the maintenance of equipment and supplies necessary for surgical procedures.

This department plays a critical role in ensuring that patients undergoing surgery are safe and comfortable throughout the surgical process. They work closely with the surgical team, including surgeons, nurses, and other healthcare professionals, to ensure that all necessary equipment and supplies are available and functioning properly.

The department is responsible for the preparation and maintenance of the operation theatre, including the sterilization of instruments and equipment, the preparation of medications and solutions, and the maintenance of a clean and sterile environment. Anesthesia technologists assist anesthesiologists in administering anesthesia to patients before, during, and after surgery.

## **Section 3**

### **ABOUT THE PROGRAM**

#### **ABOUT THE PROGRAM**

The B.Sc. Operation Theatre and Anesthesia Technology is a three-year (Academic) and 06 Months (Clinical Internship) undergraduate program that focuses on training students to become skilled operation theatre technicians and anesthesia technologists.

The curriculum includes theoretical and practical knowledge of anatomy, physiology, pharmacology, anesthesia, surgical procedures, infection control, and medical ethics. Students will also learn about the operation theatre equipment and its maintenance, patient monitoring, and emergency management.

Upon graduation, students can work in hospitals, clinics, and other healthcare facilities as operation theatre technicians, anesthesia technologists, surgical assistants, or sterile processing technicians. They can also pursue higher education and research in the field of anesthesia and surgical technology.

To pursue this course, candidates must have passed their 10+2 examination in the science stream with a minimum of 50% marks. Admission to the program is usually based on merit or entrance exams conducted by universities or colleges.

After completing the B.Sc. Operation Theatre and Anesthesia Technology course, further students can opt for the course of Anesthetist Consultant. An Anesthetist Consultant is responsible to give the right amount of anesthesia dosage with accurate levels. Students can go for various M.Sc. courses as well.

## Section 4

### Program Education Objectives (PEOs), Program Outcomes (Pos) and Program Specific Outcomes (PSOs)

#### Program Education Objectives

<b>PEO1</b>	Professional Competence: Graduates should possess the necessary knowledge and skills required to perform clinical procedures in operation theatre and anesthesia technology efficiently and effectively.
<b>PEO2</b>	Critical Thinking and Problem Solving: Graduates will be able to identify, analyze, and solve problems related to Operation Theatre and Anesthesia Technology using critical thinking skills and evidence-based practices.
<b>PEO3</b>	Leadership and Management: Graduates will be prepared to assume leadership and management roles in healthcare organizations and be able to effectively manage resources and personnel
<b>PEO4</b>	Ethical and Professional Behavior: Graduates will demonstrate ethical and professional behavior in their interactions with patients, colleagues, and other healthcare professionals.

## PROGRAM OUTCOMES

<b>PO 1</b>	<b>Demonstration-</b> Demonstrate basic knowledge of pathophysiology of common conditions requiring surgical procedures
<b>PO 2</b>	<b>Preparation-</b> Prepare the operation theatre, load and label requested drugs, gather and assemble the surgical equipment for common surgical procedures as per the complexity and duration.
<b>PO 3</b>	<b>Recognize-</b> Recognize the anxiety of patients in peri-operative state and appropriately assist to shift, induce anaesthesia and position patient for surgical procedure
<b>PO 4</b>	<b>Identify-</b> Recognize the anxiety of patients in peri-operative state and appropriately assist to shift, induce anaesthesia and position patient for surgical procedure
<b>PO 5</b>	<b>Assistance-</b> Assist consultant in emergency department while receiving acutely ill patients, stabilize them and transport in or out of hospital as per the individual needs.
<b>PO 6</b>	<b>Work as a team member</b> – Function as a member of rescue / code blue team in recognizing cardiac arrest and participate in revival cum cardiopulmonary resuscitation inside and outside hospital.
<b>PO 7</b>	<b>Management-</b> Manage the overall upkeep of the equipment used in intensive care unit and transport of critically ill patients and assist the specialist in resuscitation, management and transfer of such patients with appropriate paraphernalia.
<b>PO 8</b>	<b>Contribution-</b> Contribute in planning, setting up, commissioning, maintaining and managing operation theater, emergency departments, and intensive care unit, cardiac catheterization lab and emergency response services as a team member
<b>PO 9</b>	<b>Self Assessment-</b> Engage oneself in self-assessment and structure their continuing professional education to refine existing skills and acquire new skills for patient care and professional advancement.
<b>PO 10</b>	<b>Apply-</b> Understand the fundamentals and applications of Anesthesia, Surgical & Critical Care Equipments.
<b>PO 11</b>	<b>Learning-</b> Learn and Understand different Anesthetic & Surgical Procedures & their benefits as well as complications.
<b>PO 12</b>	<b>Analyse-</b> Ability to analyse, Monitor & give care to a Surgical/Anaesthetized patient.

## PROGRAM SPECIFIC OUTCOMES (PSOs)

<b>PSO 1</b>	Knowledge of anatomy and physiology: Students should have a deep understanding of the human body and how it functions, particularly in relation to the respiratory and circulatory systems.
<b>PSO 2</b>	Knowledge of surgical and anesthesia equipment: Students should be familiar with the various instruments and machines used in the operation theatre, as well as the different types of anesthesia and how to administer them safely.
<b>PSO 3</b>	Patient care: Students should be able to provide appropriate care to patients before, during, and after surgery, including monitoring vital signs and administering medications as needed.

### Section 5

#### Curriculum / Scheme with Examination Grading Scheme

### SEMESTER WISE SUMMARY OF THE PROGRAM: B.Sc. OTAT

S. no.	Semester	No. of Contact hours	Marks	Credits
1	I	31	800	25
2	II	21	500	19
3	III	22	500	20
4	IV	37	800	25
5	V	24	800	20
6	VI	24	800	20
	<b>TOTAL</b>	<b>159</b>	<b>4200</b>	<b>129</b>



### **EXAMINATION GRADING SCHEME**

<b>Percentage of marks obtained</b>	<b>Letter Grade</b>	<b>Grade Point</b>	<b>Performance</b>
90.00 – 100	O	10	Outstanding
80.00 – 89.99	A	9	Excellent
70.00 – 79.99	B	8	Good
60.00 – 69.99	C	7	Fair
50.00 – 59.99	D	6	Average
Less Than 50	F	0	Fail
Absent	AB	0	Fail

**Percentage Calculation: CGPA\*10**

**BOTAT, 1<sup>st</sup> SEMESTER:**

Subject			Contact Hours/Week			Credit	Evaluation Scheme (% of Total Marks)					Exam Duration (Hours)
Category	Code	Title	L	T	P		CWA	LWA	MTE	ETE	Total	
PC	BOT-1101	Anatomy and physiology	3	1		4	16	---	24	60	100	
PC	BOT-1102	Basic Science	3	1		4	16	---	24	60	100	
PE		Program Elective-I	2	1		3	16	---	24	60	100	
PC	BOT-1104	Anesthesia and OT	4	1		5	16	---	24	60	100	
PC	BOT-1105	Communication skills	2	1		3	16	---	24	60	100	
PC	BOT-1106	Anatomy and Physiology (Practical)			4	2	---	40	---	60	100	
PC	BOT-1107	Basic Science (Practical)			4	2		40	---	60	100	
PC	BOT-1108	Communication skills (Practical)			4	2	----	40	---	60	100	
<b>Total</b>			<b>14</b>	<b>5</b>	<b>12</b>	<b>25</b>	<b>80</b>	<b>120</b>	<b>120</b>	<b>480</b>	<b>800</b>	

	<b>Course Code</b>	<b>Course Title</b>
Program Elective-I	BOT-1103	Medical Ethics
	BOT-1109	Human Values and Professional Ethics

### **BOTAT, 2<sup>nd</sup> SEMESTER**

Subject			Contact Hours/Week			Credit	Evaluation Scheme (% of Total Marks)					Exam Duration (Hours)
Category	Code	Title	L	T	P		CW A	LW A	MT E	ETE	Total	
PC	BOT-1201	Biochemistry	2	1		3	16	---	24	60	100	
PC	BOT-1202	Introduction to Computers	3	1		4	16	---	24	60	100	
PC	BOT-1203	Anatomy and Physiology	4	1		5	16	---	24	60	100	
PC	BOT-1204	Pathology	4	1		5	16	---	24	60	100	
PC	BOT-1205	Biochemistry (Practical)			4	2		40		60	100	
<b>Total</b>			<b>13</b>	<b>4</b>	<b>4</b>	<b>19</b>	<b>64</b>	<b>40</b>	<b>96</b>	<b>300</b>	<b>500</b>	

### BOTAT, 3<sup>rd</sup> SEMESTER

Subject			Contact Hours/Week			Credit	Evaluation Scheme (% of Total Marks)					Exam Duration (Hours)
Category	Code	Title	L	T	P		CW	AL	WAM	TE	ET	Total
PC	BOTAT-2301	Microbiology	4	1		5	16	---	24	60	100	
PC	BOTAT-2302	Sociology	4	1		5	16	---	24	60	100	
PC	BOTAT-2303	Pharmacology	3	1		4	16	---	24	60	100	
PE	Program Elective-II		3	1		4	16	---	24	60	100	
PC	BOTAT-2305	Pharmacology (Practical)			4	2		40		600	100	
<b>Total</b>			<b>14</b>	<b>4</b>	<b>4</b>	<b>20</b>	<b>64</b>	<b>40</b>	<b>96</b>	<b>300</b>	<b>500</b>	

	Course Code	Course Title
Program Elective-II	BOTAT-2304	Indian Constitution
	BOTAT-2306	Research Methodology Biostatistics and Hospital Management

### BOTAT, 4<sup>th</sup> SEMESTER

Subject			Contact Hours/Week			Credit	Evaluation Scheme (% of Total Marks)					Exam Duration (Hours)
Category	Code	Title	L	T	P		CWA	LWA	MTE	ETE	Total	
PC	BOTAT-2401	Applied Pharmacology-II	4	1		4	16	---	24	60	100	
PC	BOTAT-2402	Anesthesia Techniques and Complications	4	1		5	16	---	24	60	100	
PC	BOTAT-2403	Medicine Relevant to Operation Theatre and Anesthesia Technology	4	1		4	16	---	24	60	100	
PC	BOTAT-2404	Biostatistics and Computer Applications	4	1		4	16	---	24	60	100	
PC	BOTAT-2405	Applied Pharmacology-II (Practical)			4	2		40		60	100	
PC	BOTAT-2406	Anesthesia Techniques and Complications (Practical)			4	2		40		60	100	
PC	BOTAT-2407	Medicine Relevant to Operation Theatre and Technology (Practical)			4	2		40		60	100	
PC	BOTAT-2408	Biostatistics and Computer Applications (Practical)			4	2	---	40		60	100	
<b>Total</b>			<b>17</b>	<b>4</b>	<b>16</b>	<b>25</b>	<b>64</b>	<b>160</b>	<b>96</b>	<b>480</b>	<b>800</b>	

### BOTAT, 5th SEMESTER

Subject			Contact Hours/Week			Credit	Evaluation Scheme (% of Total Marks)					Exam Duration (Hours)
Category	Code	Title	L	T	P		CW	AL	W	M	T	
PC	BOTAT-3501	Anesthesia technology-I	3	1		4	16	---	24	60	100	
PC	BOTAT-3502	Surgical Procedures-I	3	1		4	16	---	24	60	100	
PC	BOTAT-3503	Anesthesia for Speciality Surgeries	3	1		4	16	---	24	60	100	
PC	BOTAT-3504	Basic Intensive care and Resuscitation	3	1		4	16	---	24	60	100	
PC	BOTAT-3505	Anesthesia Technology-I (Practical)			2	1		40		60	100	
PC	BOTAT-3506	Surgical Procedures-I (Practical)			2	1		40		60	100	
PC	BOTAT-3507	Anesthesia for Speciality Surgeries (Practical)			2	1		40		60	100	
PC	BOTAT-3508	Basic Intensive care and Resuscitation (practical)			2	1	---	40		60	100	
Total			12	4	8	20	64	160	96	480	800	

### BOTAT, 6<sup>th</sup> SEMESTER

Subject			Contact Hours/Week			Credit	Evaluation Scheme (% of Total Marks)					Exam Duration (Hours)
Category	Code	Title	L	T	P		CW	AL	W	M	T	
PS	BOTAT-3601	Anesthesia Technology-II	3	1		4	16	---	24	60	100	
PS	BOTAT-3602	Surgical Procedures-II	3	1		4	16	---	24	60	100	
PS	BOTAT-3603	Specialized Surgical Techniques	3	1		4	16	---	24	60	100	
PS	BOTAT-3604	Advanced Anesthesia Technology	3	1		4	16	---	24	60	100	
PS	BOTAT-3605	Anesthesia Technology-II (Practical)			2	1		40		60	100	
PS	BOTAT-3606	Surgical Procedures-II (Practical)			2	1		40		60	100	
PS	BOTAT-3607	Specialized Surgical Techniques (Practical)			2	1		40		60	100	
PS	BOTAT-3608	Advanced Anesthesia Technology (practical)			2	1	---	40		60	100	
Total			12	4	8	20	64	160	96	480	800	

**SUBJECT TITLE: ANATOMY AND PHYSIOLOGY**

**SUBJECT CODE: BOT-1101**

**SEMESTER: 1**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
3	1		4

**Internal Assessment: 40**  
**End Term Exam: 60**  
**Duration of Exam: 3 Hrs**

**Course Objective:**

Students will be able to learn the terminology of the subject and basic knowledge of cells, tissues, blood and to understand anatomy and physiology of human body. This subject will develop an understanding of the structure and function of organs and organ systems in normal human body.

**SECTION I: ANATOMY:**

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	Definitions, Subdivisions of Anatomy, Terms of location and position. Fundamental Planes, organization of human body. Cell (structure and function). Tissues (Epithelium, Connective, Muscular, Nervous)	<b>6</b>
<b>UNIT-II</b>	<i>Skeletal system:</i> Types of bones, Bones and their parts, Divisions of skeleton <i>Joints:</i> classification, types of movements with examples.	<b>6</b>
<b>UNIT-III</b>	<i>Central nervous system:</i> Spinal Cord (anatomy, functions), reflex-meninges. <i>Brain:</i> Hind Brain, Midbrain, Forebrain	<b>6</b>
<b>UNIT-IV</b>	Anatomical introduction to skin & Sense organs: Eye, Ear, Nose	<b>4</b>
<b>UNIT-V</b>	Circulatory system: <i>Heart:</i> size, location, coverings, chambers, blood supply, the blood vessels. General plan of circulation, pulmonary circulation. Names of arteries and veins and their positions	<b>6</b>



**SECTION II: PHYSIOLOGY**

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	<b>Cell : Structure &amp; function</b>	<b>2</b>
<b>UNIT-II</b>	<b>Blood:</b> Blood cells, Haemoglobin, Blood groups, Coagulation Coagulation Factors, Anemia <i>Immunoglobulin's:</i> Types & functions	<b>6</b>
<b>UNIT-III</b>	<b>Cardiovascular system:</b> Heart rate, cardiac cycle, cardiac output, blood pressure, hypertension, radial pulse	<b>6</b>
<b>UNIT-IV</b>	<b>Respiratory System:</b> Mechanism of respiration, Lung Volumes capacities	<b>5</b>
<b>UNIT-V</b>	<b>Gastrointestinal System:</b> Process of digestion in various parts	<b>5</b>

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOT-1101. 1	Understand the basic fundamentals structural features of neurons, mechanism of neurotransmitters along with processes of Neuro-conduction and neurotransmission.
BOT-1101. 2	Clarify the anatomy and physiology of various sense organs involved in body homeostasis
BOT-1101. 3	Understand the organs and mechanism involve in respiration along with disorders of respiratory system
BOT-1101. 4	Understand the essential organs of urinary systems and process of urine formation

**Suggested Readings:**

Anatomy & Physiology- Ross and Wilson

Anatomy and Physiology: Understanding the Human Body by Clark  
 Anatomy and Physiology for nurses by Evelyn Pearce  
 Anatomy and Physiology for nurses by Sears  
 Anatomy and Physiology for nurses by Pearson  
 Anatomy and Physiology by N Murgesh

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1 Marks each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consist of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: BASIC SCIENCES**

**SUBJECT CODE: BOT-1102**

**SEMESTER: 1**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
3	1		4

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**COURSE OBJECTIVE:** Students will be able to learn the cleaning, assembly, sterilization, storage and distribution of sterilized materials from a CSSD. To provide an efficient, continuous and quality supply of sterilized material to hospital in various areas and infection free patient care.

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	<ul style="list-style-type: none"> <li>Cleaning and dusting: methods of cleaning, composition of dust.</li> <li>General care and testing of instruments: forceps, haemostatic, needle holders, knife, blade, scissor, use/ abuse, care during surgery.</li> <li>Disinfectants of instruments and sterilization- definition, methods, cleaning agents, detergents, mechanical washing,</li> </ul>	<b>2</b>

	ultrasonic cleaner, lubrication, inspection and pitfalls	
<b>UNIT-II</b>	<ul style="list-style-type: none"> <li>• Thermal, hot air oven, dry heat, autoclaving, steam sterilization water etc, UV treatment.</li> <li>• Various methods of chemical treatment: formalin, glutaraldehyde</li> <li>• Instrument's etching, care of micro surgical and titanium instruments</li> <li>• Sterilization of equipments: arthroscope, gastroscope, imago lamp, apparatus, suction apparatus, anaesthetic equipments including endotracheal tubes.</li> </ul>	<b>6</b>
<b>UNIT-III</b>	<ul style="list-style-type: none"> <li>• Materials used for wrapping and packing assembling pack contents. Types of packs prepared.</li> <li>• Inclusion of trays and galli parts in packs. Method of wrapping and making use of indications to show that a pack of container has been through a sterilization process date stamping.</li> </ul>	<b>6</b>
<b>UNIT-IV</b>	<ul style="list-style-type: none"> <li>• OT Sterilization including laminar air flow.</li> <li>• Fumigation of OT: Principle &amp; procedure</li> <li>• Waste disposal collection of used items from user area, reception protective clothing and disinfections sage guards.</li> </ul>	<b>5</b>
<b>UNIT-V</b>	<ul style="list-style-type: none"> <li>• Trouble shooting: colored spots and corrosion, staining, dust deposit, recent amendment in EPA with reference to waste disposal</li> </ul>	<b>5</b>

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOT-1102.1	Demonstrate theory and practical skills in microscopy and their handling techniques and staining procedures
BOT-1102. 2	Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes and also Understand the structural

	similarities and differences among various physiological groups of bacteria/archaea
BOT-1102. 3	Know various Culture media and their applications and also understand various physical and chemical means of sterilization
BOT-1102. 4	Master aseptic techniques and be able to perform routine culture handling tasks safely and effectively

**Suggested Readings:**

1. Manual of Anesthesia for Operation Theater Technicians by S Ahanatha Pillai
2. Textbook for Operation Theater Technicians - Jaypee Digital
3. Berry, Edna Carnelia & MarieLoius Kohn introduction to OR Techniques 4th edition
4. Dixon, Elleen-Theatre techniques-5th edition
5. Operation Theatre manual by M M Kapoor

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1 Marks each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consists of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: MEDICAL ETHICS**

**SUBJECT CODE: BOT- 1103**

**SEMESTER: 1**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
2	1		3

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**COURSE OBJECTIVE:** The main objectives of promotion of Ethics and Human Values is to create awareness, conviction & commitment to values for improving the quality of life through education, and for advancing social and human wellbeing.

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	<p><b>Course Introduction - Need, Basic Guidelines, Content and Process for Value Education</b></p> <ul style="list-style-type: none"> <li>Understanding the need, basic guidelines, content and process for Value Education.</li> </ul> <p>Self-Exploration–what is it?- its content and process; ‘Natural Acceptance’ and Experiential Validation- as the mechanism for self-exploration.</p> <ul style="list-style-type: none"> <li>Continuous Happiness and Prosperity- A look at basic Human Aspirant</li> <li>Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority.</li> <li>Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario</li> <li>Method to fulfill the above human aspirations: understanding and living</li> </ul>	<b>10</b>
<b>UNIT-II</b>	<p><b>Harmony at various levels</b></p> <ul style="list-style-type: none"> <li>Understanding Harmony in the Human Being - Harmony in Myself!</li> <li>Programs to ensure Sanyam and Swasthya</li> <li>Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship</li> <li>Understanding harmony in the Family- the basic unit of human interaction</li> <li>Understanding values in human-human relationship</li> <li>Understanding the harmony in the society (society being an extension of family)</li> </ul>	<b>6</b>
<b>UNIT-III</b>	<p><b>Implications of the above Holistic Understanding of Harmony on Professional Ethics</b></p> <ul style="list-style-type: none"> <li>Definitiveness of Ethical Human Conduct</li> <li>Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order</li> <li>Competence in professional ethics</li> </ul>	<b>6</b>

<b>UNIT-IV</b>	<ul style="list-style-type: none"> <li>• Introduction to Professional ethics</li> <li>• Professional Ethics and Right Understanding</li> <li>• Ethical Concept: Code of conduct, Confidentiality, Autonomy and informed consent, Beneficence, Non-maleficence, Veracity, Fidelity</li> </ul>	<b>5</b>
<b>UNIT-V</b>	<ul style="list-style-type: none"> <li>• Ethical issues: Malpractice and negligence, Abortion, End of life issue</li> <li>• Ethical practice: Barrier of ethical practice, Organ transplantation, Care of the terminally ill, Medico legal aspects of medical records</li> <li>• Ethical decision making: Dilemma ,Euthanasia.</li> </ul>	<b>6</b>

#### Course Outcomes:

On successful completion of this course, the learner will be able to

BOT-1103. 1	To develop the ability to distinguish between what is of value and what is superficial in life.
BOT-1103. 2	To develop the ability to face difficult situations in life boldly and resolve them confidently.
BOT-1103. 3	To enable students to progress from discrimination to commitment.
BOT-1103. 4	To understand commitment and responsibility. They gain the ability to bring harmony to the society they live.

1. R R Gaur, R Sangal, G P Bagaria, 2009, *A Foundation Course in Value Education*.

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1Marks each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consists of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: ANAESTHESIA AND OT**

**SUBJECT CODE: BOT-1104**

**SEMESTER: 1**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
4	1		5

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**COURSE OBJECTIVE:** The student will be able prepare instruments and supplies necessary for the continual function of the operating room and multifunction disciplines in the hospital and specialty settings. The student will learn effective communication skills with members of the healthcare team and develop a basic understanding of the disease process

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	<b>Medical Gas Supply</b> <ul style="list-style-type: none"> <li>Compressed gas Cylinders</li> <li>Colour coding</li> <li>Cylinders and Cylinder valves</li> <li>Cylinder storage</li> <li>Diameter index safety system</li> <li>Medical gas pipeline system and station outlets</li> <li>Air compressors</li> <li>Oxygen concentrators</li> <li>Alarms and safety devices</li> </ul>	<b>5</b>
<b>UNIT-II</b>	<ul style="list-style-type: none"> <li><b>Gas Administration Devices</b></li> <li>Simple oxygen administration devices</li> <li>Methods of controlling gas flow</li> <li>Reducing valves</li> <li>Flow meters</li> <li>Regulators</li> <li>Flow restrictors</li> </ul>	<b>6</b>
<b>UNIT-III</b>	<ul style="list-style-type: none"> <li><b>Oxygen Therapy</b></li> <li>Definition</li> </ul>	<b>6</b>

	<ul style="list-style-type: none"> <li>• Causes and responses to hypoxemia</li> <li>• Clinical signs of hypoxemia</li> <li>• Goals of oxygen therapy</li> <li>• Evaluation of patients receiving oxygen therapy</li> <li>• Hazards of oxygen therap</li> </ul>	
<b>UNIT-IV</b>	<ul style="list-style-type: none"> <li>• <b>Anaesthesia Machine</b></li> <li>• Hanger and yoke system</li> <li>• Cylinder pressure gauge, pin index</li> <li>• Pressure regulator</li> <li>• Flow meter assembly</li> <li>• Vaporizers – Types, hazards, maintenance, filling and draining</li> </ul>	<b>5</b>
<b>UNIT-V</b>	<ul style="list-style-type: none"> <li>• <b>Breathing System</b></li> <li>• General considerations</li> <li>• Classification and breathing system</li> <li>• Mapleson system</li> <li>• Jackson Rees system of Bain circuit</li> <li>• Non breathing valves – Ambu valves</li> </ul>	<b>5</b>
<b>UNIT-VI</b>	<b>Gas Analyzers Pulse Oximeter CO<sub>2</sub> Monitor</b> Pulse oximeters <ul style="list-style-type: none"> <li>• Capnographs</li> </ul>	<b>4</b>
<b>UNIT-VII</b>	<b>Manual Resuscitators</b> Types of resuscitator bags <ul style="list-style-type: none"> <li>• Methods of increasing oxygen delivery capabilities while using oxygen with resuscitator bags.</li> </ul>	<b>5</b>
<b>UNIT-III</b>	<b>Artificial air ways (oral and Nasal endotracheal tubes, Tracheostomytubes</b> <ul style="list-style-type: none"> <li>• Parts of airway and features</li> <li>• Types, sizes and methods of insertion</li> <li>• Indications for use</li> <li>• Care of long-term airways and complications</li> <li>• Protocol for tracheostomy decannulation</li> <li>• Face masks – Types, sizes and its usage</li> </ul>	<b>7</b>
<b>UNIT-III</b>	<b>Methods of Cleaning and Sterilization of Anesthetic Equipments</b>	<b>5</b>



<b>UNIT-IX</b>	<b>Minimum Standards for Anesthesia</b> <ul style="list-style-type: none"><li>• Patient assessment and preparation</li><li>• Ten golden rules of anesthesia</li><li>• Checking the drugs and equipment</li><li>• Keeping the airway clear</li><li>• Be ready to control ventilation</li><li>• Monitor pulse and BP</li></ul>	<b>6</b>
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**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOT-1104. 1	Demonstrate ability to prepare and maintain Operation Theatre
BOT-1104.2	Demonstrate ability to maintain equipment support in an acute care environment
BOT-1104.3	Identify and inspire to maintain a sterile field
BOT-1104. 4	Manage hazardous waste and follow biomedical waste disposal protocols

**Suggested Readings:**

1. Manual of Anesthesia for Operation Theater Technicians by S Ahanatha Pillai
2. Textbook for Operation Theater Technicians - Jaypee Digital
3. Berry, Edna Carnelia & MarieLoius Kohn introduction to OR Techniques 4th edition
4. Dixon, Elleen-Theatre techniques-5th edition
5. Operation Theatre manual by M M Kapoor

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1Marks each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consists of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: COMMUNICATION SKILLS**

**SUBJECT CODE: BOT-1105**

**SEMESTER: 1**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
2	1		3

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**COURSE OBJECTIVE:** Reading Skills: The ability to read English with understanding: The student is able to:

- Understand the total content and underlying meaning in the context.
- Follow sequence of ideas, facts etc;
- Locate significant points and features;
- Identify and understand phrase or sentence groups.
- Grasp meaning of words and sentences.

**Writing Skills:** The ability to write English correctly: The student is able to:

- Master the Mechanics of writing; the use of correct punctuation marks and capital letters;
- Spell words correctly;
- Write neatly and legibly with reasonable speed;
- Use appropriate vocabulary;
- Use correct grammatical items;
- Write coherently in more than one paragraph;
- Complete accurately and fluently semi controlled compositions like stories, events, processes etc;

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	<p><b>Module I</b></p> <p><b>READING</b></p> <ul style="list-style-type: none"> <li>• Unseen prose and poetry passages for language comprehension and appreciation. Unseen passages with a variety of very short answer / short answer or MCQ type questions to test comprehension, interpretation and inference. Vocabulary such as word formation and inference of meaning will also be tested.</li> </ul>	<b>8</b>

	<ul style="list-style-type: none"> <li>The total length of the passages will be between 1100 – 1200 words. The passage will include the following:</li> <li>Factual passages, e.g., instructions, descriptions, reports.</li> <li>Descriptive passages involving opinion, e.g., argumentative, persuasive or interpretative text.</li> <li>Literary passages, e.g., extract from fiction, drama, poetry, essay or biography. A poem could be of 28-35 lines.</li> </ul>	
<b>UNIT-II</b>	<b>Module II</b>  <b>Grammar</b>  Punctuation, Parts of speech, Spellings, word formation and vocabulary, Tense, Phrasal verbs and idiomatic expressions, Modals	<b>6</b>
<b>UNIT-III</b>	<b>Module III</b>  <b>WRITING</b>  <b>Essay Writing</b> -on a topic of general topic.  <b>Report Writing</b> (Press Reports)  Suggested topics: Accidents, Natural Calamities and the Celebration of Festivals	<b>6</b>
<b>UNIT-IV</b>	<b>Module IV</b>  <b>Letter types include</b> <ul style="list-style-type: none"> <li>Business or official letters (for making enquiries, registering complaints, asking for and giving information, placing orders and sending replies)</li> <li>Letters to the editor (giving suggestions or opinion on issues of public interest)</li> <li>Application for a job</li> </ul>	<b>5</b>
<b>UNIT-V</b>	<b>Writing formal and informal invitations and replies</b>	<b>5</b>

**Course Outcomes:**

- On successful completion of this course, the learner will be able to

BOT-1105. 1	Apply the practical knowledge of using action words in sentence construction during report writing
BOT-1105. 2	Apply and analyse the right kind of pronunciation with regards to speech sounds and able to get different types of pronunciations while interacting with patients
BOT-1105. 3	Apply the concepts of accurate English while writing and become equally at ease in using good vocabulary and language skills.
BOT-1105. 4	Understand the importance of pronunciation and apply the same in day to day conversation with staff and patients

### Recommended books:

- Oxford Practice Grammar by John Eastwood (Ed. 2014)
- Wren, P.C.; Martin, H.; Prasada Rao, N.D.V. (1973–2010). **High School English Grammar & Composition**
- Oxford Practice Grammar Advanced, G. Yule (Oxford)

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1Mark each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consists of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: ANATOMY AND PHYSIOLOGY**

**SUBJECT CODE: BOT-1106**

**SEMESTER: 1**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
		4	2

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

### Course Objective:

Students will be able to learn the terminology of the subject and basic knowledge of cells, tissues, blood and to understand anatomy and physiology of human body. This subject will

develop an understanding of the structure and function of organs and organ systems in normal human body.

**SECTION I: ANATOMY:**

Sr. No.	Contents	Contact Hours
	<p><i>Skeletal system:</i> Types of bones, Bones and their parts, Divisions of skeleton</p> <p><i>Joints:</i> classification, types of movements with examples.</p> <p><i>Central nervous system:</i> Spinal Cord (anatomy, functions), reflex-meninges.</p> <p><i>Brain:</i> Hind Brain, Midbrain, Forebrain</p> <p>Circulatory system: <i>Heart:</i> size, location, coverings, chambers, blood supply, the blood vessels. General plan of circulation, pulmonary circulation. Names of arteries and veins and their positions</p>	15

**SECTION II: PHYSIOLOGY**

Sr. No.	Contents	Contact Hours
	<p><b>Blood:</b> Blood cells, Haemoglobin, Blood groups, Coagulation Factors, Anemia</p> <p><i>Immunoglobulin's:</i> Types &amp; functions</p> <p><b>Cardiovascular system:</b> Heart rate, cardiac cycle, cardiac output, blood pressure, hypertension, radial pulse</p> <p><b>Respiratory System:</b> Mechanism of respiration, Lung Volumes and capacities</p> <p><b>Gastrointestinal System:</b> Process of digestion in various parts</p>	15

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-1106. 1	Understand the basic fundamentals structural features of neurons, mechanism of neurotransmitters along with processes of Neuro-conduction and neurotransmission.
BOTAT-1106. 2	Clarify the anatomy and physiology of various sense organs involved in body homeostasis
BOTAT-1106. 3	Understand the organs and mechanism involve in respiration along with disorders of respiratory system
BOTAT-1106. 4	Understand the essential organs of urinary systems and process of urine formation

**SUBJECT TITLE: BASIC SCIENCES**

**SUBJECT CODE: BOT-1107**

**SEMESTER: 1**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
		4	2

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**COURSE OBJECTIVE:** Students will be able to learn the cleaning, assembly, sterilization, storage and distribution of sterilized materials from a CSSD. To provide an efficient, continuous and quality supply of sterilized material to hospital in various areas and infection free patient care.

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	<ul style="list-style-type: none"> <li>Cleaning and dusting: methods of cleaning, composition of dust.</li> <li>General care and testing of instruments: forceps, haemostatic, needle holders, knife, blade, scissor, use/ abuse, care during surgery.</li> <li>Disinfectants of instruments and sterilization- definition, methods, cleaning agents, detergents, mechanical washing, ultrasonic cleaner, lubrication, inspection and pitfalls</li> </ul>	
<b>UNIT-II</b>	<ul style="list-style-type: none"> <li>Thermal, hot air oven, dry heat, autoclaving, steam sterilization water etc, UV treatment.</li> </ul>	

	<ul style="list-style-type: none"> <li>• Various methods of chemical treatment: formalin, glutaraldehyde</li> <li>• Instrument's etching, care of micro surgical and titanium instruments</li> <li>• Sterilization of equipments: arthroscope, gastroscope, imago lamp, apparatus, suction apparatus, anaesthetic equipments including endotracheal tubes.</li> </ul>	
<b>UNIT-III</b>	<ul style="list-style-type: none"> <li>• Materials used for wrapping and packing assembling pack contents. Types of packs prepared.</li> <li>• Inclusion of trays and galli parts in packs. Method of wrapping and making use of indications to show that a pack of container has been through a sterilization process date stamping.</li> </ul>	
<b>UNIT-IV</b>	<ul style="list-style-type: none"> <li>• OT Sterilization including laminar air flow.</li> <li>• Fumigation of OT: Principle &amp; procedure</li> <li>• Waste disposal collection of used items from user area, reception protective clothing and disinfections sage guards.</li> </ul>	
<b>UNIT-V</b>	<ul style="list-style-type: none"> <li>• Trouble shooting: colored spots and corrosion, staining, dust deposit, recent amendment in EPA with reference to waste disposal</li> </ul>	

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOT-1107.1	Demonstrate theory and practical skills in microscopy and their handling techniques and staining procedures
BOT-1107. 2	Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes and also Understand the structural similarities and differences among various physiological groups of bacteria/archaea
BOT-1107. 3	Know various Culture media and their applications and also understand various physical and chemical means of sterilization

BOT-1107. 4	Master aseptic techniques and be able to perform routine culture handling tasks safely and effectively
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**SUBJECT TITLE: COMMUNICATION SKILLS**

**SUBJECT CODE: BOT-1108**

**SEMESTER: 1**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
		4	2

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**COURSE OBJECTIVE:** Reading Skills: The ability to read English with understanding: The student is able to:

- Understand the total content and underlying meaning in the context.
- Follow sequence of ideas, facts etc;
- Locate significant points and features;
- Identify and understand phrase or sentence groups.
- Grasp meaning of words and sentences.

**Writing Skills:** The ability to write English correctly: The student is able to:

- Master the Mechanics of writing; the use of correct punctuation marks and capital letters;
- Spell words correctly;
- Write neatly and legibly with reasonable speed;
- Use appropriate vocabulary;
- Use correct grammatical items;
- Write coherently in more than one paragraph;
- Complete accurately and fluently semi controlled compositions like stories, events, processes etc;

Sr. No.	Contents	Contact Hours



	<p>Punctuation, Parts of speech, Spellings, word formation and vocabulary, Tense, Phrasal verbs and idiomatic expressions, Modals</p> <p><b>Essay Writing</b> -on a topic of general topic.</p> <p><b>Report Writing</b> (Press Reports)</p> <p>Suggested topics: Accidents, Natural Calamities and the Celebration of Festivals</p> <p><b>Letter types include</b></p> <ul style="list-style-type: none"> <li>• Business or official letters (for making enquiries, registering complaints, asking for and giving information, placing orders and sending replies)</li> <li>• Letters to the editor (giving suggestions or opinion on issues of public interest)</li> <li>• Application for a job</li> </ul> <p><b>Writing formal and informal invitations and replies</b></p>	<b>30</b>
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**Course Outcomes:**

- On successful completion of this course, the learner will be able to

BOT-1108. 1	Apply the practical knowledge of using action words in sentence construction during report writing
BOT-1108. 2	Apply and analyse the right kind of pronunciation with regards to speech sounds and able to get different types of pronunciations while interacting with patients
BOT-1108. 3	Apply the concepts of accurate English while writing and become equally at ease in using good vocabulary and language skills.
BOT-1108. 4	Understand the importance of pronunciation and apply the same in day to day conversation with staff and patients

**SUBJECT TITLE: HUMAN VALUES AND PROFESSIONAL ETHICS**

**SUBJECT CODE: BOTAT- 1109**

**SEMESTER: 1**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
4			4

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** To make the students learn to discriminate between valuable and superficial in the life. To help develop the critical ability to distinguish between essence and form, or between what is of value and what is superficial, in life - this ability is to be developed not for a narrow area or field of study, but for everyday situations in life, covering the widest possible canvas. To help students develop sensitivity and awareness; leading to commitment and courage to act on their own belief. It is not sufficient to develop the discrimination ability, it is important to act on such discrimination in a given situation. Knowingly or unknowingly, our education system has focused on the skill aspects (learning and doing) - it concentrates on providing to its students the skills to do things. In other words, it concentrates on providing “How to do” things. The aspects of understanding “What to do” or “Why something should be done” is assumed. No significant cogent material on understanding is included as a part of the curriculum. A result of this is the production of graduates who tend to join into a blind race for wealth, position and jobs. Often it leads to misuse of the skills; and confusion and wealth that breeds chaos in family, problems in society, and imbalance in nature. This course is an effort to fulfill our responsibility to provide our students this significant input about understanding. This course encourages students to discover what they consider valuable. Accordingly, they should be able to discriminate between valuable and the superficial in real situations in their life.

Sr. No.	Contents	Contact Hours
UNIT-I	<b>Course Introduction - Need, Basic Guidelines, Content and Process for Value Education</b> <ul style="list-style-type: none"> <li>Understanding the need, basic guidelines, content and process for Value Education.</li> <li>Self-Exploration–what is it?- its content and process; ‘Natural Acceptance’ and Experiential Validation- as the mechanism for self-exploration.</li> <li>Continuous Happiness and Prosperity- A look at basic Human Aspirant</li> </ul>	10

	<ul style="list-style-type: none"> <li>• Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority.</li> <li>• Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario</li> <li>• Method to fulfill the above human aspirations: understanding and living</li> </ul>	
<b>UNIT-II</b>	<p><b>Harmony at various levels</b></p> <ul style="list-style-type: none"> <li>• Understanding Harmony in the Human Being - Harmony in Myself!</li> <li>• Programs to ensure Sanyam and Swasthya</li> <li>• Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship</li> <li>• Understanding harmony in the Family- the basic unit of human interaction</li> <li>• Understanding values in human-human relationship</li> <li>• Understanding the harmony in the society (society being an extension of family)</li> </ul>	<b>10</b>
<b>UNIT-III</b>	<p><b>Implications of the above Holistic Understanding of Harmony on Professional Ethics</b></p> <ul style="list-style-type: none"> <li>• Definitiveness of Ethical Human Conduct</li> <li>• Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order</li> <li>• Competence in professional ethics</li> </ul>	<b>10</b>
<b>UNIT-IV</b>	<ul style="list-style-type: none"> <li>• Introduction to Professional ethics</li> <li>• Professional Ethics and Right Understanding</li> <li>• Ethical Concept: Code of conduct, Confidentiality, Autonomy and informed consent, Beneficence, Non-maleficence, Veracity, Fidelity</li> <li>• Ethical issues: Malpractice and negligence, Abortion, End of life issue</li> <li>• Ethical practice: Barrier of ethical practice, Organ transplantation, Care of the terminally ill, Medico legal aspects of medical records</li> <li>• Ethical decision making: Dilemma ,Euthanasia.</li> </ul>	<b>10</b>

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-1109. 1	To develop the ability to distinguish between what is of value and what is superficial in life.
BOTAT-1109. 2	To develop the ability to face difficult situations in life boldly and resolve them confidently.
BOTAT-1109. 3	To enable students to progress from discrimination to commitment.

**Suggested Readings:**

1. R. R. Gaur, R Sangal, G P Bagaria, 2009, A Foundation Course in Human Values and Professional Ethics.
2. Success Secrets for Engineering Students, Smart Student Publications, 3rd Edition.
3. Ivan Illy, 1974, Energy & Equity, The Trinity Press, Worcester, and HarperCollins, USA.
4. E. F. Schumacher, 1973, Small is Beautiful: a study of economics as if people mattered. Blond & Briggs, Britain.
5. A Nagraj, 1998 Jeevan Vidya ek Parichay, Divya Path Sansthan, Amarkantak.
6. Susan George, 1976, How the Other Half Dies, Penguin Press, Reprinted 1986,

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1Mark each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consists of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

## SEMESTER II

**SUBJECT TITLE: BIOCHEMISTRY**

**SUBJECT CODE: BOT-1201**

**SEMESTER: 2**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
2	1		3

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**COURSE OBJECTIVE:** In the present scenario study of Biochemistry is highly relevant, biochemistry students can aspire for bigger roles in industry as well as academia. Some of its scope in medical sciences

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	Important definitions & scope of biochemistry	<b>2</b>
<b>UNIT-II</b>	<b>Biomolecules</b> <i>Brief description &amp; importance of various biomolecules:</i> Carbohydrates, Proteins, Lipids, Nucleic Acid, Enzyme: <i>Electrolytes:</i> Source, function & deficiency symptoms of Sodium, Potassium, Calcium, phosphorus, Iron, Zinc & Chloride in human body.	<b>12</b>
<b>UNIT-III</b>	<b>Analytical Chemistry</b> <i>Normal Values &amp; Interpretations:</i> <i>Electrolytes:</i> Sodium, Potassium, Calcium, Iron, Chloride <i>Renal Function Test:</i> Urea, Creatinine, Uric Acid, Glucose <i>Urine Analysis:</i> Composition, Colour, Volume, pH, Specific Gravity, Turbidity <i>Liver Function Test:</i> SGOT, SGPT, Bilirubin, Albumin, Globulin & Alkaline Phosphatase <i>Carbohydrates:</i> Fasting, Random, GTT  <i>Lipid Profile:</i> Cholesterol, Triglycerides, HDL, LDL, VLDL	<b>12</b>

<b>UNIT-IV</b>	<b>Acids &amp; Bases</b> Acid & Base, pH ,Buffer Solutions	<b>5</b>
<b>UNIT-V</b>	<b>Common Laboratory Apparatus &amp; Instruments</b> <i>General description &amp; uses of common Laboratory apparatus:</i> Pipettes- Burettes, Beakers, Petri dishes, Depression plates, Flasks, Funnels Bottles, Measuring cylinders, Porcelain dish, Test tubes, Centrifuge tubes, <i>Working &amp;uses of:</i> Spectrophotometer, Water bath, Centrifuges, Analytical Balances, pH meter, Colorimeter.	<b>10</b>

**Course Outcomes:**

- On successful completion of this course, the learner will be able to

BOT-1201. 1	Understand biochemistry at the atomic level, draw molecules and reaction mechanisms perfectly.
BOT-1201. 2	Understand in detail about amino acid structures, types of amino acids, classifications, structure of proteins and types of proteins.
BOT-1201. 3	Learn the molecular structures of 20 amino acids, differentiating essential and non-essential amino acids, biologically important modified amino acids and their functions.
BOT-1201. 4	Learn how amino acids and proteins are metabolized, emphasizing the role of few intermediates of their metabolism, monitoring the deficiency and abundance disorders of amino acid metabolisms and the role of enzymes in the regulation of the pathways

**Suggested Readings:**

- Biochemistry by Mary K. Campbell, Shawn O. Farrell
- Biochemistry Illustrated: Biochemistry and Molecular Biology in the Post-Genomic Era
- Biochemistry by Donald Voet, Judith G. Voet Brock Biology of Microorganisms, 14th Edition.

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1Marks each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consists of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: INTRODUCTION TO COMPUTERS**

**SUBJECT CODE: BOT-1202**

**SEMESTER: 2**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
3	1		4

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Outcomes:** This course is designed to make a student to: Describe various application area of biostatistics Distinguish different types of data and sampling techniques. Summarize, organize and display quantitative data calculate and interpret measures of central tendency and variability in statistical data and to provide basic knowledge of computer application and parts such as hardware software MS Word MS Office MS Excel etc

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	<ul style="list-style-type: none"> <li>Computer: General Introduction, History of computer development and respective generation: Need to use computers, Applications in Laboratory and in general.</li> </ul>	<b>5</b>
<b>UNIT-II</b>	<ul style="list-style-type: none"> <li>Input and Output Device</li> <li>Memory</li> </ul>	<b>12</b>
<b>UNIT-III</b>	<ul style="list-style-type: none"> <li>Personal Computer</li> <li>Data Representation and Number System</li> <li>Software</li> </ul>	<b>12</b>
<b>UNIT-IV</b>	<ul style="list-style-type: none"> <li>Data Communication, Internet, Cyber etiquette</li> </ul>	<b>5</b>
<b>UNIT-V</b>	<ul style="list-style-type: none"> <li>Microsoft Office: PowerPoint Presentations, Microsoft word, excel sheet</li> <li>Abbreviation related to Computer</li> </ul>	<b>10</b>

**Course Outcomes:**

- On successful completion of this course, the learner will be able to

BOT-1202. 1	<i>Understanding the concept of input and output devices of Computers and how it works and recognize the basic terminology used in computer programming</i>
BOT-1202. 2	<i>Use different data structures and create / manipulate basic data files and developing applications for real world problems</i>

BOT-1202. 3	<i>Possess the knowledge of basic hardware peripherals · Know and use different number systems and the basics of programming</i>
BOT-1202. 4	<i>Understand the computer operated equipments used in OT</i>

**Suggested Readings:**

1. Computer fundamentals
2. Introduction to computers
3. Basic knowledge of computers

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1 Marks each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consist of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: ANATOMY AND PHYSIOLOGY**

**SUBJECT CODE: BOT- 1203**

**SEMESTER: 2**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
4	1		5

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** Students will be able to learn the terminology of the subject and basic knowledge of cells, tissues, blood and to understand anatomy and physiology of human body. This subject will develop an understanding of the structure and function of organs and organ systems in normal human body

**SECTION I: ANATOMY:**

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	<ul style="list-style-type: none"> <li>• <b>Respiratory system</b></li> <li>• Organs of Respiratory System. Brief knowledge of parts and position</li> </ul>	<b>6</b>



	<ul style="list-style-type: none"> <li>• <i>Conducting portion:</i> Nose, nasal cavity, Para nasal air sinuses, Larynx, trachea, bronchial tree</li> <li>• <i>Respiratory portion:</i> Pleura and lungs</li> </ul>	
<b>UNIT-II</b>	<ul style="list-style-type: none"> <li>• <b>Digestive system</b></li> <li>• Components of Digestive system, Anatomy of organs of digestive system, mouth, tongue, teeth, salivary glands, liver, biliary apparatus, pancreas.</li> </ul>	<b>6</b>
<b>UNIT-III</b>	<ul style="list-style-type: none"> <li>• <b>Excretory system</b></li> <li>• <i>Kidneys:</i> location, gross structure, excretory ducts, ureters, Urinary bladder, Urethra</li> </ul>	<b>6</b>
<b>UNIT-IV</b>	<ul style="list-style-type: none"> <li>• <b>Reproductive system</b></li> <li>• <i>Male Reproductive System:</i> Testis, Duct system.</li> <li>• <i>Female Reproductive System:</i> Ovaries, Duct system</li> </ul>	<b>4</b>
<b>UNIT-V</b>	<ul style="list-style-type: none"> <li>• Circulatory system: <i>Heart:</i> size, location, coverings, chambers, blood supply, the blood vessels. General plan of circulation, pulmonary circulation. Names of arteries and veins and their positions</li> </ul>	<b>6</b>
<b>UNIT-VI</b>	<ul style="list-style-type: none"> <li>• <b>Endocrine system</b></li> <li>• <i>Endocrine glands:</i> Positions, Hormones secreted and their functions- Pituitary, Thyroid parathyroid, Adrenal glands, Gonads &amp; Islets of pancreas</li> </ul>	<b>5</b>

## SECTION II: PHYSIOLOGY

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	<b>Excretory system</b> Structure of nephron, Mechanism of urine formation	<b>2</b>
<b>UNIT-II</b>	<b>Central Nervous System</b> motor neuron system, Lower motor neuron system Sensory Nervous system, Sympathetic Nervous system, Parasympathetic nervous system	<b>6</b>
<b>UNIT-III</b>	<b>Muscular System</b> Classification of muscles & their functions	<b>6</b>

<b>UNIT-IV</b>	<b>Special Senses</b> Eye & ear (in brief)	<b>5</b>
<b>UNIT-V</b>	<b>Endocrinology</b> List of endocrine glands, Hormones -their secretion and functions (in brief)	<b>5</b>

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOT-1203. 1	Understand the basic fundamentals structural features of neurons, mechanism of neurotransmitters along with processes of Neuro-conduction and neurotransmission.
BOT-1203. 2	Clarify the anatomy and physiology of various sense organs involved in body homeostasis
BOT-1203. 3	Understand the organs and mechanism involve in respiration along with disorders of respiratory system
BOT-1203. 4	Understand the essential organs of urinary systems and process of urine formation

**Suggested Readings:**

1. Anatomy & Physiology- Ross and Wilson
2. Anatomy and Physiology: Understanding the Human Body by Clark
3. Anatomy and Physiology for nurses by Evelyn Pearce
4. Anatomy and Physiology for nurses by Sears
5. Anatomy and Physiology for nurses by Pearson
6. Anatomy and Physiology by N Murgesh

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1Marks each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consists of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: PATHOLOGY**

**SUBJECT CODE: BOT-1204**

**SEMESTER: 2**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
4	1		5

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** Develop competency in techniques of pathology branches like haematology, clinical pathology, blood bank, histopathology and cytology. Acquire knowledge and understand the formation of blood cells, structure, functions and methods of estimating different parameters

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	<b>Cardiovascular system:</b> <ol style="list-style-type: none"> <li>Atherosclerosis: definition, risk factors, briefly pathogenesis &amp; morphology, clinical significance and prevention.</li> <li>Hypertension: definition, types and briefly pathogenesis and effects of hypertension.</li> <li>Aneurysms: definition, classification, pathology and complications.</li> <li>Pathophysiology of heart failure</li> <li>Cardiac hypertrophy: causes, pathophysiology &amp; progression to heart failure</li> <li>Ischemic heart diseases: definition, types, pathophysiology, pathology &amp; complications of various types of IHD</li> <li>Valvular heart diseases: causes, pathology &amp; complication. Complications of artificial valves</li> <li>Cardiomyopathy: definition, types, causes and significance.</li> <li>Pericardial effusion: causes, effects and diagnosis</li> <li>Congenital heart diseases: basic defect and effects of important types of congenital heart diseases.</li> </ol>	<b>12</b>
<b>UNIT-II</b>	<b>Haematology</b>	<b>14</b>

	<ul style="list-style-type: none"> <li>a) Anemia: definition, morphological types and diagnosis of anemia, brief concept about hemolytic anemia and polycythemia.</li> <li>b) Leukocyte disorders: leukemia, leukocytosis, agranulocytosis etc.</li> <li>c) Bleeding disorders: definition, classification, causes &amp; effects of important types of bleeding disorders, various laboratory tests used to diagnose bleeding disorders.</li> </ul>	
<b>UNIT-III</b>	<b>Respiratory system:</b> <ul style="list-style-type: none"> <li>a) Chronic obstructive airway diseases: definition and types, causes, pathology and complications of each type of COPD</li> <li>b) Concept about obstructive versus restrictive pulmonary disease</li> <li>c) Pneumoconiosis: definition, types, pathology and effects</li> <li>d) Pulmonary congestion and edema</li> <li>e) Pleural effusion: causes, effects and diagnosis</li> </ul>	<b>12</b>
<b>UNIT-IV</b>	<b>Renal system:</b> <ul style="list-style-type: none"> <li>a) Clinical manifestations of renal diseases, causes, mechanism, effects and laboratory diagnosis of ARF &amp; CRF, glomerulonephritis and pyelonephritis.</li> <li>b) End stage renal disease: definition, causes, effects and role of dialysis and renal transplantation in its management</li> <li>c) Brief concept about obstructive uropathy</li> </ul>	<b>12</b>

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOT-1204. 1	Recognises the need to read a whole pathology report, including comments, when ascertaining the significance of the result.
BOT-1204. 2	Demonstrates understanding of infection control and application in clinical practice, including measures available for preventing the transmission of infection (hand hygiene, 'bare below elbows', aseptic techniques, use of personal protective equipment).
BOT-1204. 3	Demonstrates understanding of legal and practical framework in handling human tissue and embryos.
BOT-1204. 4	Understands the importance of sample labelling and how incorrect labelling may contribute to diagnostic errors.

**Suggested Readings:**

1. Robbins and Cotran Review of Pathology, 5th Edition by Edward C. Klatt & Vinay Kumar
2. Crash Course Pathology, 5th Edition by Olivia Mckinney & Isabel Woodman & Hizbullah Shaikh & Shreelata T Datta & Philip Xiu
3. Pathology Illustrated, 8th Edition by Fiona Roberts & Elaine MacDuff

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1 Marks each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consist of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: BIOCHEMISTRY**

**SUBJECT CODE: BOT-1205**

**SEMESTER: 2**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
		4	2

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** In the present scenario study of Biochemistry is highly relevant, biochemistry students can aspire for bigger roles in industry as well as academia. Some of its scope in medical sciences and other fields.

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	<i>Renal Function Test:</i> Urea, Creatinine, Uric Acid, Glucose <i>Urine Analysis:</i> Composition, Colour, Volume, pH, Specific Gravity, Turbidity	
<b>UNIT-II</b>	<i>Liver Function Test:</i> SGOT, SGPT, Bilirubin, Albumin, Globulin & Alkaline Phosphatase <i>Carbohydrates:</i> Fasting, Random, GTT <i>Lipid Profile:</i> Cholesterol, Triglycerides, HDL, LDL, VLDL	
<b>UNIT-III</b>	<i>General description &amp; uses of common Laboratory apparatus:</i> Pipettes- Burettes, Beakers, Petri dishes, Depression plates, Flasks, Funnels Bottles, Measuring cylinders, Porcelain dish, Test tubes, Centrifuge tubes,	
<b>UNIT-IV</b>	<i>Working &amp; uses of:</i> Spectrophotometer, Water bath, Centrifuges, Analytical Balances, pH meter, Colorimeter.	

### Course Outcomes:

On successful completion of this course, the learner will be able to

BOT-1205. 1	Understand biochemistry at the atomic level, draw molecules and reaction mechanisms perfectly.
BOT-1205. 2	Understand in detail about amino acid structures, types of amino acids, classifications, structure of proteins and types of proteins.
BOT-1205. 3	Learn the molecular structures of 20 amino acids, differentiating essential and non-essential amino acids, biologically important modified amino acids and their functions.
BOT-1205. 4	Learn how amino acids and proteins are metabolized, emphasizing the role of few intermediates of their metabolism, monitoring the deficiency and abundance disorders of amino acid metabolisms and the role of enzymes in the regulation of the pathways

### 3<sup>RD</sup> SEMESTER

**SUBJECT TITLE: MICROBIOLOGY**

**SUBJECT CODE: BOTAT-2301**

**SEMESTER: 3**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
4	1		5

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** Microbiology: Microbiology is the fundamental course to learn about the evolution of the microorganisms and their relation shop with the ecosystem. The course helps students learn about various agents of diseases caused by a microorganism.

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	<ul style="list-style-type: none"> <li>• <b>Origin and Evolution of Microbiology</b></li> <li>• Introduction, History &amp; scope of Microbiology</li> <li>• General characteristics of Microorganisms: Bacteria, viruses, fungi.</li> </ul>	<b>7</b>
<b>UNIT-II</b>	<ul style="list-style-type: none"> <li>• <b>Study of Common Lab Instruments</b></li> <li>• Microscope: Types, principles &amp; uses</li> <li>• Autoclave, Hot air oven, Incubator, Laminar air flow, Colony counter: Principles &amp; uses</li> </ul>	<b>6</b>
<b>UNIT-III</b>	<ul style="list-style-type: none"> <li>• <b>Morphology of Bacteria &amp; Viruses</b></li> <li>• <i>Bacterial anatomy:</i> Cell wall, Cell membrane, Capsule, Flagella, Nucleoid, Bacterial Spore.</li> <li>• Structure of viruses, Concepts of replication &amp; cultivation</li> <li>• Study of bacteria: Preparation of Stains, various Staining techniques (Simple staining, Gram staining, Acid-fast staining, Negative staining &amp; Albert staining).</li> </ul>	<b>6</b>
<b>UNIT-IV</b>	<ul style="list-style-type: none"> <li>• <b>Growth &amp; Nutrition of bacteria:</b></li> <li>• Culture media and Culture methods</li> <li>• <i>Bacterial Growth:</i> Growth Curve, Generation Time, Environmental factors affecting growth.</li> <li>• Bacterial nutrition: Nutritional groups, Common Nutritional requirements</li> </ul>	<b>6</b>
<b>UNIT-V</b>	<ul style="list-style-type: none"> <li>• <b>Control of Microbial Growth</b></li> <li>• Sterilization and disinfection</li> </ul>	<b>5</b>

UNIT-VI	<ul style="list-style-type: none"> <li>• <b>Immunity &amp; Infection</b></li> <li>• <i>Immunity</i>: Types of immunity, Antigens &amp; Antibodies, Prophylactic Immunization</li> <li>• <i>Infection</i>: Types, Various routes &amp; modes of transmission, Nosocomial Infections</li> </ul>	7
UNIT-VII	<ul style="list-style-type: none"> <li>• <b>Biomedical Waste &amp; Management</b></li> <li>• Waste categories, Waste treatment &amp; disposal</li> </ul>	5

### Course Outcomes:

On successful completion of this course, the learner will be able to

BOTAT-2301. 1	Demonstrate theory and practical skills in microscopy and their handling techniques and staining procedures
BOTAT-2301. 2	Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes and also Understand the structural similarities and differences among various physiological groups of bacteria/archaea
BOTAT-2301. 3	Know various Culture media and their applications and also understand various physical and chemical means of sterilization
BOTAT-2301. 4	Master aseptic techniques and be able to perform routine culture handling tasks safely and effectively

### Suggested Readings:

1. Microbiology: An Introduction, 13th Edition.
2. Clinical Microbiology Made Ridiculously Simple, 6th Edition.
3. Prescott's Microbiology, 10th Edition.
4. Jawetz Melnick & Adelbergs Medical Microbiology, 27th Edition

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1 Marks each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consist of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice



**SUBJECT TITLE: SOCIOLOGY**

**SUBJECT CODE: BOTAT-2302**

**SEMESTER: 3**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
3	1		4

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** The objective of Subject is to create the understanding of community and social problems.

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	Community-Rural community: meaning and features. Health hazards of rural communities. Health hazards of tribal communities	<b>10</b>
<b>UNIT-II</b>	Urban community: meaning and features. Health hazards of urban communities.	<b>6</b>
<b>UNIT-III</b>	Social problems of disabled (Consequences of the following social problems in relation to sickness	<b>8</b>
<b>UNIT-IV</b>	remedies to prevent these problems):Population explosion	<b>6</b>
<b>UNIT-V</b>	Poverty and unemployment, Beggary, Juvenile delinquency, Prostitution, Alcoholism, Problems of women in employment.	<b>8</b>

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-2302. 1	Explain the sociological perspective , broadly defined use sociological theory to explain social problems and issues
BOTAT-2302. 2	Demonstrate the ability to interpret locate Evaluate, generate and use sociologically relevant data to test hypothesis and draw evidences based conclusions
BOTAT-2302. 3	Integrate sociological theory research and data in order to assess various explanations of social phenomena and to assess social policy

BOTAT-2302. 4	To train students to understand and to interpret objectively the role of social processes
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**Suggested Readings:**

1. A Textbook of Sociology by Neelam Kumari
2. Handbook of Medical Sociology for Nursing, Physiotherapy and Paramedical Student by Malhotra Varun

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1 Marks each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consist of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: PHARMACOLOGY**

**SUBJECT CODE: BOTAT 2303**

**SEMESTER: 3**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
3	1		4

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** Pharmacology is the science which involves all aspects of the action of drugs on living system. It is the study of the therapeutic value and/or potential toxicity of chemical agents on biological systems. It targets every aspect of the mechanisms for the chemical actions of both traditional and novel therapeutic agents.

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	<b>Autonomic Nerves System</b> List of drugs acting on ANS including dose, route of administration, indications, contra indications and adverse effects.	<b>10</b>
<b>UNIT-II</b>	<b>Cardiovascular Drugs</b> Mode of action, side effects and therapeutic uses of the following drugs:	<b>10</b>

	Anti-hypertensives Anti-arrhythmic drugs. Cardiac glycosides Sympathetic and non-sympathetic inotropic agents. Coronary vasodilators <i>Drugs used in haemostasis: anticoagulants thrombolytics and anti-thrombolytics.</i> Drugs used in the treatment of shock.	
<b>UNIT-III</b>	<b>Anaesthetic agents</b> Definition of general and local anaesthetics Classification of general anaesthetics. Intravenous general anaesthetic agents. Local anaesthetics: classification, mechanism of action, duration of action and methods to prolong the duration of action, preparation, dose and routes of administration	<b>8</b>
<b>UNIT-IV</b>	<b>Analgesics</b> Definition and classification. Routes of administration, dose, frequency of administration, side effects and management of non-opioid and opioid analgesics.	<b>6</b>
<b>UNIT-V</b>	<b>Antihistamines and Antiemetic</b> Classification, mechanism of action, adverse effects, preparations, dose and routes and administration.	<b>6</b>
<b>UNIT-VI</b>	<b>CNS Stimulants &amp; Depressants</b> Alcohol Sedatives, hypnotics and narcotics. CNS stimulants. Neuromuscular blocking agents and muscle relaxants	<b>6</b>

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-2303. 1	To study fundamentals of pharmaceutical analysis and pharmacopoeia.
BOTAT-2303. 2	Understand basic concepts involved in errors and to know the sources of impurities and methods to determine the impurities.
BOTAT-2303. 3	Understand the chemistry of drugs with respect to their pharmacological activity
BOTAT-2303. 4	Know the metabolism, adverse effects and therapeutic value of drugs

**Suggested Readings:**

1. Pharmacology: Lippincott's Illustrated Reviews.
2. USMLE Road Map - Pharmacology.
3. Katzung's Pharmacology: Examination and Board Review.
4. Kaplan Lecture Notes: Pharmacology.
5. Essential's of medical Pharmacology by K D Tripathy

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1 Marks each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consists of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: INDIAN CONSTITUTION**

**SUBJECT CODE: BOTAT-2304**

**SEMESTER: 3**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
3	1		4

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** The course will develop understanding of the concepts related to constitution law of India

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	Meaning of the term 'Constitution Making of the Indian Constitution 1946-1950. The democratic institutions created by the constitution, Bicameral system of Legislature at the Centre and in the States.	<b>10</b>
<b>UNIT-II</b>	Fundamental rights and duties their content and significance. Directive principles of States, policies the need to balance fundamental rights with directive principles.	<b>10</b>

<b>UNIT-III</b>	Special rights created in the Constitution for dalits, backwards, women and children and the religious and linguistic minorities. Doctrine of Separation of Powers, legislative, executive and judicial and their functioning in India.	<b>12</b>
<b>UNIT-IV</b>	The Election Commission and State Public Service commissions. Method of amending the Constitution. Enforcing rights through writs. Constitution and sustainable development in India	<b>10</b>

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-2304. 1	Understand the meaning and importance of constitution
BOTAT-2304. 2	Explain about making of Indian constitution – Contribution of constituent assembly on it
BOTAT-2304. 3	Describe the salient (outstanding) features of Indian constitution
BOTAT-2304. 4	Describe the importance of preamble of the Indian constitution and its significance

**Suggested Readings:**

1. MP.JAIN:Indian constitution law,2018
2. D.D Basu: Introduction of the constitution of india.

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1Marks each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consists of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: PHARMACOLOGY (Practical)**

**SUBJECT CODE: BOTAT 2305**

**SEMESTER: 3**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
		4	2

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** Pharmacology is the science which involves all aspects of the action of drugs on living system. It is the study of the therapeutic value and/or potential toxicity of chemical agents on biological systems. It targets every aspect of the mechanisms for the chemical actions of both traditional and novel therapeutic agents.

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	<ul style="list-style-type: none"> <li>Demonstration of drugs acting on ANS including dose, route of administration, indications, contra indications and adverse effects.</li> </ul>	
<b>UNIT-II</b>	<ul style="list-style-type: none"> <li>Classification of general anaesthetics.</li> <li>Intravenous general anaesthetic agents</li> </ul>	
<b>UNIT-III</b>	<ul style="list-style-type: none"> <li>Local anaesthetics: classification, mechanism of action, duration of action and methods to prolong the duration of action, preparation, dose and routes of administration.</li> <li>Alcohol</li> <li>Sedatives, hypnotics and narcotics</li> </ul>	
<b>UNIT-IV</b>	<ul style="list-style-type: none"> <li>CNS stimulants.</li> <li>Neuromuscular blocking agents and muscle relaxants</li> </ul>	

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-2305. 1	To study fundamentals of pharmaceutical analysis and pharmacopoeia.
BOTAT-2305. 2	Understand basic concepts involved in errors and to know the sources of impurities and methods to determine the impurities.
BOTAT-2305. 3	Understand the chemistry of drugs with respect to their pharmacological activity
BOTAT-2305. 4	Know the metabolism, adverse effects and therapeutic value of drugs

**SUBJECT TITLE: APPLIED PHYSICS AND BASIC COMPUTER**

**SUBJECT CODE: BOTAT-2306**

**SEMESTER: 3**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
3	1		4

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** Students will be able to identify and differentiate working principle, instrumentation, and applications of various bio-analytical instruments, effects of temperature, pH, metal ions on Enzyme activity & Kinetics, Demonstrate a basic understanding of computer hardware and software, demonstrate problem-solving skills, explain what a computer is, how it processes data, and its use to produce information in hospital

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	<p style="text-align: center;"><b>Applied Physics</b></p> <ul style="list-style-type: none"> <li>• Basic principle of electricity applied in OT, ICU, and CSSD.</li> <li>• Concept of static electricity, charge, potential current power, resistance AC/DC</li> <li>• Basic principles of heat, concept of temperature its measurement, way of dispersion of heat.</li> <li>• Concept of volume, specific gravity, density, concentration of solute.</li> <li>• Gas laws and their practical implications in field.</li> <li>• Compressed gases, filling ratio, principles of pressure regulator, flow of gases, fluid viscosity, laminar flow, turbulent flow.</li> </ul>	<b>6</b>
<b>UNIT-II</b>	<p style="text-align: center;"><b>Introduction to Computer</b></p> <ul style="list-style-type: none"> <li>• Computer basics, I/O devices</li> <li>• Different operating system: MSDOS</li> <li>• Basic commands</li> <li>• MD, CD, DIR, TYPE and COPY CON commands</li> <li>• Networking</li> <li>• LAN, WAN, MAN (only basic ideas)</li> <li>• Memories, RAM and ROM, Different kinds of ROM, kilobytes.</li> <li>• MB, GB their conversions</li> </ul>	<b>6</b>

<b>UNIT-III</b>	<p>Typing text in MS word</p> <ul style="list-style-type: none"> <li>• Manipulating text, Formatting the text</li> <li>• Using different font sizes, bold, italics</li> <li>• Bullets and numbering</li> <li>• Pictures, file insertion</li> <li>• Aligning the text and justify</li> <li>• Choosing paper size, adjusting margins</li> <li>• Header and footer, inserting page Nos in a document</li> </ul>	<b>6</b>
<b>UNIT-IV</b>	<p>Printing a File</p> <ul style="list-style-type: none"> <li>• Using spell check and grammar option</li> <li>• Find and replace</li> <li>• Mail merge</li> </ul> <p>Inserting tables in a document</p>	<b>4</b>
<b>UNIT-V</b>	<p>Miscellaneous</p> <ul style="list-style-type: none"> <li>• Creating table in MS, Excel</li> <li>• Cell editing</li> <li>• Drawing graphs and charts using data in excel</li> <li>• Auto formatting</li> <li>• Inserting data from other worksheets</li> <li>• Using formulas and functions</li> <li>• Manipulating data with excel</li> <li>• Using short functions to sort numbers and alphabets</li> </ul>	<b>6</b>
<b>UNIT-VI</b>	<p>Slides</p> <ul style="list-style-type: none"> <li>• Preparing new slides using MS-PowerPoint</li> <li>• Inserting slides, slide transition and animation, Using templates, Different text and font sizes</li> </ul>	<b>3</b>
<b>UNIT-VII</b>	<p>Slides with Special Features</p> <ul style="list-style-type: none"> <li>• Slides with sounds</li> <li>• Inserting clip arts, pictures, tables and graphs</li> <li>• Presentation using wizards</li> </ul>	<b>8</b>
<b>UNIT-VIII</b>	<p>Introduction to Internet</p> <ul style="list-style-type: none"> <li>• Introduction to Internet</li> <li>• Using search engine – Google search</li> <li>• Exploring the net using Internet Explorer and Navigator</li> <li>• Uploading and download of files and images</li> <li>• E-mail ID creation – Sending messages</li> <li>• Attaching files in E-mail</li> <li>• Writing small programs using functions and sub-functions.</li> </ul> <p>Introduction to “C” language – Different variables, declaration, usage</p>	<b>8</b>

**Course Outcomes:**

On successful completion of this course, the learner will be able to



BOTAT-2306. 1	Learner will understand basic theorems and concepts of Basic Physics & Basic Computer. And its applications in OT
BOTAT-2306. 2	To understand basic theories related with properties of matter and its application to determine values of various physical quantities associated with matter.
BOTAT-2306. 3	To develop basic skills to perform experiments to understand the concept from existing theories of Basic physics
BOTAT-2306. 4	Understand how to use computer operated Equipments in OT

**Suggested Readings:**

1. Donald Knuth - Computer Fundamentals
2. Ellen Ullman - Close to the Machine.
3. Ellis Horowitz - Fundamentals of Computer Algorithms.
4. Concepts Of Physics By HC Verma
5. The Feynman Lectures on Physics by Richard P. Feynman

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1Mark each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consists of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

## 4<sup>TH</sup> SEMESTER

**SUBJECT TITLE: APPLIED PHARMACOLOGY- II**

**SUBJECT CODE: BOTAT-2401**

**SEMESTER: 4**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
3	1		4

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** Pharmacology is the science which involves all aspects of the action of drugs on living system. It is the study of the therapeutic value and/or potential toxicity of chemical agents on biological systems. It targets every aspect of the mechanisms for the chemical actions of both traditional and novel therapeutic agents.

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	<b>Pharmacotherapy of Respiratory Disorders</b> Pharmacotherapy of bronchial asthma. Pharmacotherapy of cough. Mucokinetic and mucolytic agents	<b>10</b>
<b>UNIT-II</b>	<b>Corticosteroids</b> Classification, mechanism of action, adverse effects and complications, preparation, dose and routes of administration.	<b>10</b>
<b>UNIT-III</b>	<b>Diuretics</b> Mode of action of diuretics Adverse effects. Preparations, dose and routes of administration	<b>10</b>
<b>UNIT-IV</b>	<b>Chemotherapy of infections</b> Definition. Classification and mechanism of action of antimicrobial agents. Combination of antimicrobial agents. Chemoprophylaxis. Classification, spectrum of activity, dose, routes of administration and adverse effects of penicillin, cephalosporins, aminoglycosides, tetracyclines, chloramphenicol, antitubercular drugs	<b>10</b>
<b>UNIT-V</b>	<b>Miscellaneous</b> IV fluids- various preparations and their usage.	<b>5</b>

	Electrolyte supplements. Immunosuppressive agents. New drugs included in perfusion technology. Drugs used in metabolic and electrolyte imbalance	
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### Course Outcomes:

On successful completion of this course, the learner will be able to

BOTAT-2401. 1	To study fundamentals of pharmaceutical analysis and pharmacopoeia.
BOTAT-2401. 2	Understand basic concepts involved in errors and to know the sources of impurities and methods to determine the impurities.
BOTAT-2401. 3	Understand the chemistry of drugs with respect to their pharmacological activity
BOTAT-2401. 4	Know the metabolism, adverse effects and therapeutic value of drugs

### Suggested Readings:

1. Pharmacology: Lippincott's Illustrated Reviews.
2. USMLE Road Map - Pharmacology.
3. Katzung's Pharmacology: Examination and Board Review.
4. Kaplan Lecture Notes: Pharmacology.
5. Essential's of medical Pharmacology by K D Tripathy

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1 Marks each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consists of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: BASIC ANESTHETIC TECHNIQUES & COMPLICATIONS**

**SUBJECT CODE: BOTAT-2402**

**SEMESTER: 4**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
4	1		5

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** Provide safe and quality patient care by incorporating technical and critical thinking and clinical reasoning in assisting the anesthesia provider with patients of all types, ages, and physical conditions for a variety of surgical and medical related procedures. Assist the anesthesia provider in a variety of current anesthesia techniques and use of equipment for providing anesthesia.

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	<ul style="list-style-type: none"> <li>Study the indications, instruments, technique, precautions &amp; complications of various method of anesthesia &amp; the anaesthetic agents in details</li> </ul>	<b>5</b>
<b>UNIT-II</b>	<ul style="list-style-type: none"> <li>General Anaesthesia</li> <li>Short review about stages of anaesthesia</li> <li>Old G/A Sp. Ether Anaesthesia (old anaesthesia technique)</li> <li>Modern Anaesthesia Balanced G/A</li> <li>Induced hypotensive GA</li> <li>Induced Hypothermic GA</li> </ul>	<b>12</b>
<b>UNIT-III</b>	<ul style="list-style-type: none"> <li>Local anesthesia</li> <li>Regional anesthesia</li> </ul>	<b>8</b>
<b>UNIT-IV</b>	<ul style="list-style-type: none"> <li>Bier's block</li> <li>N. blocks</li> <li>Field block</li> <li>Topical</li> <li>Surface</li> <li>Tumicent Anaesthesia (Liposuction)</li> <li>Hypotensive indural</li> <li>Hypothermic indural</li> </ul>	<b>10</b>

<b>UNIT-V</b>	<ul style="list-style-type: none"> <li>• General principles- Pharmacological classification of drugs, route of administration, precautions in administration, drug toxicity, adverse drug reaction.</li> <li>• Inhalational agents: General principles and individual agents.</li> <li>• Pre-anaesthetic medication.</li> <li>• Gases used in Anaesthesia- Sedatives and hypnotics, barbiturates.</li> <li>• Intravenous Anaesthetics.</li> <li>• Muscle relaxants.</li> <li>• Difficult Airway, LMA,</li> <li>• Post Operative care after anesthesia.</li> <li>• Complication of various types of anesthesia</li> <li>• Tracheal Intubation – Oral / Nasotracheal /LMA</li> <li>• Malignant Hyperpyrexia &amp; its management resuscitation.</li> </ul>	<b>15</b>
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**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-2402. 1	To knowledge about general Anaesthesia, indication and complications during use.
BOTAT-2402. 2	To know about management of patients throughout General Anaesthesia.
BOTAT-2402. 3	To knowledge about general Anesthesia, indication and complications during use.
BOTAT-2402. 4	To know about management of patients throughout General Anaesthesia.

**Suggested Readings:**

1. Essentials of Anaesthetic Equipment, Baha Al-Shaikh Simon Stacey, 4th Edition
2. Principles of Anaesthesia Equipment, Areti Yasodananda K, 1st Edition
3. Anaesthetic Equipment Made Easy, S. Ahanatha Pillai, 1st Edition

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1Marks each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consists of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: MEDICINES RELEVANT TO OPERATION THEATRE & ANESTHESIA TECHNOLOGY**

**SUBJECT CODE: BOTAT-2403**

**SEMESTER: 4**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
3	1		4

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** The aim of the Medicine Relevant to Operation Theatre and Anesthesia Technology is to give medical knowledge includes the synthesis of pathophysiology, patient presentation, differential diagnosis, patient management, surgical principles, health promotion, and disease prevention. Application of this knowledge help student in patient care in their area of practice. In addition, students are expected to demonstrate an investigative and analytic thinking approach to clinical situations.

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	<ul style="list-style-type: none"> <li>• Diabetes mellitus</li> <li>• Hypertension</li> <li>• Ischaemic heart disease</li> </ul>	<b>10</b>
<b>UNIT-II</b>	<ul style="list-style-type: none"> <li>• Obesity</li> <li>• Elderly patient</li> <li>• Pregnancy</li> </ul>	<b>12</b>
<b>UNIT-III</b>	<ul style="list-style-type: none"> <li>• Shock</li> <li>• COPD</li> <li>• Chronic renal failure</li> </ul>	<b>8</b>
<b>UNIT-IV</b>	<ul style="list-style-type: none"> <li>• Chronic liver disease/failur</li> <li>• Anaemia</li> <li>• Pediatric patient, infant/neonate</li> </ul>	<b>10</b>
<b>UNIT-V</b>	<ul style="list-style-type: none"> <li>• Epilepsy</li> <li>• CVA</li> </ul>	<b>15</b>

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-2403. 1	To understand about improvements of standard of living and in medical treatment and specific measures to reduce the incidence of disease.
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BOTAT-2403. 2	Students also gain knowledge about causes, signs & symptoms, investigations, and treatment
BOTAT-2403. 3	Demonstrate knowledge of the various causes (genetic, developmental, metabolic, toxic, microbiologic, autoimmune, neoplastic, degenerative, and traumatic) of maladies and the ways in which they operate on the body (pathogenesis).
BOTAT-2403. 4	Demonstrate knowledge of the altered structure and function (pathology and pathophysiology) of the body and its major organ systems that are seen in various diseases and conditions.

**Suggested Readings:**

1. The House of God by Samuel Shem
2. Harrison's Principles of Internal Medicine edited by J. Larry Jameson, MD, PhD, Anthony S. Fauci, MD, Dennis L. Kasper, MD, et al
3. Being Mortal: Medicine and What Matters in the End by Atul Gawande
4. The Merck Manual of Diagnosis and Therapy edited by Robert S. Porter, MD

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1Mark each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consists of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: BIOSTATISTICS & COMPUTER APPLICATIONS**

**SUBJECT CODE: BOTAT-2404**

**SEMESTER: 4**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
3	1		4

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course objective:** This course is designed to make a student to Describe various application area of biostatistics Distinguish different types of data and sampling techniques. Summarize, organize and display quantitative data Calculate and interpret measures of central tendency and variability in statistical data and to provide basic knowledge of computer application and parts such as hardware software MS Word MS Office MS Excell etc

<b>Sr. No.</b>	<b>Contents</b>	<b>Contact Hours</b>
<b>UNIT-I</b>	1. Definition & Calculations of mean (by both direct and shortcut method and step deviation method) mode and Median (individual observation, discrete observation and continuous observation). 2. Probability 3. Tabulation of Data Graphical Presentation of Frequency Distribution 4. Line frequency	<b>10</b>
<b>UNIT-II</b>	1. Histogram (for equal and unequal class interval, inclusive data and for Midvale) 2. Frequency polygon 3. Frequency curve 4. Cumulative frequency curve	<b>12</b>
<b>UNIT-III</b>	1. Computer: General Introduction, History of computer development and respective generation: Need to use computers, Applications in Laboratory and in general.	<b>8</b>
<b>UNIT-IV</b>	1. Input and Output Device 2. Memory 3. Personal Computer 4. Data Representation and Number System 5. Software	<b>10</b>
<b>UNIT-V</b>	1. Data Communication, Internet, Cyber etiquette 2. Microsoft Office: PowerPoint Presentations, Microsoft word, excel sheet 3. Abbreviation related to Computer	<b>15</b>

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-2404. 1	<i>Understanding the concept of input and output devices of Computers and how it works and recognize the basic terminology used in computer programming</i>
BOTAT-2404. 2	<i>Use different data structures and create / manipulate basic data files and developing applications for real world problems</i>
BOTAT-2404. 3	<i>Understand the basic principles of probability, descriptive statistics, and data analysis.</i>



BOTAT-2404. 4	Explore the basic principles of statistics and some of its common uses.
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**Suggested Readings:**

1. Absolute Beginners Guide To Computing By Wallace Wang
2. Computer Basics Absolute Beginner's Guide By Michael Miller.
3. Computers For Seniors For Dummies By Nancy C.
4. Computers Made Easy: From Dummy To Geek By James Bernstein

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1 Marks each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consist of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: APPLIED PHARMACOLOGY- II (Practical)**

**SUBJECT CODE: BOTAT-2405**

**SEMESTER: 4**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
		4	2

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** Pharmacology is the science which involves all aspects of the action of drugs on living system. It is the study of the therapeutic value and/or potential toxicity of chemical agents on biological systems. It targets every aspect of the mechanisms for the chemical actions of both traditional and novel therapeutic agents.

Sr. No.	Contents	Contact Hours
	<ul style="list-style-type: none"> <li>• Preparations, dose and routes of administration.</li> <li>• Classification and mechanism of action of antimicrobial agents.</li> <li>• Combination of antimicrobial agents.</li> <li>• Chemoprophylaxis.</li> <li>• IV fluids- various preparations and their usage.</li> <li>• Electrolyte supplements.</li> <li>• Immunosuppressive agents.</li> </ul>	

	<ul style="list-style-type: none"> <li>• New drugs included in perfusion technology.</li> <li>• Drugs used in metabolic and electrolyte imbalance.</li> </ul>	
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**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-2405. 1	To study fundamentals of pharmaceutical analysis and pharmacopoeia.
BOTAT-2405. 2	Understand basic concepts involved in errors and to know the sources of impurities and methods to determine the impurities.
BOTAT-2405. 3	Understand the chemistry of drugs with respect to their pharmacological activity
BOTAT-2405. 4	Know the metabolism, adverse effects and therapeutic value of drugs

**SUBJECT TITLE: BASIC ANESTHETIC TECHNIQUES & COMPLICATIONS**  
**(Practical)**

**SUBJECT CODE: BOTAT-2406**

**SEMESTER: 4**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
		4	2

**Internal Assessment: 40**  
**End Term Exam: 60**  
**Duration of Exam: 3 Hrs**

**Course Objective:** Provide safe and quality patient care by incorporating technical and critical thinking and clinical reasoning in assisting the anesthesia provider with patients of all types, ages, and physical conditions for a variety of surgical and medical related procedures. Assist the anesthesia provider in a variety of current anesthesia techniques and use of equipment for providing anesthesia.

Sr. No.	Contents	Contact Hours
	<ul style="list-style-type: none"> <li>• Local anesthesia</li> <li>• Regional anesthesia</li> <li>• Bier's block</li> <li>• N. blocks</li> <li>• Field block</li> </ul>	

	<ul style="list-style-type: none"> <li>• Topical</li> <li>• Surface</li> <li>• Tumicent Anaesthesia (Liposuction)</li> <li>• Hypotensive indural</li> <li>• Hypothermic indural</li> <li>• Difficult Airway, LMA,</li> <li>• Post Operative care after anesthesia.</li> <li>• Complication of various types of anesthesia</li> <li>• Tracheal Intubation – Oral / Nasotracheal /LMA</li> </ul>	
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**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-2406. 1	To knowledge about general anaesthesia, indication and complications during use.
BOTAT-2406. 2	To know about management of patients throughout General Anaesthesia.
BOTAT-2406. 3	To knowledge about general anaesthesia, indication and complications during.
BOTAT-2406. 4	To know about management of patients throughout General Anaesthesia. use

**SUBJECT TITLE: MEDICINES RELEVANT TO OPERATION THEATRE & ANESTHESIA TECHNOLOGY (Practical)**

**SUBJECT CODE: BOTAT-2407**

**SEMESTER: 4**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
		4	2

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** The aim of the Medicine Relevant to Operation Theatre and Anesthesia Technology is to give medical knowledge includes the synthesis of pathophysiology, patient presentation, differential diagnosis, patient management, surgical principles, health promotion, and disease prevention. Application of this knowledge help student in patient care in their area of practice. In addition, students are expected to demonstrate an investigative and analytic thinking approach to clinical situations.

Sr. No.	Contents	Contact Hours
	<b>Description of the following diseases &amp; their management during pre &amp; post operative procedures</b> <ul style="list-style-type: none"> <li>• Diabetes mellitus</li> <li>• Hypertension</li> <li>• Ischaemic heart disease</li> <li>• Obesity</li> <li>• Elderly patient</li> <li>• Pregnancy</li> <li>• Shock</li> <li>• COPD</li> <li>• Chronic renal failure</li> <li>• Chronic liver disease/failure</li> <li>• Anaemia</li> <li>• Pediatric patient, infant/neonate</li> <li>• Epilepsy</li> <li>• CVA</li> </ul>	<b>30</b>

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-2407. 1	To understand about improvements of standard of living and in medical treatment and specific measures to reduce the incidence of disease.
BOTAT-2407. 2	Students also gain knowledge about causes, signs & symptoms, investigations, and treatment
BOTAT-2407. 3	Demonstrate knowledge of the various causes (genetic, developmental, metabolic, toxic, microbiologic, autoimmune, neoplastic, degenerative, and traumatic) of maladies and the ways in which they operate on the body (pathogenesis).
BOTAT-2407. 4	Demonstrate knowledge of the altered structure and function (pathology and pathophysiology) of the body and its major organ systems that are seen in various diseases and conditions.

**SUBJECT TITLE: BIOSTATISTICS & COMPUTER APPLICATIONS\_(Practical)**

**SUBJECT CODE: BOTAT-2408**

**SEMESTER: 4**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
		4	2

**Internal Assessment: 40**

**End Term Exam: 60**  
**Duration of Exam: 3 Hrs**

**Course Objectives:** This course is designed to make a student to :Describe various application area of biostatistics Distinguish different types of data and sampling techniques. Summarize, organize and display quantitative data Calculate and interpret measures of central tendency and variability in statistical data and to provide basic knowledge of computer application and parts such as hardware software MS Word MS Office MS Excel etc

Sr. No.	Contents	Contact Hours
<b>SECTION-II</b>	<b>BIOSTATISTICS</b>  Calculations of mean (by both direct and shortcut method and step deviation method) mode and Median (individual observation, discrete observation and continuous observation. 1. Probability 2. Tabulation of Data Graphical Presentation of Frequency Distribution 3. Line frequency 4. Histogram (for equal and unequal class interval, inclusive data and for Midvale) 5. Frequency polygon 6. Frequency curve 7. Cumulative frequency curve	<b>15</b>
<b>SECTION-II</b>	<b>COMPUTER APPLICATIONS</b>  1. Input and Output Device 2. Memory 3. Personal Computer 4. Data Representation and Number System 5. Software 6. Data Communication, Internet, Cyber etiquette 7. Microsoft Office: PowerPoint Presentations, Microsoft word, excel sheet 8. Abbreviation related to Computer	<b>15</b>

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-2408. 1	<i>Understanding the concept of input and output devices of Computers and how it works and recognize the basic terminology used in computer programming</i>
BOTAT-2408. 2	<i>Use different data structures and create / manipulate basic data files and developing applications for real world problems</i>
BOTAT-2408. 3	<i>Understand the basic principles of probability, descriptive statistics, and data analysis.</i>
BOTAT-2408. 4	<i>Explore the basic principles of statistics and some of its common uses.</i>

## 5<sup>TH</sup> SEMESTER

**SUBJECT TITLE: ANESTHESIA TECHNOLOGY-I**

**SUBJECT CODE: BOTAT-3501**

**SEMESTER: 5**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
3	1		4

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** Understand the safe anesthesia techniques for various elective and emergency procedures in and outside the operation theatre Obtain knowledge about the proper functioning of various anesthetic equipments such as the work station, anesthesia monitors, syringe pumps etc. Assist the anesthesiologists efficiently during procedures in and outside the operation theatre

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	<ul style="list-style-type: none"> <li>• Pre operative preparation</li> <li>• Pre-Anaesthetic Assessment</li> <li>• History of present assessment</li> <li>• Past history with emphasis on previous illness and surgery</li> <li>• Personal history – Smoking, alcohol</li> <li>• Physical examination – General and systemic</li> <li>• Informed consent</li> </ul>	<b>6</b>
<b>UNIT-II</b>	<ul style="list-style-type: none"> <li>• Premedication: Aims</li> <li>• Narcotics</li> <li>• Antihistaminics</li> <li>• Antacids</li> <li>• Others – NTG</li> </ul>	<b>8</b>
<b>UNIT-III</b>	<ul style="list-style-type: none"> <li>• <i>Investigations:</i> Preparations, Identification, Consent, NPO, Prosthesis</li> <li>• Lab results:</li> <li>• Biochemistry – Blood, glucose, Urea, Creatinine</li> <li>• Hematology – Hemogram, Prothrombin Time, Partial thromboplastin time, BT,CT</li> <li>• Urine- Complete urine analysis</li> <li>• ECG, Chest X-ray, ABG</li> <li>• Criteria used for accepting the case for surgery</li> </ul>	<b>8</b>

<b>UNIT-IV</b>	<ul style="list-style-type: none"> <li>Equipment Checking the machine, laryngoscopes, tubes, airways etc. suction apparatus, oxygen Cylinder, anaesthetic drugs and emergency drugs.</li> <li>Monitoring system</li> <li><i>Testing Machine:</i> Gas supply, Flow meters, O<sub>2</sub> bypass, Valves, Vaporizer</li> </ul>	<b>6</b>
<b>UNIT-V</b>	<ul style="list-style-type: none"> <li>Induction – Anaesthesia</li> <li>Endotracheal intubation, confirming the tube position and securing the tube</li> <li>Maintenance of anesthesia</li> <li>Fluid / Blood and electrolyte balance</li> <li>Reversal from anesthesia – drugs used</li> </ul>	<b>8</b>
<b>UNIT-VI</b>	<ul style="list-style-type: none"> <li><i>Intubation:</i> Choice of ETT, Choice of Laryngoscope, Techniques of intubation, Complications, Difficult intubation</li> <li>Emergency Drugs: Atropine, Epinephrine, Isoprenaline, Ephedrine, Aminophylline, Hydrocortisone, Dopamine, Norepinephrine, Dobutamine.</li> </ul>	<b>8</b>
<b>UNIT-VI</b>	<ul style="list-style-type: none"> <li><i>IV Infusion:</i> Site of cannulations, Finding a vein, Technique of venipuncture.</li> <li><i>Patient Protection:</i> eyes, ears, skin, lips, tongue, teeth, Veins, arteries, Peripheral nerves</li> </ul>	<b>8</b>

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-3501. 1	Understand the preoperative evaluation, premedication and different anaesthesia techniques, in general
BOTAT-3501. 2	Understand intraoperative fluid management and pain management
BOTAT-3501. 3	Operate the monitoring devices and record the vital signs
BOTAT-3501. 4	Explain technique of general anaesthesia and regional anaesthesia

**Suggested Readings:**

1. Essentials of Anaesthetic Equipment, Baha Al-Shaikh Simon Stacey, 4th Edition
2. Principles of Anaesthesia Equipment, Areti Yasodananda K, 1st Edition
3. Anaesthetic Equipment Made Easy, S. Ahanatha Pillai, 1st Edition

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.  
**Part A** shall consist of 12 MCQ's of 1Marks each



**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consists of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: SURGICAL PROCEDURES-I**

**SUBJECT CODE: BOTAT-3502**

**SEMESTER: 5**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
3	1		4

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** Surgery is a medical specialty that uses operative manual and instrumental techniques on a person to investigate or treat a pathological condition such as a disease or injury, to help improve bodily function, appearance, or to repair unwanted ruptured areas

Sr. No.	Contents	Contact Hours
<b>UNIT-I</b>	Preparation, nursing requirement, equipments including instruments, sutures, etc.	<b>6</b>
<b>UNIT-II</b>	Anaesthesia techniques, patient positioning & recovery	<b>8</b>
<b>UNIT-III</b>	Gynecological /obstetric surgery	<b>8</b>
<b>UNIT-IV</b>	Urologic surgery	<b>6</b>
<b>UNIT-V</b>	Orthopedic surgery	<b>8</b>
<b>UNIT-VI</b>	Neurosurgery	<b>8</b>
<b>UNIT-VI</b>	Ophthalmic surgery	<b>8</b>

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-3502. 1	Demonstrate knowledge and understanding of common surgical problems
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BOTAT-3502. 2	Demonstrate an understanding of surgical treatments, and alternatives to surgical treatment
BOTAT-3502. 3	To become familiar with various surgical procedures and know their expected outcomes and complications
BOTAT-3502. 4	Be familiar with action, dosage and use of common pharmacologic agents used in surgery (analgesics, antibiotics, anticoagulants, sedatives)

**Suggested Readings:**

1. Manipal Manual of Surgery 5Ed
2. Sabiston Textbook of Surgery International Edition.
3. Zollinger's Atlas of Surgical Operations, 11e
4. Acute Care Surgery: Imaging Essentials for Rapid Diagnosis
5. Introduction to the Operating Room

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1 Marks each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consist of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: ANAESTHESIA FOR SPECIALITY SURGERIES**

**SUBJECT CODE: BOTAT-3503**

**SEMESTER: 5**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
3	1		4

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course:** To impart basic knowledge and skills involved in dealing with handling techniques involved in dealing with anesthetic equipment in specialty surgeries as well as pre-operative, intra-operative and post postoperative patient monitoring and care. And To train students to work in conjunction with a multidisciplinary team to apply anesthesia technology to the patients in multispecialty departments multidisciplinary team to apply anesthesia technology to the patients in multispecialty departments

<b>Sr. No.</b>	<b>Contents</b>	<b>Contact Hours</b>
<b>UNIT-I</b>	<b>Neuro Anaesthesia</b> <ul style="list-style-type: none"> <li>• Glasgow coma scale</li> <li>• Premedication</li> <li>• Special investigation - CT, Angiography and MRI</li> <li>• Checklist</li> <li>• Induction of a patient</li> <li>• Reinforced Endotracheal tubes</li> <li>• Positioning in neuro surgery</li> <li>• I.C.P</li> <li>• Air embolism</li> <li>• Reversal of the patient</li> <li>• Transferring to I.C.U. / Ward</li> </ul>	<b>8</b>
<b>UNIT-II</b>	<b>Obstetric Anaesthesia</b> <ul style="list-style-type: none"> <li>• Risks for anesthesia, Precautions to be taken</li> <li>• Check list</li> <li>• Regional vs general anesthesia</li> <li>• Induction / maintenance and recovery.</li> <li>• Resuscitation of the new born, Apgar score</li> <li>• Reversal and extubation</li> <li>• Emergencies - manual removal of placenta</li> <li>• A.P.H.</li> <li>• P.P.H.</li> <li>• Ruptures uterus</li> <li>• Ectopic Pregnancy</li> </ul>	<b>8</b>
<b>UNIT-III</b>	<b>Pediatric Anaesthesia</b> <ul style="list-style-type: none"> <li>• Theatre setting</li> <li>• Check list</li> <li>• Premedication - modes</li> <li>• Induction</li> <li>• Intubation - Securing the EIT</li> <li>• Reversal &amp; extubation – Problems</li> <li>• Transferring / ICU management</li> <li>• Pain management</li> </ul>	<b>8</b>
<b>UNIT-IV</b>	<b>Anaesthesia for Trauma &amp; Shock</b> <ul style="list-style-type: none"> <li>• Resuscitation</li> <li>• Preop investigation I assessment</li> </ul>	<b>8</b>

	<ul style="list-style-type: none"> <li>• Circulatory management</li> <li>• Management of anesthesia</li> <li>• Rapid sequence induction</li> </ul>	
<b>UNIT-V</b>	<b>Thoracic Anaesthesia</b> <ul style="list-style-type: none"> <li>• Pulmonary function tests</li> <li>• bed side, Vitallograph</li> <li>• Preoperative preparation</li> <li>• Premedication</li> <li>• Check list</li> <li>• Induction</li> <li>• Intubation</li> <li>• Double lumen tubes</li> <li>• monitoring</li> <li>• Pain management</li> <li>• Extubation</li> <li>• ICU management</li> </ul>	<b>8</b>
<b>UNIT-VI</b>	<b>Cardiac Anaesthesia</b> <ul style="list-style-type: none"> <li>• NYHA classification</li> <li>• Arrhythmias, Angina, Dyspnoea</li> <li>• <i>Special investigations</i> -echo cardiography, angiography</li> <li>• Premedication</li> <li>• Setting up of monitoring system</li> <li>• Monitoring - invasive and non - invasive</li> <li>• Getting ready for the case</li> <li>• Induction of cardiac patient, precautions to be taken</li> <li>• Cardiopulmonary bypass</li> <li>• Weaning of CPB</li> <li>• Transferring the patient to ICU.</li> <li>• I.C.U management.</li> <li>• Chest tube management</li> </ul>	<b>8</b>
<b>UNIT-VI</b>	<b>ENT Anaesthesia</b> <ul style="list-style-type: none"> <li>• Anaesthesia for adenotonsillectomy</li> <li>• Anaesthesia for mastoidectomy</li> <li>• Bronchoscopy and oesophagoscopy</li> </ul>	<b>6</b>

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-3503. 1	Know anaesthetic implications in different medical conditions
BOTAT-3503. 2	Assist in anaesthetic management of different surgical procedures
BOTAT-3503. 3	Understand the anaesthetic implications in Obstetrics Gynecological and Pediatric Surgeries
BOTAT-3503. 4	Learn special considerations and postoperative care in thoracic surgeries

**Suggested Readings:**

1. Obstetric and Gynecologic Anesthesia 1st Edition
2. Essentials of Neurosurgical Anesthesia & Critical Care
3. Principles and Practice of Anesthesia for Thoracic Surgery by Peter Slinger
4. Handbook of Pediatric Anesthesia (ANESTHESIA/PAIN MEDICINE) by McGraw-Hill Education / Medical;1st edition
5. Kaplan's Cardiac Anesthesia: In Cardiac and Noncardiac Surgery 7th Edition by Elsevier; 7th edition

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1Mark each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consists of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: BASIC INTENSIVE CARE & RESUSCITATION**

**SUBJECT CODE: BOTAT-3504**

**SEMESTER: 5**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
3	1		4

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course:** To interpret blood gases and assess acid-base status interpret an electrocardiogram and recognize important life-threatening findings Demonstrate awareness of the ethical principles pertinent to critically ill patients especially end of life care, and issues around withdrawing and withholding life support. Provide basic ventilator orders for most patients

Sr. No.	Contents	Contact Hours

<b>UNIT-I</b>	<b>Monitoring and Diagnostic Procedures in I.C.U.</b> <ul style="list-style-type: none"> <li>• Central Venous access</li> <li>• Invasive hemodynamic monitoring</li> <li>• ECG: monitoring, different types of E.C.G, recording of E.C.G. of the patient</li> <li>• Defibrillators: Types, Principles and mechanism of the defibrillator Uses and safety precaution during use.</li> <li>• Ventilator: Care and maintenance of ventilators, suction machine, monitoring, Sterilization and disinfection of ventilators.</li> </ul>	<b>8</b>
<b>UNIT-II</b>	<b>General Care of Patient in I.C.U.</b> <ul style="list-style-type: none"> <li>• Care of unconscious adult and pediatric patients.</li> <li>• Feeding Ryle's tube insertion</li> <li>• Suctioning and posturing of semiconscious and unconscious patients</li> <li>• Care of mechanically ventilated patient</li> <li>• Management of: <ul style="list-style-type: none"> <li>○ Asepsis</li> <li>○ Acute poisoning</li> <li>○ Critically ill patient</li> <li>○ Disaster management</li> <li>○ Nutrition</li> <li>○ Renal Failure &amp; Liver Failure</li> <li>○ Head Injury</li> <li>○ Management of tetanus patients</li> <li>○ Tracheostomy</li> </ul> </li> <li>• Vascular lines - arterial, venous line</li> <li>• Radiography</li> <li>• Physiotherapy - chest physiotherapy</li> </ul>	<b>8</b>
<b>UNIT-III</b>	<b>Fluid Balance and Parenteral Nutrition</b>	<b>8</b>
<b>UNIT-IV</b>	<b>Infectious Diseases in I.C.U.</b> <ul style="list-style-type: none"> <li>• Antibiotics in I.C.D.</li> <li>• Oxygen therapy</li> <li>• Mechanical ventilation</li> </ul>	<b>8</b>
<b>UNIT-V</b>	<b>Acid - Base Disorders</b>	<b>8</b>

<b>UNIT-VI</b>	<b>Cardiovascular Failure</b> <ul style="list-style-type: none"> <li>• Inotropic support</li> <li>• Vasodilator drugs</li> <li>• Cardio pulmonary Resuscitation (CPR) -Basic life support, Advance life support- Mouth to Mouth, Mouth to E.T. tube, Ambu bag, Different airways</li> </ul>	<b>8</b>
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**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-3504. 1	Perform resuscitation and management of the acutely ill adult and pediatric patients
BOTAT-3504. 2	Understand functions and safe application of medical devices in the area.
BOTAT-3504. 3	Perform basic life support (BLS) and advanced cardiac life support (ACLS)
BOTAT-3504. 4	Independently evaluate and apply hygienic and aseptic technique for safe care in the intensive care unit/post-operative unit.

**Suggested Readings:**

1. Marino's The ICU Book: Print + eBook with Updates (ICU Book (Marino))
2. Textbook of Neonatal Resuscitation (NRP)
3. Critical Care Nursing Made Incredibly Easy (Incredibly Easy Series)
4. Adult CCRN Exam (With 3 Practice Tests (Barron's Test Prep))
5. Advanced Cardiovascular Life Support (ACLS) Provider Manual

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1Marks each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consists of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: ANESTHESIA TECHNOLOGY-I (Practical)**

**SUBJECT CODE: BOTAT-3505**

**SEMESTER: 5**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
		2	1

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** Understand the safe anesthesia techniques for various elective and emergency procedures in and outside the operation theatre Obtain knowledge about the proper functioning of various anesthetic equipments such as the work station, anesthesia monitors, syringe pumps etc. Assist the anesthesiologists efficiently during procedures in and outside the operation theatre.

Sr. No.	Contents	Contact Hours
	<ul style="list-style-type: none"> <li>Physical examination – General and systemic</li> <li>Informed consent</li> <li><i>Investigations:</i> Preparations, Identification, Consent, NPO, Prosthesis</li> <li>Lab results:</li> <li>Biochemistry – Blood, glucose, Urea, Creatinine</li> <li>Hematology – Hemogram, Prothrombin Time, Partial thromboplastin time, BT,CT</li> <li>Urine- Complete urine analysis</li> <li>ECG, Chest X-ray, ABG</li> <li>Equipment Checking the machine, laryngoscopes, tubes, airways etc. suction apparatus, oxygen Cylinder, anaesthetic drugs and emergency drugs.</li> <li>Monitoring system</li> <li><i>Testing Machine:</i> Gas supply, Flow meters, O<sub>2</sub> bypass, Valves, Vaporizer</li> </ul>	15

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-3505. 1	Understand the preoperative evaluation, premedication and different anaesthesia techniques, in general
BOTAT-3505. 2	Understand intraoperative fluid management and pain management
BOTAT-3505. 3	Operate the monitoring devices and record the vital signs
BOTAT-3505. 4	Explain technique of general anaesthesia and regional anaesthesia



**SUBJECT TITLE: SURGICAL PROCEDURES-I (Practical)**

**SUBJECT CODE: BOTAT-3506**

**SEMESTER: 5**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
		2	1

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** Surgery is a medical specialty that uses operative manual and instrumental techniques on a person to investigate or treat a pathological condition such as a disease or injury, to help improve bodily function, appearance, or to repair unwanted ruptured areas

Sr. No.	Contents	Contact Hours
	<ul style="list-style-type: none"> <li>Preparation,</li> <li>nursing requirement, \</li> <li>equipments including instruments, sutures, etc.</li> <li>Anaesthesia techniques, patient positioning &amp; recovery</li> <li>Gynecological /obstetric surgery</li> </ul>	15

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-3506. 1	Demonstrate knowledge and understanding of common surgical problems
BOTAT-3506. 2	Demonstrate an understanding of surgical treatments, and alternatives to surgical treatment
BOTAT-3506. 3	To become familiar with various surgical procedures and know their expected outcomes and complications
BOTAT-3506. 4	Be familiar with action, dosage and use of common pharmacologic agents used in surgery (analgesics, antibiotics, anticoagulants, sedatives)

**SUBJECT TITLE: ANAESTHESIA FOR SPECIALITY SURGERIES (Practical)**

**SUBJECT CODE: BOTAT-3507**

**SEMESTER: 5**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
		2	1

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objectives:** To impart basic knowledge and skills involved in dealing with handling techniques involved in dealing with anesthetic equipment in specialty surgeries as well as pre-operative, intra-operative and post postoperative patient monitoring and care. And To train students to work in conjunction with a multidisciplinary team to apply anesthesia technology to the patients in multispecialty departments multidisciplinary team to apply anesthesia technology to the patients in multispecialty departments

Sr. No.	Contents	Contact Hours
	<ul style="list-style-type: none"> <li>Glasgow coma scale</li> <li>Premedication</li> <li>Special investigation - CT, Angiography and MRI</li> <li>Induction of a patient</li> <li>Reinforced Endotracheal tubes</li> <li>Positioning in neuro surgery</li> <li>Check list</li> <li>Regional vs general anesthesia</li> <li>Induction / maintenance and recovery.</li> <li>Resuscitation of the new born, Apgar score</li> <li>Reversal and extubation</li> <li>Emergencies - manual removal of placenta</li> <li>Theatre setting</li> <li>Check list</li> <li>Premedication - modes</li> <li>Induction</li> <li>Intubation - Securing the EIT</li> <li>Reversal &amp; extubation – Problems</li> <li>Transferring / ICU management</li> <li>Pain management</li> </ul>	15

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-3507. 1	Know anaesthetic implications in different medical conditions
BOTAT-3507. 2	Assist in anaesthetic management of different surgical procedures
BOTAT-3507. 3	Understand the anaesthetic implications in Obstetrics Gynecological and Pediatric Surgeries
BOTAT-3507. 4	Learn special considerations and postoperative care in thoracic surgeries

**SUBJECT TITLE: BASIC INTENSIVE CARE & RESUSCITATION (Practical)**

**SUBJECT CODE: BOTAT-3508**

**SEMESTER: 5**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
		2	1

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** To interpret blood gases and assess acid-base status interpret an electrocardiogram and recognize important life-threatening findings Demonstrate awareness of the ethical principles pertinent to critically ill patients especially end of life care, and issues around withdrawing and withholding life support. Provide basic ventilator orders for most patients

Sr. No.	Contents	Contact Hours
	<ul style="list-style-type: none"> <li>Central Venous access</li> <li>Invasive hemodynamic monitoring</li> <li>ECG: monitoring, different types of E.C.G, recording of E.C.G. of the patient</li> <li>Defibrillators: Types, Principles and mechanism of the</li> </ul>	15

	<p>defibrillator Uses and safety precaution during use.</p> <ul style="list-style-type: none"> <li>• Ventilator: Care and maintenance of ventilators, suction machine, monitoring, Sterilization and disinfection of ventilators.</li> <li>• Feeding Ryle's tube insertion</li> <li>• Suctioning and posturing of semiconscious and unconscious patients</li> <li>• Care of mechanically ventilated patient</li> </ul>	
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**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-3508. 1	Perform resuscitation and management of the acutely ill adult and pediatric patients
BOTAT-3508. 2	Understand functions and safe application of medical devices in the area.
BOTAT-3508. 3	Perform basic life support (BLS) and advanced cardiac life support (ACLS)
BOTAT-3508. 4	Independently evaluate and apply hygienic and aseptic technique for safe care in the intensive care unit/post-operative unit.

## 6<sup>TH</sup> SEMESTER

**SUBJECT TITLE: ANESTHESIA TECHNOLOGY-II**

**SUBJECT CODE: BOTAT-3601**

**SEMESTER: 6**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
3	1		4

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objectives:** Understand the safe anesthesia techniques for various elective and emergency procedures in and outside the operation theatre Obtain knowledge about the proper functioning of various anesthetic equipments such as the work station, anesthesia monitors, syringe pumps etc. Assist the anesthesiologists efficiently during procedures in and outside the operation theatre.

Sr. No.	Contents	Contact Hours
UNIT-I	<ul style="list-style-type: none"> <li>History of anesthesia in detail</li> <li>Methods of anesthesia</li> <li>Minimum alveolar anaesthetic concentration</li> <li>Stages of anesthesia</li> <li>Inhalational Anesthesia: ether, Halothane, Isoflurane, Sevoflurane, Nitrous oxide</li> <li>Narcotic drugs</li> <li>Opioid analgesics: Morphine, Pethidine, Fentanyl, Buprenorphine, Tramadol.</li> </ul>	6
UNIT-II	<ul style="list-style-type: none"> <li>Difficult intubation</li> <li>Muscle relaxants</li> <li>Neuromuscular blockers: Suxamethorium, Pancuronium, Vecuronium, Atracurium, Rocuronium</li> <li>Reversal agents</li> </ul>	6
UNIT-III	<ul style="list-style-type: none"> <li>Intravenous anaesthetic agents: Thiopentone, Propofol, Ketamine</li> <li>Intraoperative management</li> <li>Confirm the identity of the patient</li> </ul>	6

	<ul style="list-style-type: none"> <li>• Transferring the patient</li> <li>• Recovery room – setup, things needed expected problems</li> <li>• Post operative complications and management</li> <li>• CPR</li> <li>• Monitoring during anesthesia and surgery</li> </ul>	
UNIT-IV	<ul style="list-style-type: none"> <li>• Nerve blockers: Benzodiazapines, Phenothazines</li> <li>• Neuromuscular transmission</li> <li>• Nerve stimulators</li> <li>• Reversal of neuromuscular blockage</li> </ul>	4
UNIT-V	<ul style="list-style-type: none"> <li>• Regional anesthesia: Spinal Anesthesia, Epidural Anaesthesia</li> <li>• Drugs acting on sympathetic nervous system: Adrenaline, Noradrenaline, Dopamine, Dobutamine, Milrinone</li> <li>• Isoprenaline</li> <li>• Local anaesthetic agents: Lignocaine, Bupivacaine</li> </ul>	6
UNIT-VI	<ul style="list-style-type: none"> <li>• Complications related to equipment</li> <li>• Hypoxemia</li> <li>• Hyercapnea</li> <li>• Increased airway pressure</li> <li>• Decreased airway pressure</li> <li>• Deep anesthesia</li> <li>• Thermal &amp; electrical injuries</li> <li>• Monitoring instruments</li> <li>• Related to airway: Difficult intubations, Airway Trauma</li> <li>• Cardiovascular System: Hypotension, Hypertension, Tachycardia, Bradycardia, Arrhythmias, Ischemia &amp; infarction</li> </ul>	5

Course Outcomes:

On successful completion of this course, the learner will be able to

BOTAT-3601. 1	Manage the overall upkeep of the equipment used in intensive care unit and transport of critically ill patients and assist the specialist in resuscitation, management and transfer of such patients with appropriate paraphernalia.
BOTAT-3601. 2	Contribute in planning, setting up, commissioning, maintaining and managing operation theater, emergency departments, and intensive care unit, cardiac catheterization lab and emergency response services as a team member.
BOTAT-3601. 3	Organise drugs, equipment and monitors for procedures outside operation theater including endoscopies, imaging, electro convulsive therapy and transport etc. and monitor through the procedure
BOTAT-3601. 4	Recognize the anxiety of patients in peri-operative state and appropriately

	assist to shift, induce anaesthesia and position patient for surgical procedure.
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**Suggested Readings:**

1. Essentials of Anaesthetic Equipment, Baha Al-Shaikh Simon Stacey, 4th Edition
2. Principles of Anaesthesia Equipment, Areti Yasodananda K, 1st Edition
3. Anaesthetic Equipment Made Easy, S. Ahanatha Pillai, 1st Edition

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1 Marks each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consist of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: SURGICAL PROCEDURES - II**

**SUBJECT CODE: BOTAT-3602**

**SEMESTER: 6**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
3	1		4

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** Surgery is a medical specialty that uses operative manual and instrumental techniques on a person to investigate or treat a pathological condition such as a disease or injury, to help improve bodily function, appearance, or to repair unwanted ruptured areas

Sr. No.	Contents	Contact Hours
UNIT-I	Plastic and reconstructive surgery	6
UNIT-II	Otorhinolaryngologic and head and neck surgery	6
UNIT-III	Thoracic surgery	6
UNIT-IV	Cardiac surgery	4
UNIT-V	Vascular surgery	6
UNIT-VI	Organ procurement and transplantation	5

UNIT-VII	Thyroid surgery	5
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**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-3602. 1	Demonstrate knowledge and understanding of common surgical problems
BOTAT-3602. 2	Demonstrate an understanding of surgical treatments, and alternatives to surgical treatment
BOTAT-3602. 3	To become familiar with various surgical procedures and know their expected outcomes and complications
BOTAT-3602. 4	Be familiar with action, dosage and use of common pharmacologic agents used in surgery (analgesics, antibiotics, anticoagulants, sedatives)

**Suggested Readings:**

1. Manipal Manual of Surgery 5Ed
2. Sabiston Textbook of Surgery International Edition.
3. Zollinger's Atlas of Surgical Operations, 11e
4. Acute Care Surgery: Imaging Essentials for Rapid Diagnosis
5. Introduction to the Operating Room

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1Mark each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consists of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: SPECIALIZED SURGICAL TECHNIQUES**

**SUBJECT CODE: BOTAT-3603**

**SEMESTER: 6**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
3	1		4

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**



**Course Objectives:** Understand the safe anesthesia techniques for specialized elective and emergency procedures in the operation theatre and to Obtain knowledge about the proper functioning of various anesthetic equipments such as the work station, anesthesia monitors, syringe pumps etc. Assist the anesthesiologists efficiently during procedures in and outside the operation theatre.

Sr. No.	Contents	Contact Hours
UNIT-I	Minor surgical procedure	6
UNIT-II	Dressings & Bandages	6
UNIT-III	Injections & infusions	6
UNIT-IV	Lumbar Puncture	4
UNIT-V	Bone Marrow Biopsy	6
UNIT-VI	Liver Biopsy	5
UNIT-VII	Pericardiocentesis	5
UNIT-VII	Abdominal paracentesis	2
UNIT-IX	Thoracocentesis & Pleural Biopsy	4

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-3603. 1	<i>Discuss post operative care of patients while performing post operative wound checks and discriminating common post-operative complications in the inpatient setting.</i>
BOTAT-3603. 2	<i>Perform a history &amp; physical exam, interpret diagnostic studies, develop a management plan, provide patient education, document patient encounter and deliver an oral presentation of common conditions in the surgical setting.</i>
BOTAT-3603. 3	<i>Perform Special technical skills in the post operative surgical setting in an adult patient.</i>
BOTAT-3603. 4	<i>Demonstrate an understanding of scientific concepts and the knowledge necessary for: history taking, physical exam, diagnostic studies, differential diagnosis, clinical intervention and therapeutics, and health maintenance of medical conditions seen in an adult patient in the surgical setting.</i>

**Suggested Readings:**

1. Manipal Manual of Surgery 5 Edition
2. Sabiston Textbook of Surgery International Edition.
3. Zollinger's Atlas of Surgical Operations, 11<sup>th</sup> edition
4. Acute Care Surgery: Imaging Essentials for Rapid Diagnosis
5. Introduction to the Operating Room

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1 Mark each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consist of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: ADVANCED ANESTHESIA TECHNOLOGY**

**SUBJECT CODE: BOTAT-3604**

**SEMESTER: 6**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
3	1		4

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** medical specialty that uses operative manual and instrumental techniques on a person to investigate or treat a specific pathological condition such as a disease or injury, to help improve bodily function, appearance, or to repair unwanted ruptured areas especially in vital organs such as liver, brain, kidney, heart,

Sr. No.	Contents	Contact
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		Hours
UNIT-I	<i>Anaesthesia &amp; co- existing diseases (Cardiac &amp; pulmonary):</i> <ul style="list-style-type: none"> <li>Ischemic heart disease</li> <li>Hypertension</li> <li>Congestive cardiac failure</li> <li>Arrhythmia &amp; heart blocks</li> <li>Chronic bronchitis &amp; COPD</li> <li>Bronchial asthma</li> </ul>	6
UNIT-II	<ul style="list-style-type: none"> <li>Pediatric anesthesia</li> </ul>	6
UNIT-III	<ul style="list-style-type: none"> <li>Liver disease and anesthesia</li> </ul>	6
UNIT-IV	<ul style="list-style-type: none"> <li>Renal disease and anesthesia</li> </ul>	4
UNIT-V	<ul style="list-style-type: none"> <li>Obesity and anesthesia</li> <li>Diabetes mellitus and anesthesia</li> <li>Thyroid disease and anesthesia</li> </ul>	5
UNIT-VI	<ul style="list-style-type: none"> <li><i>Obstetric Anaesthesia:</i> Epidural analgesia, Anaesthesia for LSCS, Special situations: pre-eclampsia</li> </ul>	5
UNIT-VII	<ul style="list-style-type: none"> <li>Anaesthesia for common surgical disorders</li> <li>Anaesthesia for Thoracic Surgery</li> <li>Use of double lumen tubes</li> <li>Anesthesia for bronchoscopy, Thymectomy</li> <li><i>Anaesthesia for cardiac surgery:</i> Preparations &amp; monitoring, Heparin &amp; Protamine, Care &amp; use of arterial &amp; venous lines, Maintenance of body temperature. Anaesthesia for open heart surgery</li> <li>Transport to ICU</li> </ul>	5
UNIT-VII	<ul style="list-style-type: none"> <li>Anaesthesia for special situations: Shock, low cardiac output &amp; cardiac arrest</li> </ul>	2
UNIT-IX	<ul style="list-style-type: none"> <li>Ventilators – types &amp; methods of ventilation</li> <li>Humidification</li> <li>Aerosol therapy</li> <li>Resuscitation of the Newborn</li> </ul>	4
UNIT-X	<ul style="list-style-type: none"> <li>Anaesthesia for ophthalmic surgeries.</li> </ul>	4

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-3604. 1	Observe the basic operations of the operation theatre while interacting with the multidisciplinary team members involved in providing optimal care to the patients
BOTAT-3604. 2	Introduced to techniques used for preparation and management of the OT.
BOTAT-3604. 3	Understand functions and safe application of medical devices in speciality surgical procedures
BOTAT-3604. 4	<i>Perform Special technical skills in the post operative Anaesthesia Care unit (PACU)</i>

**Suggested Readings:**

1. Obstetric and Gynecologic Anesthesia 1st Edition
2. Essentials of Neurosurgical Anesthesia & Critical Care
3. Principles and Practice of Anesthesia for Thoracic Surgery by Peter Slinger
4. Handbook of Pediatric Anesthesia (ANESTHESIA/PAIN MEDICINE) by McGraw-Hill Education / Medical;1st edition
5. Kaplan's Cardiac Anesthesia: In Cardiac and Noncardiac Surgery 7th Edition by Elsevier; 7th edition

**Instructions of Question Paper Setter:** The Question Paper should be divided into three parts.

**Part A** shall consist of 12 MCQ's of 1Mark each

**Part B** shall consist of 6 short Questions of 4 Marks each out of which 3 Questions shall have internal choice

**Part C** shall consists of 3 Long Questions of 8 Marks each out of which 1 question shall have internal choice

**SUBJECT TITLE: ANESTHESIA TECHNOLOGY-II (Practical)**

**SUBJECT CODE: BOTAT-3605**

**SEMESTER: 6**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
		2	1

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** Understand the safe anesthesia techniques for various elective and emergency procedures in and outside the operation theatre Obtain knowledge about the proper functioning of various anesthetic equipments such as the work station, anesthesia monitors, syringe pumps etc. Assist the anesthesiologists efficiently during procedures in and outside the operation theatre.

Sr. No.	Contents	Contact Hours
	<ul style="list-style-type: none"> <li>• Difficult intubation</li> <li>• Muscle relaxants</li> <li>• Reversal agents</li> <li>• Intraoperative management</li> <li>• Confirm the identity of the patient</li> <li>• Transferring the patient</li> <li>• Recovery room – setup, things needed expected problems</li> <li>• Post operative complications and management</li> <li>• CPR</li> <li>• Monitoring during anesthesia and surgery</li> </ul>	15

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-3605. 1	Manage the overall upkeep of the equipment used in intensive care unit and transport of critically ill patients and assist the specialist in resuscitation, management and transfer of such patients with appropriate paraphernalia.
BOTAT-3605. 2	Contribute in planning, setting up, commissioning, maintaining and managing operation theater, emergency departments, and intensive care unit, cardiac catheterization lab and emergency response services as a team member.

BOTAT-3605. 3	Organise drugs, equipment and monitors for procedures outside operation theater including endoscopies, imaging, electro convulsive therapy and transport etc. and monitor through the procedure
BOTAT-3605. 4	Recognize the anxiety of patients in peri-operative state and appropriately assist to shift, induce anaesthesia and position patient for surgical procedure.

**SUBJECT TITLE: SURGICAL PROCEDURES - II (Practical)**

**SUBJECT CODE: BOTAT-3606**

**SEMESTER: 6**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
		2	1

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** Surgery is a medical specialty that uses operative manual and instrumental techniques on a person to investigate or treat a pathological condition such as a disease or injury, to help improve bodily function, appearance, or to repair unwanted ruptured areas

Sr. No.	Contents	Contact Hours
	<ul style="list-style-type: none"> <li>• Plastic and reconstructive surgery</li> <li>• Otorhinolaryngologic and head and neck surgery</li> <li>• Thoracic surgery</li> <li>• Cardiac surgery</li> <li>• Vascular surgery</li> <li>• Organ procurement and transplantation</li> <li>• Thyroid surgery</li> </ul>	15

**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-3606. 1	<i>Discuss post operative care of patients while performing post operative wound checks and discriminating common post-operative complications in the inpatient setting.</i>
BOTAT-3606. 2	<i>Perform a history &amp; physical exam, interpret diagnostic studies, develop a management plan, provide patient education, document patient encounter</i>

	<i>and deliver an oral presentation of common conditions in the surgical setting.</i>
BOTAT-3606. 3	<i>Perform Special technical skills in the post operative surgical setting in an adult patient.</i>
BOTAT-3606. 4	<i>Demonstrate an understanding of scientific concepts and the knowledge necessary for: history taking, physical exam, diagnostic studies, differential diagnosis, clinical intervention and therapeutics, and health maintenance of medical conditions seen in an adult patient in the surgical setting.</i>

**SUBJECT TITLE: SPECIALIZED SURGICAL TECHNIQUES (Practical)**

**SUBJECT CODE: BOTAT-3607**

**SEMESTER: 6**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
		2	1

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course Objective:** Understand the safe anesthesia techniques for specialized elective and emergency procedures in the operation theatre and to obtain knowledge about the proper functioning of various anesthetic equipments such as the work station, anesthesia monitors, syringe pumps etc. Assist the anesthesiologists efficiently during procedures in and outside the operation theatre.

Sr. No.	Contents	Contact Hours
	<b>To Understand the indications &amp; techniques of following:</b> <ul style="list-style-type: none"> <li>• Minor surgical procedures</li> <li>• Dressings &amp; Bandages</li> <li>• Injections &amp; infusions</li> <li>• Lumbar Puncture</li> <li>• Bone Marrow Biopsy</li> </ul>	15

	<ul style="list-style-type: none"> <li>• Liver Biopsy</li> <li>• Pericardiocentesis</li> </ul>	
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**Course Outcomes:**

On successful completion of this course, the learner will be able to

BOTAT-3607. 1	<i>Discuss post operative care of patients while performing post operative wound checks and discriminating common post-operative complications in the inpatient setting.</i>
BOTAT-3607. 2	<i>Perform a history &amp; physical exam, interpret diagnostic studies, develop a management plan, provide patient education, document patient encounter and deliver an oral presentation of common conditions in the surgical setting.</i>
BOTAT-3607. 3	<i>Perform Special technical skills in the post operative surgical setting in an adult patient.</i>
BOTAT-3607.4	<i>Demonstrate an understanding of scientific concepts and the knowledge necessary for: history taking, physical exam, diagnostic studies, differential diagnosis, clinical intervention and therapeutics, and health maintenance of medical conditions seen in an adult patient in the surgical setting.</i>

**SUBJECT TITLE: ADVANCED ANESTHESIA TECHNOLOGY (Practical)**

**SUBJECT CODE: BOTAT-3608**

**SEMESTER: 6**

**CONTACT HOURS/WEEK:**

Lecture (L)	Tutorial (T)	Practical (P)	Credits (C)
		2	1

**Internal Assessment: 40**

**End Term Exam: 60**

**Duration of Exam: 3 Hrs**

**Course objective:** medical specialty that uses operative manual and instrumental techniques on a person to investigate or treat a specific pathological condition such as a disease or injury, to help improve bodily function, appearance, or to repair unwanted ruptured areas espically in vital organs such as liver, brain, kidney, heart,

Sr. No.	Contents	Contact Hours



	<p>Demonstration of</p> <ul style="list-style-type: none"> <li>• <i>Obstetric Anaesthesia:</i></li> <li>• Epidural analgesia, Anaesthesia for LSCS, Special situations: pre-eclampsia</li> <li>• Use of double lumen tubes</li> <li>• Transport to ICU</li> <li>• Ventilators – types &amp; methods of ventilation</li> <li>• Humidification</li> <li>• Aerosol therapy</li> <li>• Resuscitation of the Newborn</li> </ul>	15
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### Course Outcomes:

On successful completion of this course, the learner will be able to

BOTAT-3608. 1	Observe the basic operations of the operation theatre while interacting with the multidisciplinary team members involved in providing optimal care to the patients
BOTAT-3608. 2	Introduced to techniques used for preparation and management of the OT.
BOTAT-3608. 3	Understand functions and safe application of medical devices in speciality surgical procedures
BOTAT-3608. 4	<i>Perform Special technical skills in the post operative Anaesthesia Care unit (PACU)</i>