JAMIA HAMDARD
DEPARTMENT OF PARAMEDICAL SCIENCES
CBCS ENABLED SYLLABUS **BSc. ANAESTHESIA AND OPERATION THEATRE TECHNOLOGY**

SYLLABUS FOR BSC.
Anaesthesia and Operation Theatre Technology
Choice Based Credit System (CBCS)
Approval Date:24th September 2019

DEPARTMENT OF PARAMEDICAL SCIENCES
JAMIA HAMDARD
Deemed to be University
Accredited in 'A' Grade by NAAC
Declared to be designated as Institute of Eminence (IoE) by MHRD, GOI
NEW DELHI 110062
www.jamiahamdard.edu

PROGRAM NAME: BSc. Anaesthesia and Operation Theatre Technology
PROGRAM CODE: 318
ACADEMIC SESSION OF INTRODUCTION OF THE PROGRAMME: (2022-2023)
SCHOOL NAME: SNSAH
DEAPRTMENT NAME: DEPARTMENT OF PARAMEDICAL SCIENCES

APPROVAL DATE OF THE BOARD OF STUDIES (B.O.S) MEETING FOR THE PRESENT SYLLABUS **24th September 2019**
APPROVAL DATE AND NUMBER OF ACADEMIC COUNCIL OF MEETING FOR THE PRESENT SYLLABUS **26th September 2019 (39th Academic Council)**

JAMIA HAMDARD, NEW DELHI - 110062

Internal Quality Assurance Cell (IQAC)

UGC – LEARNING OUTCOMES-BASED CURRICULUM

BSC IN ANESTHESIA AND OPERATION THEATRE TECHNOLOGY

PROGRAME CODE-318

JAMIA HAMDARD, NEW DELHI - 110062

Internal Quality Assurance Cell (IQAC)

Vision Statement:

To create an institute of national and international repute in Paramedic offering state of the art education entailing the finest skills combined with compassionate patient care.

Mission Statements:

MS 1: To provide a quality paramedical education and prepare human and competent global Paramedic professionals.

MS 2: To provide highest level of quality patient care and can make contribution towards education and research.

MS 3: To provide the most advanced and comprehensive course offerings to health sciences students possible by employing the most qualified faculty, utilizing the most advanced technology.

DEPARTMENT OF PARAMEDICAL SCIENCES

Vision Statement

Academic excellence in education, research, and health care by grooming into highly skilled health professionals and faithful experts fully committed to serve the society.

Mission Statement

MS1: To impart basic, theoretical, practical, and professional knowledge of high quality for overall holistic growth of every student.

MS 2: To develop innovative educational activities and participate in public health reforms through training, research and intervention in the field of allied health sciences.

MS 3: To strive to uphold a future generation with high academic standards.

QUALIFICATION DESCRIPTORS (QDs)

Upon the completion of BSC IN ANESTHESIA AND OPERATION THEATRE TECHNOLOGY, students will be able to:

QD-1 The course will understand the fundamentals of discipline, ethics, layout and equipment's in operation theatre which includes preparing and maintaining operation theatre & equipment's used.

QD-2 Knowledge of anatomy, physiology and pathophysiology of an assessment, developmentand implementation of a treatment plan with the goal of assuring a patent airway, adequate mechanical ventilation, and respiration for patients of all ages.

QD-3 Students will understand the role and scope of the operation theatre technology in the healthcare setting with respect to preoperative and postoperative care of the patient. It will develop skills necessary to identify the treatment procedures and requirements based on various surgeries or operating procedures.

QD-4 Comprehensive anatomical and medical terminology and abbreviations within written and oral communication with colleagues and other healthcare professionals.

Mapping Qualification Descriptors (QDs) with Mission Statements (MS)

	MS-1	**MS-2**	**MS-3**
QD-1	2	1	2
QD-2	2	2	2
QD-3	3	2	3
QD-4	2	2	1

'3' in 'High-level 'mapping, 2 for 'Medium-level 'mapping, 1 for 'Low-level 'mapping.

PROGRAM LEARNING OUTCOMES (PLOs)

After completing this Course, the students should be able to
PLO-1- Healthcare sector is going through a phase of growth. This sector, to function efficiently, will need more qualified allied healthcare professionals. Operation theatres in hospitals, Emergency care departments, Central Sterile Supply Department as well as ICUs in hospitals are places where Anaesthesia and OT Technicians are needed. Thus, leads a good employability option for Anaesthesia and Operation Theatre Technologists.
PLO-2- Identify and move to maintain a sterile field.
PLO-3- Ability to prepare and maintain operation theatre.
PLO-4-Follow infection control policies and procedure
PLO-5- Recognize that all health-care personnel have a role to play in improving society's health and well-being.
PLO-6- Practice, education, and research should all be used to advance the surgeries and care in operation theatres, I.C.U, wards and burn units.
PLO-7- As members of clinical teams and health-care systems, practise both individually and collectively.
PLO-8- Provide intra-operative equipment and technical support.

PROGRAM SPECIFIC OUTCOMES (PSOs)

After completing this Course, the students should be able to:
PSO-1- Ensure availability of medical and diagnostic supplies.
PSO-2- Demonstrate the roles and responsibilities of a paramedic in an Healthcare Sector, as well as basic development, pathophysiology, and pharmacology concepts in the assessment and management of patients undergoing various surgeries.
PSO-3- Be able to safely administer medications and communicate effectively with patients, peers, and healthcare providers.
PSO-4- Supervises the circumstances in the operating room and who work alongside with the surgeon, anaesthesiologist and nurse in order to provide quality patient care throughout the surgery, and need skills for that which are fulfilled by this program.
PSO-5-Ability to prepare the patient for operative procedures
PSO-6- Provide intra-operative equipment and technical support.

Mapping of Program Learning Outcomes (PLOs)

With Qualification Descriptors (QDs)

	QD-1	QD-2	QD-3	QD-4
PLO-1	**2**	**1**	**2**	**3**
PLO-2	**2**	**2**	**2**	**2**
PLO-3	**2**	**3**	**2**	**2**
PLO-4	**2**	**1**	**3**	**2**
PLO-5	**2**	**2**	**2**	**2**
PLO-6	**2**	**3**	**2**	**2**
PLO-7	**1**	**2**	**3**	**1**
PLO-8	**3**	**2**	**2**	**2**
PSO-1	**1**	**2**	**1**	**2**
PSO-2	**2**	**3**	**2**	**3**
PSO-3	**2**	**2**	**2**	**2**
PSO-4	**2**	**2**	**2**	**1**
PSO-5	**1**	**2**	**2**	**2**
PSO-6	**3**	**2**	**2**	**2**

BSc IN ANESTHESIA AND OPERATION THEATER TECHNOLOGY

An Anesthesia and Operating room assistant provide aid in exposure, hemostasis, closure, and other intra-operative technical functions that help the anesthetist and surgeon to carry out a safe operation for the patient. In addition to intra-operative duties, the assistant also performs preoperative and post-operative duties to better facilitate proper patient care. The assistant to the surgeon during the operation does so under the direction and supervision of the surgeon and in accordance with hospital policy and appropriate laws and regulations.

a.	Name of the Course	**BSc In Anesthesia and Operation Theater Technology**
b.	Nature	Regular
c.	Duration	Minimum: Four Years (One Year compulsory rotatory internship included) (4 years full time Integrated Program, Lateral entry in third semester forstudents with two-year Diploma)
d.	Medium of Instruction and Examinations	English
e.	**Eligibility Criteria**	
	Educational Requirements	Eligibility for the admission: must have passed in 10+2 or equivalent qualification with science discipline from a recognizedinstitution with 50% aggregates Those in possession of central/state recognized two-year diplomawill be permitted lateral entry into third semester
f.	Commencement of the course	July of every year
h.	Mode of Admission	Admission to the course will be made on the basis of the merit determined by the score of CET conducted by Jamia Hamdard. Students who have appeared in NEET after interview can also be given admission. For admission against the foreign national/NRI/Industry sponsored seats, students will be required to appear only in interview conducted by Jamia Hamdard
i.	Period of Completion (Span Period)	Not more than 06 years
J.	Fees	As per university norms.
k.	Total Number of Students per year	25
l.	Total number of Semestersand examinations	Six Semesters and Semester Examination in every December and May
m.	Total Theory Papers	14 + 01 assignment+04 qualifying exams
n.	Total Credits	43
o.	Minimum Average Pass Marks	40% in each subject, Grade C

Course Structure

The course work shall be divided into six semesters as given below:

Semester-I	July to mid-December
Semester-II	January to mid-May
Semester-III	July to mid-December
Semester-IV	January to mid-May
Semester –V	July to Mid-December
Semester –VI	January to mid-May

During an academic year, a candidate shall be enrolled only for one course of study and shall not appear at any other examination of this or any other University.

The semester-wise course outline, total marks allocated to each course, internal assessment and semester examinations marks for all specialization are listed in Annexure. Detailed course contentof the syllabus shall be prescribed by the Board of Studies (BOS) and shall be reviewed periodically.

The BOS, depending on circumstances prevailing in the market, may change any paper and increase or decrease the number of optional papers.

Attendance

a. All students must attend every lecture delivered, however, to account for the late joining or other such contingencies, the attendance requirement for appearing in the semester examinations shall be a minimum of 75% of the total classes actually held.
b. In order to maintain the attendance record of a course, a roll call will be taken by the teacher in every scheduled lecture.
c. Attendance on account of participation in the prescribed functions of NCC, NSS, Inter- University sports, educational tours/field work assigned by the university to students shall be credited to the aggregate, provided the attendance record, duly counter signed by the officer in-charge, is sent to the Head of Department within two weeks time after the function/activity.
d. The teacher in-charge will consolidate the attendance record for the lectures for each student. The statements of attendance of students shall be displayed on the Department's Notice Boardby the teacher concerned at the beginning of the following month and consolidated attendance before the conclusion of each semester as given in the University Calendar. A copy of the same shall be sent to the Head of Department for record. Notices displayed on theNotice Board shall be deemed to be a proper notification, and no individual notice shall be sent to students.
e. If a student is found to be continuously absent from the classes without information for a period of 30 days, the teacher in charge shall report it to the Head of Department, who will inform the Registrar through the Dean. Registrar will issue a notice to such student, as to why his/ her admission should not be cancelled. The

Registrar will take a decision on cancellation of admission within 30 days of issue of the notice. A copy of the order shall be communicated to the student.

f. A student with less than 75% attendance of the lectures in each course shall be detained from appearing in the semester examination of that course. The Dean of Faculty concerned may consider application for the condo nation of shortage of attendance up to 5% on account of sickness or any other extra ordinary circumstances, provided the medical certificate duly certified by registered Medical Practitioner, had been submitted within 7 days of the recoveryfrom the illness

g. A student detained on account of attendance will be re-admitted to the same class in the next academic year on payment of current fees except Enrolment and identity card fees.

Scheme of Examination

Each theory course shall carry 100 marks. Of these, 75 marks shall be for semester examination and 25 marks for internal assessment.

The candidate shall have to make an oral presentation of his/ her summer training report before a joint session of the faculty and students. Presentation of report shall carry 40 marks. The same report shall be examined by an internal examiner out of 60 marks. The total summer training shall carry 100 marks.

Internal Assessment

Internal assessment for 25 marks in respect of theory papers will be based on written tests,assignments, presentations, viva-voice etc.

- The evaluation shall be done by course instructors and marks will be notified within a week of such test.
- There shall be two written tests in each course in a semester. The test will be conducted as per the academic calendar individual faculty member to announce the date for tests or conduct them as per academic calendar.
- The teacher concerned shall maintain records of marks of various components of evaluation for each student and the same will be confidential and notified at the end of the semester.
- The internal assessment marks shall he submitted by head of the Department to the Registrar at the end of the semester.
- A candidate who has to reappear (as an ex-student) in the semester examination of a course will retain the marks of internal assessment.
- A student who will be required to seek re-admission, for whatever reason, will have to appear for internal assessment and tests afresh.

Semester Examinations

- The Semester examinations shall be held at the end of each semester as notified in the academic calendar. There shall be no supplementary examination. Candidates shall appear in the examination of their uncleared papers in the next semester examination of the same paper along with other students of junior batch. Thus, the uncleared papers of Semester - I shall be cleared in Semester-IIIand those of Semester - II in Semester-IV. Likewise, the examination of uncleared papers of semester V and VI would be taken up by the student next year along with the junior batch.
- The duration of semester examinations of each theory paper will be 3 hours.

- The question papers shall be set by either an external or an internal examiner duly appointed by the Board of Studies and approved by the Vice Chancellor.
- The papers set by the examiners shall be moderated by a panel of moderators constituted by the Board of Studies at the time of approving the panel of examiners.
- The minimum pass marks shall be 50% (grade E) in each theory and viva-voce (combined examination).
- Every candidate shall have to prepare a project study / assignment in the Sixth semester. The subject of project/assignment shall be approved on the recommendations of the supervisor(s) and the Head of the Department.
- A student shall be required to maintain record of periodic progress in the project in a diary. He / she should be in constant touch with his/her supervisor and obtain his/her signature in the diary regularly. There would be continuous appraisal of the project.

Promotion Criteria

A student shall be promoted to semester-III if he/she has secured at least 50% marks each in at least 6 subjects out of 10 prescribed in Semester - I and Semester - II taken together.

No student shall be promoted to Semester –V if he/she has more than 04 uncleared papers of the preceding semesters taken together.

After the declaration of the semester-VI results, if a student has any paper uncleared of any semester, he/ she will have to reappear in these papers in concerned semester in next academic year as an ex-student along with the next batch.

The degree will be granted only after clearing all the semester examination and completion ofsix months compulsory internship.

For all the papers labelled as qualifying exams the student needs to clear these papers during the span period to be awarded the degree

Span Period

A student must complete all the requirements of degree within a period of Six years from his/ her admission. In a genuine case, if only dissertation is left to be cleared, permission may be granted to submit it even beyond the period of Six years with prior approval of the Vice Chancellor.

Course Description:

Semester I

Theory

GFC-101 Human Anatomy
GFC-102 Human Physiology

Practical

GFC-103 Human Anatomy
GFC-104 Human Physiology

Qualifying Exam

GFC- 105 Medical Ethics, Legal aspects and Medical Terminology
GFC- 106 English skills
GFC- 107Computer Skills

Semester II
Theory
AND-201 Anaesthesia & Operative drugs
GFC-202 Pathology
GFC -203 Microbiology
Practical
AND-204 Anesthesia & Operative drugs
GFC-205 Pathology
GFC -206 Microbiology
Qualifying Exam
EVS- Environment science & health
Semester III
Theory
BOTT -301 Anaesthesia Methods
BOTT -302 Fundamentals of Operation Theatre Skills
BOTT -303 Operation Theatre Technology I
Practical
BOTT -304 Anaesthesia Methods
BOTT -305 Fundamentals of Operation Theatre Skills
BOTT -306 Operation Theatre Technology I

Semester IV
Theory
BOTT -401 Surgical Techniques I
BOTT -402 Operation Theatre Technology -II
BOTT -403 Nursing Care and Emergency Management
Practical
BOTT -404 Surgical Techniques I
BOTT -405 Operation Theatre Technology -II
BOTT -406 Nursing Care and Emergency Management

Semester V
Theory
BOTT -501 Surgical Techniques –II
BOTT -502 Applied Physics and Chemistry
BOTT -503 Medicine Relevant to Operation Theatre Technology
Practical
BOTT -504 Surgical Techniques –II
BOTT -505 Applied Physics and Chemistry
BOTT -506 Medicine Relevant to Operation Theatre Technology
Semester VI
BOTT-601 Submission of Assignment & Viva Voce

SEMESTER I

Paper Code	Subject	Theory hours	Practical /Tutorial hours	Maximum Marks Theory		Practical/viva		Max. Marks Theory/Practical	Credits per subjects			Credits
Theory												
				IA*	**SE***	**IA**	**SE**		**L**	**T**	**P**	
GFC-101	Human Anatomy	50	-	25	75	-	-	100	2	0	0	2
GFC-102	Human Physiology	50	-	25	75	-	-	100	2	0	0	2
Practical												
GFC-103	Human Anatomy	-	20	-	-	25	75	100	0	0	1	1
GFC-104	Human Physiology	-	20	-	-	25	75	100	0	0	1	1
Qualifying Examination												
GFC-105	Medical Ethics	05	0	20	30	00	00	50	0	0	0	0
GFC-106	English	25	0	20	30	00	00	50	0	0	0	0
GFC-107	Computer skills	05	30	0	0	20	30	50	0	0	0	0

IA- Internal assessment, SE–Semester Examination

SEMESTER II

Paper Code	Subject	Theory hours	Practical/ Tutorial hours	Maximum Marks Theory		Practical/Viva		Max. Marks Theory /Practical	Credits per subjects			Credits
Theory												
				IA	**SE**	**IA**	**SE**		**L**	**T**	**P**	
AND-201	Anesthesia & Operative drugs	40	-	25	75	-	-	100	2	0	0	2
GFC-202	Pathology	30	-	25	75	-	-	100	2	0	0	2
GFC-203	Microbiology	30	-	25	75	-	-	100	2	0	0	2
Practical												
AND-204	Anesthesia & Operative drugs	-	20	-	-	25	75	100	0	0	1	1
GFC-205	Pathology	-	20	-	-	25	75	100	0	0	1	1
GFC-206	Microbiology	--	20	-	-	25	75	100	0	0	1	1
Qualifying Exam												
EVS	Environmental Sciences & Health	-	-	--	--	25	75	100	0	0	0	0

SEMESTER III

Paper Code	Subject	Theory hours	Practical /Tutorial hours	Maximum Marks Theory		Practical		Max. Marks Theory /Practical	Credits per subjects			Credits
Theory												
				IA	**SE**	**IA**	**SE**		**L**	**T**	**P**	
BOTT-301	Anesthesia Methods	50	-	25	75	-	-	100	3	0	0	3
BOTT-302	Fundamentals of operation Theatre Skills	40	-	25	75	-	-	100	2	0	0	2
BOTT-303	Operation theatre Technology I	40	-	25	75	-	-	100	2	0	0	2
Practical												
BOTT-304	Anesthesia Methods	-	20	-	-	25	75	100	0	0	1	1
BOTT-305	Fundamentals of operation Theatre Skills	-	20	-	-	25	75	100	0	0	1	1
BOTT-306	Operation theatre Technology I	-	20	-	-	25	75	100	0	0	1	1

SEMESTER IV

Paper Code	Subject	Theory hours	Practical/ Tutorial hours	Maximum Marks Theory		Practical/viva		Max. Marks Theory /Practical	Credits per subjects			Credits
Theory												
				IA	**SE**	**IA**	**SE**		**L**	**T**	**P**	
BOTT-401	Surgical Techniques I	40	-	25	75	-	-	100	2	0	0	2
BOTT-402	Operation Theatre Technology - II	40	-	25	75	-	-	100	2	0	0	2
BOTT-403	Nursing Care and Emergency Management	50	-	25	75	-	-	100	3	0	0	3
Practical												
BOTT-404	Surgical Techniques I	-	20	-	-	25	75	100	0	0	1	1
BOTT-405	Operation Theatre Technology - II	-	20	-	-	25	75	100	0	0	1	1
BOTT-406	Nursing Care and Emergency Management	-	20	-	-	25	75	100	0	0	1	1

SEMESTER V

Paper Code	Subject	Theory hours	Practical/ Tutorial hours	Maximum Marks Theory		Practical		Max. Marks Theory /Practical	Credits per subjects			Credits
Theory												
				IA	**SE**	**IA**	**SE**		**L**	**T**	**P**	
BOTT-501	Surgical Techniques –II	40	-	25	75	-	-	100	2	0	0	2
BOTT-502	Applied Physics and Chemistry	40	-	25	75	-	-	100	2	0	0	2
BOTT-503	Medicine Relevant to Operation Theatre Technology	40	-	25	75	-	-	100	2	0	0	2
Practical												
BOTT-504	Surgical Techniques –II	-	20	-	-	25	75	100	0	0	1	1
BOTT-505	Applied Physics and Chemistry	-	20	-	-	25	75	100	0	0	1	1
BOTT-506	Medicine Relevant to Operation Theatre Technology	-	20	-	-	25	75	100	0	0	1	1

SEMESTER VI

Paper Code	Subject	Maximum Marks IA	Maximum Marks SE	Total Marks	Credits per Subject			Credits
					L	T	P	
BOTT601	Assignment & Viva voce	25	75	100	0	0	5	5

SEMESTER-I

Course Code: 101(Theory) & 103(Practical)

Title of the Course: HUMAN ANATOMY

L-50 P-20 Credits (L=2, P=1): 3

COURSE LEARNING OUTCOMES (CLOs)

After completing this Course, the students should be able to …….

CLO-1- Comprehend the biology concerned with the study of the body structure of organisms and their parts.

CLO-2- Demonstrate the different parts of the human body

CLO-3- Categorize general slides of tissues & organs

CLO-4- Learn the Preservation, and, embalming of body organs

CLO-5- Learn the study of bones, joints ,and muscles

Mapping of Course Outcomes (COs) with Program Learning Outcomes (POs) and Program Specific Outcomes (PSOs)

	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CLO1	1	1	1	2	2	1	1	1	2	1	1	1	2	1
CLO2	1	1	1	1	1	2	2	1	1	1	1	1	1	1
CLO3	1	1	1	2	1	1	1	1	1	2	2	1	2	1
CLO4	1	1	1	2	1	1	1	1	1	2	2	1	2	1
CLO5	1	1	1	2	2	1	1	1	2	1	1	1	2	1

Detailed Syllabus:

UNIT-I

12 Hours

Introduction to Anatomy
Anatomical terms, planes, organization of human body- cell, tissue, organ & organ system.
Musculo-skeletal system:
Types of bones, structure & divisions of the skeleton system, name of all the bones and their parts, joints- classification. Structure and types of muscles
Anatomy of the Nervous system
Central nervous system & Peripheral nervous system- different components

UNIT-II

15 Hours

Anatomy of Circulatory system:
General plan of circulatory system and its components-
Heart- size, location, coverings, chambers, blood supply, nerve supply, the blood vessels
General plan of circulation, pulmonary circulation

Name of arteries and veins and their positions Lymphatic system - general plan Anatomy of the Respiratory system:
Organs of Respiratory System (Brief knowledge of parts and position)

UNIT-III

13 Hours

Anatomy of the Digestive system:
Anatomy of alimentary tract; Parts of the tract
Accessory glands of digestion; Pancreas, Liver, Gall Bladder
Anatomy of Excretory system Kidneys- location, gross structure, excretory ducts, ureters, urinary bladder, urethra

UNIT-IV

10 Hours

Reproductive system
Male Reproductive System
Female Reproductive System Anatomy of the endocrine system
Name of all endocrine glands their positions, Hormones and their functions- Pituitary, Thyroid, Parathyroid, Adrenal glands, Gonads & Islets of pancreas

Reference Books:

1. Human Anatomy Regional and Applied Vol. 1, Vol.2 & Vol.3, B.D. Chourasia C.B.S. Publishers, New Delhi
2. Hand Book of General Anatomy B.D. Chourasia, C.B.S. Publishers, New Delhi
3. Text Book of Human Histology Inderbir Singh, Jaypee Brothers, Medical Publishers, Delhi
4. Gray s Anatomy Susan Standring, Elsevier Churchill Livingstone, Edinburg

Teaching-Learning Strategies

Typical teaching is giving lectures to large groups of students, followed by tutorials and workshops, as well as some individual study.
Other delivery methods that can be highly effective, and you may have heard of concepts like flipped classroom and problem-based learning.
Different assessment scales is used like internal assessment, external assessment, seminars and different type of quiz.

Assessment

Different assessment scales are used like internal assessment, external assessment, seminars.
Max Marks Theory-100 (External Assessment 75+Internal Assessment 25) Max Marks
Practical-100 (External Assessment 75+Internal Assessment 25

Course Code: 102(Theory) & 104(Practical)

Title of the Course: Human Physiology

L-50 **P-20** **Credits (L=2, P=1): 3**

COURSE LEARNING OUTCOMES (CLOs)

After completing this Course, the students should be able to.

CLO-1-Measure Blood pressure, heart rate, pulse rate, respiratory rate, reflexes.
CLO-2-Perform Hemoglobin test
CLO-3-Measure of RBC, WBC, Platelet count
CLO-4-Blood Groups - ABO and RH grouping estimation
CLO-5-Measure the bleeding time and clotting time

Mapping of Course Outcomes (COs) with Program Learning Outcomes (POs) and Program Specific Outcomes (PSOs)

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	1	1	1	2	2	1	1	1	2	1	1	1	2	1
CO2	1	1	1	1	1	2	2	1	1	1	1	1	1	1
CO3	1	1	1	2	1	1	1	1	1	2	2	1	2	1
CO4	1	1	1	2	1	1	1	2	2	1	2	2	1	1
CO5	2	1	1	1	1	2	1	2	1	1	1	1	2	

Detailed Syllabus:

UNIT-I **12Hours**

General Physiology
Cell, Transport across cell membrane, homeostasis, resting membrane potential, action potential
Blood
Composition and functions of Blood
RBC, WBC, Platelet count, Hemoglobin
Blood Groups - ABO and RH grouping
Hemostasis & Anticoagulants

UNIT-II **15 Hours**

Cardio vascular system
Cardiac muscle, Pacemaker & conducting tissue
Cardiac Cycle
Cardiac output, Heart rate, ECG
Arterial blood pressure
Respiratory System
Functions of Respiratory system

Mechanism of respiration, lung volumes & capacities

UNIT-III **13 Hours**

Nerve & Muscle physiology
Neuron structure & properties
Neuromuscular junction
Skeletal muscle structure mechanism of contraction
Cerebrospinal Fluid (CSF): Composition, functions & Circulation.
Central & autonomic Nervous system Organization of CNS
Functions of various parts of Brain, in brief
Composition, functions and circulation of CSF
Differences between sympathetic and parasympathetic division

UNIT-IV

10 Hours

Digestive system
Functional Anatomy, organization & innervations
Composition and functions of all Digestive juices
Digestion & Absorption of carbohydrates, proteins and fats
Excretory System
Kidneys: Functions, Nephron, Juxta-glomerular Apparatus
Renal circulation
Mechanism of Urine formation
GFR
Endocrine and Reproductive systems Endocrine glands & hormones secreted
Functions of Reproductive system
Male Reproductive System: spermatogenesis, Testosterone.
Female reproductive system: Ovulation, Menstrual cycle.
Pregnancy test

Books recommended

1.Text book of Guyton (Arthur C) Prism Publishers Bangalore.
2.Review of medical Ganong Appleton and Physiology, Lange.

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Other delivery methods that can be highly effective, and you may have heard of concepts like flipped classroom and problem-based learning.
Different assessment scales is used like internal assessment, external assessment, seminars and different type of quiz.

Assessment

Different assessment scales are used like internal assessment, external assessment, seminars.
Max Marks Theory-100 (External Assessment 75+Internal Assessment 25) Max Marks
Practical-100 (External Assessment 75+Internal Assessment 25

Course Code: 105

Title of the Course: Medical Ethics, Legal aspects and Medical Terminology

L-5

Credits: 00

After completion of this course, the students should be able to:
CLO1-Apply the Ethical value
CLO2-he/she learns moral value about medical terms
CLO3- Legal responsibilities they might encounter in their subsequent coursework, in their clinical rotations and ultimately in their roles as health care professionals.

Mapping of Course Learning Outcomes (CLOs) with Program Learning Outcomes (PLOs)
and Program Specific Outcomes (PSOs)

	PLO-1	PLO-2	PLO-3	PLO-4	PLO-5	PSO-1	PSO-2	PSO-3
CLO-1	1	1	1	1	1	1	1	1
CLO-2		1	1		1			1
CLO-3		1		1	1	1	1	

Detailed Syllabus:

25 HOURS

Role Definition and Interaction, Ethical, Moral, and Legal Responsibilities
Medical terminology- The course employs a body systems-oriented, word-analysis approach to learning medical terminology. The goal of the class is to prepare students for the terminology they might encounter in their subsequent coursework, in their clinical rotations and ultimately in their roles as health care professionals.

Books recommended

Medical Ethics (Challenges and Prospects in India) by Subrata Sharma

Teaching-Learning Strategies

Typical teaching is giving lectures to large groups of students, followed by tutorials and workshops, as well as some individual study.
Other delivery methods that can be highly effective, and you may have heard of concepts like flipped classroom and problem-based learning.
Different assessment scales is used like internal assessment, external assessment, seminars and different type of quiz.

Assessment

Different assessment scales are used like internal assessment, external assessment, seminars.
Max Marks Theory-100 (External Assessment 75+Internal Assessment 25) Max Marks
Practical-100 (External Assessment 75+Internal Assessment 25

Course Code: 106

Title of the Course: English

L-25

Credits: 00

COURSE LEARNING OUTCOMES (CLOs)

CLO-1-This course is designated to help the students to acquire a good command over English language for common and medical terminology used in medical practice.
Objectives:
CLO-2-Ability to speak and write proper English
CLO-3-Ability to read and understand English
CLO-4-Ability to understand and practice medical terminology

Mapping of Course Learning Outcomes (CLOs) with Program Learning Outcomes (PLOs)and Program Specific Outcomes (PSOs)

	PLO-1	PLO-2	PLO-3	PLO-4	PLO-5	PSO-1	PSO-2	PSO-3
CLO-1	1	1	1	1	1	1	1	1
CLO-2	1	1	1	1	1	1	1	1
CLO-3	1	1	1	1	1	1	1	1
CLO-4	1	1	1	1	1	1	1	1

Books recommended

Communication Skills for Professionals and Students by Dr Amitabh Dwivedi

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Max Marks Theory-100 (External Assessment 75+Internal Assessment 25) Max Marks
Practical-100 (External Assessment 75+Internal Assessment 25

Course Code: 107

Title of the Course: Computer Skills

L-5

P-30

Credits: 00

COURSE LEARNING OUTCOMES (CLOs)

CLO-1- At the end of the subject, the student should be able perform computer applications related to medical records and information system.

Mapping of Course Outcomes (COs) with Program learning Outcomes (POs) and Program Specific Outcomes (PSOs)

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CLO1	1	1	1	2	2	1	1	1	2	1	1	1	2	1

Books recommended

Computer Fundamentals by Pradeep K SINHA and PRITI SINHA

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Practical-100 (External Assessment 75+Internal Assessment 25

SEMESTER - II

Course Code: AND -201 (Theory) & AND -204 (Practical)

Title of the Course Anaesthesia and Operative Drugs

L-40 **P-20** **Credits- L-2, P-1 =3**

COURSE LEARNING OUTCOMES (CLOs)

After completing this Course, the students should be able to

- **CLO-1**- Learn about pharmacology
- **CLO-2**- To know about various drugs used in Anesthesia
- **CLO-3**-Present accurate and proper drug dose for different surgeries and procedures.

Mapping of Course Outcomes (COs) with Program Learning Outcomes (PLOs) and Program Specific Outcomes (PSOs)

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CLO1	1	1	1	2	2	1	1	1	2	1	1	1	2	1
CLO2	1	1	1	1	1	2	2	1	1	1	1	1	1	1
CLO3	1	1	1	2	1	1	1	1	1	2	2	1	2	1

Detailed Syllabus
AND 201, ANESTHESIA AND OPERATIVE DRUGS
MM Theory-100 (75+25)

UNIT-I

10 hours

Pharmacology:
biophysical science-based course which examines drugs used in surgery and emergency drugs, reviewing anaphylactic and toxicity reactions. Various terminology used in drug formulations, factors affecting dosage, illustration relating drugs and narcotics, principles of administration of drugs, drug safety

UNIT-II

10hours

Drugs used in Anaesthesia

Inducing agents.
Muscle Relaxants
Reversal Drugs
Inhalational Anesthesia
Sedatives

Hypnotics

UNIT-III

10 hours

Drugs used in Anaesthesia

Analgesia
Anticholinergic
Antihypertensive
Drugs used in local block
Drugs used in Spinal and Epidural Block
Gases used in Anesthesia, Oxygen,
Nitrous Oxide,
Cyclopropane

UNIT-IV

10 hours

Drugs used in Anaesthesia
Anti-emetic
Anti Cholinesterance drugs
Anti- allergic drugs
Steroids
Drugs used in cardiac arrest, shock
Miscellaneous drugs

AND 204, ANESTHESIA AND OPERATIVE DRUGS
MM -Practical -100 (75+25)

20 hours

Demonstration in OR
Gas Cylinder Handling
Central gas pipeline
Iv Fluids used in anaesthesia, preparations of IV Fluids
Setting Trolly for CPR, Difficult intubation
Book Reference:
1. Operation Theatre Techniques by Dr. Pramila Bhalla.
2. Operation Theatre Synopsis of Medical Instruments & Procedures by Arora & Yadav
3. Short Text Book of Anaesthesia by Dr. Ajay Yadav
4. Text Book of Anaesthesia by A.R. Aitkenhead
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ASSESSMENT

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Max Marks Theory-100 (External Assessment 75+Internal Assessment 25) Max Marks
Practical-100 (External Assessment 75+Internal Assessment 25)

Course Code: GFC-202 (Theory) and GFC- 205 (Practical)

Title of the Course- Pathology

L-30 P-20 Credits- (L-2, P-1) =3

- **COURSE LEARNING OUTCOMES (CLOs)**

- **CLO-1**- Learn about blood and its components.
- **CLO-2**- Observe about different blood tests.
- **CLO-3**- Demonstration of various lab reports and tests.

Mapping of Course Outcomes (COs) with Program Outcomes (POs) and Program Specific Outcomes (PSOs)

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CLO1	1	1	1	2	2	1	1	1	2	1	1	1	2	1
CLO2	1	1	1	1	1	2	2	1	1	1	1	1	1	1
CLO3	1	1	1	2	1	1	1	1	1	2	2	1	2	1

Detailed Syllabus

UNIT-I **7 hours**

Collection of Blood
Anti-Coagulants
Coagulation Profile; Method and Principal; Advantages and Disadvantages
Clot Retraction time; Bleeding Time; Clotting time.
Blood Groups: Introduction; ABO Blood Groups in heritance of ABO Group; Techniques of Blood Grouping: Slide Method; Tube Method; Bombay; Phenotype; Clinical Significance; Minor Blood Groups

UNIT -II **7 hours**

Rh – Typing: Techniques of Rh Grouping; Rh-Incompatibility; Erythroblastosis is foetalis (HDN); Rh - Immunization; D^4-Antigen.
Transfusion reactions and complications of blood transfusion
Blood Components; Packed red cells; Platelet

UNIT – III **7 hours**

Concentrate-Appropriate uses; Granulocyte concentrate; appropriate uses; Fresh Frozen Plasma (FFP); appropriate uses; Factor VIII and Factor IX concentrate and appropriate uses; Cryoprecipitate and appropriate uses; Albumin; and immuno globulin and other products.

UNIT – IV **9 hours**

Terminologies-Cell Injury, Degenerations, Cell death & Necrosis, Inflammation, Healing, Tuberculosis, Typhoid, Thrombosis- briefly, Embolism- briefly, Ischemia and Infraction - briefly Derangements of body fluids Disorders of circulation Anaemia, Leukaemia

GFC- 205, Pathology

MM -Practical -100 (75+25) **20 hours**

Demonstration in lab

Recommended Books:

1. Textbook of Pathology by Dr. Harshmohan.
2. Robbin's Pathologic Basis of Disease.
3. Practical Pathology by Tejender Singh.
4. Medical Lab Techniques by Prof V.H. Talib.

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Max Marks Theory-100 (External Assessment 75+Internal Assessment 25) Max Marks

Practical-100 (External Assessment 75+Internal Assessment 25)

Course Code: GFC-203 (Theory) & GFC-206 (Practical)

Title of the Course: Microbiology

L-30 P-10 Credits- (L-2, P-1) =3

COURSE OUTCOMES (COs)

After completing this Course, the students should be able to

- **CLO-1**- To know about various methods of sterilization used mainly in healthcare sector.
- **CLO-2**- To demonstrate about various tests related to Immune system

Mapping of Course Outcomes (COs) with Program Learning Outcomes (PLOs) and Program Specific Outcomes (PSOs)

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CLO1	1	1	1	2	2	1	1	1	2	1	1	1	2	1
CLO2	1	1	1	1	1	2	2	1	1	1	1	1	1	1

DETAILED SYLLABUS

GFC 203, Microbiology

MM Theory-100 (75+25)

UNIT-I **9 Hours**

Introduction to microbes, source of infection, models of spread, bacterial Cell, growthrequirements of bacteria, bacteria Cycle.

Sterilization and Disinfection; Definition; Methods of sterilization procedures techniquesand uses; Clinical Importance, Biomedical Waste & Its management

UNIT – II **5 hours**

HIV & AIDS, Hepatitis Virus; Hepatitis A; B; & C failures of various types of hepatitisvirus

UNIT-III **9 hours**

Basic Fundamentals of Immunology

Immunological Apparatus; structure and functions, T-Cells; B-Cell lymphocytesAntigen, Antibody, Antigen and Antibody reactions

Immunoglobulins; Classes of immunoglobulins; I_gG; I_gA; I_gM; I_gD; I_gE;Immune Responses; Immunity; Hyper Sensitivity

UNIT-IV **7 hours**

Classification of Human Parasites

Vector and arthropods of medical importance (Mosquitoes, Fleas, Tick, Flies, Sand fly,Scabies etc)

GFC 206, Microbiology **20 hours**

MM Practical-100 (75+25)

Demonstration in lab

Recommended Books:

1. Ramanik Sood, Laboratory Technology (Methods and Interpretations) J.P. Bros, New Delhi.

2. Sachdev K N, Clinical Pathology & Bacteriology J.P. Bros, New Delhi.
3. Basic Laboratory Methods in Parasitology, J.P. Bros, New Delhi.
4. Ananth Narayan & Panikkar, Textbook of Medical Microbiology.
5. Robert Cruckshank, Medical Microbiology – The practice of Medical Microbiology.
6. D.R. Arora Textbook of Microbiology, CBS Publications, New Delhi.
7. Prof. C.P. Baveja, Practical Microbiology, Arya Publications.

Teaching-Learning Strategies

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Practical-100 (External Assessment 75+Internal Assessment 25)

SEMESTER -III

Course Code: BOTT -301(Theory) BOTT-304 (Practical)

Title of the Course: Anesthesia Methods

L-50 P-20 Credits- (L-3, P-1) =4

COURSE LEARNING OUTCOMES (CLOs)

After completing this Course, the students should be able to

CLO-1- The students will come to know about different methods of Anesthesia.
CLO-2- The student will come to know about various equipment's used in Anaesthesia.
CLO-3-Will come to know about different techniques used in emergency conditions.

Mapping of Course learning Outcomes (CLOs) with Program Learning Outcomes (PLOs) and Program Specific Outcomes (PSOs)

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CLO1	1	3	1	2	2	1	1	1	2	1	3	1	2	1
CLO2	2	3	1	1	1	2	2	1	1	1	3	1	1	1
CLO3	1	3	1	2	1	1	1	1	1	2	3	1	2	1

DETAILED SYLLABUS

BOTT 301, Anesthesia Methods **10 hours**

MM Theory-100 (75+25)

UNIT – I

Anesthesia: Definition of Anesthesia
History of Anesthesia
First successful clinical demonstration:
Pre historic (ether) era
Inhalational anesthetic era
Regional anesthetic era
Intravenous anesthetic era
Modern anesthetic era
Minimum standard of anesthesia
Who should give Anesthesia.

UNIT – II **10 hours**

Basic anesthetic trechniques
Pre-operative, intra operative
& Post operative care
Pre anesthetic checkup (PAC)
Investigations-
a. routine-hematological- their significance
- urine, E.C.G.
- chest X-Ray
- Echocardiography
- liver function test, TFT, PFT, Blood glucose
- renal function test and others

ASA grading-1.2.3.4.5

Pre-anesthetic orders:
-patient-informed consent.
-fasting guidelines/nil per orally
- premedication- drugs used
- special instructions- if any
Machine- checking the, machine 02, n20, suction apparatus, laryngoscopes.
-insertion of canula
- monitoring systems
Preparation of drugs- emergency drugs

UNIT – III **10 hours**

Intra operative management

- Confirm the identification of the patient
- - monitoring- minimum
- - noninvasive & invasive monitoring
- - induction of anesthesia- drugs used
- -endotracheal intubation
- Maintenance of anesthesia
- Positioning of the patient
- Blood / fluid & electrolyte balance
- Reversal from anesthesia – drugs used
- Dressing of wound
- Transferring the patient
- Recovery room- set up and things needed, PACU

Post-operative complications & management
Anesthesia techniques, types of anesthesia, choice of anesthesia
General anesthesia, indication of general anesthesia, technique of GA, local anesthesia.
Conduct of general anesthesia- standard technique of GA
Regional anesthetic techniques
1. local anesthetic technique
2. nerve blocks
3. spinal anesthetic/epidural anesthesia
Anesthesia instrument planning for various surgical procedures
Anesthesia machine/ Boyle's apparatus, anesthesia work station
Supply of compressed gases, liquid oxygen, storage and supply system
Vaporizers- types, hazards, maintenance, filling and draining etc.
Breathing system- classification of breathing circuits- Mapleson system-a, b, c, d, e, f
Jackson rees system, Bains circuit, circle system.
Face mask & airways, laryngoscopes- types, sizes, stylets, and gum elastic bougie'

UNIT – IV **10 hours**

Intubation equipment's-

- Endotracheal tubes- types, sizes, cuff system
  fixing, removing and inflating cuff, checking tube position, complications
- Common components- connectors, adaptors, reservoir bags, face masks
- Supraglottic devices- LMA, IGEL, etc.

Anesthesia ventilator and working principles
General considerations: humidity & heat
Supply of compressed gases, liquid oxygen, storage & supply system,

- Compressed gas cylinders
- Color coding

- Cylinder valves: pin index
- Reducing pressure valves, pressure regulator
- Gas piping system
- Recommendations for piping system
- Alarms & safety devices
- Machine-checking the machine 02, n20
- Suction apparatus laryngoscopes, ET tubes, and airways
- Scavenging of waste anesthetic gases
- Resuscitators AMBU bag

UNIT – V **10 hours**

- Monitoring devices
- Multipara monitor- capnography (etco2), pulse oximeter (spo2), electrocardiography (ECG)
- Temperature- central and peripheral
- Anesthesia gas monitoring
- Non-invasive blood pressure (NIBP) and invasive blood pressure (IBP)
- Central venous pressure (CVP)
- PA Pressure, LA pressure & cardiac output
- Anesthesia depth monitor
- Neuromuscular transmission monitor- peripheral nerve stimulator
- Kidney function monitoring
- Blood loss monitoring
- Pain control methods
- Labor analgesia
- Technical term used
- Recent advances
- CPR, BLS

BOTT - 304, ANESTHESIA METHODS **20 HOURS**

MM Practical-100 (75+25)

Demonstration in OT.

Changing cylinders, making positions, setting monitoring devices, preparing drips,

Setup, check and maintain anesthesia machine, monitors life support equipment like airway, Ventilator emergency equipment, defibrillator, anesthesia and resuscitation drugs.

Maintain and keep record s of all anesthesia equipment and drugs.

Prepares and Maintain Operation table, light, electric cautery, tourniquets etc.

Book Reference:

1. Operation Theatre Techniques by Dr. Pramila Bhalla.
2. Operation Theatre Synopsis of Medical Instruments & Procedures by Arora & Yadav
3. Short Text Book of Anaesthesia by Dr. Ajay Yadav
4. Text Book of Anaesthesia by A.R. Aitkenhead

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Assessment

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Max Marks Theory-100 (External Assessment 75+Internal Assessment 25) Max Marks
Practical-100 (External Assessment 75+Internal Assessment 25)

Course Code: BOTT -302(Theory) BOTT-305 (Practical)

Title of the Course FUNDAMENTALS OF OPERATION THEATRE SKILLS

L-40 P-20 Credits- (L-2, P-1) =3

COURSE LEARNING OUTCOMES (CLOs)

After completing this Course, the students should be able to

CLO-1- To know about the Central Sterile Sterilization Department.

CLO-2- To know about the various techniques used in sterilization.

CLO-3- To know about the various methods used for sterilization of different equipment's and instruments used in Healthcare Sector.

Mapping of Course learning Outcomes (CLOs) with Program Learning Outcomes (PLOs) and Program Specific Outcomes (PSOs)

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CLO1	1	3	1	2	2	1	1	1	2	1	3	1	2	1
CLO2	2	3	1	1	1	2	2	1	1	1	3	1	1	1
CLO3	1	3	1	2	1	1	1	1	1	2	3	1	2	1

BOTT 302, FUNDAMENTALS OF OPERATION THEATRE SKILLS

MM Theory-100 (75+25)

DETAILED SYLLABUS

UNIT – I **10 HOURS**

C.S.S.D. and logistics

Layout, different rooms and record keeping cleaning of equipment's and sterilization.

Methods of cleaning- mechanical washing, ultrasonic cleaner

Lubrication, inspection and pitfalls like coloured spots and corrosion , staining ,dust deposit , blunt broken.

General care and testing of instruments-forceps haemostatic, needle, holders, Knife,blade, scissor, use/ abuse, care during surgery.

UNIT-II **10 HOURS**

Sterilization – Definition

Methods of sterilization

A. Physical Methods –

Dry Heat, Hot Air Oven

Moist heat- Autoclave, steam Sterilization, Hot and Cold-Water Sterilizer

UV treatment

Gamma radiation, X -Ray

UNIT – III **10 HOURS**

B. Chemical Sterilization

EO Gas Sterilization

H2O2 gas, Plasma Sterilization Formaldehyde

Cidex, Ozone etc

Disinfectants – Thermal washer disinfection

Monitoring of sterilization

Disinfectants and of their instruments and Sterilization- Definition,

Methods cleaning agents, detergents, Mechanical washing, ultrasonic cleaner,

lubricationinspection and pitfalls various methods of chemical treatment-
formalin, glutaraldehyde etc, thermal. Hot Air oven- dry heat, Autoclaving,
steam
Sterilization water etc,
UV treatment

UNIT – IV **10 HOURS**

Instrument's Etching, care of micro surgical and titanium instruments Sterilization of equipment's – Arthroscopy, Gastro scope, imago Lamp, Apparatus,suction Apparatus, Anesthetic equipment's including endotracheal tubes
Methods of packing/Wrapping of items
Monitoring of sterilization
OT fumigation including Laminar Air Flow
Other CSSD procedures

- Waste disposal collection of used items from user area.
- Use of protective clothing
- Cleaning of catheters and tubing, cleaning glass ware, cleaning syringes and needles.

BOTT - 304, FUNDAMENTAL OPERATION THETRE SKILLS **20 HOURS**

MM Practical-100 (75+25)

Demonstration in CSSD about cleaning, wrapping trays, monitoring, operating autoclaves and other sterilizers
Learn operation of autoclave, sterilizer for EO gas, formaldehyde, plasma, thermal washer disinfection.
Materials used for wrapping and packing assembling pack contents.
Types of packs prepared, inclusion of trays in packs.
Method of wrapping and making use of of indicators to show that a pack of container has been through a sterilization process stamping.
Monitoring of sterilization

Book Reference:

1. Operation Theatre Techniques by Dr. Pramila Bhalla.
2. Operation Theatre Synopsis of Medical Instruments & Procedures by Arora & Yadav
3. Short Text Book of Anaesthesia by Dr. Ajay Yadav
4. Text Book of Anaesthesia by A.R. Aitkenhead

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Practical-100 (External Assessment 75+Internal Assessment 25)

Course Code: BOTT -303(Theory) BOTT-306 (Practical)
Title of the Course Operation Theatre Technology -I
L-40 P-20 Credits- (L-2, P-1) =3

COURSE LEARNING OUTCOMES (CLOs)

After completing this Course, the students should be able to

CLO-1-The student will come to know about Layout of Operation Theatre.
CLO-2- The student will learn about different equipment's used in Operation theatre.
CLO-3- Handling of different powered surgical instruments and equipment's used OT, ward and I.C.U.

Mapping of Course learning Outcomes (CLOs) with Program Learning Outcomes (PLOs) and Program Specific Outcomes (PSOs)

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CLO1	1	3	1	2	2	1	1	1	2	1	3	1	2	1
CLO2	2	3	1	1	1	2	2	1	1	1	3	1	1	1
CLO3	1	3	1	2	1	1	1	1	1	2	3	1	2	1

DETAILED SYLLABUS
BEMT 303, Operation Theatre Technology -I

MM Theory-100 (75+25)
UNIT – I 10 HOURS
Layout of operation theatre
Physical Facilities
Transition of patient from receiving area to OT
Peripheral Support areas
UNIT – II 10 HOURS
Various zones of OT
Operating room, Special procedure rooms
Potential sources of injury to caregiver and patient and universal precautions
UNIT- III 10 HOURS
Handling sterile instruments
Surgical drills, saw
Electrocautery
Diathermy Machine
UNIT- IV 10 HOURS
OT Lights
Operating Microscope
C-arm
Suction Machine
BOTT - 306, Operation Theatre Technology – I **20 HOURS**
MM Practical-100 (75+25)
Demonstration in OT
Checking the machine O2, N2O, suction apparatus, Laryngoscopes, ET Tubes, airways.
Additional skills in the preparation procedures.

Book Reference:

1. Operation Theatre Techniques by Dr. Pramila Bhalla.
2. Operation Theatre Synopsis of Medical Instruments & Procedures by Arora & Yadav
3. Short Text Book of Anaesthesia by Dr. Ajay Yadav
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Practical-100 (External Assessment 75+Internal Assessment 25)

SEMESTER -IV

Course Code: BOTT -401(Theory) BOTT-404 (Practical)

Title of the Course SURGICAL TECHNIQUES -I

L-40 P-20 Credits- (L-2, P-1) =3

COURSE LEARNING OUTCOMES (CLOs)

After completing this Course, the students should be able to

CLO-1- The student will come to know about different surgical procedures.
CLO-2- The student will come to know about different surgical positions.
CLO-3- Handling of different instruments used in various surgeries.

Mapping of Course learning Outcomes (CLOs) with Program Learning Outcomes (PLOs) and Program Specific Outcomes (PSOs)

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CLO1	1	3	1	2	2	1	1	1	2	1	3	1	2	1
CLO2	2	3	1	1	1	2	2	1	1	1	3	1	1	1
CLO3	1	3	1	2	1	1	1	1	1	2	3	1	2	1

DETAILED SYLLABUS
BOTT 401, Surgical Techniques – I
MM Theory-100 (75+25)

UNIT-I **10 hours**

General Surgery
Methods of Dressings,
Sutures
Bandages
Plasters

UNIT – II 10 HOURS

Give broad ideas about the following with emphasis on surgical positions, instruments required in the case and role of assistant in different surgical procedures.
General Surgery

UNIT- III 10 HOURS

Orthopaedic Surgery
Obstetric and Gynaecologic
ENT
Ophthalmic surgery
Oral surgery

UNIT – IV 10 HOURS

Paediatric surgery
Genitourinary surgery
Geriatric surgery
Endoscopic procedures

BOTT 404, SURGICAL TECHNIQUES-II **20 HOURS**
MM Practical-100 (75+25)

Demonstration in OR

To learn about surgical instruments, uses, identification, cleaning, assisting in surgical cases.

Book Reference:

1. Operation Theatre Techniques by Dr. Pramila Bhalla.
2. Operation Theatre Synopsis of Medical Instruments & Procedures by Arora & Yadav
3. Short Text Book of Anaesthesia by Dr. Ajay Yadav
4. Text Book of Anaesthesia by A.R. Aitkenhead

Teaching-Learning Strategies

Typical teaching is giving lectures to large groups of students, followed by tutorials and workshops, as well as some individual study.

Other delivery methods that can be highly effective, and you may have heard of concepts like flipped classroom and problem-based learning.

Different assessment scales is used like internal assessment, external assessment, seminars and different type of quiz.

Assessment

Different assessment scales are used like internal assessment, external assessment, seminars.

Max Marks Theory-100 (External Assessment 75+Internal Assessment 25) Max Marks

Practical-100 (External Assessment 75+Internal Assessment 25)

Course Code: BOTT-402 (Theory) & BOTT-405(Practical)

Title of the Course OPERATION THEATRE TECHNOLOGY -II

L-40 P-20 Credits-(L-2, P-1) =3

COURSE LEARNING OUTCOMES (CLOs)

After completing this Course, the students should be able to

CLO-1- To know about preparations of patient for surgeries

CLO-2- To know about various diagnostic procedure.

Mapping of Course Learning Outcomes (CLOs) with Program Learning Outcomes (PLOs) and Program Specific Outcomes (PSOs)

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CLO1	1	1	1	2	2	1	1	1	2	1	1	1	2	1
CLO2	1	1	1	1	1	2	2	1	1	1	1	1	1	1

BOTT 402, OPERATION THEATRE TECHNOLOGY - II

MM Theory-100 (75+25)

UNIT- I **10 HOURS**

Preoperative preparation of the patient

Insertion of bladder catheter

Positioning the surgical patient

Harmful effects of surgical positions.

UNIT -II 10 HOURS

Application of pneumatic tourniquets

Plaster application

C-Arm

Technique of Surgical scrub

Gloving, Gowning

UNIT- III 10 HOURS

Skin Preparation, Drapes, Draping

Visualization techniques

Endoscopes

Haemostasias and methods to control bleeding

Drainage system/ surgical drains

Transportation of the patient to recovery room/ ICU

UNIT-IV 10 HOURS

Diagnostic procedures in OR

Pathological Examination

Radiological Examination

MRI

Nuclear Medicine studies

Ultrasonography- uses of ultra sound in Anesthesia

BOTT 405, Operation Theatre Technology - II **20 HOURS**

MM Practical-100 (75+25)

Demonstration of clinical posting in wards, minor OT, OT

Insertion of catheter, dressing, cleaning of endoscopes
PACU- Post – Operative Complications and Management.

Book Reference:

1. Operation Theatre Techniques by Dr. Pramila Bhalla.
2. Operation Theatre Synopsis of Medical Instruments & Procedures by Arora & Yadav
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Max Marks Theory-100 (External Assessment 75+Internal Assessment 25) Max Marks
Practical-100 (External Assessment 75+Internal Assessment 25)

Course Code: BOTT -403(Theory) BOTT-406 (Practical)
Title of the Course: Nursing Care and Emergency Management

L-50 P-20 Credits- (L-3, P-1) =4

COURSE LEARNING OUTCOMES (CLOs)

After completing this Course, the students should be able to

CLO-1- The Student will be able to handle and manage the patient intra- operatively and post- operatively.
CLO-2- The student can deal with emergency management.
CLO-3- The student can work and deal with the patients in I.C.U.

Mapping of Course learning Outcomes (CLOs) with Program Learning Outcomes (PLOs) and Program Specific Outcomes (PSOs)

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CLO1	1	3	1	2	2	1	1	1	2	1	3	1	2	1
CLO2	2	3	1	1	1	2	2	1	1	1	3	1	1	1
CLO3	1	3	1	2	1	1	1	1	1	2	3	1	2	1

DETAILED SYLLABUS
BOTT 403, Nursing care and Emergency Management

MM Theory-100 (75+25)

UNIT 1 **10 HOURS**

Nursing Care
Pre-operative management of patient
Post – Operative Management of patient
PACU- Post Anesthesia Care Unit
Transportation of critically ill patient, intra hospital and to other hospitals, Transportation Ambulance.
Shifting of patients, Monitoring of vital function, detection of life, threatening problems eg: shock, respiratory failure, vomiting etc.
Transportation of patient to and from the operation theatre.
Emergency Management

UNIT 2 10 HOURS

First Aid
Road Side- Accident
Shock
Cardiac arrest
CPR
Disaster Management

UNIT 3 15 HOURS

ICU (Intensive Care Unit)
Setup, services rendered, rules procedures, disciplines, management of asepsis,
Types of patients, care and physiotherapy of unconscious patients
Equipment's used in ICU, their function, operation and maintenance
Suction catheters and tubes, CVP lines.

UNIT 4 15 HOURS

Respiratory Ventilator, Methods of suctioning
Humidifier, Cardiac monitor, ABG, Spiro meter, Central gas pipeline, intra-arterial canulation, nebulizer, infusion pump, T- piece
Methods of giving oxygen therapy
Duties of assistant in ICU
Types of beds
Ventilation of patient in crises, mouth to mouth, mouth to tube, AMBU Bag
ICU Lab
Management of tetanus patients.
Psychological aspect of patient.
Hemofiltration
ECG, EMG. EEG
Insertion of arterial lines, cardio version, methods of hypothermia, Tracheostomy
Nutrition support in ICU.

BOTT 406, NURSING CARE AND EMERGENCY MANAGEMENT 20 HOURS
MM Practical-100 (75+25)

Demonstration in ICU and wards, learning suction of ET tube, care and maintenance of monitors, ventilators, oxygen delivery system, anesthesia equipment, drugs, fluids etc.

Book Reference:

1. Operation Theatre Techniques by Dr. Pramila Bhalla.
2. Operation Theatre Synopsis of Medical Instruments & Procedures by Arora & Yadav
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4. Text Book of Anaesthesia by A.R. Aitkenhead

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Assessment

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Practical-100 (External Assessment 75+Internal Assessment 25)

SEMESTER – V

Course Code: BOTT- 501(Theory) & BOTT-504(Practical)
Title of the Course, SURGICAL TECHNIQUES - II
L-40 P-20 Credits- (L-2, P-1) =3

COURSE LEARNING OUTCOMES (CLOs)

After completing this Course, the students should be able to
CLO-1- To know about the various surgical positions used in procedures.
CLO-2- To know about the various special surgeries.

Mapping of Course Learning Outcomes (CLOs) with Program Learning Outcomes (PLOs) and Program Specific Outcomes (PSOs)

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CLO1	1	1	1	2	2	1	1	1	2	1	1	1	2	1
CLO2	1	1	1	1	1	2	2	1	1	1	1	1	1	1

BOTT 501, SURGICAL TECHNIQUES – II
MM Theory-100 (75+25)

UNIT-I 10 HOURS
Special Surgeries
Given broad ideas about the following surgeries with emphasis on surgical positions, instruments required in the case and role of assistant.
Cardio thoracic surgeries

UNIT – II 10 HOURS
Transplant surgeries
Neuro Surgeries
Anaesthesia outside the OT

UNIT – III 10 HOURS
Geriatric Anaesthesia
Trauma
Plastic surgery

UNIT – IV 10 HOURS
Peripheral Vascular Surgery
Hand Surgeries
Bariatric Surgeries

BOTT 504, SURGICAL TECHNIQUES- II **20 HOURS**
MM Practical-100 (75+25)
Demonstration in OT

Book Reference:
1. Operation Theatre Techniques by Dr. Pramila Bhalla.
2. Operation Theatre Synopsis of Medical Instruments & Procedures by Arora & Yadav
3. Short Text Book of Anaesthesia by Dr. Ajay Yadav
4. Text Book of Anaesthesia by A.R. Aitkenhead

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Max Marks Theory-100 (External Assessment 75+Internal Assessment 25) Max Marks

Practical-100 (External Assessment 75+Internal Assessment 25)

Course Code: BOTT-502 (Theory) & BOTT-505(Practical)

Title of the Course, APPLIED PHYSICS AND CHEMISTRY

L-40 P-20 Credits- (L-2, P-1) =3

COURSE LEARNING OUTCOMES (CLOs)

After completing this Course, the students should be able to

CLO-1- To know about the various surgical positions used in procedures.

CLO-2- To know about the various special surgeries.

Mapping of Course Learning Outcomes (CLOs) with Program Learning Outcomes (PLOs) and Program Specific Outcomes (PSOs)

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CLO1	1	1	1	2	2	1	1	1	2	1	1	1	2	1
CLO2	1	1	1	1	1	2	2	1	1	1	1	1	1	1

BOTT 502, APPLIED PHYSICS AND CHEMISTRY

MM Theory-100 (75+25)

UNIT-I 10 HOURS

Energy, Potential Energy, Kinetic Energy, Mechanical efficiency

Basic principles of mechanics like Concept of Force, pressure, massweight, and properties of solid, liquids & gases.

UNIT-II 10 HOURS

Basic principles of electricity as applied in the field of Operation Theatre, ICU, CSSD

Concept of static electricity, concept of charge, potential current, power, resistance.

Basic principles of heat, concept of temperature, its measurement, ways of dispersion of heat.

UNIT-III 10 HOURS

Effect of heat, rise or fall in temperature, it effects on human bodies, methods of prevention of heat loss, Thermometry, thermostat,thermocouple.

Concept of volume, specific gravity, density, concentration of solutes.

Gas law & their practical implication in the field.

UNIT-IV 10 HOURS

Compressed gases & filling ratio, Principles of pressure regulators, flow of gases, fluids viscosity, law of laminar, flow rate, turbulent flow, critical Reynolds's member, Resistance to Laminar & Turbulent flow.

Pressure loss due to abrupt change in bore of tube. Principle of flow meters and its types.

BOTT 505, APPLIED PHYSICS AND CHEMISTRY 20 HOURS

MM Practical-100 (75+25)

Demonstration in Lab.

Book Reference:

1. Concepts of Physics by HC Verma.
2. Chemistry and Physics by Sanjay Gupta.

Teaching-Learning Strategies

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Practical-100 (External Assessment 75+Internal Assessment 25)

Course Code: BOTT-503 (Theory) & BOTT-506(Practical)

Title of the Course MEDICINE RELEVANT TO OPERATION THEATRE TECHNOLOGY

L-40 P-20 Credits- (L-2, P-1)

COURSE LEARNING OUTCOMES (CLOs)

After completing this Course, the students should be able to

CLO-1- To know about the different diseases and disorders.

CLO-2- To know about various medications for different disease and disorders.

Mapping of Course Learning Outcomes (CLOs) with Program Learning Outcomes (PLOs) and Program Specific Outcomes (PSOs)

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CLO1	1	1	1	2	2	1	1	1	2	1	1	1	2	1
CLO2	1	1	1	1	1	2	2	1	1	1	1	1	1	1

BOTT 503 MEDICINE RELEVANT TO OPERATION THEATRE TECHNOLOGY

MM Theory-100 (75+25)

UNIT-I **10 hours**

Diabetes Mellitus
Hypertension
Ischemic heart disease
Obesity

UNIT II 10 HOURS

Elderly Patient
Pregnancy
Shock
COPD

UNIT III 10 HOURS

Chronic Liver Failure
Chronic Liver Disease
Anemia

UNIT IV **10 HOURS**

Pediatric Patient Infant/ Neonate
Epilepsy
CVA
AIDS
Hepatitis B

BOTT 506, MEDICINE RELEVANT TO OPERATION THEATRE TECHNOLOGY 20 HOURS

MM Practical-100 (75+25)

Demonstration of clinical posting in wards.

Book Reference:

1. Operation Theatre Techniques by Dr. Pramila Bhalla.
2. Operation Theatre Synopsis of Medical Instruments & Procedures by Arora & Yadav

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4. Text Book of Anaesthesia by A.R. Aitkenhead

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Practical-100 (External Assessment 75+Internal Assessment 25)

SEMESTER – VI

Course Code: BOTT-601

Title of the Course Dissertation & Viva-Voice
Credits-5

COURSE LEARNING OUTCOMES (COs)

After completing this Course, the students should be able to

- **CLO-1**- Students select a topic and do research on it and make results and conclusion out it which may benefit the institution/hospitals.

Mapping of Course Learning Outcomes (CLOs) with Program Learning Outcomes (PLOs) and Program Specific Outcomes (PSOs)

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CLO1	1	1	2	2	2	1	1	1	2	2	3	1	2	1

Teaching-Learning Strategies
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Different assessment scales is used like internal assessment, external assessment, seminars and different type of quiz.

ASSESSMENT
Different assessment scales are used like internal assessment, external assessment, seminars.
Max Marks Practical-100 (External Assessment 75+Internal Assessment 25)