Dolphin (PG) Institute

Of Biomedical & Natural Sciences

Dehradun, Uttarakhand-248007

(An Autonomous Institute)

Ordinance & Syllabus

of

B.Sc in Operation Theatre Technology

Academic Programme

Ordinance according to

NEP-2020

Duration: 4 Years

(3 Years +1 Year Internship)

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ACKNOWLEDGEMENT:

We acknowledge the invaluable contributions and expertise of the Board of Studies in shaping the Bachelor of Science (Bonours) Operation Theatre Technology, course curriculum. The Board's dedication to ensuring the program meets the highest standards of academic excellence and clinical relevance has been instrumental in preparing our students for successful careers in medical laboratories.

We extend our sincere gratitude to the Board members and faculty of different departments for their expert guidance on curriculum development and review, Commitment to staying current with health care trends and best practices.

We thank all the members for active involvement in ensuring the program aligns with professional accreditation standards and support in fostering strong hospital partnerships and clinical placement opportunities

We are profoundly grateful to the following experts for their contribution in developing this syllabi.

Dr. A.Raturi, Associate Professor, Dept of Physics
Mr. Aditya Swarup, Associate Professor, Dept of MLT, DIBNS
Dr. Gauri Singh, Associate professor, Dept of Microbiology, DIBNS
Dr. Ashok Singh, Associate Professor, Dept of Microbiology, DIBNS

BOARD OF STUDIES:

Composition of Board of Studies: Department of Operation Theater Technology

Sl. No.	Category	Names	Signature
16.	Head of The Department - Chairperson	Dr. Sandeep Ahuja	
2.	All Faculty members of the Department	Dr.Gyanendra Awasti Dr.V.C.Reddy Dr.Rajiv Garg	
3.	Two subject experts from outside the parent University nominated by the academic council.	Dr. Gautam Rawat, Assistant Professor, Govind Paramedical Institute, Jogiwala, Dehradun, UK Mr.Badal sindhwai, OT technologist, SRHU, Jolly grant, Dehradun, UK	
4.	One expert nominated by the Vice-chancellor	Dr.S.C. Baghel, Supervisor & Senior Anesthesia In-Charge, Dept Of Operation theater Technology, SRHU, Jolly grant, Dehradun,UK	
5.	One representative from industry nominated by the principal	Dr. Reena Ahuja M.S; Surgeon, Jankalyan Hospital, Dehradun, UK	
6.	One member of the college alumni to be nominated by the principal	NA	

About Bachelor in Operation Theater Technology

Today with advanced technology, surgeries and operations have a big role to play to help people overcome their ailments. Various electrical and electronic equipment are in use in modern operation theaters for monitoring anesthesia and surgical procedures.

The role of operation Theater Technologist is to help to save the lives of patients by assisting doctors performing surgery in the theater. They are responsible for the direct and indirect patient care. They are trained to assist the surgical and anesthetic teams during the procedures and assume responsibility for completion of other functions assigned. Apart from the operation related work like preparing and maintaining Operation Theater and equipment, operation theater technicians also act as a link between the surgical team and other part of Operation Theater and hospital. They must be able to anticipate the requirements of the surgical team and respond quickly and effectively. Now there is a great demand for such personnel, the qualified and trained Operation Theater Technician, in the corporate hospitals, both in India and abroad.

Program Mission

The mission of the Operation Theater Technology Program at Dolphin Institute of Bio Medical & Natural Sciences is to save the lives of patients by assisting doctors performing surgery in the theater. They will learn to implement their skills for the the direct and indirect patient care.

Program Outcomes

1. Theoretical and practical Knowledge: The student will gain Knowledge and technical skills associated with Operation Theatre Technology.

2. Organization, Quality Control and Management of Operation Theater: The students will learn the working and operation of surgical and Para surgical instruments. They will learn appropriate quality control and safety procedures during surgical procedures and pre and post operative procedures.

3. Usage of Modern Tools & Techniques: The students will become familiar with the Modern surgical tools & Techniques and their application in various surgeries . They will also apply appropriate techniques and resources through practical knowledge, machine learning and AI tools.

4. Entrepreneurial and business skills: Enabling the students to implement and build their crude ideas into a potential business plan so as to enhance the possibility of self-employment and entrepreneurship.

5. Job opportunities, employability, entrepreneurial and business skills: **:** The students will be exposed to the job and placement opportunities related to operation theatre and surgical equipment. The student will be professionally competent as a operation theatre technologist.

6. Ethical, moral & professional values: The students will gain ethical values as morals, social behaviour and professional awareness for functioning effectively as a operation theatre technologist. They will learn the ethics and guidelines of various regulatory/legal bodies governing the Medical Institutions.

7. Report Writing, Data Presentation and Scientific Writing The students will learn the report writing, data compilation, interpretation.

8. Scientific Writing, Soft-Skill Development and Communication skills: The students will acquire verbal and nonverbal skills by the means of activities viz. report writing, seminar, presentations. They will also learn to build professional and stronger relationship with co-workers.

9. Continued and outcome-based learning: The students will extend their knowledge and skills for critical thinking and leadership. They will learn the ethics and guidelines of various regulatory/legal bodies governing the R&D and the industry.

10. Preoperative and Postoperative Procedures: Ability to assist in the preparation and management of patients before, during, and after surgical procedures.

11. Anesthesia and Pharmacology: Understand the basics of anaesthesia and pharmacological agents used in surgical settings.

12. Teamwork and Communication: Collaborate effectively with surgeons, anaesthesiologists, nurses, and other healthcare professionals.

13. Ethical and Legal Awareness: Adhere to ethical standards and understand legal aspects related to operation theatre technology.

14. Patient Data Management: Accurately document and manage patient records, including surgical notes and postoperative care.

15. Leadership and Management: Demonstrate leadership qualities and manage operation theatre resources efficiently.

16. Clinical Skills: Develop hands-on skills in patient monitoring and handling medical emergencies.

Program Structure

High-quality health care education is essential for the digital age and using technology is powerful way to enhance changing requirements of the corporate, business enterprises and society. O.T.T students should be equipped to work across time zones, languages, and cultures. Employability, innovation, theory to practice connectedness is the central focus of this curriculum.

The curriculum is designed as such that the students can gain an in-depth mastery of the academic disciplines and applied functional areas necessary to meet the requirements of business enterprises and the hospital Setup .

The Institute emphasis on courses balanced with core and elective courses: The curriculum of O.T.T program emphasizes an intensive, flexible education of core courses (all types), and electives. Total 162 credits are allotted for the O.T.T degree.

The programme structure and credits for O.T.T are finalized based on the stakeholders' requirements and general structure of the programme. However, the maximum number of the credits for award of O.T.T degree will be162 credits.

Core Course (CC): Core courses of O.T.T program will provide a holistic approach to health care education, giving students an overview of the field, a basis to build and specialize upon. These core courses are the strong foundation to establish health related knowledge and provide broad multi-disciplined knowledge can be studied further in depth during the elective phase.

The core courses will provide more practical-based knowledge, case-based lessons and collaborative learning models. It will train the students to analyze, decide, and lead-rather than merely know-while creating a common student experience hat can foster deep understanding, develop decision-making ability and contribute to the business and community at large. We offer sixteen core courses from I-VI semester.

Core course-1: Human Anatomy
Core course-2: Human Physiology
Core course-3: Principles of Anaesthesia
Core course-4: Introduction to OT technology
Core course-5: Basic Techniques of Anaesthesia
Core course-6: Basics of Surgical Procedures
Core course-7: OT Equipments
Core course-8: Basic Intensive care
Core course-9: Advance anaesthetic techniques
Core course-10: Specialized surgical Techniques
Core course-11: Electronics and technology in surgery and anaesthesia
Core course-12: Advanced Critical Care
Core course-13: CSSD Procedures

Minor Course (MC): The discipline specific Minor courses are chosen to make students specialist or having specialized knowledge of a specific domain i.e.; Operation Theater technology .It is covered in all semesters of the program relevant to chosen disciplines of core courses of the program.

1. Medical Terminology and Record Keeping
2. PSM
3. Clinical Biochemistry
4. Clinical Microbiology
5. Pharmacology
6. General Pathology
7. Hospital waste Management
8. Forensic Medicine
9. Quality Control and Patient safety
10. Research Methodology
11. Medical bioethics &IPR

12. Healthcare Delivery System in India
13. Hospital Management
14. Clinical Nutrition
15. Quality and Patient Care

Value Added Course (VAC):A value added audit course is a credit course which is basically meant to enhance general ability of students in areas like soft skills, quantitative aptitude and reasoning ability - required for the overall development of a student and at the same time crucial for industry/corporate demands and requirements. The student possessing these skills will definitely develop acumen to perform well during the recruitment process of any premier organization and will have the desired confidence to face the interview. Moreover, these skills are also essential in day- to-day life of the corporate world. The aim is to nurture every student for making effective communication, developing aptitude and a general reasoning ability for a better performance, as desired in corporate world.

1. One from DIBNS Pool VAC
2. Environmental Science

Ability Enhancement Compulsory Course (AECC): The Ability Enhancement Compulsory Course (AECC) is a course designed to develop the ability of students in communication (especially English) and other related courses where they might find it difficult to communicate at a higher level in their prospective job at a later stage due to lack of practice and exposure in the language, etc. Students are motivated to learn the theories, fundamentals and tools of communication which can help them develop and sustain in the corporate environment and culture.

1. One each from DIBNS Pool AECC

Skill Enhancement Courses: These courses are designed to provide skill-based knowledge which will enhance their usage of specific professional skill set to be used in a global context for optimizing their knowledge both in day to day use and getting a job. We offer computer and laboratory informatics as skill enhancement course for our students.

1. One each from DIBNS Pool SEC

Multidisciplinary courses: These courses are designed as per new education policy to introduce courses from other discipline like arts & commerce to be introduced in to the STEM streams and other way round, which will help in overall holistic academic growth of students

1. Three courses from DIBNS Pool MD

Duration of Course:

Bachelor in Operation Theatre Technology will be a full time course. Duration will be four years (06 Semesters & followed by compulsory 01 Year internship).

No. of Seats :

Total no. of Students to this course shall be 30.

Admission.

1. For admission a candidate should have passed the 10+2 (Senior Secondary) Examination or its equivalent Examination Science stream i.e. Physics, Chemistry and Biology Subjects with 50% marks in the aggregate from any recognized Board. Candidate should have completed the minimum age of 17 years as on 31st December of the year of admission to B.Sc. Operation Theater Technology Course.

2. Candidate with Diploma in Operation Theater Technology/Vocational course in Operation Theater after 10^{th} class are eligible for admission under equivalent examination for 10+2.

3. Lateral entry: candidate with Diploma in Operation Theater Technology after 12^{th} in science stream are eligible for lateral entry in 2^{nd} year subject to evaluation of competency by the Institute constituted academic council assessment.

2. Candidates with 10+2 with Maths , Chemistry and Physics are also eligible for whom the institute will run a Bridge Course in Biology and post satisfactory completion of bridge course the admission shall be confirmed. If the candidate qualifies NEET (medical) exam the bridge course is not required.

Mode of Admission:

The candidates for admission to this course shall be selected through an entrance test conducted by the University/ procedure decided by the governing body of the institute or on the basis of merit of marks obtained (Physics, Chemistry & Biology) in 10 + 2 or its equivalent examination.

Medium of instruction:

English shall be the medium of instruction in the class and in the University examination.

Methods of Teaching:

Pedagogy & Other practices adopted: “Pedagogy is the method and practice of teaching, especially for teaching an academic subject or theoretical concept”. In addition to conventional time-tested lecture method, the institute will emphasize on experiential learning.

1. Case Based Learning: Case based learning enhances student skills at delineating the critical decision dilemmas faced by organizations, helps in applying concepts, principles and analytical skills to solve the delineated problems and develops effective templates for health related problem solving. Case method of teaching is used as a critical learning tool for effective learning and we encourage it to the fullest.

2. Role Play & Simulation: Role-play and simulation are forms of experiential learning. Learners take on different roles, assuming a profile of a character or personality, and interact and participate in diverse and complex learning settings. Role-play and simulation function as learning tools for teams and groups or individuals as they "play" online or face-to-face. They alter the power ratios in teaching and learning relationships between students and educators, as students learn through their explorations and the viewpoints of the character or personality they are articulating in the environment. This student-centred space can enable learner-oriented assessment, where the design of the task is created for active student learning. Therefore, role-play& simulation exercises such as practice on duties and real time simulation etc. are being promoted for the practical-based experiential learning of our students.

3. **Video Based Learning (VBL) & Learning through Movies (LTM):** These days technology has taken a front seat and classrooms are well equipped with equipment and gadgets. Video-based learning has become an indispensable part of learning. Similarly, students can learn various concepts through movies. In fact, many teachers give examples from movies during their discourses. Making students learn few important theoretical concepts through VBL & LTM is a good idea and method. The learning becomes really interesting and easy as videos add life to concepts and make the B.Sc. Operation Theatre

Technology (B.Sc.O.T.T) learning engaging and effective. Therefore, our institute is promoting VBL & LTM, wherever possible.

4. Field / Live Projects: The students, who take up experiential projects in different hospitals/health organizations, where senior executives with a stake in teaching guide them, drive the learning. All students are encouraged to do some live project other their regular classes.

5. Industrial Visits/ Educational tour: Industrial visit are essential to give students hands-on exposure and experience of how things and processes work in education. College organizes such visits to enhance students' exposure to practical learning and work out for a report of such a visit relating to their specific topic, course or even domain.

6. MOOCS: Students may earn credits by passing MOOCS from SWAYAM portal as decided by the college from time to time. Credits earned will provide accumulation of credits for students pre-requested for award of degree. Additional credits will also be given in case MOOCS credits are above the pre-requested credits. Institute mandates two MOOC courses each of 2 credits in IV & V semesters as mandatory for award of degree.

7. Special Guest Lectures (SGL): Some topics/concepts need extra attention and efforts as they either may be high in difficulty level or requires experts from specific health organizations/domain to make things/concepts clear for a better understanding from the perspective of the health care system. Hence, to cater to the present needs of industry we organize such lectures, as part of lecture-series and invite prominent personalities from academia and health organizations from time to time to deliver their vital inputs and insights

8. Student Development Programs (SDP): Harnessing and developing the right talent for the right organizations an overall development of a student is required. Apart from the curriculum teaching various student development programs (training programs) relating to soft skills, interview skills, workshops etc. that may be required as per the need of the student and healthcare trends, are conducted across the whole program. Participation in such programs is solicited through volunteering and consensus.

9. Special assistance Programme for slow learners: Special classes are arranged for slow learners. They are assisted patiently and consistently. Motivation is one of the most essential requirements to help them continue learning. Proper acknowledgement and praise helps the overall development of such student.

10. Laboratory Focused programs: Establishing collaborations with various health partners to deliver the Programme on sharing basis. The specific courses are to be delivered by health care experts to provide practice based insight to the students.

11. Orientation program: Two week Programme is arranged to introduce students to college services which will support their educational and personal goals. To facilitate initial academic process, course selection and registration, creating an atmosphere that minimizes anxiety, promotes positive attitude and stimulates excitement for learning. It also helps knowledge of scope, information regarding academic and student service resources and Programme. It provides a welcoming atmosphere for student’s to meet faculty, staff, senior students as well as of the new students.

12. Mentoring scheme: The College follows the mentoring scheme. Every student is provided with a faculty mentor to help him/her in their personal & academic issues. The mentor maintains a register along with the mentor mentee booklet provided to all students. In that book all the details of student are filled and every month 2 times they meet with their mentor. Ment or fills the details of meeting in every student register and tries to solve the issue and after solving the issue the issue closed in that register.

13. Career & personal counselling: College has training and placement cell for career and personal counselling of the students.

14. Competitive exam preparation: College provides different subject experts for competitive exam preparation of students.

15. Extracurricular Activities: organizing & participation of students in extracurricular activities are mandatory to help students and develop confidence & face audience with care.

16. Participation in workshop, seminars, writing & presenting paper: College encourages students to participate in these types of activities. Most of our students are participating in these types of activities.

17. Formation of Student clubs, membership & organizing and participating events: College have students club and students are participating in many events like youth festival and other activities those are performed in our Universities as well as in other Universities participation.

18. Capability enhancement & development scheme: College offers some schemes like soft skill development, remedial coaching, yoga and meditation and personal counselling to enhance the capability and holistic development of the students.

19. Library visit & Utilization of E-Learning resources: College as well as faculty members encourage students to go to library and study. To enhance this department have provision of Library schedule in the time table so student can use that time to refer different books and use E learn in library. College have well developed and organized library

Attendance to appear in the end semester examination :

The permission to appear in end semester examination shall be granted to such candidate only who have fulfill the condition of 75% attendance in each subject separately in theory and practical as per the university rule. Regarding attendance requirements students will have to fulfill the condition of 75%attendance. 15% relaxation in attendance, in exceptional circumstances can be made by the Vice Chancellor on the recommendation of the Director/Coordinator/Head of the Institute/Department.

Assessment:

	Internal	External	Total
Theory	30	70	100
Practical	30	70	100

Internal Theory Exam Evaluation : 30marks

<table>
<tr><td>Class test-I</td><td>Class test-II</td><td>Class test-III</td><td>Attendance& General Behaviour</td><td>Assignment/Seminar/Workbook/viva</td><td>Total</td></tr>
<tr><td>30</td><td>30</td><td>30</td><td>05</td><td>10</td><td rowspan="2">30 marks</td></tr>
<tr><td colspan="3">Best of two adjusted to 15 marks</td><td></td><td></td></tr>
</table>

Internal Practical exam Evaluation : 30 marks

The internal evaluation would also be done by the Internal Examiner based on the experiment performed during the internal examination.

During the entire semester			**During exam**	
File work & experiment	Viva	Attendance	Experiment	viva
05+05	05	05	05	05

To qualify the course a student is required to secure a minimum of 45% marks in aggregate including the semester examination and teacher's continuous evaluation. (I.e. both internal and external). A candidate who secures less than 45% of marks in a course shall be deemed to have failed in that course. The student should have secured at least 50 CPI in aggregate to clear the programme.

Student will be eligible for internship only after the clearing all the papers along with supplementary if any

Question Paper Structure for External examination

1. The question paper shall consist of six questions, Out of which first question shall be of short answer type (not exceeding 50 words) and will be compulsory. Question no. 2 to 6 shall have explanatory answers (approximately 350 to 400 words) along with having an internal choice within each unit.
2. Question No. 1 shall contain 8 parts from all units of the syllabus with at least one question from each unit and students shall have to answer any five, each part will carry 2 marks.
3. The remaining five questions shall have internal choice within each unit; each question will carry 12 marks.
4. Question must be given from each unit of syllabus given for the semester.

Important notes:

1. Through various examination methods attainment of Programme Specific Outcomes (PSOs) will be assessed. A question paper must assess the following aspects of learning: Remember Understand, Apply, Analyze, Evaluate & Create (reference to Bloom's Taxonomy).

2. Case Study is essential in every question paper (wherever it is being taught as a part of pedagogy) for evaluating higher-order learning.

3. There shall be continuous evaluation of the student and there will be a provision of fortnight progress report.

External Practical Evaluation (70 marks)

The external evaluation would also be done by the External Examiner based on the experiment performed during the external examination.

Lab work	File work	Viva	Total
40	10	20	70

Internship Time Period

Internship for Qualifying B.Sc. O.T.T Programme will be of one year. A 1600 Hrs of internship with 40 credits should be completed by the candidate to be awarded the degree. Students have to undertake the rotational postings during which students have to work under supervision of an experienced staff in the following areas:

S.No	Posting	Duration
1	Dept of Anaesthesiology	280Hrs
2	Surgical ICU	280 Hrs
3	Orthopaedic OT	240 Hrs
4	Obstetrics & Gynaecology	240 Hrs
5	General Surgery including Laparoscopic surgery	280 Hrs
6	Speciality Surgery (Cardiothoracic & Vascular surgery / Neurosurgery/ Urology/ Paediatric surgery/ Plastic Surgery/ ENT Surgery/ Ophthalmic surgery/Oncosurgery/ other super speciality surgery and CSSD)	280 Hrs
	Total	1600Hrs

Other Details on internship:

- Entire internship shall be done in a Hospital or Medical College approved by the College/University.
- Every candidate will be required after passing the final B.Sc. (Operation Theatre Technology) Examination to undergo compulsory rotatory internship to the satisfaction of the institute Authorities.
- Degree of Bachelor of Science in Operation Theatre Technology on passing the final examination and after the completion of internship on demand by the candidate.
- The internee shall be entrusted with OT responsibilities under direct supervision of Senior Medical Officer/OT In charge. They shall not be working independently.
- Internee will not issue any certified copy of investigation reports or other related documents under their signature.
- The Internee shall maintain the record of work, which is to be verified and certified by the senior medical officer/ In charge under whom he /she works.
- Apart from scrutiny of record of work, assessment and evaluation of training shall be undertaken by an Description approach using situation tests in knowledge, skills and attitude during at the end of training.
- Based on the record of work and date of evaluation HOD/Principal shall issue certificate for satisfactory completion of training following which the University shall award the degree of Bachelor of Science in Operation Theatre Technology.
- Satisfactory completion shall be determined on the basis of the following:
- Proficiency of knowledge about requirements for each surgical Techniques
- The competency and skills expected to manage each Surgical Procedure.
- Responsibility, punctuality, works up of surgical procedures, involvement in special procedures and preparation of reports.
- Capacity to work in a team (behaviour with colleagues, nursing staff and relationship with medical and paramedical.
- Initiating, participating in discussions and developing research aptitude.
- Only twelve leave are allowed to an internee during the period of his/her internship. If he/she extend his/her leave in the duration of internship, the period the internship shall be extended by double the days for which the student was absent.

Internship Log Book: Duly signed and completed Internship log book is compulsory to submit department/college to obtain internship completion and course completion letter/certificates.

Assessment of Internship: At the end of the Internship there will be an assessment for the student at the Institute to ensure, whether a student has attained entry level competency for job as a OT Technician.

Bachelor in Operation Theatre Technology

First Semester

<table>
<tr><th rowspan="2">S.No.</th><th rowspan="2">Subjects</th><th rowspan="2">Subject Code</th><th rowspan="2">Credit</th><th colspan="3">THEORY MARKS</th><th colspan="3">PRACTICAL MARKS</th><th rowspan="2">Total Marks</th></tr>
<tr><th>Internal Assessment</th><th>Theory marks</th><th>Total</th><th>Internal Assessment</th><th>External Assessment</th><th>Total</th></tr>
<tr><td>1.</td><td>Human Anatomy</td><td>MJBOTT 101</td><td>3+1</td><td>30</td><td>70</td><td>100</td><td rowspan="2">30</td><td rowspan="2">70</td><td rowspan="2">100</td><td rowspan="2">300</td></tr>
<tr><td>2.</td><td>Human Physiology</td><td>MJBOTT 102</td><td>3+1</td><td>30</td><td>70</td><td>100</td></tr>
<tr><td>3.</td><td>Medical Terminology and Record Keeping</td><td>MIBOTT 101</td><td>2+1</td><td>30</td><td>70</td><td>100</td><td rowspan="2">30</td><td rowspan="2">70</td><td rowspan="2">100</td><td rowspan="2">300</td></tr>
<tr><td>4.</td><td>PSM</td><td>MIBOTT102</td><td>2+1</td><td>30</td><td>70</td><td>100</td></tr>
<tr><td>5.</td><td>One from DIBNS Pool AEC</td><td>AEC 101</td><td>2</td><td>30</td><td>70</td><td>100</td><td>-</td><td>-</td><td>-</td><td>100</td></tr>
<tr><td>6.</td><td>One from DIBNS Pool SEC</td><td>SEC101</td><td>3</td><td>30</td><td>70</td><td>100</td><td>-</td><td>-</td><td>-</td><td>100</td></tr>
<tr><td>7.</td><td>One from DIBNS Pool VAC</td><td>VAC 101</td><td>2</td><td>30</td><td>70</td><td>100</td><td>-</td><td>-</td><td>-</td><td>100</td></tr>
<tr><td colspan="10">Grand Total</td><td>900</td></tr>
</table>

Second Semester

S. No.	Subjects	Subject Code	Credit	THEORY MARKS			PRACTICAL MARKS			Total Marks
				Internal Assessment	Theory marks	Total	Internal Assessment	External Assessment	Total	
1.	Principles of Anaesthesia	MJBOTT 103	3+1	30	70	100	30	70	100	300
2.	Introduction to OT technology	MJBOTT 104	3+1	30	70	100				
3.	Clinical Biochemistry	MIBOTT 103	2+1	30	70	100	30	70	100	300
4.	Clinical Microbiology	MIBOTT 104	2+1	30	70	100				
5.	One from DIBNS Pool AEC	AEC 102	2	30	70	100	-	-	-	100
6.	One from DIBNS Pool SEC	SEC102	3	30	70	100	-	-	-	100
7.	Environmental Science	VAC 102	2	30	70	100	-	-	-	100
Grand Total										900

Third Semester

<table>
<tr><th rowspan="2">S.No.</th><th rowspan="2">Subjects</th><th rowspan="2">Subject Code</th><th rowspan="2">Credit</th><th colspan="3">THEORY MARKS</th><th colspan="3">PRACTICAL MARKS</th><th rowspan="2">Total Marks</th></tr>
<tr><th>Internal Assessment</th><th>Theory marks</th><th>Total</th><th>Internal Assessment</th><th>External Assessment</th><th>Total</th></tr>
<tr><td>1.</td><td>Basic Techniques of Anaesthesia</td><td>MJBOTT 201</td><td>3+1</td><td>30</td><td>70</td><td>100</td><td rowspan="2">30</td><td rowspan="2">70</td><td rowspan="2">100</td><td rowspan="2">400</td></tr>
<tr><td>2.</td><td>Basics of Surgical Procedures</td><td>MJBOTT 202</td><td>3+1</td><td>30</td><td>70</td><td>100</td></tr>
<tr><td>3.</td><td>Pharmacology</td><td>MIBOTT 201</td><td>2+1</td><td>30</td><td>70</td><td>100</td><td rowspan="2">30</td><td rowspan="2">70</td><td rowspan="2">100</td><td rowspan="2">300</td></tr>
<tr><td>4.</td><td>General Pathology</td><td>MIBOTT 202</td><td>2+1</td><td>30</td><td>70</td><td>100</td></tr>
<tr><td>6.</td><td>One from DIBNS Pool MDC</td><td>MDC 201</td><td>3</td><td>30</td><td>70</td><td>100</td><td>-</td><td>-</td><td>-</td><td>100</td></tr>
<tr><td>7.</td><td>One from DIBNS Pool SEC</td><td>SEC201</td><td>3</td><td>30</td><td>70</td><td>100</td><td>-</td><td>-</td><td>-</td><td>100</td></tr>
<tr><td colspan="10">Grand Total</td><td>800</td></tr>
</table>

Fourth Semester

S.No.	Subjects	Subject Code	Credit	THEORY MARKS			PRACTICAL MARKS			Total Marks
				Internal Assessment	Theory marks	Total	Internal Assessment	External Assessment	Total	
1.	OT Equipments	MJBOTT 203	3+1	30	70	100	30	70	100	400
2.	Basic Intensive care	MJBOTT 204	3+1	30	70	100				
3.	Hospital waste Management	MIBOTT 203	2+1	30	70	100	30	70	100	300
4.	Forensic Medicine	MIBOTT 204	2+1	30	70	100				
5.	Quality Control and Patient safety	MIBOTT 205	2+1	30	70	100				
6.	One from DIBNS Pool MDC	MDC 202	3	30	70	100	-	-	-	100
Grand Total										800

Fifth Semester

S.No.	Subjects	Subject Code	Credit	THEORY MARKS			PRACTICAL MARKS			Total Marks
				Internal Assessment	Theory marks	Total	Internal Assessment	External Assessment	Total	
1.	Advance anaesthetic techniques	MJBOTT 301	3+1	30	70	100	30	70	100	400
2.	Specialized surgical Techniques	MJBOTT 302	3+1	30	70	100				
4.	Research Methodology	MIBOTT 301	2+1	30	70	100	30	70	100	300
5	Medical Bioethics & IPR	MIBOTT 302	2+1	30	70	100				
5.	Healthcare Delivery System in India	MIBOTT 303	2+1	30	70	100				
6.	One from DIBNS Pool MDC	MDC 301	3	30	70	100	-	-	-	100
Grand Total										800

Sixth Semester

<table>
<tr><th rowspan="2">S.No.</th><th rowspan="2">Subjects</th><th rowspan="2">Subject Code</th><th rowspan="2">Credit</th><th colspan="3">THEORY MARKS</th><th colspan="3">PRACTICAL MARKS</th><th rowspan="2">Total Marks</th></tr>
<tr><th>Internal Assessment</th><th>Theory marks</th><th>Total</th><th>Internal Assessment</th><th>External Assessment</th><th>Total</th></tr>
<tr><td>1.</td><td>Electronics and technology in surgery and anaesthesia</td><td>MJBOT T 303</td><td>3+1</td><td>30</td><td>70</td><td>100</td><td rowspan="3">30</td><td rowspan="3">70</td><td rowspan="3">100</td><td rowspan="3">400</td></tr>
<tr><td>2.</td><td>Advanced Critical Care</td><td>MJBOT T 304</td><td>3+1</td><td>30</td><td>70</td><td>100</td></tr>
<tr><td>3.</td><td>CSSD Procedures</td><td>MJBOT T 305</td><td>3+1</td><td>30</td><td>70</td><td>100</td></tr>
<tr><td>4.</td><td>Hospital Management</td><td>MIBOTT 304</td><td>2+1</td><td>30</td><td>70</td><td>100</td><td rowspan="2">30</td><td rowspan="2">70</td><td rowspan="2">100</td><td rowspan="2">300</td></tr>
<tr><td>5.</td><td>Clinical Nutrition</td><td>MIBOTT 305</td><td>2+1</td><td>30</td><td>70</td><td>100</td></tr>
<tr><td>6.</td><td>Quality and Patient Care</td><td>MIBOTT 306</td><td>2</td><td>30</td><td>70</td><td>100</td><td>-</td><td>-</td><td>-</td><td>100</td></tr>
<tr><td colspan="10">Grand Total</td><td>800</td></tr>
</table>

Seventh & Eight Semester

Internship programme of 1 year duration with following departmental orientation as per institute availability shall be given to each students earning a total of 40 credits.
An 8 Minimum of 8 working hours per day totaling 1600 Hrs in both semesters is mandatory

S.No	Department	Duration	Credits	Mark for log book+ employer assessment	Proficiency Aassessment Test.
1	Dept of Anaesthesiology	280Hrs	7	30	70
2	Surgical ICU	280Hrs	7	30	70
3	Orthopaedic OT	240Hrs	6	30	70
4	Obstetrics & Gynaecology	240Hrs	6	30	70
5	General Surgery including Laparoscopic surgery	280Hrs	7	15	35
6	Speciality Surgery (Cardiothoracic & Vascular surgery / Neurosurgery/ Urology/ Paediatric surgery/ Plastic Surgery/ ENT Surgery/ Ophthalmic surgery/Oncosurgery/ other super speciality surgery and CSSD)	280Hrs	7	15	35
Total		1600 Hrs	40	150	350

First Semester

Subject-Human Anatomy

[Credit: 3+1]

Course Description: The students of BOTT will not be doing the dissection of cadaver. Demonstrations should be given in such a way that they have as clear understanding of the human anatomy as possible.

Course Outcomes:

On completion of the course, the students will be Able to:

CO1. Understanding of recognizing organs, organ system and sample collection sites.

CO2. Identifying and discussing the major structures of human body

CO3. Demonstrating various organ systems and employ knowledge of human anatomy to solve questions regarding functions, diseases and sample collection

CO4. Differentiating the various organ system and its related disorders

CO5. Analyzing appropriate sample collection site

CO6.developing a holistic approach to human health and medical research

UNIT-1:(8Hrs)

The Human Body as a Whole:

Definitions, Subdivisions of Anatomy, Terms of location and positions, Fundamental Planes, Body Cavities and Their Membranes, Dorsal cavity, Ventral cavity, and Sections, Vertebrate structure of Human

UNIT-2:(8Hrs)

Levels of Organization of Human Body:

Cell structure and function, organisation of the body cells and tissues. Tissue, Types, Structure, Location and Function of Epithelial Tissue, Connective Tissue, Muscle Tissue, Nerve Tissue, Membranes, Glandular tissue. The Integumentary System: structure and function of The Skin, Subcutaneous Tissue

UNIT-3:(8Hrs)

Locomotion and Support:

Types of bones, structure of bone, divisions of the skeleton, Appendicular skeleton, Axial skeleton names of all the bones and their parts; joints - classification, types of movements with examples. Anatomy of important muscles.

UNIT-4 :(10Hrs)

Cardiovascular system Theory: Heart-size, location, chambers, exterior & interior Blood supply of heart Systemic & pulmonary circulation Branches of aorta, common carotid artery, subclavian artery, axillary artery, brachial artery, superficial palmer arch, femoral artery, internal iliac artery Peripheral pulse Inferior vena cava, portal vein, port systemic anastomosis, Great saphenous vein, Dural venous sinuses Lymphatic system- Histology of lymphatic tissues, Names of regional lymphatic's, auxiliary and inguinal lymph nodes in brief Practical: Demonstration of heart and vessels in the body Histology of large artery, medium sized artery & vein, large vein Microscopic appearance of large artery, medium sized artery & vein, large vein pericardium Histology of lymph node, spleen, tonsil & thymus Normal chest radiograph showing heart shadows Normal angiograms

UNIT-5 :(6Hrs)

Nervous system: Classification of nervous system. Nerve – structure, classification, microscopy with examples. Neurons, classification with examples. Simple reflex arc. Parts of a typical spinal nerve/Dermatome. Central nervous system – disposition, parts and functions Cerebrum Cerebellum. Midbrain & brain stem Blood supply & anatomy of brain Spinal cord- anatomy, blood supply, nerve pathways Pyramidal, extra pyramidal system Thalamus, hypothalamus Structure and features of meningies Ventricles of brain, CSF circulation Development of nervous system & defects Cranial nerves – (course, distribution, functions and palsy) Sympathetic nervous system, its parts and components Parasympathetic nervous system Applied anatomy

UNIT-6 :(8Hrs)

Sensory system Structure and function of Visual system Auditory system Gustatory system Olfactory system Somatic sensory system Cardiovascular system Circulatory system – major arteries and veins of the body, structure of blood vessels Heart structure, positions, chambers, valves, internal & external features Blood supply to heart Conductive system of heart Digestive system Parts of digestive system Abdominal cavity – divisions Muscles of abdominal wall Liver Pancreas Spleen Alimentary canal Gall bladder intestine (small & large).

PRACTICAL

1. Demonstration of Major organs through models and permanent slides.

2. Demonstration of parts of circulatory system from models.

3. Demonstration of parts of respiratory system from models.

4. Demonstration of digestive system from models.

5. Demonstration of excretory system from models.

6. Demonstration of nervous system from models.

7. Structure of eye and ear

8. Demonstration of structural differences between skeletal, smooth and cardiac muscles.

9. Demonstration of various bones

10. Demonstration of various joints

11. Demonstration of various parts of male & female reproductive system from mode

Text Books:

1. Sujit Chaudhary,

2. Sembulingam

Reference Books:

1. Anatomy &Physiology, Ross &Wilson

2. Human Anatomy, BD Chaurasia

3. Text book of Medical Physiology Guyton and Hall

4. Principles of Anatomy and Physiology, Gerard J. Tortora and BryanH.Derrickson

Subject-Human Physiology

[Credit: 3+1]

Course Description: Human Physiology explores the intricate functions of the human body, delving into how various systems—such as cardiovascular, respiratory, and nervous—work together to maintain homeostasis. This course covers fundamental concepts including cellular functions, tissue organization, and organ system interactions, providing a comprehensive understanding of the mechanisms underlying health and disease. Students will gain insights into how physiological processes adapt to environmental changes and the impact of disorders on body function.

Course Outcomes:

On completion of the course, the students will be Able to:

CO1. Enlisting and memorizing the function of major human organs system/ parts.

CO2. Identifying and explaining the inter relation between different organ systems.

CO3. Understanding functions of various organ systems and employ its knowledge to identify disease.

CO4. Differentiating and drawing the diagram of various organs & organs system

CO5. Understanding of abnormality and various physical conditions

UNIT-1 :(8Hrs)

General Physiology: Cell: morphology, Structure and function of cell organelles Structure of cell membrane Transport across cell membrane Intercellular communication Homeostasis

UNIT-2 :(12Hrs)

Blood: Introduction-composition & function of blood W.B.C., R.B.C, Platelets formation & functions, Immunity Plasma: composition, formation & functions, Plasma Proteins: -types & functions Blood Groups- types, significance, determination Haemoglobin Haemostasis Lymph-composition, formation, circulation & functions.

UNIT-3 :(10Hrs)

Cardiovascular system: Conducting system-components, impulse conduction Heart valves Cardiac cycle- definition, phases of cardiac cycle Cardiac output- definition, normal value, determinants. Stroke volume and its regulation Heart rate and its regulation: Arterial pulse, Blood pressure-definition, normal values, factors affecting blood pressure Shock-definition, classification, causes and features Basic idea of ECG Cardiovascular changes during exercise.

UNIT-4 :(14 Hrs)

Respiratory System: Mechanics of respiration Lung volumes and capacities Pulmonary circulation, transport of respiratory gases Factors affecting respiration Regulation of respiration-neural regulation, voluntary control and chemical regulation Hypoxia, Hypercapnia, Hypocapnia Artificial respiration Disorders of respiration- dyspnoea, orthopnoea, hyperpnoea, hyperventilation, apnoea, tachypnoea Respiratory changes during exercise.

PRACTICAL

Topics to be covered:

1. Demonstration of dissected parts (abdominal viscera, face and brain).
2. Demonstration of skeleton- articulated and disarticulated.
3. During the training more emphasis will be given on the study of CNS, PNS, Cardiovascular System, Respiratory System, Digestive System, Urinary System bones& reproductive system muscles, joints, nerve supply of the limbs and arteries of limbs.
4. Audio visual material for practical study of related anatomical parts.
5. Demonstration on Anatomical models
6. Students visit to Anatomy Museum

Text books:

1. Textbook of Medical Physiology, Guyton and Hall
2. Human Anatomy, B D Chaurasia
3. https://open.umn.edu/opentextbooks/textbooks/169
4. https://www.classcentral.com/course/humanphysio-380

Reference books:

1. Anatomy & Physiology, Ross & Wilson
2. Human Anatomy, B D Chaurasia
3. Principles of Anatomy and Physiology, GerardJ. Tortora and Bryan H. Derrick son
4. http://www.rapidlearningcenter.com/biology/human- physiology/human-physiology.html
5. https://www.adinstruments.com/lt/human-physiology

Subject-Medical Terminology and Record Keeping

[Credit: 2+1]

Course Description: Understand the fundamental principles of medical word construction, including prefixes, suffixes, and root words

Course outcomes:

On completion of the course, the students will be Able to:

CO1. Utilize a comprehensive understanding of medical prefixes, suffixes, and root words to decipher and interpret medical terms accurately

CO2. Demonstrate proficiency in constructing and deconstructing medical terms relevant to anatomy, physiology, pathology, diagnostics, treatments, and procedures.

UNIT-1 :(8Hrs)

Derivation of medical terms.

Define word roots, prefixes, and suffixes. Conventions for combined morphemes and the formation of plurals.

Basic medical terms.

UNIT-:(8Hrs)

Form medical terms utilizing roots, suffixes, prefixes, and combining roots.

Interpret basic medical abbreviations/symbols.

UNIT-3 :(10Hrs)

Utilize diagnostic, surgical, and procedural terms and abbreviations related to the integumentary system, musculoskeletal system, respiratory system, cardiovascular system, nervous system, and endocrine system.

UNIT-4 :(8Hrs)

Interpret medical orders/reports.

Data entry and management on electronic health record system.

PRACTICAL

1. The formation of plurals.

2. Derivation of medical terms

3. Interpret medical orders/reports

4. Interpret basic medical abbreviations/symbols.

Recommended Books

1. Medical Terminology: An Illustrated Guide" by Barbara J. Cohen and Ann De Petri’s
2. Medical Terminology for Health Professions" by Ann Ehrlich and Carol L. Schroeder
3. The Language of Medicine" by Davi-Ellen Chabner
4. Health Information: Management of a Strategic Resource" by Mervat Abdelhak, Sara Grostick, Mary Alice Han ken

Subject- Preventive and Social Medicine

[Credit: 2+1]

Course Description: The course is designed to make students of BOTT to understand the fundamental principles of community medicine and its usage in understanding disease and diagnosis at community level focusing on prevention and health education

Course outcomes:

On completion of the course, the students will be able to:

CO1.Understand the Concept of Community Health, preventive Medicine &Family Welfare.

CO2.Understand the Nutrition and major Nutritional disorders and their prevention

CO3.Describe epidemiology and etiology of communicable disease

CO4.Apply National health policy programmes, Universal Immunization and Vaccines schedules

CO5.Analyze population related problems and its effect on growth and development

Unit-1 :(8Hrs)

Fundamentals of Preventive Medicine

Definition and concepts of health, important public health acts, health problems of developed and developing countries, environment and health. Definition and concepts of epidemiology, diseases, types and use of epidemiology. Basic emergency care and first aid.

Unit-2 :(8Hrs)

Epidemiology

Epidemiology, etiology, pathogenesis and control of communicable disease like malaria, cholera, tuberculosis, leprosy, diarrhea, poliomyelitis, viral hepatitis, measles, dengue, rabies, AIDS.

Unit-3 :(10Hrs)

National Health Programmes

National Health Policy and Programs, DOTS, National AIDS control programme, National cancer control programme, universal immunization programme etc.

Nutrition and major nutritional problems, etiology, manifestations and prevention, components of RCH care. Examination of water, food adulteration, role of regular exercise and yoga in prevention and management of various diseases.

Unit-4 :(8Hrs)

Social Aspects of health

Population, problems of population growth, birth rates, death rates, fertility rates, MMR.,CPR, Approaches and methods of contraception, Reproductive and child health. Hygiene and sanitation, sanitation barriers, excreta disposal.

Unit-5 :(8Hrs)

Immunization, World as community & health

Immunization programme, various national immunization programs and vaccine schedules, Family welfare and planning, communicable and non-communicable disease, Health planning in India including various committees, national health policy and health goals. Objectives and goals of WHO, UNICEF, Indian Red Cross Society, UNFPA, FAO, ILO.

PRACTICAL

1. Epidemiological Survey of Communicable Diseases.
2. Non-Communicable Diseases (NCDs) Monitoring.
3. Nutritional surveys and dietary assessments.
4. Maternal and Child Health Services.
5. Immunization Programs.
6. Health Policy and Planning.
7. Field Visits and Community Diagnosis.

Text books:

1. Textbook of Preventive Social Medicine, K.Parks, Sunder Lal,

Reference books:

1. Park & Park, Preventive & Social Medicine
2. https://www.hindawi.com/journals/apm/contents/

SECOND SEMESTER

Subject-Principles of Anaesthesia

[Credit: 3+1]

Course Description: Principles of Anesthesia" is a foundational course that explores the essential concepts and practices of anesthesiology. The course covers the physiology and pharmacology of anesthetic agents, techniques for administering anesthesia, patient assessment, and the management of perioperative care. Students will gain an understanding of the different types of anesthesia, including general, regional, and local, as well as the principles of pain management and monitoring of patients during surgery. The course also emphasizes safety, ethical considerations, and the development of critical thinking skills in anesthesia practice.

Course Outcomes:

On completion of the course, the students will be able to:

CO1.Gain knowledge on various codes and safety devices.

CO2.Learn the importance of endo tracheal tubes and laryngoscopes in anaesthesia.

CO3.Learn about the machines and gain knowledge on OT and OT techniques.

CO4. To develop ideology of various Equipment used in anaesthesia technology.

CO5. To develop knowledge on the principles involved in OT and OT techniques

UNIT-1 :(8Hrs)

MEDICAL GAS SUPPLY: Compressed gas cylinders, Colour coding, Cylinder valves; pin index. Gas piping system. Recommendations for piping system, Alarms & safety devices.

UNIT-2 :(8Hrs)

ANAESTHESIA MACHINE

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

UNIT-3 :(10Hrs)

BREATHING SYSTEM General considerations: humidity & heat, Common components - connectors, adaptors, reservoir bags, Pulse oximetry, EtCo2 & Capnography, Methods of humidification, Classification of breathing system Maple son system – a, b, c, d, e, f, Jackson

Rees system, Bain circuit • Non rebreathing valves – ambu-valves, The circle system Components Soda lime, indicators

UNIT-4 :(8Hrs)

FACE MASKS & AIRWAY LARYNGOSCOPES Types, sizes

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

UNIT-5 :(8Hrs)

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

PRACTICALS/ DEMONSTRATION:

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

Recommended Books

1. The Anesthesia Technician and Technologist's Manual, Glenn Woodworth, Jeffrey R. Kirsch, Shannon Sayers-Rana, 1st edition, Lippincott Williams & Wilkins, 2012
2. Anesthésia Equipment, Principles and Applications (Expert Consult: Online and Print),
3. Anesthésia Equipment Clinical Key 2012 Specific Learning Outcome (SLO):

Subject-Introduction to OT technology

[Credit: 3+1]

Course Description: To prepare the students in understanding every issue and aspect related to Operation Theatre and make the students aware of infection control policies and procedures

Course Outcomes:

On completion of the course, the students will be able to:

CO1.Gaining knowledge and understanding of complexities of CSSD.

CO2.Sharpening cognitive skill to handle emergencies and patient breakdowns during complex procedure.

CO3.Efficiency and skills in handling different types of equipment.

CO4.Discuss about various in OT

UNIT-1 :(10Hrs)

C.S.S.D and logistics: - Cleaning and dusting - methods of cleaning, composition of dust. Advantages of CSSD. Sterilization process in CSSD.

Disinfectants of instruments and Sterilization- Definition, Methods, cleaning agents, detergents, Mechanical washing, ultrasonic cleaner, lubrication inspection and pitfalls. **Various methods of chemical treatment**- formalin, glutaraldechyde etc, thermal. Hot Air oven-dry heat, Autoclaving, steam Sterilization water etc. UV treatment.

Sterilization of equipment - Arthroscope, Gastroscope, imago Lamp, Apparatus, suction Apparatus Anaesthetic equipment including endotracheal tubes.

UNIT-2 :(10Hrs)

Anaesthesia Service - History, pre-operative, Intra operative; post operative care, General Anaesthesia Techniques Local Anaesthesia Technique. PAC (Pre Anesthesia Check-up) and Investigations/Monitoring, Equipments used in Anesthesia, Intra-Venous Fluids used During Anesthesia, Methods of Drug Administration, and Suturing.

UNIT-3 :(12Hrs)

Blood Transfusion- blood, composition of blood, function of blood, ↔ Blood grouping, cross matching and blood transfusion, transfusion hazard. Bandaging Positioning of Patient-Supine position, prone position, side lying positions, Fowler’s Position, Cardiac Position, Erect position, Lithotomy position, Knee chest position, Trendelenburg position.

UNIT-4 :(14Hrs)

Emergencies outside the Operation Theatre: First Aid, Emergencies Trauma Techniques/ Accident & Emergency Department. Duties of Nurses, CPR (Cardiopulmonary Resuscitation), PACU (Post-Anesthesia Care Unit) ICU (Intensive Care Unit) Hazards in OTT Environmental hazards Chemical hazards Electrical hazards Musculoskeletal and biological hazards Radiation hazards Technical Risks and safety.

PRACTICAL

1. Sterilization Techniques and Procedures.
2. Handling and Care of Surgical Instruments.
3. Preparation of the Surgical Environment.
4. Patient Positioning and Safety.
5. Understanding and Managing OT Equipment.
6. Emergency Response in the OT
7. Basic Surgical Assisting Skills.

Recommended Books

Manual of instruments and procedures 3rd edition Jay pee publishers

Basics of operation theatre technology 2nd edition by Jaypee brothers

Surgical technology for surgical tech a positive care approach by AST 12th edition

Subject-Clinical Biochemistry

[Credit: 2+1]

Course Description- The course is designed to make students of BMRIT to understand the biochemical basis of human body in context of analyzing chemical compounds for understanding the different pathological processes and diseases.

Course Outcomes:

On completion of the course, the students will be able to:

CO1.On completion of the course, the students will be able to:

CO2.Understand the concepts and theories of bio molecules

CO3.Understand the chemistry of carbohydrates, proteins, lipids and amino acids.

CO4.Describe the mechanism of enzyme action and identify the classes and factors affecting action

CO5.Analyze different diseases associated with abnormalities of bio-molecules

CO6.Evaluate the biochemical test results.

UNIT-1 :(12Hrs)

Fundamental of Laboratory:

Introduction to Clinical Biochemistry and role of Medical Lab Technologist, ethics, responsibility, safety measure and hazards in clinical biochemistry lab and first aid in laboratory accidents. Glassware's & plastic ware's used in lab, calibration of volumetric apparatus, cleaning& care and maintenance

UNIT-2 :(10Hrs)

Fundamentals of Laboratory: Instruments:

Principle, working, care & maintenance and calibration of Weighing balance,

Hot plate, Magnetic stirrer, Centrifuges, Incubator, Hot air oven, Colorimeter, Spectrophotometer, Water distillation plant, Deionizers Henderson Hassel Balch equation, pH paper, pH meter, method of pH measurement.

UNIT-3 :(8Hrs)

Fundamental of Laboratory Solutions

Preparation of solution and reagents, normal solution, molar solutions, percent solution, buffer solution, dilutions, w/v, v/v, standard solution, aqueous solutions, concepts of acid and base Units of measurement: SI unit, reference range, conversion factor, units for measurement of bio metabolite, enzymes, protein, drugs, hormones, vitamins.

UNIT-4 :(8Hrs)

Samples in biochemistry Laboratory:

Specimen collection and processing of blood, urine & CSF, separation of serum and plasma, deproteinization of sample, Handling of specimens for testing, preservation of specimen, transport of specimen, factors affecting the clinical results, effect of storage on sample.

PRACTICAL

1. Demonstration of Blood Collection
2. Demonstration of Anticoagulation
3. Demonstration of Lab Glassware
4. Preparation of Normal solution
5. Demonstration of Acids
6. Demonstration of Alkalis
7. Demonstration of Acid-Base Indicator
8. Kidney function tests
9. Liver function tests
10. Urea and Creatinine values
11. Demonstration of Blood Collection

Text Books:

1. Text book of Biochemistry, D M Vasudevan, Jaypee Publishers

Reference Books:

1. Biochemistry, USatyanarayan

2. Medical Biochemistry, RajaBin

1. https://journals.sagepub.com/doi/full/10.1177/000456321
4541364

2. https://www.jaypeebrothers.com/pgDetails.aspx?book_id=9789386150196

Subject-Clinical Microbiology

[Credit: 2+1]

Course Description: Students should understand the principles behind sterilization and disinfection methods and be able to apply appropriate techniques to control bacterial growth and capable of interpreting bacterial growth curves and how different environmental factors affect growth.

Course Outcomes:

On completion of the course, the students will be able to:

CO1.Applying safety measures and quality control used in laboratory

CO2.Understanding theories and applying skills related to growth and Nutrition of Bacteria-

CO3.Understand the types and properties of disinfectant and sterilization

CO4.Understand the basic and microbiological instrumentations.

CO5.Understand the ethics and legality in use of laboratory animals

UNIT-1 :(6Hrs)

Fundamentals of microbiology lab:

General safety measures used in Microbiology laboratory, Management and quality control of medical microbiology laboratory.

UNIT-2 :(10Hrs)

Growth and Nutrition of Bacteria:

Growth and Nutrition of Bacteria: various phases of growth, typical growth curve, Nutrition of microbes and physical condition required for growth.

Effect of Carbon, Nitrogen, Growth factors, Vitamins, Temperature, pH,

Osmotic Pressure, Oxygen and Carbon Di Oxide on microbial growth.

UNIT-3 :(10Hrs)

Antiseptics & Disinfectants:

Antiseptics & Disinfectants: Definition, types and properties, mode of action, use, qualities of good disinfectants

Chemical disinfectants – phenol and its compounds, alcohol, halogen, heavy metals and quaternary ammonium compounds, aldehyde, gaseous compound. Use and abuse of disinfectants. Precautions while using the disinfectants.

UNIT-4 :(8Hrs)

Basic and Microbiological Instrumentation

Principle, working, use, care & maintenance of Laminar air flow, Autoclave, hot air Oven, Incubator, Colony Counter,Mac-intos Field-jar .Distillation plant, Centrifuge Machine, Analytical Balance, Hotplate, Magnetic Stirrer, Water Bath.

PRACTICALS

1. To identify carbohydrates in given solution by various methods.
2. To determine protein by Biuret method.
3. To perform protein test by various methods.
4. Physical examination of urine
5. Urine sugar determination by Benedict'smetod.
6. Protein by heat and acetic method
7. Bile salt, Bile pigments and Urobilinogen determination
8. Determination of Ketone bodies
9. Determination of various parameters of urine by uristik method.
10. Preparation of hemolysate
11. To demonstrate techniques for cleaning of glassware's.
12. To demonstrate working and maintenance of laminar air flow
13. To demonstrate working and maintenance of autoclave.
14. To demonstrate biomedical waste management
15. To demonstrate hot air oven.
16. To demonstrate the use of disinfectants and preparation of working
17. dilution of various disinfectants.
18. To demonstrate incubator and preservation of cultures.
19. To demonstrate sterilization method by filtration.

Recommended books

1. Moat G, John W. Foster and Michael P. Specter . Microbial physiology.
2. Fourth edition, A John Wiley son, Inc. publication. New Delhi.
3. Dubey RC and Maheswari DK A Text of Microbiology. Revised edition, S. Chand and Company Ltd., New Delhi Namita Gupta, Rani Gupta (2021),
4. Fundamentals of Bacterial Physiology and Metabolism, Springer Rajan S and Selvichristry .
5. Exam Oriented Biochemistry. CBS Publishers, New Delhi

6. Doelle HW. Microbial Metabolism, Academic Press.
7. Nelson David L, Albert L Lehninger and Michael M Cox. Lehninger Principles of biochemistry. Macmillan.
8. Murray RK, Granner DK, Mayes PA and Rodwell VW. "Harper's Biochemistry, Appleton and Lange: New York, NY.
9. Pelczar TR M J Chan ECS and Kreig N R (2006). Microbiology. Tata Mc GrawHill INC., New York

Subject-Eenvironmental Sciences

[Credit: 2]

Course Description: **t**his course is designed to make BOTT students environmentally conscious not only in regional or national setting but as a citizen of earth keeping in mind the specific demands of each community and their resources along with responsible consumption of those resources with minimal damage to environment

Course Outcomes:

On completion of the course, the students will be:

CO1.Understand basic concepts in the context of ecological and environmental sciences.

CO2.Understand and describing biodiversity and also summarize bio geographical distribution of India.

CO3.Describe concepts and methods to apply in environmental communication and public awareness.

CO4.Apply the ethical and cultural conduct in environmental activities.

CO5.Analyze the ideas about energy resources in today's scenario and discussing about alternate energy sources.

Unit-1 :(8Hrs)

Ecology and Environment:

Definition and Scope of environmental studies, multidisciplinary nature of environmental studies, Concept of sustainability & sustainable development. Ecology and Environment: Concept of an Ecosystem-its structure and functions, Energy Flow in an Ecosystem, Food Chain, Food Web, Ecological Pyramid& Ecological succession, Study of following ecosystems: Forest Ecosystem, Grass land Ecosystem & Aquatic Ecosystem & Desert Ecosystem.

Unit-2 :(8Hrs)

Natural Resources & Biodiversity:

Natural Resources: Renewable & Non-Renewable resources; Land resources and land use change; Land degradation, Soil erosion & desertification. Deforestation: Causes & impacts due to mining, Dam building on forest biodiversity & tribal population. Energy Resources: Renewable & Non-Renewable resources, Energy scenario & use of alternate energy sources, Case studies. Biodiversity: Hot Spots of Biodiversity in India and World, Conservation, Importance and Factors Responsible for Loss of Biodiversity, Bio geographical Classification of India

Unit-3 :(6Hrs)

Environmental Pollutions

Types, Causes, Effects & control; Air, Water, soil & noise pollution, Nuclear hazards & human health risks, Solid waste Management; Control measures of urban & industrial wastes, pollution case.

Unit-4 :(6Hrs)

Environmental policies & practices:

Climate change & Global Warming (Green house Effect),Ozone Layer -Its Depletion and Control Measures, Photochemical Smog, Acid Rain Environmental laws: Environment protection Act; air prevention & control of pollution act, Water Prevention & Control of Pollution Act, Wild Life Protection Act, Forest Conservation Acts, International Acts; Montreal & Kyoto Protocols & Convention on biological diversity, Nature reserves, tribal population & Rights & human wild life conflicts in Indian context

Unit-5 :(6Hrs)

Human Communities & Environment

Human population growth; impacts on environment, human health & welfare, Resettlement & rehabilitation of projects affected person: A case study, Disaster

Management; Earthquake, Floods & Droughts, Cyclones & Landslides, Environmental Movements; Chipko, Silent Valley, Vishnoi's of Rajasthan, Environmental Ethics; Role of Indian & other regions & culture in environmental conservation, Environmental communication & public awareness; Case studies.

Text Books

1. "Environmental Chemistry", De, A. K., New Age Publishers Pvt.Ltd.

Reference books

1. "BiodiversityandConservation",Bryant, P. J.,HypertextBook

Reference Books:

2. "Textbook of Environment Studies",Tewari, Khulbe &Tewari,I.K.Publication
3. http://odl.teriuniversity.ac.in/course/category.php?id=3
4. https://www.edx.org/learn/environmental -science

Third Semester

Subject-Basic Techniques of Anaesthesia

[Credit: 3+1]

Course Description- To develop in depth knowledge on concepts of pathological conditions and to develop exhaustive ideology of techniques in regional and general anaesthesia.

Course Outcome-

On completion of the course, the students will be:

CO1.Gain knowledge on history of anaesthesia, pre and post - operative assessment.

CO2.Learn the investigations and pre-anaesthetic orders required for patient to be anesthetized.

CO3.Gain knowledge on the management of complications and anaesthetic considerations.

UNIT-1 :(10Hrs)

Resuscitation techniques: Basic life support (Airway, breathing, circulation) and the equipment used for it. Drugs used in CPR. AED and Defibrillators. Anaesthesia drugs and techniques: a. Principles of anaesthesia.

UNIT-2 :(12Hrs)

Basics of general anaesthesia depth, mechanism and intubation. Techniques of general anaesthesia. Various intravenous and inhalational agents. Regional anaesthesia, spinal and epidural, posture and drugs. Local Anaesthetic agents. Neuro muscular blocking agents. Principles of oxygen administration along with the apparatus. Care of patient in the recovery room.

UNIT-3 :(10Hrs)

Post-operative pain: evaluation and management. Types of fluid and therapy. Blood and blood components transfusion. Preparation of anaesthesia machine, intubation kit, suction machine, anaesthesia drugs.

UNIT-4 :(12Hrs)

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

PRACTICALS

1. Anaesthesia workstation
2. Boyle's anaesthesia apparatus and other Advanced Anaesthesia machines.
3. Apparatus and technique of the intravenous injections: a. Selection of the material used for intravenous injection. b. Different types of intravenous needles and cannulas. Theoretical study for testing of the toxicity of the materials.
4. Resuscitation equipment and Resuscitation techniques: a. Endotracheal tubes: Selection of the material used for the Endotracheal tube
5. Study of the structure of various types of the endotracheal tubes. Cleaning and sterilization of ETT. b. Connectors: Various connectors, size and material used. c. Mask: Material, structure and importance of dead space of facemask. d. Supra glottic airways. e. Spinal and epidural blocks: equipment, types of spinal and epidural needles, their structure. Instruments used for spinal and epidural blocks. Laryngeal sprays: Types, structure and material used, mechanism, uses and their maintenance.

Reference books

1. Lawrence, Peter F. Essentials of Surgical Specialties, 3rd Ed., 2007.
2. Lippincott, Williams and Wilkins (or newer edition).Chapter 1: Anaesthesiology, pp 1-50 2 : text book of anaesthesiology by ajay yadav 5th edition
3. Butterworth, J., Morgan and Mikhail's Clinical Anaesthesiology, 5e, McGraw-Hill Inc, 2013
4. Morgan GE, Mikhail MS, Murray MJ. (Eds) Clinical Anaesthesiology. 4th edition, McGraw-Hill Medical. Aug 26, 2005

Subject-Basics of Surgical Procedures

[Credit: 3+1]

Course Description: This course aims to provide students with a foundational understanding of surgical procedures, from pre-operative preparation to post-operative care.

Course outcomes:

Upon successful completion of this course, students will be able to:

CO1.Demonstrate understanding of aseptic techniques, proper tissue handling, and basic wound closure methods used in surgical procedures.

CO2.Identify and describe common surgical instruments and equipment utilized in various surgical interventions.

CO3. Identify and Handle Surgical Instruments.

CO5. Students will be able to describe the basic principles and concepts underlying surgical procedures, including asepsis, anatomy, and common surgical instruments.

UNIT-1 :(10Hrs)

Blood Transfusion. History of discovery of blood groups and genetics of blood groups. Types of blood groups and Rh factor. Coombs test. Collection of blood, its preservation and standardization. Various types of blood and blood products (Packed cells, PRP, FFP)

UNIT-2 :(12Hrs)

Pre-transfusion checks. Transfusion reactions. Fluids and electrolytes Body fluid compartments and the effect of fluid administration on them. Types of fluids (crystalloids and colloids) and their chemical composition. Indications of specific fluids and their complications.

UNIT-3 :(14Hrs)

General surgical procedure and para-surgical equipment a. operating tables: structure, material used, maintenance, control, Hydraulic system and Electrical system. Different types of diathermy machine. Monopole, Bipolar, Ligasure, Harmonic Scalpel, CUSA-Principle, hazards, prevention, functioning and maintenance. Types of operation lights and light sources: Features, Care, cleaning, sterilization and maintenance. Operation Theatre sterilization- Different recent advances.

UNIT-4 :(14Hrs)

LAR/APR--Positioning of patient, care-Prevention of hazards. Total thyroidectomy—with emphasis on proper positioning. Transthoracic esophagectomy—Different approaches. Venesection and Tracheotomy. Laparoscopic Cholecystectomy – Pneumoperitonium - Creation and removing, principles. Nephrectomy. k. Breast surgery. Positioning of patient for different operations: Problems and hazards. Hypothermia and hyperthermia.

PRACTICAL

1. Various types of blood and blood products.

2. Types of fluids (crystalloids and colloids) and their chemical composition.

3. Indications of specific fluids and their complications.

4. . Laparoscopic Cholecystectomy.

Reference books

1. Basic Surgical Techniques" by R. M. Kirk.

2. Schwartz's Principles of Surgery

Subject-Pharmacology

[Credit: 2+1]

Course Description- This course provides an introduction to the principles of pharmacology, the study of drugs and their actions on biological systems. Students will explore the basic concepts of pharmacokinetics (how the body absorbs, distributes, metabolizes, and excretes drugs) and pharmacodynamics (how drugs exert their effects on the body). The course will cover various classes of drugs, their mechanisms of action, therapeutic uses, side effects, and potential interactions.

Course outcome-

Upon successful completion of this course, students will be able to:

CO1. Understand Pharmacological Principles.

CO2. Classify and Differentiate Drugs.

CO3. Understand Drug Interactions.

CO4. Understand the Basis of Adverse Drug Reactions.

CO5. Ethical and Legal Aspects of Drug Use.

Unit-1 :(10Hrs)

General Pharmacology: - Introduction, Definitions, Classification of drugs, Sources of drugs, Routes of drug administration, Distribution of drugs, Metabolism and Excretion of drugs, Pharmacokinetics, Pharmacodynamics, Factors modifying drug response. - Elementary knowledge of drug toxicity, drug allergy, drug resistance, drug potency, efficacy & drug antagonism. - Adverse drugs reactions & management

Unit-2 :(8Hrs)

Autonomic Nervous system: - General considerations – The Sympathetic and Parasympathetic Systems, Receptors, Somatic Nervous System - Cholinergic and Anti-Cholinergic drugs, Adrenergic and Adrenergic blocking drugs, Peripheral muscle relaxants.

Unit-3 :(6Hrs)

Cardiovascular Pharmacology: - Antihypertensive and drugs useful in Angina. Neuropharmacology (in brief): - Sedative-Hypnotic Drugs: Barbiturates, Benzodiazepines - Antianxiety Drugs: Benzodiazepines, Other Anxiolytics

Unit-4 :(6Hrs)

Inflammatory/Immune Diseases- - Non-narcotic Analgesics and Non-steroidal Anti-Inflammatory Drugs: Acetaminophen, NSAIDs, Aspirin, Non-aspirin NSAIDs, drug Interactions with NSAIDs - Glucocorticoids: Pharmacological Uses of Glucocorticoids, adverse effects, Physiologic Use of Glucocorticoids

Unit-5 :(5Hrs)

Digestion and Metabolism (in brief): - Gastrointestinal Pharmacology: Peptic Ulcer Disease, Constipation, Diarrhoea - Drugs Used in Treatment of Diabetes Mellitus: Insulin, Oral Hypoglycaemic, Pharmacology of different dyes used in Radiological procedures.

PRACTICALS:

1. Drug Administration Techniques.
2. Therapeutic Drug Monitoring.
3. Drug Interaction Studies.
4. Adverse Drug Reactions and Drug Safety.
5. Prescription Writing and Medication Errors

TEXT BOOKS

1. Shenoy, Essential of Orthopaedics
2. K.Perks ,Textbook of Preventive Social Medicine
3. 12.Sunder Lal ,Adarsh,Pandey
4. Jacob Anthikad textbook of psychology and sociology.
5. Harsh Mohan textbook of pathology.

Subject-General Pathology

[Credit: 2+1]

Course objectives: The course is designed to make students of BOTT to make entry in to Medical laboratories with understanding pathology samples and their categorization as haematology and clinical pathology with distinction between two types of samples and testing techniques.

Course Outcomes:

On completion of the course, the students will be able to :

CO1.Understand the formation of blood & its composition.

CO2.Describe different stage of cells development.

CO3.Understand the concept of Haemopoiesis biomedical waste management microscopy.

CO4.Apply the specific technique for sample collection , its preservation & biomedical waste management.

CO5.Analyze infected blood samples and sites for haematological investigation.

Unit-1 :(8Hrs)

Fundamentals of haematology Lab Introduction to Haematology, Organization of laboratory and safety measures. Biomedical waste management, BMW – Segregation, collection, transportation, treatment and disposal (including colour coding), The Microscope and its parts, care and maintenance, monocular and binocular microscope, Important equipment used in haematology lab.

Unit-2 :(6Hrs)

Basic Haematology Haematopoiesis, Erythropoiesis, Leucopoiesis, Thrombopoiesis, Mechanism of hemopoiesis, stages of cell development, sites of hemopoiesis,

Blood and its composition, plasma and its composition, RBC, WBC, Platelets, **Anticoagulants**, mechanism of action, types and uses, merits and demerits, effect of storage on blood cells.

Unit-3:(6Hrs)

Haematology Sample Collection, Transport, Preservation, and Processing of various clinical Specimens, Blood collection for haematological investigations, Venipuncture, Capillary blood, Arterial blood, Vaccutainer, its type and uses, order of draw sample acceptance and rejection criteria.

Unit-4 :(8Hrs)

Haemoglobin & CBC Hemoglobin, structure, function and types, Haemoglobinometry, Haemoglobin estimation by various methods, advantages and disadvantages, physiological and pathological variations on blood parameters Hemocytometry, visual and electronic method, Neubauer counting chamber, RBC count, WBC count, Platelets count, procedure, calculation, significance, precautions involved during counting, absolute count of various WBCs.

Physiological and pathological changes in values.

Unit-5 :(6Hrs)

laboratory Techniques: Preparation of thin and thick smears, staining of smears, Romanowsky dyes, preparation and staining procedures of blood smears, Morphology of normal blood cells and their identifications, differential leucocytes count by manual and automated method, physiological and pathological variations in values

PRACTICALS

1. To learn general laboratory safety rules.
2. To demonstrate glass wares, apparatus and plastic wares used in laboratory.
3. To prepare EDTA, Sod. Citrate & Sod. Fluoride anticoagulants and bulbs/vials used in laboratory.
4. Demonstration of Vaccutainer.
5. To demonstrate method of blood collection.
6. To separate serum and plasma.
7. Demonstration of microscope
8. Determination of Haemoglobin by various methods.
9. Determination of TLC
10. Preparation of thick and thin smear
11. Determination of DLC
12. Determination of Total RBC
13. Determination of total platelet count

Text Books:

1. Text Book of Pathology, Harsh Mohan, 6thEdition

2. Atlas and text of haematology, volume-I, Dr. Tejinder Singh

Reference Books:

1. Haematology, McKenzie, 3rdEdition
2. Compendium of Transfusion medicine, Dr.R.N.Makroo

1. http://www.mefos.unios.hr/index.php/de/diplomski-mld-eng-1/mandatory-courses/clinical-haematology
2. https://www.blood-academy.com/

Subject-General Pathology

[Credit: 2+1]

Course objectives: The course is designed to make students of BOTT to make entry in to Medical laboratories with understanding pathology samples and their categorization as haematology and clinical pathology with distinction between two types of samples and testing techniques.

Course Outcomes:

On completion of the course, the students will be able to :

CO1.Understand the formation of blood & its composition.

CO2.Describe different stage of cells development.

CO3.Understand the concept of Haemopoiesis biomedical waste management microscopy.

CO4.Apply the specific technique for sample collection , its preservation & biomedical waste management.

CO5.Analyze infected blood samples and sites for haematological investigation.

Unit-1 :(8Hrs)

Fundamentals of haematology Lab Introduction to Haematology, Organization of laboratory and safety measures. Biomedical waste management, BMW – Segregation, collection, transportation, treatment and disposal (including colour coding), The Microscope and its parts, care and maintenance, monocular and binocular microscope, Important equipment used in haematology lab.

Unit-2 :(6Hrs)

Basic Haematology Haematopoiesis, Erythropoiesis, Leucopoiesis, Thrombopoiesis, Mechanism of hemopoiesis, stages of cell development, sites of hemopoiesis,

Blood and its composition, plasma and its composition, RBC, WBC, Platelets, **Anticoagulants**, mechanism of action, types and uses, merits and demerits, effect of storage on blood cells.

Unit-3:(6Hrs)

Haematology Sample Collection, Transport, Preservation, and Processing of various clinical Specimens, Blood collection for haematological investigations, Venipuncture, Capillary blood, Arterial blood, Vaccutainer, its type and uses, order of draw sample acceptance and rejection criteria.

Unit-4 :(8Hrs)

Haemoglobin & CBC Hemoglobin, structure, function and types, Haemoglobinometry, Haemoglobin estimation by various methods, advantages and disadvantages, physiological and pathological variations on blood parameters Hemocytometry, visual and electronic method, Neubauer counting chamber, RBC count, WBC count, Platelets count, procedure, calculation, significance, precautions involved during counting, absolute count of various WBCs.

Physiological and pathological changes in values.

Unit-5 :(6Hrs)

laboratory Techniques: Preparation of thin and thick smears, staining of smears, Romanowsky dyes, preparation and staining procedures of blood smears, Morphology of normal blood cells and their identifications, differential leucocytes count by manual and automated method, physiological and pathological variations in values

PRACTICALS

1. To learn general laboratory safety rules.
2. To demonstrate glass wares, apparatus and plastic wares used in laboratory.
3. To prepare EDTA, Sod. Citrate & Sod. Fluoride anticoagulants and bulbs/vials used in laboratory.
4. Demonstration of Vaccutainer.
5. To demonstrate method of blood collection.
6. To separate serum and plasma.
7. Demonstration of microscope
8. Determination of Haemoglobin by various methods.
9. Determination of TLC
10. Preparation of thick and thin smear
11. Determination of DLC
12. Determination of Total RBC
13. Determination of total platelet count

Text Books:

1. Text Book of Pathology, Harsh Mohan, 6thEdition

2. Atlas and text of haematology, volume-I, Dr. Tejinder Singh

Reference Books:

1. Haematology, McKenzie, 3rdEdition

2. Compendium of Transfusion medicine, Dr.R.N.Makroo

1. http://www.mefos.unios.hr/index.php/de/diplomski-mld-eng-1/mandatory-courses/clinical-haematology

2. https://www.blood-academy.com/

Fourth Semester

Subject- OT Equipments

[Credit: 3+1]

Course Description: To learn about the various OT equipment's and their operation in OT

Course outcomes:

On completion of the course, the students will be able to :

CO1. Students will gain a comprehensive understanding of the functionality, operation, and maintenance requirements of various types of OT equipment commonly used in surgical settings.

CO2.Participants will acquire the skills to effectively integrate OT equipment into surgical workflows, resulting in improved efficiency, time management and resource utilization in the operation theatre.

CO3. Students will be able to recognize and name essential equipment and instruments used in the operation theatre.

UNIT-1 :(10Hrs)

Cleanliness and sterilization of OT, Carbonization and fumigation Lighting in OT . Assisting Surgeons in OT Trouble Shooting. Anaesthesia Services -General Anaesthesia Techniques, Local Anaesthesia techniques. Blood transfusion. Monitoring in OT.

UNIT-2 :(8Hrs)

Positioning of Patients. Medical Air -Gas Manifold. Hooking up the ventilator. The maintenance of humidifiers. Nebulisation. Airway Devices. Laryngoscope and Endotracheal tubes. Face Mask and Manual Resuscitator. Instrument planning for various surgical procedures. Assist with intubation OTT techniques. Air exchanges and HEPA filters

UNIT-3 :(10Hrs)

Anaesthesia workstation Electrical diathermy. Monitoring a resuscitative device. Vaporizers. Laparoscopic unit. Suction devices. Mechanical ventilators & compressors. Autoclave& types. Operating microscopes. Imaging devices

UNIT-4 :(14Hrs)

X ray units C arm medical gas cylinders & pressure regulators. Operating tables and lights . Practical's I in OT techniques and Equipment's Autoclaving and sterilization methods

Washing, cleaning, testing and repairing of gloves and sorting Preparation of dressings, swabs and packs, packing of drums and sterilization Common types of instruments, needles, suture and ligatures used in operation theatre.

PRACTICAL

1.Autoclaving and sterilization methods washing.

2.Cleaning, testing and repairing of gloves and sorting.

3.Preparation of dressing, swabs and packs.

4.Common types of instruments, needles, suture and ligatures used in operation theatre.

5.Packing of drums and sterilization.

Textbook:

1. Fundamentals of operating department practice 2nd Edition by Daniel Rodger , Kevin hens haw, Paul Rowling and Scott Miller.

2.Surgical Technology Principles and Practice Joanna Kotcher.

Subject-Basic Intensive care

[Credit: 3+1]

Course Description: To introduce students to the field of intensive care, including its role in managing critically ill patients and improving patient outcomes.

Course outcomes:

On completion of the course, the students will be able to :

CO1.Students will gain a foundational understanding of the principles and concepts underlying critical care medicine, including the patho physiology of critical illness, hemodynamic monitoring, and organ support techniques.

CO2.Students will develop proficiency in conducting comprehensive patient assessments, including the interpretation of vital signs, laboratory values, and diagnostic tests, to monitor the status of critically ill patients and identify changes that may require intervention.

UNIT-1 :(10Hrs)

Care and maintenance of ventilators, suction machine, monitoring devices, Sterilization and disinfection of ventilators, Care, maintenance and operational capabilities of beds, lights and other apparatus ,Air conditioning and control of pollution in ICU.

UNIT-2 :(12Hrs)

Attachment and intra operative utility of ventilators and monitoring devices.

Care of unconscious adult and paediatric patients. Physiotherapy techniques, feeding, Ryle' stube insertion and hyper alimentation. Suctioning and posturing of semiconscious and unconscious patients.

Oxygen therapy, maintenance of clear Airway.

UNIT-3:(10Hrs)

Ventilation of patient in crisis. Mouth to mouth. Mouth to ET Tube. Resuscitator/ bag valve mask assembly. Different types of Airways. Short term ventilation/ Transport ventilators. ICU Laboratory; Detection of blood gases of the patient.

UNIT-4:(12Hrs)

Principles of ABG machines. Management of asepsis. 18. Management of tetanus patient. Psychological aspects of the patient, relative and staff. Hemo filtration and haemodialysis.

Ventilators: Principles of working of different ventilators. Monitoring techniques and equipment; Cardiac monitors, Respiratory monitors, Spiro meters, Temperature monitors.

PRACTICAL

1. Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS).
2. Airway Management Techniques.
3. Mechanical Ventilation- Understanding ventilator settings, modes, and troubleshooting common issues.
4. Hemodynamic Monitoring- Use of invasive and non-invasive techniques to monitor blood pressure, cardiac output, and other vital parameters.
5. Management of Shock- Identification and treatment of different types of shock, including hypovolemic, cardiogenic, septic, and anaphylactic shock.

Subject- Hospital Waste Management

[Credit: 2+1]

Course Description: Teach how to manage biomedical waste. Provide Knowledge about various biomedical management and handling rules. Learn the treatment and disposable techniques used for biomedical management · Teach biomedical waste management rules.

Course outcomes:

On completion of the course, the students will be able to :

CO1.Understand how to manage biomedical waste

CO2.Know various biomedical management and handling rules

CO3.Learn the treatment and disposable techniques of biomedical management

CO4.Know various biomedical waste management rules

UNIT-1 :(6Hrs)

Waste disposal management, Hospital waste management, Bio safety- regulatory framework for GMOs, bioethics and its socio economic impact, Hazards associated with poor health care waste management

UNIT-2 :(8Hrs)

Characterization of medical waste- Bio-medical wastes (Management and Handling) Rules, 1998, Amendments and guidelines, segregation, packaging, storage, transport of infectious waste. Techniques of Biomedical waste management. Health and safety rules. Protocols, issues, and challenges in transportation of Biomedical waste.

UNIT-3 :(8Hrs)

Treatment method- Autoclave, Hydroclave, Microwave, Chemical Disinfection, Solidification and stabilization, Bioremediation, Thermal Conversion Technologies, accumulation and storage of hazardous waste, land disposal of hazardous waste, other treatment and disposal.

UNIT-4 :(10Hrs)

Biomedical waste management rule: Biomedical wastes categories and their segregation, collection, treatment, processing, and disposal options, Standards For Treatment and Disposal Of Bio-Medical wastes, Standards for autoclaving of bio-medical waste, standards of microwaving, standards for deep burial, standards for the efficacy of chemical disinfection, standards for dry heat sterilization, standards for liquid waste

Online Resources:

https://dth.ac.in/medical/courses/Microbiology/block-9/3/index.php

https://www.aiims.edu/en/departments-and-centers/central-facilities/265-biomedical/7346-biomedical-waste-management.html

Subject-Forensic Medicine

MIBOTT-204

Course objective: To introduce students to the fundamental principles and concepts of forensic medicine and develop an understanding of the role of forensic medicine in legal investigations and the criminal justice system.

Course outcomes:

1. Students will demonstrate a comprehensive understanding of the fundamental principles and concepts of forensic medicine, including its role in legal investigations, the criminal justice system, and the application of medical knowledge to legal matters.

2. Students will gain knowledge of forensic toxicology principles, including the detection, interpretation, and analysis of drugs, alcohol, and poisons in post-mortem specimens, as well as their role in forensic death investigations and impaired driving cases.

UNIT-1

Introduction to Forensic Medicine: Definition, scope, and history of forensic medicine.Legal aspects of forensic medicine and expert witness testimony. Role of forensic medicine in the criminal justice system

UNIT-2

Forensic Pathology: Principles of forensic pathology and post-mortem examination. Forensic investigation of traumatic and non-traumatic deaths. Interpretation of autopsy findings and determination of cause and manner of death

UNIT-3

Forensic Toxicology: Introduction to forensic toxicology and principles of toxicological analysis. Detection and interpretation of drugs, alcohol, and poisons in post-mortem specimens. Role of toxicology in forensic death investigations and impaired driving cases

UNIT-4

Clinical Forensic Medicine. Role of the forensic physician in the evaluation of living individuals in legal cases. Examination and documentation of injuries, sexual assault, and child abuse. Collection and preservation of forensic evidence from living victims

UNIT-4

Special Topics in Forensic Medicine: Forensic anthropology and skeletal identification. Forensic entomology and the estimation of post-mortem interval. Digital forensics and the role of technology in forensic investigations

PRACTICAL

1. Analysis and discussion of forensic case studies from various forensic disciplines
2. Practical exercises in forensic examination techniques, evidence collection, and report writing

Recommended books

1. "Medicolegal Essentials in Healthcare" by Roy G. Beran and Sarah Maxwell
2. "Forensic Medicine: Fundamentals and Perspectives" by Reinhard B. Dettmeyer
3. "Principles of Forensic Medicine and Toxicology" by Apurba Nandy

Quality Control & Patient Safety
MIBOTT-205

Course objective: The objective of this course is to provide students with a comprehensive understanding of quality control principles and patient safety practices within various healthcare settings

Course Outcome: Upon successful completion of this course, students will be able to:

1. Apply quality control methodologies to assess and enhance healthcare processes and systems.
2. Evaluate patient safety risks and implement strategies to mitigate errors and adverse events.
3. Demonstrate proficiency in utilizing quality improvement tools and techniques to optimize patient care outcomes.
4. Analyze regulatory requirements and ethical considerations related to quality control and patient safety in healthcare settings.
5. Collaborate effectively with interdisciplinary teams to implement evidence-based practices and promote a culture of safety.

UNIT-1

Quality Assurance and Management Introduction, Quality improvement approaches, standards and norms, quality improvement tools, introduction to NABH guidelines.

UNIT-2

Basic of Emergency Care and Life Support Skills Basic life support (BLS) following cardiac arrest, recognition of sudden cardiac arrest and activation of emergency response system, early cardiopulmonary resuscitation (CPR) and rapid defibrillation with an automated external defibrillator (AED)

UNIT-3

Basic Emergency Care First aid, choking, rescue breathing methods, ventilation including use of bag valve master (BVMs) SECTION-C Biomedical Waste Management Definition, waste minimization, BMW-segregation, collection, transportation, treatment and disposal (Including colour coding), Liquid BMW, Radioactive waste, metals/chemicals/drug

UNIT-4

Infection Prevention and Control Sterilization, Disinfection, Effective hand hygiene, use of PPE, Prevention and control of common health care associated infections, Guidelines (NABH) and JCI for hospital infection control. Disaster preparedness and management Fundamentals of emergency management

Recommended Readings

1. Schriefer, J., & Leonard, M. S. (2012). Patient safety and quality improvement: an overview of QI. Pediatrics in review,
2. Datta, P., Mohi, G., &Chander, J. (2018). Biomedical waste management in India: Critical appraisal. Journal of laboratory physicians,
3. Yamin, T. (2013). Chemical & Biological Weapons: Positions, Prospects and Trends. Policy Perspectives,

Fundamentals of Psychology

MDC-202

Course objectives : Students should gain a knowledge of the fundamental principles of psychology and develop critical thinking skills that they can apply to various aspects of their personal and professional behaviour.

Course Outcomes:

1. On completion of the course, the students will be able to :
2. Understand about the fundamental processes and core psychological concepts.
3. Develop clear understanding of the concepts like intelligence, motivation, emotion and personality.
4. understand the different Stages and types of Memory.
5. Understanding different personality theories and models
6. Explore different Theories of Emotion

Unit 1:Psychology

Nature, Scope and Applications; Approaches: Psychodynamic, Behavioristic, Cognitive, Humanistic & Indigenous Indian Psychology (with special reference to Shrimad Bhagwad Gita, Sankhya Darshan and Buddhism).

Unit 2:Attention Processes

Selective and Sustained Attention: Nature and Determinants; Perceptual Processes: Nature and Determinants; Perceptual Organization; Perceptual Illusion. Learning: Classical Conditioning, Operant Conditioning and Verbal Learning: Methods and Procedures.

Unit 3:Memory and Forgetting:

Stages of Memory: Encoding, Storage and Retrieval; Types of Memory: Sensory, Short Term and Long Term Memory (Basic Introduction); Forgetting .Intelligence: Nature and Definition; Concept of IQ; Types of Intelligence ,Theories of Intelligence (Introduction of Basic Concepts): Spearman, Thurston, Guilford, Sternberg, Gardner.

Unit 4:Personality

Definition and Determinants; Approach of Personality (Basic Concepts): NEO, Trait approaches (Allport and Cattell); Psychodynamic (Freud); Humanistic (Rogers and Maslow).

Unit 5:Emotion:

Nature of Emotion; Basic Emotions; Expressions of Emotion: Universal Versus Culture Specific; Theories of Emotion: James-Lange, Cannon-Bard, Schachter-Singer. Motivation: Nature and Concept (Needs, Drives, Instincts); Types of Motives.

Text books:

De Silva, P. *An introduction to Buddhist psychology*. Springer.

Galotti, K.M.*Cognitive Psychology: In and Out of the Laboratory* (5th ed.). New Delhi: Sage.

Feldman, R. S. *Understanding Psychology*. India: Tata McGraw Hill.

Mishra, G. (Edited) Personality in Indigenous Tradition. In ICSSR Research

Reference books :

Baron, R. & Misra, G. *Psychology* (5th edition). New Delhi: Pearson.

Ciccarelli, S. K., White, N.J., & Misra, G. *Psychology* (5th ed., South Asian Edition). New Delhi: Pearson Education.

Cornelissen, M., Mishra, G. & Verma, S. Foundations of Indian Psychology. New Delhi: Pearson Education.

ADVANCE ANAESTHETIC TECHNIQUES

MJBOTT-301

Course objective: To prepare graduates of an Advanced Anesthetic Techniques course to deliver safe, efficient, and high-quality anesthesia care in diverse clinical settings, utilizing advanced techniques and evidence-based practices.

Course outcomes:

1. Students will be skilled in implementing multimodal analgesic techniques and enhanced recovery protocols to minimize postoperative pain, opioid consumption, and length of hospital stay while promoting early ambulation and return to function.

2. Students will be able to promptly recognize and manage perioperative complications and emergencies, such as malignant hyperthermia, anaphylaxis, hypotension, and cardiac arrest, utilizing evidence-based protocols and simulation-based training.

Unit 1

Heart as a pump. Cardiac cycle. Cardiac contractility and stroke volume. Cardiac output and its measurement.

Unit 2

Various ECG Leads, their placement and Normal ECG. Cardiac Arrhythmias (atrial fibrillation, ventricular tachycardia, extra systoles) Circulatory shock and its physiology.

Unit 3

Cardiac failure. Physics of blood flow and pressure. Measurement of blood flow. Electromagnetic flow meter, ultrasonic flow meter, plethysmography. Regulation of arterial pressure and hypertension (Drugs used for treatment of hypertension) Arterial circulation including cardiopulmonary bypass.

Unit 4

Artificial ventilation and related equipment: Physiology of IPPV (Intermittent positive pressure ventilation). Principles of mechanical ventilation. Various modes of IPPV. Automatic pressure and time cycled ventilators. Operating room ventilators. Other types of ventilators (HFJV, NIV). Complications in patients on ventilators. General care of a patient on ventilator. Disinfection and sterilization of ventilators. Humidification. Principles of oxygen administration and methods used to deliver oxygen. Acid base balance.

PRACTICALS

1. Various modes of IPPV.
2. Automatic pressure and time cycled ventilators.
3. Operating room ventilators.
4. Other types of ventilators (HFJV, NIV)
5. Complications in patients on ventilators.
6. General care of a patient on ventilator.
7. Disinfection and sterilization of ventilators.
8. Humidification
9. Principles of oxygen administration and methods used to deliver oxygen.
10. Acid base balance.

Specialized surgical Techniques
MJBOTT-302

Course Objective: To prepare learners to excel in the practice of specialized surgical techniques, equipping them with the knowledge, skills, and attitudes necessary to provide safe, effective, and patient-centered surgical care in diverse clinical settings.

Course Outcomes

1. Students will demonstrate proficiency in performing a variety of specialized surgical techniques within their respective surgical specialties, including orthopedic, neurosurgical, cardiovascular, plastic, and minimally invasive surgery.

2. Students will learn the technical skills required for specialized surgical practice, including precision, dexterity, and proficiency in using surgical instruments and equipment specific to their specialty

Unit 1

Cardiovascular and Respiratory System-Techniques, equipment, procedures and instruments Diseases of cardiovascular and respiratory systems. Types of perfusion machines. Techniques of Perfusion and operational capabilities. Intra-aortic Balloon pump. Cell saver techniques. Care, maintenance and working of Heart lung Machine. Patient's record keeping preoperatively, during anesthesia and post-operatively.Principles and techniques of temperature monitoring. Positioning during cardiothoracic surgical procedures. Positioning and techniques for: Radial artery cannulation. Central venous cannulation/pulmonary artery catheter • Femoral artery/venous cannulation

Unit 2

Monitoring Techniques and Equipment: a. Cardiac monitors, blood pressure and ECG monitoring b. Respiratory monitors, respiratory rate, Spirometers, SpO_2, and $EtCO_2$. Temperature monitors.TEE and echocardiography machine e. Non-invasive cardiac output machine. Positioning a. During various neurosurgical procedures including sitting, prone, lateral and position for trans-sphenoidal hypo-physectomy. Fixation of head during various neurosurgical procedures. Prone and Knee chest position for spine surgery.

Unit 3

Requirements during intubation in a case of cervical spine fracture including fiber optic laryngoscopy, awake intubation, LMA family especially ILMA. Anaesthetic and surgical requirements during aneurysm surgery. Surgical and Anaesthetic requirements during micro neurosurgery including types of microscopes, principle, structural features, microscopic photography and cameras used. Anaesthetic and surgical requirements during thyroid surgery, adrenal surgery. Anaesthetic and surgical requirements during abdominal surgery including Laproscopic surgery, genitourinary surgery including percutaneous nephrolithotomy, Endoscopic surgery, TURP, TURBT, Lithotripsy, ESWL (Extracorporeal shock wave therapy) Anaesthetic and surgical requirement during renal transplant donor and recipient surgery including care and precautions during operative procedures of hepatitis B & hepatitis C positive patients.

Unit 4

Anaesthetic and surgical requirement during pediatric and Neonatal surgical procedures including emergency procedures like tracheo-esophageal fistula. Sub diaphragmatic hernia, major abdominal and thoracic procedures; Foreign body bronchus and esophagus. -Apparatus and techniques for measuring blood pressure and temperature. -Principle and working of direct/Indirect blood pressure monitoring apparatus. -Intraoperative and postoperative problems and complications of general surgery. -Management of emergency caesarean section. -Management of massive obstetrical hemorrhage. -Surgical management in major burns and craniofacial surgery. -Surgical management of joint replacement and arthroscopy. -Surgical management of endoscopies, laryngectomy with RND and cochlear implant. -Management of PPV and perforating eye injury. -Care and maintenance of Para-surgical equipment (Cautery, OT Lights, OT Table etc.)

PRACTICAL

1. Management of emergency caesarean section.
2. Management of massive obstetrical hemorrhage.
3. Surgical management in major burns and craniofacial surgery.
4. Surgical management of joint replacement and arthroscopy
5. Surgical management of endoscopies, laryngectomy with RND and cochlear implant.
6. Management of PPV and perforating eye injury.
7. Care and maintenance of Para-surgical equipment (Cautery, OT Lights, OT Table etc.

8. Types of perfusion machines.
9. Techniques of Perfusion and operational capabilities.
10. Intra-aortic Balloon pump.
11. Cell saver techniques.

Research Methodology

MIBMRIT-301

Course Objective: The objective of this module is to help the students understand the basic principles of research and methods applied to draw inferences from the research findings

Course Outcomes: The student will be able to

1. Describe the basic principles of research and methods applied to draw inferences from the research findings.
2. Explain Design, Methodology of Experiment/Survey, Demography & vital statistics, Sampling & interpretation of Data

UNIT-1

Research Methodology: Introduction to Research methodology: Meaning of research, objectives of research, Motivation in research, Types of research & research approaches, Research methods vs methodology, Criteria for good research.

UNIT-2

Research problem: Statement of research problem, Statement of purpose and objectives of research problem, Necessity of defining the problem. Research design: Meaning of research design, Need for research design, Features for good design, Different research designs, Basic principles of research design.

UNIT-3

Measurement & scaling techniques: Measurement in research Measurement scales, sources of error in measurement, Technique of developing measurement tools, Meaning of scaling, its classification, important scaling techniques.

UNIT-4

Methods of data collection: collection of primary data, collection data through questionnaires & schedules, Difference between questionnaires & schedules. Computer technology: Introduction to Computers, computer application in research computers & researcher.

PRACTICALS

1.Literature survey on selected problem and its proper citation.

2. Defining aim and objectives of the problem.

3. Writing a review article for a journal.

Text Books:

1.Research Methodology & Biostatistics by CR Kothari

2.Research Methodology & Biostatistics by Vinod Kumar Bais

Medical Bioethics & IPR

MIBMRIT-504

Course objectives: To introduce the wide range of ethical issues in health care Understanding the relevant ethical principles invokedImparting knowledge and skills that will enable students to develop ethical answers to these issues and to acquire specialized knowledge of law and IPR.

Course outcomes

Upon successful completion of the course, students will be able to:

1. Recognize what constitutes an ethical concern in health care
2. Understanding ethical issues in Healthcare.
3. Develop the ability to reason through difficult medical/clinical ethical issues both orally, in the context of a group of their peers, and through written
4. The students get awareness of acquiring the patent and copyright for their innovative works.

UNIT-1

Introduction to Bioethics Bioethical issues related to Healthcare & medicine Anatomy - Cadaver ethics, Human dignity, PNDT, Disposal of cadaver, Genetic Counselling.

UNIT-2

Physiology - Animal ethics, Health policy privacy. Biochemistry & Pathology - Prudence of investigation confidentiality, Patients bill of rights, Disposal of investigative material, Integrity, Blood transfusion

UNIT-3

Pharmacology - Rational drug prescribing, Clinical trials, Risk minimization, Animal ethics Microbiology - Hand wash, Drug resistance minimization, Prudence of investigation confidentiality, Sterilization procedure, Biosafety and bio hazard

UNIT-4

Introduction to Intellectual Property: Concept of Intellectual Property Kinds of Intellectual Property Patents, Copyrights Designs, Trademarks,Geographical Indication, Infringement of IPR, Its protection and Remedies Licensing and its types

PRACTICALS: As per theory topics

Reference Books:

1. Contemporary issues in bioethics – Beauchamp & walters (B&W) 4th edition.
2. Classic philosophical questions by Gloud (8th Edition)
3. Case book series and booklets by UNESCO Bioethics Core curriculum 2008
4. Encyclopedia of Bioethics 5 vol set, (2003) ISBN-10: 0028657748
5. Intellectual property rights- Ganguli-Tat McGrawhill. (2001) ISBN-10:0074638602,
6. Intellectual Property Right- Wattal- Oxford Publicatiopn House.(1997) ISBN:0195905024.

Healthcare Delivery System in India
MIBOTT-303

Course Objective: The course provides the students a basic insight into the main features of Indian health care delivery system and how it compares with the other systems of the world.

Course outcomes:

1. Students will gain comprehensive knowledge of the organizational structure, including public and private sectors, and various stakeholders involved in the Indian healthcare system.
2. Students will demonstrate an understanding of healthcare policies, regulations, and legislative frameworks governing the Indian healthcare sector, including key acts and regulatory bodies.
3. Students will understand the role of health information systems, including electronic health records (EHR), health management information systems (HMIS), and telemedicine, in improving healthcare delivery, monitoring health outcomes, and facilitating decision-making.

Unit 1

Introduction to healthcare delivery system. Healthcare delivery system in India at primary, secondary and tertiary care. Community participation in healthcare delivery system. Health system in developed countries. Private Sector. National Health Mission. National Health Policy Issues in Health Care Delivery System in India

Unit 2

National Health Programme- Background objectives, action plan, targets, operations, achievements and constraints in various National Heath Programmes.

Unit 3

Introduction to AYUSH system of medicine -Introduction to Ayurveda. -Yoga and Naturopathy Unani -Siddha -Homeopathy Need for integration of various system of medicine Health scenario of India- past, present and future Demography & Vital Statistics -Demography-its concept -Vital events of life & its impact on demography -Significance and recording of vital statistics -Census & its impact on health policy

Unit 4

Epidemiology Principles of Epidemiology Natural History of disease Methods of Epidemiological studies Epidemiology of communicable & non-communicable diseases, disease transmission, host defense immunizing agents, cold chain, immunization, disease monitoring and surveillance.

Dance and Music

MDC-301

Course Objective:

To know the contribution of Dancers and Musicians, importance of Gayan and Vadan in Dance and enhance the interest of Hindustani Vocal Music.

Course Outcomes:

On completion of the course, the students will be able to :

1. Familiarized with the basic concepts of the Indian Classical Dance.
2. Gain knowledge about technical terms of dance
3. Gain the knowledge of origin of dance and are familiarized with different Taal matras.
4. Cultivate interest in knowing more about Hindustani Vocal Music
5. Understand the contribution eminent musicologists.

Unit 1:

Historical Aspects

A brief history of Indian dance

A brief history with other classical dance styles of India.

A brief history of Kathak dance.

Unit 2:

Aspects of Kathak

Distinctive aspects of Kathak (using of ghungrus,

chakkars, upaj, costume, etcFolk dance.The difference between folk and classical dance

Unit 3

Taal and Mudras

Components of taalNotations of taalInnovative techniques developed for stage performances in modern timesHasta Mudras (Hand Signs)- types and uses (AsamyuktaMudra)

Unit 4:

Prescribed Taal and notation

Nada, Shruti, Swar, Saptak, Thaat, Jati, Laya, Taal, Sargam Geet, Raag.Description of Prescribed Taal along with Taal notation:Teentaal, Dadara

Unit 5:

Contribution of eminent musicologists.

Life sketch and contribution to Indian Classical Music:TansenV.N. BhatkhandeV.D.Paluskar

Reference books:

Elizabeth Reynolds Indian method in Acting by Prasanna National School of Drama, An actor prepared by Konstantin Stanislavski.Elizabeth Reynolds

Geoffrey Bles Ltd.Hapgood, first published in great britain

Dennis Longwell Sanford Meisner on acting Book,

Hema Hirlrkar, Nuances of Hindustani Classical Music, unicorn books,

Bhatkhande, V.N. Hindustani Sangeet Kramik Pustak Malika (Vol.1to6). Hathras U.P.

Electronics and technology in surgery and anesthesia

MJBOTT-303

Course Objective: Explore the integration of electronic and technological advancements into clinical practice, including the use of electronic health records (EHR), telemedicine platforms, and mobile health applications to improve patient care and outcomes.

Course Outcomes:

1. Students will demonstrate proficiency in operating a variety of electronic medical devices used in surgery and anesthesia, including anesthesia delivery systems, patient monitoring equipment, and surgical instruments.
2. students will have a strong understanding of the principles of biomedical instrumentation, including sensors, transducers, signal processing, and data acquisition, as applied to surgical and anesthesia equipment.

Unit 1

Electronics and electro mechanical techniques d. Electrical safety precautions in operation theatre. OT tables, OT lights, suction machines, electrodes, pressure transducers, electrical safety, application, handling operation. e. Basic electronics, basic principle, care and maintenance and uses of surgical diathermy machine, defibrillator, Boyle's apparatus, anesthesia machine, monitors, pace-makers and stimulators etc. Engineering aspects of operation theatre equipment, power supplies, CVT, servo stabilizers, and ups etc.

Unit 2

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

Unit 3

Computer data processing, software information and Data management. Logging on and off, Security concepts, Sending and receiving Emails. Hospital information system.

PRACTICAL:

1. Electrical safety precautions in operation theatre. OT tables, OT lights, suction

machines, electrodes, pressure transducers, electrical safety, application, handling operation

2. Basic electronics, basic principle, care and maintenance and uses of surgical diathermy machine, defibrillator, Boyle's apparatus, anesthesia machine, monitors, pace-makers and stimulators etc.
3. Logging on and off, Security concepts, Sending and receiving Emails.
4. Hospital information system.

Advanced Critical Care
MJBOTT-304

Course objective: To Provide an in-depth exploration of the principles, practices, and advanced concepts relevant to the care of critically ill patients across diverse healthcare settings. Students will develop advanced clinical skills, critical thinking abilities, and decision-making competencies necessary for providing high-quality care to critically ill patients in intensive care units (ICUs) and other critical care environments.

Course outcomes:

1. Students will demonstrate a comprehensive understanding of the pathophysiology, etiology, and clinical manifestations of critical illnesses across various organ systems, including cardiovascular, respiratory, neurological, renal, and metabolic systems.
2. Students will develop advanced clinical assessment skills, including rapid and systematic evaluation of critically ill patients, interpretation of diagnostic tests and monitoring parameters, and formulation of differential diagnoses.
3. Students will acquire proficiency in advanced life support techniques, including advanced airway management, hemodynamic monitoring, initiation and management of vasoactive medications, and advanced cardiac life support (ACLS) interventions.

UNIT-1

Foundations of Critical Care Medicine: Introduction to critical care medicine. Pathophysiology of critical illness. Hemodynamic monitoring and shock management. Principles of mechanical ventilation

UNIT-2

Advanced Cardiac Life Support (ACLS) Advanced cardiovascular support and resuscitation techniques. Management of arrhythmias and cardiac arrest. Use of advanced cardiac monitoring devices

UNIT-3

Advanced Respiratory Support. Advanced modes of mechanical ventilation.Ventilator-associated lung injury and protective lung strategies. Management of acute respiratory distress syndrome (ARDS)

UNIT-4

Neurocritical Care: Assessment and management of traumatic brain injury (TBI). Monitoring and management of intracranial pressure (ICP). Neurological assessment in critical care patients. Trauma and Surgical Critical Care: Initial assessment and management of trauma patients. Surgical emergencies in the ICU. Principles of surgical critical care

Recommended Books

"Marino's The ICU Book" by Paul L. Marino

Additional Readings:

"Critical Care Medicine: Principles of Diagnosis and Management in the Adult" by Joseph E. Parrillo and R. Phillip Dellinger

"Current Diagnosis and Treatment Critical Care" edited by Frederic S. Bongard, Darryl Y. Sue, and Janine R. E. Vintch

CSSD Procedures

MJBOTT-305

Course Objective: Understanding of the principles of sterilization, including different sterilization methods, factors influencing sterilization efficacy, and standards/regulations governing sterilization practices.

Course Outcomes

1. Students will demonstrate proficiency in various sterilization techniques, including steam sterilization, ethylene oxide (ETO) sterilization, hydrogen peroxide gas plasma sterilization, and low-temperature sterilization methods

2. Students will exhibit competency in decontamination and cleaning practices for surgical instruments, medical devices, and other reusable healthcare equipment, ensuring thorough removal of organic and inorganic contaminants

Unit 1

Principles of sterilization and disinfection. Methods of sterilization Dry Sterilization. Wet sterilization.

Unit 2

Gaseous sterilization. Chemical sterilization. Sterilization by radiation (Gamma rays, ultraviolet rays)

Unit 3

Techniques of sterilization of rubber articles. (LMA, FOB, ETT, Laryngoscopes, Anesthesia machines and circuits) Technique of sterilization of carbonized articles. Methods of disinfection. Boiling. Chemical disinfection.

Unit 4

Hazards of sterilization. Prevention of hazards of sterilization. Precautions to be taken during sterilization. Course Title: - Advance Anesthesia Technic

PRACTICAL

1. Sterilization & Disinfectant
2. Autoclave
3. Hot air Oven
4. Boiling
5. Pasteurization
6. Flaming
7. By Chemical Disinfectant

Hospital Management
MIBOTT-304

Course objective: To introduce students to the principles and concepts of hospital management and develop an understanding of the organizational structure and functions of healthcare facilities.

Course outcomes:

1. Students will demonstrate a comprehensive understanding of hospital operations, including the organizational structure, functions, and processes involved in the management and administration of healthcare facilities.
2. Students will acquire proficiency in human resources management practices, including recruitment, selection, training, performance management, and employee relations, necessary for building and maintaining a competent healthcare workforce.

UNIT-1

Introduction to Hospital Management: Definition and scope of hospital management Historical development of hospitals and healthcare systems. Role and responsibilities of hospital administrators

UNIT-2

Organizational Structure and Governance. Types of healthcare organizations and their organizational structures. Governance models in healthcare organizations. Accreditation and regulatory compliance in hospitals

UNIT-3

Healthcare Finance and Budgeting. Principles of healthcare finance and revenue cycle management. Budgeting and financial planning in hospitals. Healthcare reimbursement systems and managed care

UNIT-4

Human Resources Management: Recruitment, selection, and retention of healthcare personnel: Training and development of healthcare staff.Performance management and employee relations in hospitals

Recommended books

1. "Hospital and Healthcare Facility Design" by Richard L. Miller and Earl S. Swensson
2. "Essentials of Healthcare Management" by Peter G. Northouse and Kent S. Cameron
3. "Hospital Operations: Principles of High Efficiency Health Care" by Wallace J. Hopp and William S. Lovejoy

Clinical Nutrition
MIBOTT-305

Course objective: To equip learners with the knowledge, skills, and competencies necessary to provide evidence-based nutrition care to individuals across the lifespan and diverse clinical settings, promoting health, preventing disease, and improving patient outcomes through nutrition intervention.

Course outcomes:

1. Students will demonstrate a comprehensive understanding of the principles of nutritional science, including the roles of macronutrients, micronutrients, and phytonutrients in human health and disease.
2. Students will be able to conduct comprehensive assessments of nutritional status using a variety of methods, including dietary assessment, anthropometric measurements, biochemical analysis, and clinical evaluation

UNIT-1

Role of dietarian: The hospital & community. Basic concepts of diet therapy. Principles of diet therapy & therapeutic nutrition for changing needs. It should corner all age groups. Adaptation of normal diet for changing needs. Routine hospital diets - Regular diet, light diet, full liquid and tube feeding.

UNIT-2

Modification of diet - Febrile conditions, infections and surgical conditions. Diets for gastro - intestinal disorders, constipation, diarrhoea, peptic ulcer. Diet for renal diseases - Nephritis, Nephrotic syndrome and renal failure. Diet for obesity and cardiovascular disorders. Diet for Diabetes mellitus. Diet & nutrition in kidney diseases.

UNIT-3

Nutrition in cancer. Nutrition in Immune system dysfunction, AIDS & Allergy. Nutrition support in metabolic disorders. Nutrition in burns and surgery. Nutrition - Addictive behaviour in annorexia, nervosa, bulimia & alcoholism.

UNIT-4

Nutrient drug interaction. Feeding the patients - Psychology of feeding the patient, assessment of patient needs. Feeding infants & children - problems in feeding children in hospitals. Nutrition & diet clinics - Patients checkup and dietary counseling, educating the patient and follow-up

PRACTICAL

1. Standardization of common food preparations.

2. Planning, preparation and calculation of following diets: a) Normal diet. b) Liquid diet c) Soft diet d) High and low caloric diet e)

3. Bland diet for peptic ulcer f) Diet for Viral hepatitis and cirrhosis g) Diet for Diabetes mellitus h) Diet for Hypertension and Atherosclerosis i)

4. Diet for Nephritis and Nephrotic syndrome k. Low and medium cost diets for P.E.M., Anemia & vitamin A deficiency

Quality and Patient Care

MIBOTT-306

Course objective:

The objective of the course is to help students understand the basic concepts of quality in health Care and develop skills to implement sustainable quality assurance program in the health system

Course Outcome:

1. Students will demonstrate an understanding of key concepts related to quality improvement in healthcare, including defining quality, identifying factors influencing healthcare quality, and understanding the importance of continuous improvement.

2. Students will acquire skills in collecting, analyzing, and interpreting healthcare data to identify opportunities for improvement, measure performance indicators, and track progress towards quality goals

Unit 1

Quality assurance and Management Introduction, Quality improvement approaches, standards and norms, quality improvement tools, introduction to NABH guidelines.

UNIT-2

Basic of Emergency care and Life support skills Basic life support (BLS) following cardiac arrest, recognition of sudden cardiac arrest and activation of emergency response system, early cardiopulmonary resuscitation (CPR) and rapid defibrillation with an automated external defibrillator (AED)

UNIT-3

Basic emergency care First aid, choking, rescue breathing methods, ventilation including use of bag valve master (BVMs)