PRESIDENCY UNIVERSITY

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PROGRAMME REGULATIONS & CURRICULUM

2025-29

PRESIDENCY SCHOOL OF ALLIED HEALTH SCIENCES

B.SC. IN ANAESTHESIA & OPERATION THEATRE TECHNOLOGY (AOTT)

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PRESIDENCY UNIVERSITY
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Approved by AICTE, New Delhi | Approved By BCI
Bengaluru

Presidency School of Allied Health Sciences

B.Sc. in ANAESTHESIA & OPERATION THEATRE TECHNOLOGY

(AOTT)

Program Regulations and Curriculum

Based on Choice Based Credit System (CBCS) and Outcome Based Education (OBE)

Program: B.Sc. IN ANAESTHESIA & OPERATION THEATRE TECHNOLOGY

B.Sc. (AOTT)

2025-2029

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PART A – PROGRAM REGULATIONS

1. Vision & Mission of the University and the School / Department

1.1 Vision of the University

To be a Value-driven Global University, excelling beyond peers and creating professionals of integrity and character, having concern and care for society.

1.2 Mission of the University

- Commit to be an innovative and inclusive institution by seeking excellence in teaching, research and knowledge-transfer.
- Pursue Research and Development and its dissemination to the community, at large.
- Create, sustain and apply learning in an interdisciplinary environment with consideration for ethical, ecological and economic aspects of nation building.
- Provide knowledge-based technological support and services to the industry in its growth and development.
- To impart globally-applicable skill-sets to students through flexible course offerings and support industry's requirement and inculcate a spirit of new-venture creation.

1.3 Vision of Presidency School of Allied Health Sciences

- To be a value-based, practice-oriented school committed to producing globally competent Allied Health Professionals who contribute to excellence in patient care, education, and community well-being.

1.4 Mission of Presidency School of Allied Health Sciences

- Foster a dynamic learning environment that integrates theoretical knowledge with hands-on clinical practice.
- Attract and develop highly qualified faculty committed to excellence in teaching, research, and healthcare innovation.
- Establish state-of-the-art laboratories and clinical training facilities to enhance practical learning experiences.
- Encourage interdisciplinary collaboration to promote holistic patient care and inter-professional education.
- Instil leadership, ethical values, and a spirit of community service among students to meet global healthcare challenges.

1.5 Vision of program B. Sc in Anaesthesia Operation Theatre Technology.

- To be a nationally recognized program that imparts quality education and practical expertise in Anaesthesia and Operation Theatre Technology, aimed at producing skilled, ethical, and compassionate healthcare technologists who contribute to excellence in surgical care and patient safety.

1.6 Mission of program B. Sc in Anaesthesia Operation Theatre Technology.

- To impart quality education and hands-on training in anaesthesia and operation theatre practices, preparing students to excel in clinical and surgical support roles.
- To develop ethical, compassionate, and competent professionals who can contribute to patient safety and surgical excellence in diverse healthcare settings.
- To encourage innovation, research, and critical thinking for continuous improvement in perioperative care and allied health sciences.
- To build strong industry and hospital linkages that provide real-time exposure, enhance employability, and align students with current healthcare practices.

2. Preamble to the Program Regulations and Curriculum

This is the subset of Academic Regulations, and it is to be followed as a requirement for the award of Bachelor of Science in Anaesthesia & Operation Theatre Technology (AOTT). The curriculum for the Bachelor of Science in Anaesthesia & Operation Theatre Technology (AOTT) program is designed in alignment with the Choice Based Credit System (CBCS), emphasizing practical and career-oriented learning. It incorporates Social Project-Based Learning, Industrial Training, and Clinical Internships to ensure that students gain real-world experience in surgical settings. This practice-driven approach equips graduates with the necessary skills and competencies to pursue successful careers in hospitals, surgical centers, and healthcare industries, as well as opportunities for higher studies or entrepreneurship in the healthcare sector.

In exercise of the powers conferred by and in discharge of duties assigned under the relevant provision(s) of the Act, Statutes and Academic Regulations, of the University, the Academic Council hereby makes the following Regulations.

3. Short Title and Applicability

a. These Regulations shall be called the Bachelor of Science in Anaesthesia & Operation Theatre Technology (AOTT) Degree Program Regulations and Curriculum 2025-2029.
b. These Regulations are subject to, and pursuant to the Academic Regulations.
c. These Regulations shall be applicable to the ongoing Bachelor of Science in Anaesthesia & Operation Theatre Technology (AOTT) Degree Programs of the 2025-2029 batch, and to all Bachelor of Science in Anaesthesia & Operation Theatre Technology (AOTT) Degree Programs which may be introduced in future.
d. These Regulations shall supersede all the earlier Bachelor of Science in Anaesthesia & Operation Theatre Technology (AOTT) Degree Program Regulations and Curriculum, along with all the amendments thereto.
e. These Regulations shall come into force from the Academic Year 2025-2026.

4. Definitions

In these Regulations, unless the context otherwise requires:

a. *"Academic Calendar" means the schedule of academic and miscellaneous events as approved by the Vice Chancellor;*

b. *"Academic Council" means the Academic Council of the University;*

c. *"Academic Regulations" means the Academic Regulations, of the University;*

d. *"Academic Term" means a Semester or Summer Term;*

e. *"Act" means the Presidency University Act, 2013;*

f. *"Basket" means a group of courses bundled together based on the nature/type of the course;*

g. *"BOE" means the Board of Examinations of the University;*

h. *"BOG" means the Board of Governors of the University;*

i. *"BOM" means the Board of Management of the University;*

j. *"BOS" means the Board of Studies of a particular Department/Program of Study of the University;*

k. *"CGPA" means Cumulative Grade Point Average as defined in the Academic Regulations;*

l. *"Clause" means the duly numbered Clause, with Sub-Clauses included, if any, of these Regulations;*

m. *"COE" means the Controller of Examinations of the University;*

n. *"Course In Charge" means the teacher/faculty member responsible for developing and organising the delivery of the Course;*

o. *"Course Instructor" means the teacher/faculty member responsible for teaching and evaluation of a Course;*

p. *"Course" means a specific subject usually identified by its Course-code and Course-title, with specified credits and syllabus/course-description, a set of references, taught by some teacher(s)/course-instructor(s) to a specific class (group of students) during a specific Academic Term;*

q. *"Curriculum Structure" means the Curriculum governing a specific Degree Program offered by the University, and, includes the set of Baskets of Courses along with minimum credit requirements to be earned under each basket for a degree/degree with specialization/minor/honours in addition to the relevant details of the Courses and Course catalogues (which describes the Course content and other important information about the Course). Any specific requirements for a particular program may be brought into the Curriculum structure of the specific program and relevant approvals should be taken from the BOS and Academic Council at that time.*

r. *"DAC" means the Departmental Academic Committee of a concerned Department/Program of Study of the University;*

s. *"Dean" means the Dean / Director of the concerned School;*

t. *"Degree Program" includes all Degree Programs;*

u. *"Department" means the Department offering the degree Program(s) / Course(s) / School offering the concerned Degree Programs / other Administrative Offices;*

v. *"Discipline" means specialization or branch of B.Sc. Degree Program;*

w. *"HOD" means the Head of the concerned Department;*

x. *"L-T-P-C" means Lecture-Tutorial-Practical-Credit – refers to the teaching – learning periods and the credit associated;*

y. *"MOOC" means Massive Open Online Courses;*

z. *"MOU" means the Memorandum of Understanding;*

aa. *NCAHP: National Commission for Allied Health Professionals*

bb. *"NPTEL" means National Program on Technology Enhanced Learning;*

cc. *"Parent Department" means the department that offers the Degree Program that a student undergoes;*

dd. *"Program Head" means the administrative head of a particular Degree Program/s;*

ee. *"Program Regulations" means the Bachelor of Science Degree Program Regulations and Curriculum, 2025-2029;*

ff. *"Program" means the Bachelor of Science (B.Sc.) Degree Program;*

gg. *"PSoAHS" means the Presidency School of Applied Health Science;*

hh. *"Registrar" means the Registrar of the University;*

ii. *"School" means a constituent institution of the University established for monitoring, supervising and guiding, teaching, training and research activities in broadly related fields of studies;*

jj. *"Section" means the duly numbered Section, with Clauses included in that Section, of these Regulations;*

kk. *"SGPA" means the Semester Grade Point Average as defined in the Academic Regulations;*

ll. *"Statutes" means the Statutes of Presidency University;*

mm. *"Sub-Clause" means the duly numbered Sub-Clause of these Program Regulations;*

nn. *"Summer Term" means an additional Academic Term conducted during the summer break (typically in June-July) for a duration of about eight (08) calendar weeks, with a minimum of thirty (30) University teaching days;*

oo. *"SWAYAM" means Study Webs of Active Learning for Young Aspiring Minds.*

pp. *"UGC" means University Grant Commission;*

qq. *"University" means Presidency University, Bengaluru; and*

rr. "Vice Chancellor" means the Vice Chancellor of the University.

5. Program Description

The Bachelor of Science in Anaesthesia & Operation Theatre Technology (AOTT) Degree Program Regulations and Curriculum 2025-2029 are subject to, and, pursuant to the Academic Regulations. These Program Regulations shall be applicable to the following ongoing Bachelor of Science (B.Sc.) Degree Programs of 2025-2029 offered by the Presidency School of Allied Health Sciences (PSoAHS):

1. Bachelor of Science in Anaesthesia & Operation Theatre Technology (AOTT)
2. Bachelor of Science in Medical Laboratory Technology (MLT)
3. Bachelor of Science in Cardiac Care Technology (CCT)
4. Bachelor of Science in Respiratory Care Technology (RCT)
5. Bachelor of Science in Medical Radiology & Imaging Technology (MRIT)

5.1 These Program Regulations shall be applicable to other similar programs, which may be introduced in future.

5.2 These Regulations may evolve and get amended or modified or changed through appropriate approvals from the Academic Council, from time to time, and shall be binding on all concerned.

5.3 The effect of periodic amendments or changes in the Program Regulations, on the students admitted in earlier years, shall be dealt with appropriately and carefully, so as to ensure that those students are not subjected to any unfair situation whatsoever, although they are required to conform to these revised Program Regulations, without any undue favour or considerations

6. Minimum and Maximum Duration

6.1 Bachelor of Science **Anaesthesia and Operation Theatre Technology (B.Sc. AOTT)**

The Bachelor of Science (Anaesthesia and Operation Theatre Technology) Degree Program is a **Four-Year, Full-Time, Semester-Based Program**. The minimum duration of the program is **four (04) years**, comprising **eight (08) semesters -** each academic year consisting of **two semesters** (Odd and Even).

The academic structure includes:

- **Theory Classes**: 2140 Hours
- **Practical Classes**: 920 Hours
- **Internship**: Minimum 1440 Hours
- **Total Hours**: 4500 Hours

6.2 A student who, for any reason, is unable to complete the program within the prescribed minimum duration may be granted an additional **two (02) years** beyond the normal period to fulfil the mandatory minimum credit requirements.

In general, the **maximum allowable duration** for completion of the program is defined as **'N + 2' years**, where **'N'** denotes the **normal duration (i.e., 4 years)**. Therefore, the **maximum duration to complete the B.Sc. AOTT program is 6 years**.

6.3 The time taken by the student to improve Grades/CGPA, and in case of temporary withdrawal/re-joining (Refer to Clause 16.1 of Academic Regulations), shall be counted in the permissible maximum duration for completion of a Program.

6.4 In exceptional circumstances, such as temporary withdrawal for medical exigencies where there is a prolonged hospitalization and/or treatment, as certified through hospital/medical records, women students requiring extended maternity break (certified by registered medical practitioner), and, outstanding sportspersons representing the University/State/India requiring extended time to participate in National/International sports events, a further extension of one (01) year may be granted on the approval of the Academic Council.

6.5 The enrolment of the student who fails to complete the mandatory requirements for the award of the concerned Degree (refer Section 19.0 of Academic Regulations) in the prescribed maximum duration (Clauses 18.1 and 18.2 of Academic Regulations), shall stand terminated and no Degree shall be awarded.

7. Program Educational Objectives (PEO)

After four years of successful completion of the program, the graduates shall be:

PEO No.	Program Educational Objectives (PEO)
PEO1	**Professional Competence:** Graduates will demonstrate comprehensive knowledge and practical skills relevant to allied health care professions, enabling them to function effectively in diverse clinical settings.
PEO2	**Research and Innovation:** Graduates will participate in clinical research and contribute to the advancement of allied health care practices through innovation and evidence-based approaches.
PEO3	**Ethical and Responsible Practice:** Graduates will uphold professional ethics, patient confidentiality, and safety standards while delivering perioperative care.
PEO4	**Teamwork and Leadership:** Graduates will work effectively in multidisciplinary healthcare teams and demonstrate leadership qualities when required.
PEO5	**Lifelong Learning and Career Advancement:** Graduates will engage in continuous learning and professional development to adapt to evolving medical technologies and practices.

8. Program Outcomes (PO) and Program Specific Outcomes (PSO)

8.1 **Program Outcomes (PO)**

On successful completion of the Program, the students shall be able to:

PO No.	Program Outcome
PO1	**Disciplinary Knowledge:** Apply core knowledge of anaesthesia, operation theatre management, and patient safety protocols in clinical practice.
PO2	**Critical Thinking:** Analyze clinical situations and make informed decisions to ensure patient safety during surgery and anaesthesia.
PO3	**Scientific Interpretation:** Interpret scientific data related to anaesthesia and surgery, using evidence to guide clinical decision-making.
PO4	**Research-Related Skills:** Conduct basic research in anaesthesia and OT practices, applying findings to improve clinical practice and patient care outcomes.
PO5	**Information and Digital Literacy:** Utilize digital tools, medical databases, and patient management systems to enhance accuracy and efficiency in clinical settings.
PO6	**Effective Citizenship:** Contribute positively to public health by understanding the healthcare professional's role in society.
PO7	**Ethics:** Uphold ethical principles, ensuring patient dignity, confidentiality, and informed consent.
PO8	**Social Interaction:** Collaborate with healthcare teams, demonstrating empathy and respect towards patients and colleagues.
PO9	**Effective Communication:** Communicate effectively with patients and healthcare teams to ensure clear information exchange.
PO10	**Environmental and Sustainability:** Implement sustainable practices in the operation theatre to minimize environmental impact.
PO11	**Self-Directed and Lifelong Learning:** Engage in continuous professional development, staying updated on advancements in anaesthesia and OT technology.

8.2 Program Specific Outcomes (PSOs):

On successful completion of the Program, the students shall be able to:

PSO No.	Program Specific Outcome
PSO1	**Perioperative Patient Care:** Apply knowledge and technical skills in preparing the operation theatre, assisting in surgical procedures, positioning patients, and maintaining sterility throughout perioperative care.
PSO2	**Anaesthesia Equipment and Drug Management:** Operate, maintain, and troubleshoot anaesthesia machines, monitors, and related equipment; assist in anaesthesia administration and manage anaesthetic drugs safely and accurately.
PSO3	**Emergency Response and Critical Care Support:** Assist in handling perioperative emergencies and provide support in resuscitation and critical care scenarios within the operation theatre and recovery areas.
PSO4	**Documentation and Safety Protocols:** Maintain accurate patient and procedural documentation while strictly adhering to infection control, biomedical waste disposal, and patient safety guidelines.

9. Admission Criteria (as per the concerned Statutory Body)

The University admissions shall be open to all persons irrespective of caste, class, creed, gender, or nationality. All admissions shall be made on the basis of merit in the qualifying examinations and an entrance examination conducted by the University. The admission criteria for the B.Sc. in Anaesthesia & Operation Theatre Technology program are listed in the following sub-clauses:

9.1 An applicant who has passed the Higher Secondary (10+2) or equivalent examination recognized by any Indian University or a duly constituted Board with Physics, Chemistry, and Biology (mandatory), and Mathematics (optional), securing a minimum of 50% marks in aggregate, shall be eligible for admission to the Program. ST/SC 45% marks in aggregate, shall be eligible for admission to the Program.

9.2 Students who have completed their 12th-grade education with Physics, Chemistry, and Mathematics (PCM) are required to successfully complete a 4- credit hour bridge course in Biology within their first academic semester. Completion of this bridge course is mandatory for non-biological students.

9.3 Candidates who have studied abroad and have passed the equivalent qualification, as determined by the Association of Indian Universities, must have passed Physics, Chemistry, and Biology (mandatory) and Mathematics (optional) up to the 12th standard level.

9.4 Foreign Nationals (FN), Persons of Indian Origin (PIO), and Children of Indian Workers

in Gulf Countries (CIWGC) must have completed qualifying examinations considered equivalent by the Association of Indian Universities/Academic Council to be eligible for admission.

9.5 Reservation for the SC / ST and other backward classes shall be made in accordance with the directives issued by the Government of Karnataka from time to time.

9.6 Admissions are offered to Foreign Nationals and Indians living abroad in accordance with the rules applicable for such admission, issued from time to time, by the Government of India.

9.7 Candidates must fulfil the medical standards required for admission as prescribed by the University.

9.8 If, at any time after admission, it is found that a candidate had not in fact fulfilled all the requirements stipulated in the offer of admission, in any form whatsoever, including possible misinformation and any other falsification, the Registrar shall report the matter to the Board of Management (BOM), recommending revoking the admission of the candidate.

9.9 The decision of the BOM regarding the admissions is final and binding.

10. Lateral Entry / Transfer Students requirements

10.1 Lateral Entry

The University admits students directly to the second year (3rd Semester) of the Bachelor of Science in Anaesthesia & Operation Theatre Technology (AOTT) degree program as per the provisions and/or regulations of the Government and the National Commission for Allied and Healthcare Professions (NCAHP) pertaining to the "Lateral Entry" scheme. The general conditions and rules governing the provision of Lateral Entry to the B.Sc. Program of the University are listed in the following Sub-Clauses:

10.1.1 Admission to the 2nd year (3rd Semester) of the B.Sc. Degree program shall be open to candidates who have completed a minimum of two (02) years full-time Diploma in Anaesthesia & Operation Theatre Technology from a Government-recognized body and who have secured a pass in the qualifying diploma examination.

10.1.2 Provided that, such candidates must also have completed the Higher Secondary (10+2) or equivalent examination with Physics, Chemistry, and Biology as subjects.

10.1.3 Lateral Entry shall be permissible only if the subject studied at the Diploma level is the same as the one in which the admission is sought.

10.1.4 The number of students to be admitted under the Lateral Entry scheme shall not exceed twenty percent (20%) of the total annual intake for the B.Sc. Program.

10.1.5 Eligibility of candidates for Lateral Entry shall be based on performance

in the qualifying diploma examination and the entrance examination conducted or approved by the NCAHP, as applicable.

10.1.6 Candidates admitted under the Lateral Entry scheme must adhere to all program-specific rules and regulations applicable from the 3rd semester onwards, including curriculum structure and credit requirements.

10.1.7 Foreign Nationals and candidates qualified from foreign Universities/Boards must obtain equivalence certification from the NCAHP Commission prior to admission, confirming their qualification is equivalent to the Indian diploma standards.

10.1.8 All existing University regulations, including any bridge courses prescribed by the University for knowledge alignment, shall be binding on students admitted through the Lateral Entry scheme. Such bridge courses, if prescribed, will not be included in CGPA calculations.

10.1.9 All the Courses (and the corresponding number of Credits) prescribed for the 1st Year of the concerned Program shall be waived for the student(s) admitted to the concerned Program through Lateral Entry. Further, the *Minimum Credit Requirements* for the award of the B.Sc. Degree in the concerned Program shall be prescribed / calculated as follows:

The ***Minimum Credit Requirements*** for the award of the Bachelor of Science Degree prescribed by the concerned Bachelor of Science Degree Program Regulations and Curriculum, 2025-2029, minus the number of Credits prescribed / accepted by the Equivalence Committee for the 1st Year (1st and 2nd Semesters) of the B.Sc. Program.

For instance, if the *Minimum Credit Requirements* for the award of the Bachelor of Science (B.Sc.) Degree as prescribed by the Regulations for B.Sc. (Anaesthesia & Operation Theatre Technology) is "N" Credits, and, if the total credits prescribed in the 1st Year (total credits of the 1st and 2nd Semesters) of the Program concerned is "M" Credits, then the *Minimum Credit Requirements* for the award of the Bachelor of Science in Anaesthesia & Operation Theatre Technology (AOTT) for a student who joins the Program through the provision of the Lateral Entry, shall be "N – M" Credits.

10.1.10 Further, no other waiver except the Courses prescribed for the 1st year of the B.Sc. Program of the University shall be permissible for students joining the B.Sc. Program through the provision of Lateral Entry.

10.2 Transfer of student(s) from another recognized University to the 2nd year (3rd Semester) of the B. Sc. Program of the University

A student who has completed the 1st Year (i.e., passed in all the Courses / Subjects prescribed for the 1st Year) of the B.Sc., Three /Four-Year Degree

Program from another recognized University, may be permitted to transfer to the 2nd Year (3rd Semester) of the B.Sc. Program of the University as per the rules and guidelines prescribed in the following Sub-Clauses:

10.2.1 The concerned student fulfils the criteria specified in Sub-Clauses 10.1.1,10.1.2 and 10.1.3.

10.2.2 The student shall submit the Application for Transfer along with a non-refundable Application Fee (as prescribed by the University from time to time) to the University no later than July 10 of the concerned year for admission to the 2nd Year (3rd Semester) B.Sc. Program commencing on August 1 on the year concerned.

10.2.3 The student shall submit copies of the respective Marks Cards / Grade Sheets / Certificates along with the Application for Transfer.

10.2.4 The transfer may be provided on the condition that the Courses and Credits completed by the concerned student in the 1st Year of the B.Sc. Three/Four-year Degree Program from the concerned University, are declared equivalent and acceptable by the Equivalence Committee constituted by the Vice Chancellor for this purpose. Further, the Equivalence Committee may also prescribe the Courses and Credits the concerned students shall have to mandatorily complete, if admitted to the 2nd Year of the B.Sc. Program of the University.

10.2.5 The Branch / Discipline allotted to the student concerned shall be the decision of the University and binding on the student.

11. Specific Regulations regarding Assessment and Evaluation (including the Assessment Details of NTCC Courses, Weightages of Continuous Assessment and End Term Examination for various Course Categories)

11.1 The academic performance evaluation of a student in a Course shall be according to the University Letter Grading System based on the class performance distribution in the Course.

11.2 Academic performance evaluation of every registered student in every Course registered by the student is carried out through various components of Assessments spread across the Semester. The nature of components of Continuous Assessments and the weightage given to each component of Continuous Assessments (refer Clause 11.5 of Academic regulations) shall be clearly defined in the Course Plan for every Course, and approved by the DAC.

11.3 Format of the End-Term examination shall be specified in the Course Plan.

11.4 Grading is the process of rewarding the students for their overall performance in each Course. The University follows the system of Relative Grading with statistical

approach to classify the students based on the relative performance of the students registered in the concerned Course except in the following cases:

- Non-Teaching Credit Courses (NTCC)
- Courses with a class strength less than 30

Absolute grading method may be adopted, where necessary with prior approval of concerned DAC.

Grading shall be done at the end of the Academic Term by considering the aggregate performance of the student in all components of Assessments prescribed for the Course. Letter Grades (Clause 8.10 of Academic regulations) shall be awarded to a student based on her/his overall performance relative to the class performance distribution in the concerned Course. These Letter Grades not only indicate a qualitative assessment of the student's performance but also carry a quantitative (numeric) equivalent called the Grade Point.

11.5 Assessment Components and Weightage

Table 1: Assessment Components and Weightage for different category of Courses

Nature of Course and Structure	Evaluation Component	Weightage	Minimum Performance Criteria
Lecture-based Course *L component in the L-T-P Structure is predominant (more than 1) (Examples: 3-0-0; 3-0-2; 2-1-0; 2-0-2, 2-0-4 etc.)*	**Continuous Internal Evaluation (CIE)** (a) 50% of CIE from two notified formative written tests (b) 50% of CIE from internal assessments such as seminars, journal club presentations, case presentations, assignments, etc.	30% (CIE Total)	40% (CIE to be eligible for ESE)
	End Semester Examination (ESE) University-conducted Theory exam with specified pattern, type, and weightage as per curriculum	70%	30% (ESE)
Lab/Practice-based Course *P component in the L-T-P Structure is predominant (Examples: 0-0-4; 1-0-4; 1-0-2; etc.)*	**Continuous Internal Evaluation (CIE)** Laboratory work including records, performance, attendance, project reports, etc. along with two formative tests and internal assessments (seminars, case-based assessments)	30% (CIE Total)	40% (CIE to be eligible for ESE)

	End Semester Examination (ESE) Practical exam: Spotters, equipment demonstration, case-based discussion, etc.	70%	30% (ESE)
Skill-based Courses *Industry Internship, Capstone Project, Dissertation, Summer/Short Internship, Field Projects, Portfolio, etc., with non-L-T-P pedagogy*	**Guidelines for the assessment components and recommended weightages** will be specified in the concerned Program Regulations and Course Plans	As specified (typically 40%)	As per Program Regulations

The exact weightages of Evaluation Components shall be clearly specified in the respective Course Plan.

Normally, for Practice/Skill based Courses, without a defined credit structure (L–T–P) [NTCC], but with assigned Credits (as defined in Clause 5.2 of the Academic Regulations), the method of evaluation shall be based only on Continuous Assessments. The various components of Continuous Assessments, the distribution of weightage among such components, and the method of evaluation/assessment, shall be as decided and indicated in the Course Plan/PRC. The same shall be approved by the respective DAC.

11.6 Minimum Performance Criteria:

11.6.1 Theory only Course and Lab/Practice Embedded Theory Course student shall satisfy the following minimum performance criteria to be eligible to earn the credits towards the concerned Course:

a. A student must obtain a minimum of 30% of the total marks/weightage assigned to the End Term Examinations in the concerned Course.
b. The student must obtain a minimum of 40% of the AGGREGATE of the marks/weightage of the components of Continuous Assessments, Mid Term Examinations and End Term Examinations in the concerned Course.

11.6.2 Lab/Practice only Course and Project Based Courses

The student must obtain a minimum of 40% of the AGGREGATE of the marks/weightage of all assessment components in the concerned Course.

11.6.3 A student who fails to meet the minimum performance criteria listed above in a Course shall be declared as "Fail" and given "F" Grade in the concerned Course. For theory Courses, the student shall have to re-appear in the "Make-Up Examinations" as scheduled by the University in any subsequent semester, or, re-appear in the End Term Examinations of the same Course when it is scheduled at the end of the following Semester or Summer Term,

if offered. The marks obtained in the Continuous Assessments (other than the End Term Examination) shall be carried forward and be included in computing the final grade, if the student secures the minimum requirements (as per Sub-Clause 11.6 and 11.6.2 of Academic regulations) in the "Make-Up Examinations" of the concerned Course. Further, the student has an option to re-register for the Course and clear the same in the summer term/ subsequent semester if he/she wishes to do so, provided the Course is offered.

12. Additional clarifications - Rules and Guidelines for Transfer of Credits from MOOC, etc. – Note: These are covered in Academic Regulations

The University allows students to acquire credits from other Indian or foreign institutions and/or Massive Open Online Course (MOOC) platforms, subject to prior approval. These credits may be transferred and counted toward fulfilling the minimum credit requirements for the award of a degree. The process of transfer of credits is governed by the following rules and guidelines:

12.1 The transfer of credits shall be examined and recommended by the Equivalence Committee (Refer ANNEXURE B of Academic regulations) and approved by the Dean - Academics.

12.2 Students may earn credits from other Indian or foreign Universities/Institutions with which the University has an MOU, and that MOU shall have specific provisions, rules and guidelines for transfer of credits. These transferred credits shall be counted towards the minimum credit requirements for the award of the degree.

12.3 Students may earn credits by registering for Online Courses offered by *Study Web of Active Learning by Young and Aspiring Minds* (SWAYAM) and *National Program on Technology Enhanced Learning* (NPTEL), or other such recognized Bodies/ Universities/Institutions as approved by the concerned BOS and Academic Council from time to time. The concerned School/Parent Department shall publish/include the approved list of Courses and the rules and guidelines governing such transfer of credits of the concerned Program from time to time. The Rules and Guidelines for the transfer of credits specifically from the Online Courses conducted by SWAYAM/ NPTEL/ other approved MOOCs are as stated in the following Sub-Clauses:

12.3.1 A student may complete SWAYAM/NPTEL/other approved MOOCs as mentioned in Clause12.3(as per Academic regulations) and transfer equivalent credits to partially or fully complete the mandatory credit requirements of Discipline Elective Courses and/or the mandatory credit requirements of Open Elective Courses as prescribed in the concerned Curriculum Structure. However, it is the sole responsibility of the student to complete the mandatory credit requirements of the Discipline Elective Courses and the Open Elective Courses as prescribed by the Curriculum Structure of the concerned Program.

12.3.2 SWAYAM/NPTEL/ other approved MOOCs as mentioned in Clause 12.3 (as per Academic regulations) shall be approved by the concerned Board of Studies and placed (as Annexures) in the concerned PRC.

12.3.3 Parent Departments may release a list of SWAYAM/NPTEL/other approved MOOCs for Pre-Registration as per schedule in the Academic Calendar or through University Notification to this effect.

12.3.4 Students may Pre-Register for the SWAYAM/NPTEL/other approved MOOCs in the respective Departments and register for the same Courses as per the schedule announced by respective Online Course Offering body/institute/ university.

12.3.5 A student shall request for transfer of credits only from such approved Courses as mentioned in Sub-Clause 12.3.1 above.

12.3.6 SWAYAM/NPTEL/other approved MOOCs Courses are considered for transfer of credits only if the concerned student has successfully completed the SWAYAM/NPTEL/other approved MOOCs and obtained a certificate of successful/satisfactory completion.

12.3.7 A student who has successfully completed the approved SWAYAM/NPTEL/ other approved MOOCs and wants to avail the provision of transfer of equivalent credits, must submit the original Certificate of Completion, or such similar authorized documents to the HOD concerned, with a written request for the transfer of the equivalent credits. On verification of the Certificates/Documents and approval by the HOD concerned, the Course(s) and equivalent Credits shall be forwarded to the COE for processing of results of the concerned Academic Term.

12.3.8 The credit equivalence of the SWAYAM/NPTEL/other approved MOOCs are based on Course durations and/or as recommended by the Course offering body/institute/university. The Credit Equivalence mapped to SWAYAM/ NPTEL approved Courses based on Course durations for transfer of credits is summarised in Table shown below. The Grade will be calculated from the marks received by the Absolute Grading Table 8.11. in the Academic regulations.

Table 2: Durations and Credit Equivalence for Transfer of Credits from SWAYAM-NPTEL/ other approved MOOC Courses

Sl. No.	Course Duration	Credit Equivalence
1	4 Weeks	1 Credit
2	8 Weeks	2 Credits
3	12 Weeks	3 Credits

12.3.9 The maximum permissible number of credits that a student may request for credit transfer from MOOCs shall not exceed 20% of the mandatory minimum credit requirements specified by the concerned Program Regulations and Curriculum for the award of the concerned Degree.

12.3.10 The University shall not reimburse any fees/expense; a student may incur for the SWAYAM/NPTEL/other approved MOOCs.

12.3.11 The maximum number of credits that can be transferred by a student shall be limited to forty percent (40%) of the mandatory minimum credit requirements specified by the concerned Program Regulations and Curriculum for the award of the concerned Degree. However, the grades obtained in the Courses transferred from other Institutions/MOOCs, as mentioned in this Section (13.0**Error! Reference source not found.**), shall not be included in the calculation of the CGPA.

13. Structure / Component with Credit Requirements Course Baskets & Minimum Basket wise Credit Requirements

The B. Sc. in Anaesthesia & Operation Theatre Technology (AOTT) Program Structure (2025-2029) totalling 189 credits. Table 3 summarizes the type of baskets, number of courses under each basket and the associated credits that are mandatorily required for the completion of the Degree.

Table 3: B. Sc. in Anaesthesia & Operation Theatre Technology (OT & AT): Summary of Minimum Credit Contribution from various Baskets

Sl. No.	Baskets/Category	Credit Contribution
1	Core Courses (CC)	48
2	Ability Enhancement Compulsory Course (AECC)	4
3	Discipline Specific Elective (DSE)	53
4	General Elective	6
5	Research Project (PWR)	7
6	Skill Enhancement (SEC)	23
7	Internship (INT)	48
	Total Credits	**189**

14. Minimum Total Credit Requirements of Award of Degree

The Minimum total credit requirement for the award of degree shall be as per the guidelines of NCAHP.

15. Other Specific Requirements for Award of Degree, if any, as prescribed by the Statutory Bodies,

15.1 The award of the Degree shall be recommended by the Board of Examinations and approved by the Academic Council and Board of Management of the University**.**

15.2 A student shall be declared to be eligible for the award of the concerned Degree if she/he:

a. Fulfilled the Minimum Credit Requirements and the Minimum Credits requirements under various baskets;

b. Secure a minimum CGPA of 4.50 in the concerned Program at the end of the Semester/Academic Term in which she/he completes all the requirements for the award of the Degree as specified in Sub-Clause a of Academic Regulations**;**

c. No dues to the University, Departments, Hostels, Library, and any other such Centres/ Departments of the University; and

d. No disciplinary action is pending against her/him.

16. Curriculum Structure – Basket Wise Course List:

List here all the courses Basket/Category wise as per the Credit Distribution shown in the Table 3.

Table 3.1 Core Courses (CC)						
S. No	Course code	Course Name	L	T	P	C
1	BAOTT001	Introduction to Healthcare Delivery System in India	5	0	0	5
2	BAOTT002	Medical Terminology & Record Keeping	3	0	0	3
3	BAOTT003	Anatomy	6	0	2	7
4	BAOTT004	Physiology	6	0	2	7
5	BAOTT005	Healthcare Quality & Patient Safety	2	0	4	4
6	BAOTT007	Basics of Biomedical Sciences in Surgery & Anesthesia	2	0	2	3
7	BAOTT008	Biochemistry & Hematology	3	0	4	5
8	BAOTT009	Pathology & Microbiology	2	0	0	2
9	BAOTT010	Basic Concept in Pharmacology	2	0	4	4
10	BAOTT018	Basic Intensive Care	3	0	4	5
11	BAOTT019	Clinical Medicine & Management	3	0	0	3
		Total No. of Credits				**48**

Table 3.2 Ability Enhancement Compulsory Course (AECC)						
S. No	Course code	Course Name	L	T	P	C
1	BAOTT006	Medical Law and Ethics, Professionalism & Values, Principles of Management	4	0	0	4
		Total No. of Credits				**4**

Table 3.3 Discipline Specific Elective (DSE)						
S. No	Course code	Course Name	L	T	P	C
1	BAOTT016	Advanced Anesthesia Techniques	6	0	2	7
2	BAOTT017	Advanced Surgical Procedures	6	0	2	7
3	BAOTT020	Specialized Anesthesia	6	0	2	7
4	BAOTT021	Specialized Surgery	6	0	2	7
5	BAOTT022	Recent Advances in Anesthesia & Surgical Field	3	0	2	4
6	BAOTT024	Specialized Anesthesia-2	6	0	2	7
7	BAOTT025	Specialized Surgery-2	6	0	2	7

8	BAOTT026	Specialized Anesthesia & Surgical-3	6	0	2	7
		Total No. of Credits				**53**

Table 3.4 General Elective						
S. No	Course code	Course Name	L	T	P	C
1	BAOTT023	Disaster Management & Environmental Science	6	0	0	6
		Total No. of Credits				**6**

Table 3.5 Research Project (PWR)						
S. No	Course code	Course Name	L	T	P	C
1	BAOTT015	Industrial Orientation & Visit	3	0	0	3
2	BAOTT027	Research Methodology & Biostatistics	4	0	0	4
		Total No. of Credits				**7**

Table 3.6 Skill Enhancement (SEC)						
S. No	Course code	Course Name	L	T	P	C
1	BAOTT011	Basic Computer & Info. Sciences, Communication & Soft Skills	2	0	4	4
2	BAOTT012	Basic Techniques of Anesthesia	6	0	2	7
3	BAOTT013	Basics of Surgical Procedures	6	0	2	7
4	BAOTT014	CSSD & Manifold Area	3	0	4	5
		Total No. of Credits				**23**

Table 3.9 Internship (INT)						
S. No	Course code	Course Name	L	T	P	C
1	OTT402	Internship	0	0	48	24
2	OTT404	Internship	0	0	48	24
		Total No. of Credits				**48**

17. Practical / Skill based Courses – Internships / Thesis / Dissertation / Capstone Project Work / Portfolio / Mini project

Practical / Skill based Courses like internship, project work, capstone project, research project / dissertation, and such similar courses, where the pedagogy does not lend itself to a typical L-T-P-C Structure as defined in Clause 5.1 of the Academic Regulations, are simply assigned the number of Credits based on the quantum of work / effort required to full fill the learning objectives and outcomes prescribed for the concerned Courses. Such courses are referred to as Non-Teaching Credit Courses (NTCC). These Courses are designed to provide students with hands-on experience and skills essential for their professional development. These courses aim to equip students with abilities in problem identification, root cause analysis, problem-solving, innovation, and design thinking through industry exposure and project-based learning. The expected outcomes are first level proficiency in problem solving and design thinking skills to better equip Operation

Theatre graduates for their professional careers. The method of evaluation and grading for the Practical / Skill based Courses shall be prescribed and approved by the concerned Departmental Academic Committee (refer Annexure A of the Academic Regulations). The same shall be prescribed in the Course Plan.

17.1 Internship

A student may undergo an internship for a period of 4-6 weeks in an industry / company or academic / research institution during the Semester Break between 4th and 5th Semesters or 6th and 7th Semesters, subject to the following conditions:

17.1.1 The Internship shall be in conducted in accordance with the Internship Policy prescribed by the University from time to time.

17.1.2 The selection criteria (minimum CGPA, pass in all Courses as on date, and any other qualifying criteria) as applicable / stipulated by the concerned Industry / Company or academic / research institution for award of the Internship to a student;

17.1.3 The number of Internships available for the concerned Academic Term. Further, the available number of internships shall be awarded to the students by the University on the basis of merit using the CGPA secured by the student. Provided further, the student fulfils the criteria, as applicable, specified by the Industry / Company or academic / research institution providing the Internship, as stated in Sub-Clause 18.1.2 above.

17.1.4 A student may opt for Internship in an Industry / Company or academic / research institution of her / his choice, subject to the condition that the concerned student takes the responsibility to arrange the Internship on her / his own. Provided further, that the Industry / Company or academic / research institution offering such Internship confirms to the University that the Internship shall be conducted in accordance with the Program Regulations and Internship Policy of the University.

17.1.5 A student selected for an Internship in an industry / company or academic / research institution shall adhere to all the rules and guidelines prescribed in the Internship Policy of the University.

17.2 Minor Project Work

A student may opt to do a Minor Project Work for a period of 4-6 weeks in an Industry / Company or academic / research institution or the University Department(s) during the 3rd / 5th / 6th / 7th Semester as applicable, subject to the following conditions:

17.2.1 The Minor Project Work shall be approved by the concerned HOD and be carried out under the guidance of a faculty member.

17.2.2 The student may do the Minor project work in an Industry / Company or academic / research institution of her / his choice subject to the above-mentioned condition (Sub-Clause 18.2.1). Provided further, that the Industry / Company or academic / research institution offering such project work confirms to the University that the project work will be conducted in accordance with the Program Regulations and requirements of the University.

17.3 Research Project / Dissertation

A student may opt to do a Research Project / Dissertation for a period of 12-14 weeks in an Industry / Company or academic / research institution or the University Department(s) as an equivalence of Capstone Project, subject to the following conditions:

17.3.1 The Research Project / Dissertation shall be approved by the concerned HOD and be carried out under the guidance of a faculty member.

17.3.2 The student may do the Research Project / Dissertation in an Industry / Company or academic / research institution of her / his choice subject to the above-mentioned condition (Sub-Clause 18.4.1). Provided further, that the Industry / Company or academic / research institution offering such Research Project / Dissertation confirms to the University that the Research Project / Dissertation work will be conducted in accordance with the Program Regulations and requirements of the University.

18. List of MOOC (NPTEL) Courses

NPTEL - Discipline Elective Courses for B. Sc (Anaesthesia & Operation Theatre Technology)

Sl. No.	Course ID	Course Name	Duration
1	noc25-hs77	English Studies, Cultural Studies	12 Weeks
2	noc25-ce09	Environmental Science	12 Weeks
3	noc25-bt34	Microsensors, Implantable Devices and Rodent Surgeries for Biomedical Applications	12 Weeks
4	noc25-ge20	Management of Medical Emergencies in Dental Practice	12 Weeks
5	noc25-ge36	Medical Law	12 Weeks
6	noc25-ge27	Qualitative Research Methods and Research Writing	12 Weeks

19. Recommended Semester Wise Course Structure / Flow including the Program / Discipline Elective Paths / Options

Semester I											
Sl. No.	**Course Code**	**Course Name**	**Theory**	**Practical**	**Total**	**L**	**T**	**P**	**Credits**	**Contact Hours**	**Basket**
1	BAOTT001	Introduction to Healthcare Delivery System in India	80	0	80	5	0	0	5	5	CC
2	BAOTT002	Medical Terminology & Record Keeping	50	0	50	3	0	0	3	3	CC
3	BAOTT003	Anatomy	100	40	140	6	0	2	7	8	CC
4	BAOTT004	Physiology	100	40	140	6	0	2	7	8	CC
5	BAOTT005	Healthcare Quality & Patient Safety	60	40	100	4	0	2	5	6	CC
Total			**390**	**120**	**510**	**24**	**0**	**6**	**27**	**30**	
CC= Core Course, AECC= Ability Enhancement Compulsory Course, SEC= Skill Enhancement Course, DSE= Discipline Specific Elective, GE= Generic Elective, VAC= Value Added Course. PWR= Research Project											

Semester II											
Sl. No.	**Course Code**	**Course Name**	**Theory**	**Practical**	**Total**	**L**	**T**	**P**	**Credits**	**Contact Hours**	**Basket**
1	BAOTT006	Medical Law and Ethics, Professionalism & Values, Principles of Management	(30+10 +30)	0	70	4	0	0	4	4	AECC
2	BAOTT007	Basics of Biomedical sciences in surgery and Anaesthesia	(40+30)	(0+30)	100	2	0	2	3	4	CC
3	BAOTT008	Biochemistry & Haematology	(50+50)	0	100	3	0	4	5	7	CC
4	BAOTT009	Pathology & Microbiology	40	0	40	2	0	0	2	2	CC

5	BAOTT010	Basic Concepts in Pharmacology	40	60	100	2	0	4	4	6	CC
6	BAOTT-011	Basic computers and information Science, Communication and soft skills.	40	60	100	2	0	4	4	6	SEC
		Total				**15**	**0**	**14**	**22**	**29**	
CC= Core Course, AECC= Ability Enhancement Compulsory Course, SEC= Skill Enhancement Course, DSE= Discipline Specific Elective, GE= Generic Elective, VAC= Value Added Course. PWR= Research Project											

Semester III											
Sl. No.	**Course Code**	**Course Name**	**Theory**	**Practical**	**Total**	**L**	**T**	**P**	**Credits**	**Contact Hours**	**Basket**
1	BAOTT012	Basic Techniques of Anaesthesia	100	50	150	6	0	2	7	8	SEC
2	BAOTT013	Basics of Surgical Procedures	100	50	150	6	0	2	7	8	SEC
3	BAOTT014	CSSD & Manifold Area	50	100	150	3	0	4	5	7	SEC
4	BAOTT015	Industrial Orientation & Industrial Visit	60	0	60	3	0	0	3	3	PWR
		Total	**310**	**200**	**510**	**18**	**0**	**8**	**22**	**26**	
CC= Core Course, AECC= Ability Enhancement Compulsory Course, SEC= Skill Enhancement Course, DSE= Discipline Specific Elective, GE= Generic Elective, VAC= Value Added Course. PWR= Research Project											

Semester IV											
Sl. No.	**Course Code**	**Course Name**	**Theory**	**Practical**	**Total**	**L**	**T**	**P**	**Credits**	**Contact Hours**	**Basket**
1	BAOTT016	Advanced Anaesthesia Techniques	100	50	150	6	0	2	7	8	DSE

2	BAOTT017	Advanced Surgical Procedures	100	50	150	6	0	2	7	8	DSE
3	BAOTT018	Basic Intensive Care	50	100	150	3	0	4	5	7	CC
4	BAOTT019	Clinical Medicine & Management	60	0	60	3	0	0	3	3	CC
		Total	**310**	**200**	**510**	**18**	**0**	**8**	**22**	**26**	
CC= Core Course, AECC= Ability Enhancement Compulsory Course, SEC= Skill Enhancement Course, DSE= Discipline Specific Elective, GE= Generic Elective, VAC= Value Added Course. PWR= Research Project											

Semester V											
Sl. No.	**Course Code**	**Course Name**	**Theory**	**Practical**	**Total**	**L**	**T**	**P**	**Credits**	**Contact Hours**	**Basket**
1	BAOTT020	Specialized Anaesthesia 1	100	50	150	6	0	2	7	8	DSE
2	BAOTT021	Specialized Surgery 1	100	50	150	6	0	2	7	8	DSE
3	BAOTT022	Recent Advances in Anaesthesia & Surgical Field	100	0	100	3	0	2	4	5	DSE
4	BAOTT023	Disaster Management & Environmental Science	50+60	0	110	6	0	0	6	6	GE
		Total	**410**	**100**	**510**	**21**	**0**	**6**	**24**	**27**	
CC= Core Course, AECC= Ability Enhancement Compulsory Course, SEC= Skill Enhancement Course, DSE= Discipline Specific Elective, GE= Generic Elective, VAC= Value Added Course. PWR= Research Project											

Semester VI											
Sl. No.	**Course Code**	**Course Name**	**Theory**	**Practical**	**Total**	**L**	**T**	**P**	**Credits**	**Contact Hours**	**Basket**
1	BAOTT-024	Specialized Anaesthesia 2	100	50	150	6	0	2	7	8	DSE
2	BAOTT-025	Specialized Surgery 2	100	50	150	6	0	2	7	8	DSE

3	BAOTT-026	Specialized Anaesthesia & Surgery 3	100	50	150	6	0	2	7	8	DSE
4	BAOTT-027	Research Methodology and Biostatistics	60	0	60	4	0	0	4	4	PWR
		Total	**360**	**150**	**510**	**22**	**0**	**6**	**25**	**28**	
CC= Core Course, AECC= Ability Enhancement Compulsory Course, SEC= Skill Enhancement Course, DSE= Discipline Specific Elective, GE= Generic Elective, VAC= Value Added Course. PWR= Research Project											

Semester VI & VII											
Sl. No.	**Course Code**	**Course Name**	**Theory**	**Practical**	**Total**	**L**	**T**	**P**	**Credits**	**Contact Hours**	**Basket**
1	BAOTT-028	AOTT Internship (should contain six months of Anaesthesia, six months of surgery, and at least one month of each specialty)	-	1440	1440	0	0	48	48	48	**INT**
		Total	**-**	**1440**	**1440**			**48**		**48**	
CC= Core Course, AECC= Ability Enhancement Compulsory Course, SEC= Skill Enhancement Course, DSE= Discipline Specific Elective, GE= Generic Elective, VAC= Value Added Course. PWR= Research Project											

20. Course Catalogue

SEMESTER-I

Course Code: BAOTT001	**Course Title: Introduction to Healthcare Delivery System in India** **Type of Course: Core Course**	**L-T-P-C**	5	0	0	5
Version No.	1.0					
Course Pre-requisites	None					
Anti-requisites	None					
Course Description	This course introduces students to the Indian healthcare delivery system, including its structure, community and private sector involvement, and national health policies and Programs. Students will explore India's health scenario over time, learn about the AYUSH systems of medicine, and understand core epidemiological concepts. Designed to be conceptual and analytical, the course enhances critical thinking, policy evaluation, and healthcare analysis skills.					
Course Objective	• To provide an overview of the Indian healthcare delivery system and its key components. • To compare India's healthcare system with those of other countries. • To analyze the role of public, private, and community participation in healthcare delivery. • To understand the objectives, structure, and functioning of the National Health Mission and National Health Policy. • To examine the background, aims, and operations of various national health Programs. • To familiarize students with the AYUSH medical system and its role in healthcare. • To understand demographic indicators, vital statistics, and trends in India's health scenario. • To introduce basic epidemiological concepts, disease transmission methods, and surveillance systems for infectious and non-communicable diseases.					
Course Outcomes	**List the course outcomes** On successful completion of the course the students shall be able to: 1. Describe the structure and functions of primary, secondary, and tertiary healthcare delivery systems in India. 2. Evaluate the extent and effectiveness of community participation in the Indian healthcare system. 3. Compare and contrast the healthcare system in India with those in developed countries. 4. Analyze the role of the private sector in healthcare provision and service delivery in India. **5.** Explain the objectives, action plans, and outcomes of various national health Programs in India.					
Course Content:						

<table>
<tr><td>Module 1</td><td>Introduction to National Healthcare Delivery System</td><td>Assignment/ Quiz</td><td>Numerical solving Task</td><td>15 Sessions</td></tr>
<tr><td colspan="5">Introduction to National 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</td></tr>
<tr><td>Module 2</td><td>National Health Program</td><td>Assignment/ Quiz</td><td>Memory Recall based Quizzes</td><td>10 Sessions</td></tr>
<tr><td colspan="5">National Health Program- Background objectives, action plan, targets, operations, achievements and constraints in various National Heath Program.</td></tr>
<tr><td>Module 3</td><td>Introduction to AYUSH system of medicine.</td><td>Assignment/ Quiz</td><td>Memory Recall-based Quizzes</td><td>15 Sessions</td></tr>
<tr><td colspan="5">Introduction to AYUSH system of medicine.
• Introduction to Ayurveda.
• Yoga and Naturopathy
• Unani
• Siddha
• Homeopathy
• Need for integration of various system of medicine</td></tr>
<tr><td>Module 4</td><td>Demography & Vital Statistics</td><td>Assignment/ Quiz</td><td>Numerical solving Task</td><td>10 Sessions</td></tr>
<tr><td colspan="5">Demography & Vital Statistics-
a) Demography – its concept
b) Vital events of life & its impact on demography
c) Significance and recording of vital statistics
d) Census & its impact on health policy</td></tr>
<tr><td>Module 5</td><td>Health Scenario of India</td><td>Assignment/ Quiz</td><td>Numerical solving Task</td><td>25 Sessions</td></tr>
<tr><td colspan="5">Epidemiology
a) Principles of Epidemiology
b) Natural History of disease
c) Methods of Epidemiological studies
d) Epidemiology of communicable & non-communicable diseases, disease transmission, host defense immunizing agents, cold chain, immunization, disease monitoring and surveillance.</td></tr>
<tr><td colspan="5">Targeted Application & Tools that can be used:
• Health Policy Analysis Tools</td></tr>
</table>

- National Health Mission Dashboards
- Demographic Analysis Software (e.g., SPSS, Epi Info)
- Surveillance and Data Collection Portals (e.g., IDSP, HMIS)

Project Work/ Assignment:

1. Article review: Critical summary of assigned article related to Indian health system or policy.

2. Presentation: Group discussion on a selected national health Program or AYUSH practice.

3. Case Study: Real-world scenario involving health delivery or epidemiological intervention with comprehensive analysis.

Text Book(s):

1. **Sundar Lal, Adarsh & Pankaj (2023).** *Textbook of Community Medicine.* CBS Publishers.
2. **Park, K. (2023).** *Park's Textbook of Preventive and Social Medicine.* Banarsidas Bhanot Publishers.
3. **Taneja, D. K. (2023).** *Foundations in Community Medicine.* Jaypee Brothers Medical Publishers.

Reference Book (s):

1. Sundar Lal, Adarsh & Pankaj (2023). *Textbook of Community Medicine*. CBS Publishers.
2. ICMR Publications – *National Health Programs Guidelines*
3. GOI Reports – *National Health Policy 2017*, *NHM Annual Reports*

Online Resources (e-books, notes, ppts, video lectures etc.):

1. https://presidencyuniversity.linways.com
2. https://nhm.gov.in – National Health Mission
3. https://niti.gov.in – NITI Aayog Health Policy Resources
4. https://www.mohfw.gov.in – Ministry of Health and Family Welfare
5. https://nptel.ac.in – Video lectures on Epidemiology and Health Policy

Topics relevant to "SKILL DEVELOPMENT":

- Analyzing healthcare policies and Programs
- Using demographic data for health planning
- Conducting epidemiological investigations
- Community engagement strategies for health delivery
- AYUSH integration and evaluation techniques
- Analyzing healthcare policies and Programs
- Using demographic data for health planning
- Conducting epidemiological investigations
- Community engagement strategies for health delivery
- AYUSH integration and evaluation techniques

Course Code: BAOTT002	**Course Title:** Medical Terminology & Record Keeping **Type of Course: Core Course**	**L-T-P-C**	3	0	0	3
Version No.	1.0					
Course Pre-requisites	None					
Anti-requisites	None					

<table>
<tr><td>Course Description</td><td colspan="4">This course introduces the basics of medical language, focusing on roots, prefixes, and suffixes. Students will learn to build and interpret medical terms, abbreviations, and symbols related to human anatomy and their specific field. Emphasis is placed on spelling accuracy and understanding medical documentation.</td></tr>
<tr><td>Course Objective</td><td colspan="4">• To introduce students to the structure and formation of medical terms using roots, prefixes, and suffixes.
• To develop the ability to accurately interpret and construct medical terminology across various body systems.
• To familiarize students with common medical abbreviations and symbols used in healthcare documentation.
• To enhance spelling proficiency and accuracy in the use of medical vocabulary.
• To enable students to read and understand medical records, orders, and reports.
• To apply medical terminology specific to the student’s area of study within the allied health sciences.
• To build a foundation for effective communication within clinical and healthcare environments.</td></tr>
<tr><td>Course Outcomes</td><td colspan="4">List the course outcomes
On successful completion of the course the students shall be able to:
1. Define the basic components of medical terms including roots, prefixes, and suffixes.
2. Construct and interpret medical terms used in relation to various human body systems.
3. Identify and use standard medical abbreviations and symbols in healthcare communication.
4. Apply correct spelling and terminology in medical documentation and assessments.
5. Interpret basic medical reports, prescriptions, and clinical notes accurately.
6. Use medical terminology relevant to the student's specific allied health field.
7. Communicate clinical information effectively using appropriate medical language.</td></tr>
<tr><td>Course Content:</td><td colspan="4"></td></tr>
<tr><td>Module 1</td><td>Foundations of Medical Terminology</td><td>Assignment/ Quiz</td><td>Numerical solving Task</td><td>10 Sessions</td></tr>
<tr><td colspan="5">• Introduction to medical terminology and its importance in healthcare.
• Derivation and origin of medical terms (Greek & Latin roots).
• Definition and identification of word roots, prefixes, and suffixes.
• Conventions for combining morphemes and formation of plurals.</td></tr>
<tr><td>Module 2</td><td>Building and Understanding Basic Medical Terms</td><td>Assignment/ Quiz</td><td>Memory Recall based Quizzes</td><td>10 Sessions</td></tr>
<tr><td colspan="5">• Introduction to basic medical terms used in clinical settings.
• Formation of medical terms using root words, suffixes, and prefixes.
• Practice combining terms across different body systems.</td></tr>
</table>

- Introduction to general abbreviations and medical symbols.

Module 3	**System-Based Medical Terminology**	Assignment/ Quiz	Memory Recall-based Quizzes	**14 Sessions**

Diagnostic, surgical, and procedural terms specific to the following systems:

- Integumentary system
- Musculoskeletal system
- Respiratory system
- Cardiovascular system
- Nervous system
- Endocrine system
- Related medical abbreviations and usage in context.

Module 4	**Medical Documentation and Interpretation**	Assignment/ Quiz	Numerical solving Task	**8 Sessions**

- Reading and interpreting medical orders and patient reports.
- Common formats of prescriptions, progress notes, and clinical documentation.
- Introduction to SOAP notes and basic terminology used in them.

Module 5	**Health Scenario of India**	Assignment/ Quiz	Numerical solving Task	**Sessions**

- Introduction to Electronic Health Records (EHR) and medical data entry.
- Standard terminologies used in digital healthcare systems (ICD, CPT, etc.).
- Hands-on practice (if available) or simulation with case-based EHR scenarios.

Targeted Application & Tools that can be used:

Targeted Applications:

- Accurate use of medical language in clinical communication.
- Reading and interpreting medical records and reports.
- Data entry in Electronic Health Record (EHR) systems.
- Understanding basic medical coding and billing.
- Supporting healthcare education and interdisciplinary teamwork.

Tools That Can Be Used:

- Medical Dictionaries: Taber's, Dorland's, MedlinePlus
- Learning Platforms: Quizlet, Kahoot, Visible Body, Kenhub
- EHR Simulators: SimChart, OpenEMR, Practice Fusion
- Coding Tools: ICD-10 Browser, CPT Code Lookup
- LMS & Assessment: Google Classroom, Moodle, Google Forms

Text Book(s):

- Medical Terminology: A Short Course" – *Davi-Ellen Chabner*
  Widely used, easy to understand, with clear explanations and system-based chapters.
- "The Language of Medicine" – *Davi-Ellen Chabner*
  Comprehensive, clinically oriented, with exercises and real-world case studies.
- "Exploring Medical Language: A Student-Directed Approach" – *Myrna LaFleur Brooks & Danielle LaFleur Brooks*
  Interactive, student-friendly, and excellent for building word analysis skills.

Reference Book (s):

- "Essentials of Medical Terminology" – *R.K. Sharma*
  Tailored for Indian allied health courses; covers root words, suffixes, and system-based terms.
- "Textbook of Medical Terminology for Allied Health Sciences" – *Dr. Ramesh Chandra*
  Designed for paramedical and allied health students with Indian clinical context.
- "Fundamentals of Medical Terminology" – *Vijay Prakash*
  Covers basics with examples from Indian hospital settings and public health use.
- "Dictionary of Medical Terms" – *P.H. Collin (Indian Edition)*
  Compact dictionary adapted for Indian students and healthcare terminology.
- "National Health Programs of India" – *Jugal Kishore*
  Not a pure terminology book, but excellent for understanding health terms in Indian policy and public health.

Online Resources (e-books, notes, ppts, video lectures etc.):

- https://presidencyuniversity.linways.com
- **MedlinePlus Medical Dictionary** (by NIH):
  https://medlineplus.gov/
  Trusted source for understanding medical terms and conditions.
- **Quizlet – Medical Terminology Flashcards:**
  https://quizlet.com/
  Interactive flashcards and quizzes on thousands of medical terms.
- **Kahoot – Medical Terminology Quizzes:**
  https://kahoot.com/
  Engaging learning through MCQs and timed games (often used in class).

Course Code: BAOTT-003	**Course Title:** Anatomy **Type of Course: Core Course**	**L-T-P-C**	6	0	2	7
Version No.	1.0					
Course Pre-requisites	None					
Anti-requisites	None					
Course Description	This course introduces students to the fundamentals of human anatomy essential for allied health professionals. It covers basic anatomical terminology, detailed study of bones (osteology), muscular, thoracic, excretory, digestive, and nervous systems. The structure and function of the gastrointestinal tract and the central nervous system are also explained. Through practical training using mannequins and radiological tools, students gain critical skills in bone identification, surface anatomy, organ localization, and interpretation of X-rays. The course aims to develop a foundational understanding of human anatomy with practical application for operation theatre and anesthesia technology students.					
Course Objective	• To familiarize students with anatomical structures and terminology. • To enable identification and description of bones, muscles, and internal organs. • To understand the anatomical basis of physiological functions. • To apply anatomical knowledge in clinical and diagnostic settings. • To interpret surface and radiological anatomy for practical use in operation theatres.					

<table>
<tr><td>Basic skill sets required for the laboratory:</td><td colspan="4">The students shall be able to develop:
1. An attitude of enquiry
2. Confidence and ability to tackle new problems
3. Ability to interpret events and results
4. Ability to work as a leader and as a member of a team
5. Assess errors and eliminate them
6. Observe and measure anatomical phenomena
7. Write structured reports
8. Select suitable models, mannequins, and anatomical tools
9. Locate anatomical faults or abnormalities in systems
10. Manipulative skills for handling anatomical models and tools
11. Ability to follow dissection/simulation procedures
12. Awareness of safety precautions in labs
13. Judgment of anatomical proportions and orientation without measurement</td></tr>
<tr><td>Course Out Comes</td><td colspan="4">List the course outcomes
On successful completion of the course the students shall be able to:
1. Describe the basic anatomical terminology and identify major bones of the upper and lower limbs, including the vertebral column.
2. Explain the anatomical structure of the thorax including intercostal space, pleura, thoracic cage, and major thoracic bones.
3. Describe the anatomical components of the respiratory system with emphasis on the lungs, trachea, and bronchial tree.
4. Illustrate the surface anatomy, chambers, valves, and blood vessels of the heart along with the pericardium and coronary arteries.
5. Identify and describe the major skeletal muscles of the thorax and upper limb, focusing on the origin, insertion, and action of flexor and extensor groups.
6. Explain the structure and function of the excretory system including kidneys, ureters, and urinary bladder.
7. Discuss the anatomy and physiology of the digestive system, including oral cavity, gastrointestinal tract, digestion, absorption, and common disorders.
8. Describe the structure and function of neurons and outline the organization of the central and peripheral nervous systems, including cranial and spinal nerves.</td></tr>
<tr><td>Course Content:</td><td colspan="4"></td></tr>
<tr><td>Module 1</td><td>Introduction to Anatomy</td><td>Assignment</td><td></td><td>34 Sessions</td></tr>
<tr><td colspan="5">Topics: Introduction to Anatomy: Basic Anatomical terminology
a. Osteology-
i. Upper limb – clavicle, scapula, humerus, radius, ulna,
ii. Lower limb - femur, hipbone, sacrum, tibia, fibula &Vertebral column
b. Thorax – Intercostal space, pleura, bony thoracic cage, ribs sternum & thoracic vertebrae
c. Lungs – Trachea, bronchial tree.</td></tr>
<tr><td>Module 2</td><td>Heart</td><td>Assignment</td><td></td><td>10 Sessions</td></tr>
<tr><td colspan="5">Topics: Heart – Surface anatomy of heart, chambers of the heart, valves of the heart, and major blood vessels of heart, pericardium, and coronary arteries</td></tr>
</table>

Module 3	**Skeleton-muscular system**	Assignment		**10 Sessions**
Topics: Skeleton-muscular system – Muscles of thorax, muscles of upper limb (arm & fore arm) Flexor and extensor group of muscles (origin, insertion, action)				
Module 4	**Excretory system**	Assignment		**6 Sessions**
Topics: Excretory system – Kidneys, ureters, bladder.				
Module 5	**Digestive System**	Assignment		**20 Sessions**
Digestive System: I. Structure and function of the digestive system Oral cavity and digestive enzymes II. Anatomy and function of the gastrointestinal tract Absorption and digestion of nutrients III. Common digestive disorders				
Module 6	**Nervous System**	Assignment		**20 Sessions**
Topics: Nervous System: • Structure and function of neurons • Organization of the central nervous system (brain and spinal cord) Peripheral nervous system and its divisions • Cranial nerves and spinal nerves Basic principles of neurophysiology				
List of Laboratory Tasks: **Experiment No. 1:** Gross Anatomy (Using Models and Charts) **Experiment No. 2:** Identification of bones – upper limb: clavicle, scapula, humerus, radius, ulna **Experiment No. 3:** Identification of bones – lower limb: femur, hip bone, sacrum, tibia, fibula **Experiment No. 4:** Vertebral column – structure and types **Experiment No. 5:** Surface anatomy – anatomical landmarks and orientations **Experiment No. 6:** Heart, lungs, kidneys – external morphology and internal structures **Experiment No. 7:** Digestive tract and accessory organs – liver, stomach, intestines **Experiment No. 8:** Nervous system – brain, spinal cord, cranial nerves (models/charts) **Experiment No. 9:** Radiological anatomy – interpretation of X-ray (Chest PA view) **Experiment No. 10:** Identification of reproductive organs – male and female (models)				
Targeted Application & Tools that can be used: • Anatomical mannequins and charts • Plastic and 3D printed bone and organ models • Dissection videos and simulation software • Radiological films and digital X-ray interpretation tools • Surface anatomy tracing and virtual 3D anatomy apps (e.g., Visible Body, Kenhub)				
Project work/Assignment: Mention the Type of Project /Assignment proposed for this course: ▪ **Create a labeled 3D model or diagram of the human heart, demonstrating its surface anatomy, chambers, valves, and major blood vessels.** *(Type: Individual / Group Model-based Assignment)*				

▪ **Develop a detailed anatomical chart or digital presentation illustrating the bones of the upper and lower limbs with correct anatomical terminology and orientation.** *(Type: Individual Visual Assignment)* ▪ **Prepare a comparative chart on the structure and function of the central vs. peripheral nervous system, including cranial and spinal nerves.** *(Type: Research-based Assignment / Poster Presentation)* ▪ **Design a digestive system flowchart that maps the process of digestion and absorption along with the associated organs and enzymes.** *(Type: Diagrammatic / Concept Mapping Assignment)*
Text Book 1. *Anatomy and Physiology for Allied Health* by Kevin T. Patton 2. *Human Anatomy* by Marieb, Wilhelm & Mallatt
References I. *Gray's Anatomy for Students* by Richard Drake II. *Clinically Oriented Anatomy* by Keith L. Moore III. *Atlas of Human Anatomy* by Frank H. Netter **Online learning resources:** 1. EBook: https://presiuniv.knimbus.com/user#/home 2. https://puniversity.informaticsglobal.com/ 3. https://www.visiblebody.com 4. https://www.kenhub.com 5. https://www.aheducation.co.in 6. https://www.anatomyzone.com
Topics relevant to "SKILL DEVELOPMENT": • Skill development through experiential learning via anatomical model handling and surface tracing • Identification and differentiation of human bones and organs • Radiological anatomy interpretation • Application of anatomical knowledge in real-life clinical environments such as operating theatres and diagnostic labs.

Course Code: BAOTT-004	**Course Title:** Physiology **Type of Course: Core Course**	**L-T-P-C**	6	0	2	7
Version No.	1.0					
Course Pre-requisites	None					
Anti-requisites	None					
Course Description	This course provides an integrated study of human physiology tailored for Allied Health and Operation Theatre Technology Programs. Learners progress from cellular mechanisms through major organ-system functions, then develop hands-on competence in routine clinical monitoring (vital signs, electrocardiography, basic respiratory function tests). Emphasis is placed on correlating physiological principles with bedside measurements and peri-operative practice.					
Course Objective	• **Explain** cellular transport, membrane potentials and homeostatic control loops.					

	• **Describe** blood composition, haemostasis, and immune-defence mechanisms. • **Analyse** cardiovascular dynamics, heart sounds and blood-pressure regulation. • **Discuss** gas exchange, lung mechanics and acid-base balance. • **Outline** renal filtration, concentration, fluid-electrolyte balance and micturition. • **Summarise** male and female reproductive physiology and hormonal control. • **Relate** structure–function relationships in CNS pathways and reflexes. • **Differentiate** endocrine gland functions and feedback regulation. • **Map** neural–hormonal regulation of the gastrointestinal tract and digestion. • **Demonstrate** accurate measurement of TPR (temperature, pulse, respiration) and BP using manual and automated devices. • **Perform & interpret** a 12-lead ECG, recognising normal intervals, axis, rhythm and common arrhythmias. • **Conduct** basic respiratory examinations (inspection, percussion, auscultation) and **interpret** spirometry flow-volume loops.			
Basic skill sets required for the laboratory:	The students shall be able to develop: • Measurement of vital signs (TPR & BP) • Performing and interpreting ECG • Conducting basic respiratory function tests (e.g., spirometry) • Performing blood tests (HB, TC, DC, ESR, BT, CT) • Urine analysis (physical and chemical tests) • Sensory assessments (vision, hearing, taste, smell) • Maintaining lab safety, hygiene, and PPE use • Accurate recording and interpretation of lab data • Ethical conduct and responsible equipment handling • Understanding clinical relevance of test results			
Course Out Comes	**List the course outcomes** On successful completion of the course the students shall be able to: 1. **Explain** the fundamental physiological processes at the cellular and systemic levels. 2. **Describe** the composition and functions of blood, cardiovascular, respiratory, excretory, and endocrine systems. 3. **Analyze** physiological control mechanisms of the central nervous system, gastrointestinal tract, and reproductive systems. 4. **Demonstrate** accurate measurement and documentation of vital signs and basic clinical parameters. 5. **Perform and interpret** a 12-lead electrocardiogram including normal and abnormal waveforms. 6. **Conduct and interpret** basic respiratory examinations and spirometry reports. 7. **Correlate** normal physiological parameters with peri-operative clinical findings.			
Course Content:				
Module 1	**Cell Physiology**	Assignment		**8 Sessions**

• Acid–base homeostasis: buffer systems, respiratory vs. metabolic control • Disturbances of pH: metabolic/respiratory acidosis & alkalosis, compensation mechanisms				
Module 2	**Haematology**	Assignment		**10 Sessions**
• Blood composition; plasma-protein classes & functions • Haemostasis: coagulation cascade, bleeding & clotting times • Red cells: erythropoiesis, normal/pathological variations, haemoglobin function, ESR • White cells: total & differential counts, leucocyte functions • Platelets: thrombopoiesis, normal range, role in clot formation • Blood groups: ABO, Rh system, transfusion principles				
Module 3	**Cardiovascular Physiology**	Assignment		**15 Sessions**
• Cardiac muscle & conduction system; heart sounds & auscultation points • Cardiac cycle phases; determinants of cardiac output • Arterial pressure regulation; short- & long-term control; hypertension pathophysiology • Electrocardiography: 12-lead set-up, normal waves & common arrhythmias				
Module 4	**Respiratory Physiology**	Assignment		**10 Sessions**
• Mechanics of ventilation; compliance & airway resistance • Gas exchange and oxygen transport (O_2 dissociation curve) • Lung volumes & capacities: definitions, normal values, clinical relevance				
Module 5	**Renal & Excretory Physiology**	Assignment		**10 Sessions**
• Nephron structure–function overview • Urine volume & specific-gravity measurement techniques • Renal function assessment: GFR (inulin/creatinine clearance), tubular tests • Electrolyte & water balance; counter-current mechanism • Renal contribution to acid–base regulation				
Module 6	**Reproductive Physiology**	Assignment		**8 Sessions**
• Spermatogenesis, semen composition & hormonal control • Ovarian cycles, hormonal regulation, and menstrual events				
Module 7	**Central Nervous System**	Assignment		**9 Sessions**
• Cerebrospinal fluid: formation, circulation, functions, clinical taps • Overview of key sensory, motor and autonomic pathways relevant to peri-operative care				
Module 8	**Endocrine Physiology**	Assignment		**10 Sessions**
• Pituitary, thyroid, parathyroid, adrenal & pancreatic hormones: secretion, regulation, actions • Negative feedback loops and clinical correlations (e.g., diabetes, thyroid disorders)				
Module 9	**Gastro-intestinal Physiology**	Assignment		**10 Sessions**
• Functional anatomy & motility of the GI tract				

- Digestive processes in mouth, stomach, small intestine
- Nutrient absorption mechanisms; role of bile in fat digestion

Module 10	**Special Senses**	Assignment		**8 Sessions**

- Vision: visual acuity, field testing
- Hearing: Rinne, Weber, pure-tone audiometry
- Taste & olfaction perception pathways
- Vestibular apparatus & balance assessment
- Proprioception and kinesthetic sense evaluations

List of Laboratory Tasks:

Experiment No. 1: Determination of Blood Groups
Experiment No. 2: Measurement of Vital Signs – Temperature, Pulse, Respiration, and Blood Pressure
Experiment No. 3: Electrocardiography (ECG) – Electrode Placement and Basic Interpretation
Experiment No. 4: Spirometry – Measurement of Lung Volumes and Capacities
Experiment No. 5: Respiratory System Examination – Observation of Breathing Patterns and Rate
Experiment No. 6: Hemoglobin Estimation using Sahli's Method
Experiment No. 7: Bleeding Time and Clotting Time – Duke's and Capillary Tube Methods
Experiment No. 8: Total Leukocyte Count (TLC) and Differential Count (DC) – Peripheral Smear Technique
Experiment No. 9: Erythrocyte Sedimentation Rate (ESR) – Westergren or Wintrobe Method
Experiment No. 10: Physical and Chemical Examination of Urine – Color, pH, Specific Gravity, Protein, Glucose

Targeted Application & Tools that can be used:

- **Sphygmomanometer and Stethoscope** – for measuring blood pressure and auscultation
- **Digital Thermometer and Pulse Oximeter** – for assessing body temperature and oxygen saturation
- **ECG Machine and Electrodes** – for recording and interpreting cardiac electrical activity
- **Spirometer and Peak Flow Meter** – for measuring lung volumes and respiratory function
- **Sahli's Hemoglobinometer and ESR Tubes** – for hemoglobin estimation and erythrocyte sedimentation rate
- **Glass Slides, Lancets, and Staining Kits** – for total and differential leukocyte counts
- **Reagent Strips and Urinometers** – for urine analysis (physical and chemical examination)
- **Blood Grouping Slides and Antisera (A, B, D)** – for ABO and Rh blood grouping
- **Snellen Chart and Tuning Forks** – for testing visual acuity and hearing (Rinne's, Weber's tests)
- **Physiology Simulation Software and Virtual Labs** – for interactive learning and case-based scenarios (e.g., PhysioEx, Lt Platform)

Project work/Assignment: Mention the Type of Project /Assignment proposed for this course:

- Preparation of charts/models on physiological systems (e.g., cardiovascular, respiratory, endocrine)

- Case-based assignment on ECG interpretation or respiratory test findings
- Lab report writing for selected practical experiments
- Survey/report on vital signs monitoring among peers or community
- PowerPoint presentation on hormonal disorders or nervous system functions
- Poster creation for awareness on blood groups, anemia, or hypertension
- Review assignment on digital physiology tools (e.g., PhysioEx, Visible Body)
- Short research assignment on lifestyle effects on basic physiological parameters

Text Book

- **Guyton and Hall Textbook of Medical Physiology** – by John E. Hall
- **Essentials of Medical Physiology** – by K. Sembulingam & Prema Sembulingam
- **Principles of Physiology** – by Debasis Pramanik
- **Textbook of Human Physiology** – by Sarada Subrahmanyam & K. Madhavan Kutty
- **Understanding Medical Physiology** – by R.L. Bijlani
- **Anatomy and Physiology in Health and Illness** – by Ross & Wilson (for integrated A&P understanding)

References

- Guyton, A.C., & Hall, J.E. (2021). *Textbook of Medical Physiology* (14th ed.). Elsevier.
- Sembulingam, K., & Sembulingam, P. (2021). *Essentials of Medical Physiology* (8th ed.). Jaypee Brothers Medical Publishers.
- Bijlani, R.L. (2013). *Understanding Medical Physiology* (4th ed.). Jaypee Brothers Medical Publishers.

Online learning resources:

7. EBook: https://presiuniv.knimbus.com/user#/home
8. https://puniversity.informaticsglobal.com/
9. https://www.visiblebody.com
10. https://www.kenhub.com
11. https://www.aheducation.co.in
12. https://www.anatomyzone.com

Topics relevant to "SKILL DEVELOPMENT":

- **Vital Signs Monitoring –** Accurate measurement of temperature, pulse, respiration, and blood pressure using clinical instruments.
- **Cardiac & Respiratory Assessment –** Performing ECG, interpreting basic rhythms, and conducting spirometry for lung function evaluation.
- **Hematological Testing Skills –** Determining blood groups, hemoglobin levels, ESR, and performing bleeding/clotting time tests.
- **Microscopy Techniques –** Preparing and examining blood smears for total and differential leukocyte counts.
- **Urine Examination –** Conducting physical and chemical analysis of urine for diagnostic purposes.
- **Sensory System Evaluation –** Performing basic vision, hearing, taste, and balance tests with proper documentation and interpretation.

Course Code: BAOTT-005	**Course Title: Health Care Quality & Patient Safety** **Type of Course: Core Course**	**L-T-P-C**	4	0	2	5
Version No.	1.0					
Course Pre-requisites	None					
Anti-requisites	None					

Course Description	This course integrates four critical pillars of modern healthcare management: 1. **Basic Life Support (BLS) & Primary Assessment** – rapid recognition of collapse, high-quality CPR, use of AEDs, systematic primary survey, and accurate vital-sign measurement. 2. **Infection Prevention & Control (IPC)** – standard and transmission-based precautions, hand hygiene, PPE, sharps safety, environmental cleaning, and **biomedical waste management** in compliance with Indian BMW Rules 2016 (Amended 2018). 3. **Quality Assurance & Management** – principles of quality of care, continuous quality-improvement (CQI) cycles, key performance indicators, clinical audits, incident reporting, root-cause analysis, and alignment with **NABH** accreditation standards. 4. **Antibiotic Resistance & Stewardship** – mechanisms and drivers of resistance, Indian and WHO surveillance data, "5 Ds" of stewardship (Diagnosis, Drug, Dose, Duration, De-escalation), and multidisciplinary ASP implementation. 5. **Disaster Preparedness & Management** – disaster cycle (mitigation, preparedness, response, recovery), Hospital Incident Command System (HICS), triage (START/Jump-START), psychological first aid, resource management, and information systems for coordination.
Course Objective	• Integrate the science and skills of BLS into everyday clinical practice, emphasising rapid assessment and high-quality resuscitation. • Apply evidence-based IPC protocols—including biomedical-waste segregation—to minimise healthcare-associated infection (HAI) risk. • Utilise quality-assurance frameworks and NABH tools to measure, analyse, and improve patient-care processes. • Explain the epidemiology of antibiotic resistance and implement antimicrobial stewardship strategies appropriate to their practice setting. • Demonstrate readiness for natural or man-made disasters by formulating facility-level preparedness and response plans that address both physical and psychosocial needs.
Basic skill sets required for the laboratory:	The students shall be able to develop: • Measuring and interpreting vital signs (TPR, BP, SpO_2, pain scale) accurately • Performing Basic Life Support (BLS) on adult, child, and infant manikins • Conducting primary assessment (Airway, Breathing, Circulation – ABC) • Applying infection prevention and control (IPC) practices • Performing hand hygiene using WHO-recommended techniques • Donning and doffing Personal Protective Equipment (PPE) correctly • Segregating and disposing biomedical waste as per color coding rules • Managing spills and using disinfectants safely • Maintaining environmental cleanliness and safety • Identifying and preventing healthcare-associated infections (HAIs) • Understanding and applying quality assurance principles in healthcare • Assisting in quality improvement activities (e.g., audits, PDSA cycles) • Understanding the role and principles of NABH standards

	• Identifying types and causes of antibiotic resistance • Supporting antimicrobial stewardship activities (e.g., sample handling, data awareness) • Participating in disaster preparedness drills and emergency simulations • Performing triage tagging and understanding the Incident Command System (ICS) • Practicing psychological first aid and basic crisis communication • Managing information and resources during healthcare emergencies			
Course Out Comes	**List the Course Outcomes;** On successful completion of the course the students shall be able to: • Demonstrate accurate measurement and documentation of vital signs including temperature, pulse, respiration, blood pressure, and oxygen saturation using appropriate clinical tools. • Perform Basic Life Support (BLS) procedures on adult, child, and infant models as per the latest resuscitation guidelines and protocols. • Apply standard infection prevention and control measures, including hand hygiene, personal protective equipment (PPE) use, and environmental disinfection in clinical and laboratory settings. • Identify and implement preventive strategies for healthcare-associated infections (HAIs) based on infection control protocols. • Segregate, handle, and dispose of biomedical waste responsibly according to Biomedical Waste Management Rules and institutional guidelines. • Explain the principles of healthcare quality assurance and management, including NABH standards, patient safety indicators, and quality improvement models. • Interpret the causes, types, and consequences of antibiotic resistance and describe evidence-based practices for antimicrobial stewardship. • Demonstrate disaster preparedness competencies, including emergency triage, coordination, and simulation-based mock drill participation. • Apply psychological first aid principles and effective communication strategies in crisis and disaster scenarios. • Utilize basic information and resource management tools to support coordination and continuity during healthcare emergencies.			
Course Content:				
Module 1	**Basics of emergency care and life support skills.**	Assignment		**25 Sessions**
a) Vital signs and primary assessment b) Basic emergency care – first aid and triage c) Ventilations including use of bag-valve-masks (BVMs) d) Choking, rescue breathing methods e) One- and Two-rescuer CPR f) Using an AED (Automated external defibrillator).				

g) Managing an emergency including moving a patient

Module 2	**Infection prevention and control.**	Assignment		**15 Sessions**

a Evidence-based infection control principles and practices [such as sterilization, disinfection,
b effective hand hygiene and use of Personal protective equipment (PPE)],
c Prevention & control of common healthcare associated infections,
d Components of an effective infection control program, and
e Guidelines (NABH and JCI) for Hospital Infection Control

Module 3	**Bio medical waste management and environmental safety.**	Assignment		**8 Sessions**

a) Definition of Biomedical Waste
b) Waste minimization
c) BMW – Segregation, collection, transportation, treatment and disposal (including color coding)
d) Liquid BMW, Radioactive waste, Metals / Chemicals / Drug waste
e) BMW Management & methods of disinfection
f) Modern technology for handling BMW
g) Use of Personal protective equipment (PPE)
h) Monitoring & controlling of cross infection (Protective devices)

Module 4	**Quality assurance and management.**	Assignment		**12 Sessions**

a) Concepts of Quality of Care
b) Quality Improvement Approaches
c) Standards and Norms
d) Quality Improvement Tools
e) Introduction to NABH guidelines

Targeted Application & Tools that can be used:

- **CPR Manikin** – For practicing chest compressions and rescue breathing
- **Bag-Valve-Mask (BVM)** – For airway and ventilation training
- **First Aid Kit** – For basic emergency care and wound management
- **Vital Sign Monitor** – For checking BP, pulse, temperature, and SpO_2
- **Hand Hygiene Kit (with UV light)** – For practicing proper handwashing
- **Personal Protective Equipment (PPE)** – Gloves, masks, gowns, face shields
- **Color-coded Waste Bins** – For biomedical waste segregation practice
- **Disinfectants and Cleaning Supplies** – For surface and instrument cleaning
- **Autoclave (Demo Unit)** – For teaching sterilization techniques
- **Posters/Charts** – NABH guidelines, infection control steps, BMW color coding

Project work/Assignment: Mention the Type of Project /Assignment proposed for this course:

- Preparation of posters/models on Basic Life Support (BLS) and CPR techniques
- Case-based assignment on infection control breach and response strategy
- Simulation lab report on emergency care procedures and airway management
- Survey/report on hand hygiene compliance using WHO audit checklist

• PowerPoint presentation on biomedical waste segregation and disposal methods • Poster creation for awareness on NABH infection control and safety guidelines • Review assignment on digital tools/apps for CPR, AED, and infection control training • Short research assignment on quality assurance practices and patient safety standards in hospitals
Text Book • *First Aid and Emergency Nursing* – Dr. M. S. Bhatia • *Practical Guidelines for Infection Prevention and Control in Health Care Facilities* – World Health Organization (WHO) • Biomedical Waste Management: A Guide for Healthcare Workers – Dr. G. K. Khanna • *Healthcare Management and Administration* – Dr. S. L. Goe
References • Rai, G. & Sharma, J. P. *Hospital and Clinical Pharmacy and Infection Control*. • WHO. *Safe Management of Wastes from Health-care Activities*, 2nd ed. **Online learning resources:** • EBook: https://presiuniv.knimbus.com/user#/home • https://puniversity.informaticsglobal.com/ • www.nabh.co • www.cdc.gov • www.mohfw.gov.in

SEMESTER-2

Course Code: BAOTT006	**Course Title:** Medical Law and Ethics, Professionalism & Values, Principles of Management **Type of Course: AECC**	**L-T-P-C**	4	0	0	4
Version No.						
Course Pre-requisites	NONE					
Anti-requisites	NONE					
Course Description	This course delves into the legal and ethical issues that arise in medical practice. Medical ethics, confidentiality, informed consent, euthanasia, organ transplantation, medico-legal implications of medical data, and professional indemnity insurance are among the topics covered.					
Course Objective	• To introduce students to the fundamental principles of medical ethics and their application in healthcare. • To understand the moral responsibilities and professional conduct expected from healthcare providers. • To provide knowledge of key legal provisions related to medical practice in India. • To develop the ability to identify and analyze ethical and legal issues in clinical scenarios. • To understand patient rights, informed consent, confidentiality, and professional negligence. • To promote ethical decision-making and adherence to legal standards in healthcare practice.					

<table>
<tr><td>Course Outcomes</td><td colspan="4">List the course outcomes
On successful completion of this course the students shall be able to:
• Demonstrate understanding of fundamental principles of medical ethics including autonomy, beneficence, non-maleficence, and justice.
• Analyze ethical issues and dilemmas encountered in clinical practice with appropriate ethical reasoning.
• Identify the legal responsibilities and duties of healthcare professionals in relation to patient care and documentation.
• Interpret the implications of relevant laws such as the Consumer Protection Act, Medical Termination of Pregnancy (MTP) Act, and the Biomedical Waste Management Rules in healthcare settings.
• Apply ethical and legal principles in real-life case scenarios including issues of consent, confidentiality, negligence, and end-of-life decisions.
• Exhibit professional behavior and accountability in accordance with national and institutional codes of conduct and legal standards.</td></tr>
<tr><td>Course Content:</td><td colspan="4"></td></tr>
<tr><td>Module 1</td><td>Introduction to medical ethics</td><td>Assignment/ Quiz</td><td>Numerical solving Task</td><td>Sessions</td></tr>
<tr><td colspan="5">Medical ethics – Definition, Goal, Scope, Introduction to Code of Conduct, Basic Principles of Medical Ethics, Confidentiality</td></tr>
<tr><td>Module 2</td><td>Malpractice and negligence, Autonomy and informed consent & Care of the terminally ill- & Professional Indemnity insurance policy</td><td>Assignment/ Quiz</td><td>Memory Recall based Quizzes</td><td>Sessions</td></tr>
<tr><td colspan="5">Malpractice and Negligence, Rational and Irrational Drug Therapy, Autonomy and Informed Consent, Rights of Patients, Care of the Terminally Ill, Euthanasia, Development of Standardized Protocol to Avoid Near Miss or Sentinel Events</td></tr>
<tr><td>Module 3</td><td>Organ transplantation &Medico legal aspects of medical records & obtaining an informed consent 12 Hours</td><td>Assignment/ Quiz</td><td>Memory Recall-based Quizzes</td><td>Sessions</td></tr>
<tr><td colspan="5">Organ Transplantation, Medico-Legal Aspects of Medical Records, Medico-Legal Cases and Types, Records and Documents Related to MLC, Ownership of Medical Records, Confidentiality, Privileged Communication, Release of Medical Information, Unauthorized Disclosure, Retention of Medical Records, Other Various Aspects, Ethics in the Profession of Medical Laboratory Science</td></tr>
</table>

Module 4	**Legal and Ethical Foundations of Healthcare**	Assignment/ Quiz	Numerical solving Task	**10 Sessions**
Autonomy, Beneficence, Non-malfeasance, Justice, and Confidentiality, Informed Consent, Medical Privacy, End-of-Life Care, Reproductive Rights, and Healthcare Disparities				
Module 5	**Professionalism and Values**	Assignment/ Quiz	Numerical solving Task	**Sessions**
Introduction to Professionalism • Definition and importance in healthcare • Difference between profession and vocation • Role of professionalism in patient care and healthcare delivery **Professional Ethics Act (2002)** • Code of conduct, accountability, responsibility, and misconduct • Professional values: o Integrity o Objectivity o Professional competence and due care o Confidentiality **Personal Values & Behavior** • Ethical and moral values • Professional attitude and behavior • Treating patients and colleagues equally **Cultural Competence & Teamwork** • Cultural issues in healthcare environment • Importance of team efforts • Differences between various professions in a healthcare setting				
Module 6	**Principles of Management**	Assignment/ Quiz	Numerical solving Task	**20 Sessions**
Management Overview • Definition and evolution • Contributions of F.W. Taylor, Henry Fayol, etc. **Functions of Management** • **Planning**: o Types, strategic vs. operational, policies vs. strategies, procedures, limitations • **Organizing**: o Hierarchies, organization types, relationships (line, staff, functional), committees • **Directing**: o Direction process, leadership principles, leadership styles, delegation • **Controlling**: o Span of control, management levels, control processes, corrective action, budgetary control • **Coordination**: o Co-ordination vs. co-operation, techniques, charts, SOPs **Communication & Motivation** • Types of communication, barriers, improving techniques				

- Motivation theories: McGregor, Maslow, Herzberg, Porter-Lawler

Targeted Application & Tools that can be used:

- Case-Based Learning Platforms
- Virtual Simulations
- Learning Management Systems (LMS)
- Online Assessment Tools
- Policy Reference Tools
- Interactive e-Modules and MOOCs
- Ethics Consultation Apps
- Document Management Systems
- Video-Based Tools for Discussion
- Legal Databases and Journals

Module 7	**Personnel Management**	Assignment/ Quiz	Numerical solving Task	**5 Sessions**

Content:

- Objectives of Personnel Management
- Role of the Personnel Manager
- Staffing and work distribution
- Job analysis and job descriptions
- Recruitment and selection processes
- Orientation and training
- Coaching and counseling
- Disciplinary procedures
- Grievance handling and complaint redressal
- Termination procedures
- Performance appraisal systems
- Employee health and safety
- Application of Consumer Protection Act in healthcare

Project Work/ Assignment:

- Medical Negligence Case Study: Analyze and present a real or hypothetical case highlighting ethical and legal breaches in healthcare.
- Informed Consent Form Development: Create a detailed and legally compliant informed consent form for a specific medical procedure.
- Patient Rights Presentation: Prepare and deliver a presentation explaining fundamental patient rights and ethical responsibilities of healthcare providers.
- Organ Transplant Law Research Report: Compile a report on the legal and ethical framework surrounding organ transplantation in India.
- Sentinel Event Protocol Design: Develop a standardized protocol to prevent sentinel events and promote patient safety in clinical settings.

Text Book(s):

• Sharma, B. M. (2022). *Medical Ethics – Concepts and Issues*. CBS Publishers & Distributors.

• Fremgen, B. F. (2021). *Medical Law and Ethics*. Pearson Education.

• Aggrawal, A. (2020). *Textbook of Forensic Medicine and Toxicology*. Avichal Publishing Company.

• Little, M., & Kerridge, I. (2019). *Ethics in Clinical Practice*. Cambridge University Press.

Reference Book (s):

• Beauchamp, T. L., & Childress, J. F. (2020). *Principles of Biomedical Ethics*. Oxford University Press.
• Avery, G. (2021). *Law and Ethics in Nursing and Healthcare*. SAGE Publications.
• Medical Council of India. (2016). *Indian Medical Council (Professional Conduct, Etiquette and Ethics) Regulations*. MCI/NMC Official Publication.
• Pozgar, G. D. (2022). *Legal Aspects of Health Care Administration*. Jones & Bartlett Learning.

Online Resources (e-books, notes, ppts, video lectures etc.):

- https://nmc.org.in/rules-regulations/professional-conduct-regulations/
- https://www.who.int/ethics/en/
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7144173/
- https://www.coursera.org/learn/medical-ethics
- https://www.swayam.gov.in/
- https://www.youtube.com/playlist?list=PLrD2fD6sWRlKHOvS8IleT9ohE6SP1Pttw
- https://www.slideshare.net/search/slideshow?searchfrom=header&q=medical+ethics
- https://bioethics.nih.gov/

Topics relevant to "SKILL DEVELOPMENT":

- Ethical Decision-Making in Clinical Practice
- Effective Patient Communication and Consent Handling
- Documentation and Record-Keeping Skills
- Handling Medico-Legal Cases Professionally
- Teamwork and Interdisciplinary Ethical Discussions
- Maintaining Confidentiality in Healthcare Settings
- Critical Thinking for Resolving Ethical Dilemmas
- Professionalism and Code of Conduct Adherence
- Responding to Sentinel Events and Near Misses
- Understanding and Implementing Patient Rights
- Legal Reporting and Documentation Skills for MLC
- Developing Standard Operating Procedures (SOPs)
- Using Digital Tools for Ethics Training and Legal Compliance
- Role-play and Simulation of Ethical Scenarios
- Conflict Resolution and Negotiation in Healthcare Teams

Course Code: BAOTT007	**Course Title: Basics of Biomedical Sciences in Surgery and Anaesthesia Type of Course: Core Course**	**L-T-P- C**	2	0	4	4
Version No.	**1.0**					
Course Pre-requisites	List here Prerequisite course codes • Basics of Human Anatomy & Physiology • Fundamentals of Physics (Pressure, Light, Electricity) • Elementary Biomedical Instrumentation					
Anti-requisites	None					
Course Description	This course introduces the foundational principles of biomedical sciences and engineering technology as applied in surgical and					

	anaesthesia settings. It explores the working principles, design, and operation of various surgical and anaesthesia devices, biomedical imaging technologies, surgical guidance systems, and anaesthesia monitoring mechanisms. The course highlights the integration of real-time imaging and computer-assisted technologies in operation theatres and outlines ethical and healthcare technology management principles critical for the safe use of biomedical devices in clinical practice.			
Course Objective	1. Understand the scope of biomedical sciences in the OT and anaesthesia domain. 2. Gain familiarity with essential surgical and anaesthesia equipment. 3. Comprehend the physical and engineering principles underlying biomedical devices. 4. Analyze how medical imaging and guidance systems assist surgical workflows. 5. Appreciate the importance of healthcare technology management, ethics, and regulatory concerns.			
Basic skill sets required for the laboratory:	The students shall be able to develop: • Ability to identify and handle biomedical equipment safely • Understanding of device manuals, control panels, and safety protocols • Accurate observation and recording of physiological data • Proficiency in basic measurements (e.g., ECG, BP, oxygen saturation, $EtCO_2$) • Ability to interpret basic imaging results (X-ray, CT, MRI) • Familiarity with connection and calibration of monitoring devices • Skills in assisting with endoscopic and laparoscopic device setups • Competence in distinguishing between various surgical and anaesthesia tools • Awareness of sterilization and infection control in equipment handling • Teamwork and communication in simulated OT/laboratory settings • Ability to troubleshoot common device errors or alarms • Report writing and documentation of laboratory findings			
Course Out Comes	**On successful completion of the course the students shall be able to:** 1. Identify and explain the working of major surgical and anaesthesia devices. 2. Describe basic physical laws relevant to biomedical monitoring. 3. Outline the principles of biomedical imaging modalities and their role in surgery. 4. Discuss the function and development of anaesthesia delivery and monitoring systems. 5. Demonstrate understanding of technological advancements, ethical practices, and legal issues in biomedical applications.			
Course Content:				
Module 1	**Introduction to Biomedical Engineering in Surgery and Anaesthesia**	Assignment		**4 Sessions**
Role, evolution, and scope of biomedical engineering in OT and anaesthesia				

Module 2	**Surgical and Anaesthesia Devices**	Assignment		**15 Sessions**
OT Table, OT Light, Infusion Pumps, TCA pumps, Video Laryngoscope, Bronchoscope, Diathermy, Drills, Coagulation devices (ESUs, LASER, Ultrasonic, RF, Harmonic Scalpel), 12-lead ECG, physical laws of Transducers, $EtCO_2$ Monitor, Pulse Oximeter, BP Monitor				
Module 3	**Surgical Microscope**	Assignment		**2 Sessions**
Principles, optical adjustments, and usage in microsurgery				
Module 4	**Laparoscopic Cart and Instruments**	Assignment		**2 Sessions**
Overview of laparoscopic systems, Veress needle, Trocars, graspers, scissors, etc.				
Module 5	**Biomedical Imaging in Surgery and Anaesthesia**	Assignment		**6 Sessions**
X-ray, CT, MRI, image-guided interventions, image processing techniques, integration into workflows				
Module 6	**Surgical Navigation and Guidance Systems**			**2 Sessions**
Surgical navigation principles, tracking, imaging registration, real-time surgical guidance				
Module 7	**Anaesthesia Delivery and Monitoring**			**9 Sessions**
Anaesthesia machine systems, monitoring devices, physiological parameter interpretation, closed-loop anaesthesia delivery systems				

List of Laboratory Tasks:

Experiment No 1: Identification and Demonstration of Operation Theatre (OT) Table and OT Light

Experiment No 2: Functionality and Setup of Infusion Pump and TCA Pump

Experiment No 3: Demonstration of Diathermy and Electrosurgical Unit (ESU)

Experiment No 4: Hands-on Demonstration: Pulse Oximeter, $EtCO_2$ Monitor, and Blood Pressure Monitor

Experiment No 5: Recording and Interpretation of 12-Lead ECG

Experiment No 6: Demonstration of Anaesthesia Workstation Components

Experiment No 7: Demonstration and Use of Video Laryngoscope and Bronchoscope

Experiment No 8: Study of Surgical Microscope: Optical Adjustment and Functionality

Experiment No 9: Laparoscopic Instruments and Cart Demonstration (Veress needle, Trocars)

Experiment No 10: Introduction to Biomedical Imaging Modalities (X-ray, CT, MRI)

Targeted Application & Tools that can be used:

- Application in Operation Theatre equipment management and troubleshooting
- Use in anaesthesia delivery and monitoring setups
- Hands-on understanding of minimally invasive surgical technologies
- Interpretation of diagnostic physiological and imaging data
- Application in biomedical device quality assurance and calibration
- Exposure to real-time imaging and surgical navigation systems

• Foundation for careers in biomedical equipment support, hospital engineering, or OT technician roles **Tools and Equipment that can be used:** • Operation Theatre Table and Lights • Infusion and TCA Pumps • Electrosurgical Unit (ESU), Diathermy, Harmonic Scalpel • Anaesthesia Workstation and Vaporizers • Pulse Oximeter, $EtCO_2$ Monitor, Blood Pressure Monitor • 12-Lead ECG Machine • Video Laryngoscope, Bronchoscope • Laparoscopic Cart, Veress Needle, Trocars, Endoscopic Instruments • Surgical Microscope • Sample DICOM images/X-ray, CT, MRI viewers (digital or print-based) • Biomedical Simulator Software (optional for demo/practice)
Text Book 1. R.S. Khandpur – Handbook of Biomedical Instrumentation, Tata McGraw Hill 2. John G. Webster – Medical Instrumentation: Application and Design, Wiley
References 1. Leslie Cromwell – Biomedical Instrumentation and Measurements, Pearson 2. Joseph D. Bronzino – The Biomedical Engineering Handbook, CRC Press 3. Operating manuals from Medtronic, Dräger, GE Healthcare **Online learning resources:** • EBook: https://presiuniv.knimbus.com/user#/home • NPTEL Biomedical Instrumentation • BMES Official Site • PubMed Biomedical Tech • Khan Academy: Medical Devices
Topics relevant to "SKILL DEVELOPMENT": • Biomedical device operation and calibration • Diagnostic monitoring interpretation • Imaging data analysis **Topics relevant to "ENVIRONMENT AND SUSTAINABILITY":** • Low-power medical device innovation • Sustainable surgical and anaesthesia technologies • Safe biomedical waste management

Course Code: BAOTT008	**Course Title:** Biochemistry & Haematology **Type of Course: Core Course**	**L-T-P- C**	2	0	2	3
Version No.	**1.0**					
Course Pre-requisites	• Basic Human Physiology • Introductory Chemistry					
Anti-requisites	None					
Course Description	This course is divided into two major components: Biochemistry and Haematology. The biochemistry section focuses on the study of vitamins,					

	minerals, body fluids, and acid-base balance which are essential to understanding metabolism and body function. The haematology section introduces the principles and procedures involved in the study of blood components, blood disorders, and coagulation processes. The course also includes hands-on training in hematology laboratory techniques such as phlebotomy, blood typing, and complete blood count analysis.			
Course Objective	1. To understand the role and function of vitamins, minerals, and trace elements in the human body. 2. To comprehend concepts of pH, buffers, and acid-base balance. 3. To gain knowledge of hematological parameters and their clinical significance. 4. To study blood disorders and transfusion-related complications. 5. To develop competency in performing basic hematological laboratory procedures.			
Basic skill sets required for the laboratory:	The students shall be able to develop: • Competency in safe phlebotomy and blood handling techniques • Ability to perform CBC and interpret blood parameters • Skills in blood grouping and cross-matching • Use of laboratory tools such as microscopes and coagulometers			
Course Out Comes	On successful completion of the course the students shall be able to: • Explain the role of essential vitamins and minerals in metabolic processes. • Calculate pH and apply the Henderson-Hasselbalch equation in clinical contexts. • Interpret complete blood count and coagulation parameters. • Identify common haematological disorders and understand their implications. • Demonstrate practical skills in blood collection, typing, and cross-matching.			
Course Content:				
Module 1	**Vitamins & Minerals**	Assignment		**15 Sessions**
Fat-soluble vitamins (A, D, E, K), water-soluble vitamins, B-complex vitamins, major elements (Ca, P, Mg, Na, K, Cl, S), trace elements, calorific value, BMR, RQ				
Module 2	**Acids and Bases**	Assignment		**5 Sessions**
pH, buffers, indicators, normality, molarity, molality, Henderson–Hasselbalch equation				
Module 3	**Haematology: CBC Parameters**	Assignment		**2 Sessions**
Hemoglobin, RBC, WBC, platelet counts, differential count				
Module 4	**Anemia and Polycythemia**	Assignment		**2 Sessions**
Classification, causes, diagnosis				
Module 5	**Thrombocytopenia**	Assignment		**2 Sessions**
Clinical features, diagnosis, platelet counts				
Module 6	**Coagulation Parameters and**			**2 Sessions**

	Coagulation Disorders			
BT, CT, PT, INR, APTT – principles and interpretation, Hemophilia, DIC, von Willebrand disease				
Module 7	**Blood Transfusion – Hazards & Complications**			**2 Sessions**
Transfusion reactions, mismatch hazards, infection risk				

List of Laboratory Tasks:

Experiment No 1: Phlebotomy – Safe blood collection techniques
Experiment No 2: Complete Blood Count (CBC) – Manual or automated
Experiment No 3: ABO and Rh Blood Group Typing
Experiment No 4: Cross-matching of blood samples
Experiment No 5: Hemoglobin estimation
Experiment No 6: Packed Cell Volume (PCV) and ESR
Experiment No 7: Peripheral Blood Smear Preparation and Identification
Experiment No 8: Platelet Count (manual method)
Experiment No 9: Bleeding Time and Clotting Time estimation
Experiment No 10: PT/INR test demonstration

Targeted Application & Tools that can be used:

• Clinical lab testing in diagnostics and pathology
• Blood transfusion and cross-matching
• Monitoring of anemias and coagulation disorders
• Supporting patient care through biochemical and hematological data interpretation

Tools and Equipment that can be used:

• Hemocytometer
• Centrifuge
• Spectrophotometer
• Coagulometer
• Automated CBC Analyzer
• Microscope
• Blood typing kits and cross-matching slides
• Reagents for BT, CT, PT, APTT
• Glass slides, lancets, ESR pipettes, anticoagulants

Project work/Assignment: Mention the Type of Project /Assignment proposed for this course:

- Case study report on types of anemia and interpretation of lab values
- Lab-based mini-project: Comparison of automated vs. manual CBC results

Text Book

- U. Satyanarayan – Essentials of Biochemistry
- Dacie & Lewis – Practical Haematology

References

- Vasudevan – Textbook of Biochemistry for Medical Students
- Henry's – Clinical Diagnosis and Management by Laboratory Methods
- Roberta Meguid – Clinical Hematology: Theory & Procedures

Online learning resources:

- EBook: https://presiuniv.knimbus.com/user#/home
- NPTEL – Clinical Biochemistry
- American Society of Hematology
- PubMed – Hematology Resources

• Khan Academy – Blood Disorders
Topics relevant to "SKILL DEVELOPMENT": • Proficiency in phlebotomy and sample handling • Mastery of haematology instruments and methods • Analytical thinking through lab result interpretation **Topics relevant to "ENVIRONMENT AND SUSTAINABILITY":** • Safe disposal of biomedical and sharps waste • Minimization of reagent use through efficient techniques • Awareness of contamination and biosafety

Course Code: BAOTT009	**Course Title: Pathology & Microbiology** **Type of Course: Core Course**	**L-T-P- C**	2	0	2	3
Version No.	**1.0**					
Course Pre-requisites	None					
Anti-requisites	None					
Course Description	This course provides foundational knowledge of general pathology and clinical microbiology essential to understanding disease mechanisms and laboratory diagnostics. In the pathology section, students will explore cellular injury, inflammation, immune and infectious diseases, neoplasia, and environmental/nutritional disorders. The microbiology component covers morphology, culture techniques, sterilization methods, immunology, bacteriology, parasitology, mycology, and virology. Through integrated theory and practicals, students will acquire clinical lab skills relevant to hospital-based diagnostics.					
Course Objective	• Understand the cellular and tissue-level changes that lead to disease. • Learn the mechanisms and classifications of inflammation, infection, and neoplasia. • Understand growth, morphology, and diagnostic principles of microorganisms. • Gain insights into immune responses and immunological testing. • Develop laboratory skills in pathogen identification and handling of diagnostic specimens.					
Basic skill sets required for the laboratory:	The students shall be able to develop: Use and care for microscopes and lab safety tools • Prepare and observe stained slides of tissues and pathogens • Identify bacterial and fungal morphology • Perform basic sterilization and aseptic techniques • Interpret common immunological and serological tests • Conduct stool, urine, and blood sample analysis for microbial diagnosis • Work collaboratively in lab and follow biosafety guidelines • Record and interpret results from clinical tests • Handle culture media and analyze growth patterns					

Course Out Comes	**On successful completion of the course the students shall be able to:** • Explain cellular responses to injury, inflammation, infection, and neoplasia. • Identify microorganisms using morphological and culture-based techniques. • Apply knowledge of sterilization and disinfection methods in clinical practice. • Interpret serological and hematological diagnostic test results. • Demonstrate key microbiological lab skills including specimen collection and culture			
Course Content:				
Module 1	**Cellular Adaptation, Injury & Death**	Assignment		**17 Sessions**
Stress response, necrosis, apoptosis, reversible/irreversible injury				
Module 2	**Inflammation**	Assignment		**8 Sessions**
Acute and chronic inflammation, chemical mediators, morphologic patterns				
Module 3	**Immunity Disorders**	Assignment		**6 Sessions**
Immune system overview, disorders (autoimmunity, hypersensitivity)				
Module 4	**Anemia and Polycythemia**	Assignment		**2 Sessions**
Classification, causes, diagnosis				
Module 5	**Thrombocytopenia**	Assignment		**2 Sessions**
Clinical features, diagnosis, platelet counts				
Module 6	**Coagulation Parameters and Coagulation Disorders**	Assignment		**2 Sessions**
BT, CT, PT, INR, APTT – principles and interpretation, Hemophilia, DIC, von Willebrand disease				
Module 7	**Blood Transfusion – Hazards & Complications**	Assignment		**2 Sessions**
Transfusion reactions, mismatch hazards, infection risk				
List of Laboratory Tasks: Experiment No 1: Phlebotomy – Safe blood collection techniques Experiment No 2: Complete Blood Count (CBC) – Manual or automated Experiment No 3: ABO and Rh Blood Group Typing Experiment No 4: Cross-matching of blood samples Experiment No 5: Hemoglobin estimation Experiment No 6: Packed Cell Volume (PCV) and ESR Experiment No 7: Peripheral Blood Smear Preparation and Identification Experiment No 8: Platelet Count (manual method) Experiment No 9: Bleeding Time and Clotting Time estimation Experiment No 10: PT/INR test demonstration				

Targeted Application & Tools that can be used:

• Clinical lab testing in diagnostics and pathology
• Blood transfusion and cross-matching
• Monitoring of anemias and coagulation disorders
• Supporting patient care through biochemical and hematological data interpretation

Tools and Equipment that can be used:

• Hemocytometer
• Centrifuge
• Spectrophotometer
• Coagulometer
• Automated CBC Analyzer
• Microscope
• Blood typing kits and cross-matching slides
• Reagents for BT, CT, PT, APTT
• Glass slides, lancets, ESR pipettes, anticoagulants

Project work/Assignment: Mention the Type of Project /Assignment proposed for this course:

- Case study report on types of anemia and interpretation of lab values
- Lab-based mini-project: Comparison of automated vs. manual CBC results

Text Book

- U. Satyanarayan – Essentials of Biochemistry
- Dacie & Lewis – Practical Haematology

References

- Vasudevan – Textbook of Biochemistry for Medical Students
- Henry's – Clinical Diagnosis and Management by Laboratory Methods
- Roberta Meguid – Clinical Hematology: Theory & Procedures

Online learning resources:

- EBook: https://presiuniv.knimbus.com/user#/home
- NPTEL – Clinical Biochemistry
- American Society of Hematology
- PubMed – Hematology Resources
- Khan Academy – Blood Disorders

Topics relevant to "SKILL DEVELOPMENT":

- Proficiency in phlebotomy and sample handling
- Mastery of haematology instruments and methods
- Analytical thinking through lab result interpretation

Topics relevant to "ENVIRONMENT AND SUSTAINABILITY":

- Safe disposal of biomedical and sharps waste
- Minimization of reagent use through efficient techniques
- Awareness of contamination and biosafety

Course Code: BAOTT010	**Course Title: Basic Concepts in Pharmacology** **Type of Course: Skill Enhancement Course**	**L-T-P- C**	2	0	0	2
Version No.	**1.0**					
Course Pre-requisites	None					
Anti-requisites	None					

Course Description	This course provides an introductory overview of pharmacology tailored for Operation Theatre Technology students. It explores the fundamentals of clinical pharmacology including drug classifications, mechanisms of action, pharmacokinetics, pharmacodynamics, dosage forms, routes of administration, and essential emergency drugs. Emphasis is placed on medications commonly used in the perioperative period, anesthesia, and critical care.			
Course Objective	• Understand the basic principles of pharmacokinetics and pharmacodynamics. • Learn major drug classes used in surgical and anesthesia practice. • Gain knowledge of drug indications, contraindications, interactions, and side effects. • Familiarize with emergency medications used in perioperative and ICU settings. • Develop practical understanding of safe drug handling and administration.			
Basic skill sets required for the laboratory:	The students shall be able to develop: • Identify common drug formulations and understand labeling. • Perform dose calculations and dilutions accurately. • Understand safe administration routes: oral, IV, IM, subcutaneous, topical, inhalation. • Use emergency drug kits and resuscitation drugs under supervision. • Maintain drug administration records and follow medication safety protocols. • Prepare and handle anesthetic agents in OT settings.			
Course Out Comes	List of Course Outcomes: On successful completion of the course the students shall be able to: • Explain core pharmacological concepts relevant to operation theatre practices. • Recognize drug classifications and their clinical applications. • Understand drug interactions, contraindications, and patient safety aspects. • Assist in perioperative drug preparation and administration. • Respond appropriately in emergencies involving medication use.			
Course Content:				
Module 1	**Fundamentals of Pharmacology**	Assignment		**5 Sessions**
Introduction, Pharmacokinetics, Pharmacodynamics, Routes of drug administration				
Module 2	**Common Drug Classes in OT**	Assignment		**10 Sessions**
NSAIDs, Antisialogogues (Atropine, Glycopyrrolate), Sedatives/Anxiolytics (Diazepam, Midazolam, Phenergan, etc.), Narcotics (Morphine, Pethidine, Fentanyl), Antiemetics (Ondansetron, Dexamethasone)				
Module 3	**Anesthetic Agents**	Assignment		**12 Sessions**

Induction agents (Thiopentone, Ketamine, Propofol, etc.), Muscle relaxants (Suxamethonium, Vecuronium, etc.), Inhalational gases (O_2, N_2O, Halothane, Sevoflurane, etc.), Local anesthetics (Xylocaine, Bupivacaine, Prilocaine, etc.)				
Module 4	**Reversal and Adjunct Drugs**	Assignment		**3 Sessions**
Reversal agents (Neostigmine, Naloxone, Flumazenil), Adjuncts used in anesthesia and recovery				
Module 5	**Emergency Drugs and Resuscitation Pharmacology**	Assignment		**10 Sessions**
Adrenaline, Dopamine, Atropine, Mephentermine, Calcium, Potassium, Aminophylline, Steroids, Antihypertensives, Diuretics, Antiarrhythmics, Bronchodilators, Vasodilators, Dosage and Dilution				

List of Laboratory Tasks: NA

Targeted Application & Tools that can be used:

- Perioperative drug management
- Anesthetic agent handling in the OT
- Emergency and critical care pharmacology
- OT setup and medication safety
- Drug record maintenance

Tools and Equipment that can be used:

- Syringes, IV sets
- Drug dilution charts
- Drug ampoules/vials
- Crash carts and OT trolleys
- PPE and biohazard bins
- Labeling kits and measuring cylinders

Project work/Assignment: Mention the Type of Project /Assignment proposed for this course:

- Drug chart preparation for a surgical case
- Group presentation on emergency drug protocols
- Individual assignment on adverse drug reactions (ADRs)

Text Book

- K.D. Tripathi – Essentials of Medical Pharmacology
- Sharma & Sharma – Principles of Pharmacology

References

- Katzung – *Basic & Clinical Pharmacology*
- Rang & Dale – *Pharmacology*
- Oxford Handbook of Clinical Pharmacology

Online learning resources:

- EBook: https://presiuniv.knimbus.com/user#/home
- NPTEL – Pharmacology Modules
- WHO Essential Medicines List
- Medscape Drug Reference
- Khan Academy – Pharmacology

Topics relevant to "SKILL DEVELOPMENT":

- Drug handling and documentation

- Emergency drug response skills
- Preparation of OT drug trays

Topics relevant to "ENVIRONMENT AND SUSTAINABILITY":

- Biomedical waste management of expired drug
- Safe storage and labeling practice
- Minimization of drug wastage

Course Code: BAOTT011	**Course Title: Basic Computers and Information Science, Communication, and Soft Skills** **Type of Course: AECC**	**L-T-P- C**	2	0	4	4
Version No.	**1.0**					
Course Pre-requisites	None					
Anti-requisites	None					
Course Description	This course introduces students to fundamental computer and information technology concepts along with essential communication and soft skills. The first part focuses on computer basics, operating systems, MS Office applications (Word, Excel, PowerPoint), networks, internet usage, and their application in clinical environments. The second part enhances students' abilities in spoken and written communication, business writing, patient interaction, and healthcare communication. It includes grammar, report writing, presentations, and overcoming communication barriers.					
Course Objective	• Understand basic components and functions of computer systems. • Operate MS Office tools for clinical and academic documentation. • Explore computer networks, internet tools, and their healthcare applications. • Develop clear, accurate, and professional written and spoken communication. • Learn and apply communication skills relevant to healthcare settings.					
Basic skill sets required for the laboratory:	The students shall be able to develop: • Operate MS Word, Excel, and PowerPoint for data and report handling. • Perform basic operations on Windows OS. • Browse the internet, use email, and understand clinical data systems. • Communicate professionally using proper language, structure, and tone. • Demonstrate effective listening, speaking, and writing skills. • Engage in role-play and simulations for healthcare communication.					
Course Out Comes	**On successful completion of the course the students shall be able to:** • Explain the basic functioning of computer hardware and software. • Apply MS Office tools in creating documents, presentations, and data sheets. • Demonstrate internet usage and data management in healthcare. • Communicate effectively with peers, patients, and professionals.					

	• Use writing formats suitable for reports, emails, and case studies. • Understand and implement communication models and overcome barriers.			
Course Content:				
Module 1	**Computer Fundamentals & MS Office**	Assignment		**14 Sessions**
Basics of computers, input/output devices, memory, storage devices, Windows OS, MS Word, Excel, PowerPoint				
Module 2	**Networking & Internet Applications in Healthcare**	Assignment		**10 Sessions**
Computer networks (LAN, MAN, WAN), internet usage, email, FTP, WWW, healthcare applications, hospital data systems				
Module 3	**Communication and Soft Skills**			**16 Sessions**
Grammar and sentence formation, professional speaking, writing (letters, emails, reports), healthcare communication principles, barriers and strategies				

List of Laboratory Tasks:

Computer Practical

- MS Word, Excel, PowerPoint
- Windows operations and file management
- Internet browsing, email, and medical data handling

Communication & Soft Skills Practical

- Role play, presentations, group discussions
- Report and email writing
- Patient interaction simulations

Targeted Application & Tools that can be used:

- Clinical report generation
- Medical data management
- Interpersonal and professional communication in healthcare

Tools and Equipment that can be used:

- Computers with MS Office
- Internet connectivity
- Audio-visual aids for communication practice

Project work/Assignment: Mention the Type of Project /Assignment proposed for this course:

- MS Word report on clinical topic
- PowerPoint presentation on healthcare awareness
- Professional email and case report drafting

Text Book

- V. Rajaraman – *Fundamentals of Computers*
- Wren & Martin – *High School English Grammar and Composition*
- Sinha – *Business Communication*

References

- Peter Norton – *Computer Fundamentals*
- Lesikar – *Basic Business Communication*

• Cambridge English Resources **Online learning resources:** • EBook: https://presiuniv.knimbus.com/user#/home • Microsoft Office Tutorials • NPTEL – Basic Computer Science • Grammarly, Typing.com, Khan Academy
Topics relevant to "SKILL DEVELOPMENT": • Digital documentation • Verbal and non-verbal communication • Structured data presentation **Topics relevant to "ENVIRONMENT AND SUSTAINABILITY":** • Paperless communication • Efficient software usage • Cybersecurity awareness

Semester III

Course Code: BAOTT012	**Course Title: Basic Techniques of Anaesthesia** **Type of Course: SEC**	**L-T-P- C**	6	0	2	7
Version No.	**1.0**					
Course Pre-requisites	None					
Anti-requisites	None					
Course Description	This course offers foundational knowledge and hands-on exposure to anaesthesia techniques essential for operation theatre technologists. The curriculum spans preoperative patient preparation, anaesthesia machine operations, airway management, fluid and drug therapy, monitoring methods, and pain management strategies. The course also addresses anaesthesia-related concerns in general and obstetric surgeries along with complication management.					
Course Objective	• Understand the role and methods of preoperative assessment. • Operate and maintain anaesthesia machines and safety systems. • Learn fluid therapy strategies and emergency medication use. • Apply knowledge of anaesthetic induction, airway management, and monitoring. • Recognize complications and surgical considerations in various procedures.					
Basic skill sets required for the laboratory:	The students shall be able to develop: • Conduct preoperative evaluations. • Operate anaesthesia machines and monitoring systems. • Assist in airway management and anaesthetic induction. • Administer emergency drugs under supervision. • Monitor depth of anaesthesia and respond to complications.					
Course Out Comes	**On successful completion of the course the students shall be able to:** • Conduct thorough preoperative assessments. • Operate anaesthesia equipment with safety protocols. • Assist in anaesthetic induction, fluid therapy, and emergency management.					

	• Apply principles of balanced anaesthesia and monitoring. • Understand surgical anaesthetic considerations and complication management.			
Course Content:				
Module 1	**Preoperative Assessment & Anaesthesia Equipment**	Assignment		**20 Sessions**
- Preoperative assessment and preparation - Anaesthesia machine: design & functionality - Safety systems (flow systems, CO_2 absorbents, circuits, humidifiers)				
Module 2	**Fluid & Drug Management in Anaesthesia**	Assignment		**10 Sessions**
- Perioperative fluid therapy (crystalloids, colloids) - Emergency medications: indications and use				
Module 3	**Anaesthetic Induction and Airway Management**			**20 Sessions**
- Techniques of induction - Airway devices - Preoxygenation, Sellick's manoeuvre - Vaporizers, intubation & reversal agents				
Module 4	**Maintenance, Monitoring, and Pain Management**			
- Balanced anaesthesia principles - Monitoring of vital signs, depth of anaesthesia, oxygenation - Pain management: systemic, regional, PCA				
Module 5	**Surgical Considerations and Complications**			
- Anaesthetic considerations for general surgeries (e.g., appendectomy, hernia repair) - Anaesthesia in obstetrics & gynaecology - Recognition and management of anaesthesia-related complications				
List of Laboratory Tasks: • Anaesthesia machine setup and safety check • Simulated preoperative evaluation and documentation • Airway device demonstration and practice (LMA, ETT, etc.) • Fluid therapy preparation and calculation • Emergency drug preparation and response simulation • Anaesthesia monitoring system demo (ECG, SpO_2, $EtCO_2$)				
Targeted Application & Tools that can be used: • Anaesthesia workstation • Resuscitation kits • Infusion and drug delivery systems • Clinical monitoring tools				

• Simulation mannequins
Project work/Assignment: Mention the Type of Project /Assignment proposed for this course: • Case study on anaesthetic plan for elective surgery • Poster on balanced anaesthesia technique • Group presentation on airway devices • Drug chart for emergency anaesthesia medications
Text Book • Ajay Yadav – *Short Textbook of Anaesthesia* • B.S. Saha – *Principles of Anaesthesiology*
References • Morgan & Mikhail – *Clinical Anesthesiology* • Jaffe & Schmiesing – *Anesthesiologist's Manual of Surgical Procedures* • Miller – *Basics of Anesthesia* **Online learning resources:** • EBook: https://presiuniv.knimbus.com/user#/home • Microsoft Office Tutorials • NPTEL – Anaesthesia and Critical Care • Medscape Anaesthesia Tutorials
Topics relevant to "SKILL DEVELOPMENT": • Anaesthetic equipment handling • Clinical safety protocols • Emergency preparedness **Topics relevant to "ENVIRONMENT AND SUSTAINABILITY":** • Safe waste disposal • Energy-efficient anaesthesia systems • Minimizing anaesthetic gas pollution.

Course Code: BAOTT013	**Course Title: Basics of Surgical Procedures** **Type of Course: SEC**	**L-T-P- C**	6	0	2	7
Version No.	**1.0**					
Course Pre-requisites	None					
Anti-requisites	None					
Course Description	This course provides foundational knowledge and skills related to general and obstetric/gynaecological surgical procedures. It includes operating theatre layout, aseptic techniques, WHO checklist implementation, carbolization, fumigation, wound closure, surgical instruments, and infection control. Students will study common diseases, operative principles, patient positioning, and anaesthetic considerations related to general and gynecologic surgeries.					
Course Objective	• Understand the design and functioning of operation theatre layout and zoning systems. • Apply WHO surgical checklist, carbolization, and fumigation protocols. • Learn principles of aseptic techniques and sterile field maintenance. • Understand common diseases and surgical procedures in general and gynecological practice.					

	• Identify surgical instruments and apply safe handling and wound closure techniques.			
Basic skill sets required for the laboratory:	The students shall be able to develop: • Navigate the operating theatre environment with awareness of sterile and unsterile zones. • Apply infection control techniques including fumigation and carbolization. • Maintain aseptic techniques including gloving, gowning, and draping. • Identify and handle surgical instruments appropriately. • Assist in patient positioning and understand anaesthesia-related considerations.			
Course Out Comes	**On successful completion of the course the students shall be able to:** • Explain and demonstrate the layout and protocols of the operation theatre. • Apply WHO checklist protocols and fumigation procedures effectively. • Perform basic aseptic techniques and maintain sterile fields. • Identify and describe common surgical and gynecological diseases. • Recognize and handle surgical instruments and wound closure materials. • Implement surgical site infection control protocols. • Understand anaesthesia needs and patient positioning in surgeries.			
Course Content:				
Module 1	**Operation Theatre Environment and Infection Control**	Assignment		**20 Sessions**
- Layout of OT, zoning, and WHO checklist - Carbolization and fumigation - Infection control and surgical site infection (SSI) prevention strategies				
Module 2	**Aseptic Techniques and Surgical Skills**	Assignment		**20 Sessions**
- Spaulding's classification, sterile field, hand hygiene, gloving, gowning, draping - Incision and wound closure methods - Suturing and dressing principles				
Module 3	**Surgical Instrumentation and Handling**	Assignment		**10 Sessions**
- Identification, classification, handling, and maintenance of general and gynecologic surgical instruments				
Module 4	**Diseases and Surgical Approaches**	Assignment		**20 Sessions**
- General surgical conditions (e.g., hernia, cholecystitis, GI cancers) - Gynecologic/obstetric diseases (e.g., fibroids, PID, ectopic pregnancy)				
Module 5	**Surgical Techniques and Patient Considerations**	Assignment		**30 Sessions**

- Common general surgical procedures (appendectomy, hernia repair, etc.)
- Common gynecologic procedures (C-section, hysterectomy)
- Anaesthesia and patient positioning

List of Laboratory Tasks:

- Visit and map the layout of a functional OT and sterile zones.
- Perform WHO Surgical Safety Checklist application (pre-, intra-, post-op).
- Practice sterile gloving, gowning, and draping.
- Observe and demonstrate suturing techniques and wound dressing.
- Identify and demonstrate usage of general and gynecological surgical instruments.
- Engage in simulation-based scenarios emphasizing sterile field maintenance.

Targeted Application & Tools that can be used:

- WHO Surgical Safety Checklist
- Fumigation kits and disinfectants
- Surgical kits and wound care tools
- Mannequins for suturing and draping practice

Project work/Assignment: Mention the Type of Project /Assignment proposed for this course:

- Chart-based poster on aseptic zones of OT
- Report on SSI prevention protocol
- Group presentation on surgical instruments by category
- Simulation-based assignment on WHO checklist execution

Text Book

- S. Mahadevan – Manual of Surgery
- Michael J. Zinner – Maingot's Abdominal Operations

References

- Bailey & Love – *Short Practice of Surgery*
- Shirish N Daftary – *Manual of Obstetrics and Gynecology for Nurses and Midwives*
- WHO – *Surgical Safety Guidelines*

Online learning resources:

- NPTEL – Surgery and OT Technology
- WHO Surgical Safety Online Modules
- https://presiuniv.knimbus.com/user#/home
- YouTube: Basic surgical technique and OT walkthroughs

Topics relevant to "SKILL DEVELOPMENT":

- Surgical instrument handling
- Patient preparation and positioning
- Sterile dressing and suturing

Topics relevant to "ENVIRONMENT AND SUSTAINABILITY":

- Waste management in OT
- Eco-friendly disinfection practices
- Reusable vs disposable surgical tools

Course Code: BAOTT014	**Course Title: CSSD & Manifold Area** **Type of Course: SEC**	**L-T-P- C**	3	0	4	5
Version No.	**1.0**					
Course Pre-requisites	None					
Anti-requisites	None					

Course Description	This course provides a comprehensive understanding of the Central Sterile Services Department (CSSD) and Hospital Manifold Systems. It covers sterilization methods, decontamination processes, instrument packaging, inventory and quality control, and infection prevention strategies. In addition, students will gain knowledge of manifold systems, including medical gas distribution, regulation, emergency procedures, and troubleshooting techniques. The program emphasizes hands-on training to ensure practical competence in maintaining surgical safety and operational standards in healthcare facilities.			
Course Objective	• Understand the role and workflow of the CSSD in infection prevention and surgical readiness. • Learn various sterilization and decontamination techniques and their applications. • Gain proficiency in instrument preparation, packaging, and sterile storage systems. • Explore quality assurance protocols, PPE, and aseptic practices in the CSSD. • Understand hospital manifold systems, gas regulation, safety, and emergency response.			
Basic skill sets required for the laboratory:	The students shall be able to develop: • Operate sterilization and cleaning equipment (e.g., autoclave, ultrasonic cleaner). • Prepare and pack surgical instruments for sterilization. • Maintain and organize sterile storage using FIFO and labelling standards. • Adhere to infection control protocols (hand hygiene, PPE, aseptic technique). • Operate and troubleshoot manifold systems and manage gas safety procedures.			
Course Out Comes	**On successful completion of the course the students shall be able to:** • Demonstrate knowledge of CSSD layout, operations, and infection control. • Apply appropriate sterilization and decontamination methods. • Implement packaging, labelling, and distribution techniques in sterile services. • Ensure compliance with quality assurance and documentation in sterilization cycles. • Understand and manage the design, function, and safety of medical gas manifold systems.			
Course Content:				
Module 1	**Introduction to CSSD & Sterilization Methods**	Assignment		**13 Sessions**
- Role and layout of CSSD - Steam, ETO, plasma, and chemical sterilization techniques				
Module 2		Assignment		**7 Sessions**

	Decontamination, Preparation & Packaging			
- Manual, mechanical, and enzymatic cleaning - Instrument inspection, assembly, and packing				
Module 3	**Sterile Storage, Distribution & Quality Assurance**	Assignment		**10 Sessions**
- FIFO, labelling, and inventory control - Biological and chemical indicators, compliance monitoring				
Module 4	**Infection Control & Equipment Maintenance**	Assignment		**7 Sessions**
- PPE, hand hygiene, aseptic practices - Troubleshooting and maintenance of CSSD equipment				
Module 5	**Hospital Manifold Systems**	Assignment		**30 Sessions**
- Types of medical gases, system layout, gas regulation, emergency handling - Gas identification, safety, and compliance				

List of Laboratory Tasks:

- Autoclave operation
- Chemical sterilization
- Manual and ultrasonic cleaning
- Sterile inventory and FIFO management
- Gas source and pressure regulation
- Emergency shut-off and safety alarms
- Troubleshooting manifold issues

Targeted Application & Tools that can be used:

- Autoclaves, ultrasonic cleaners
- ETO and plasma sterilizers
- Inventory and labelling tools
- Manifold panels, gas cylinders, pressure regulators
- PPE and infection control equipment

Project work/Assignment: Mention the Type of Project /Assignment proposed for this course:

- Logbook and poster on sterilization cycle and indicators
- Report on manifold system layout and safety mechanisms
- Checklist audit of a CSSD layout for compliance
- Demonstration project on equipment maintenance and documentation

Text Book

- K. Kunders – *Hospitals: Planning, Design, and Management*
- Seavey R. – *Sterile Processing in Healthcare Facilities*

References

- Mehta A. – *Manual of Hospital Infection Control*
- WHO Guidelines – *Decontamination and Reprocessing of Medical Devices for Healthcare Facilities*
- AORN – *Standards for Sterile Processing and Infection Control*

Online learning resources: • NPTEL – Hospital Support Services • CDC – Sterilization and Disinfection Guidelines • https://presiuniv.knimbus.com/user#/home • YouTube: Autoclave and CSSD walkthrough videos • WHO CSSD Modules
Topics relevant to "SKILL DEVELOPMENT": • Instrument sterilization and handling • Gas system maintenance • Aseptic field preparation and safety drills **Topics relevant to "ENVIRONMENT AND SUSTAINABILITY":** • Eco-friendly sterilization practices • Waste segregation and biomedical disposal • Safe and sustainable use of medical gases

Course Code: BAOTT015	**Course Title: Industrial Orientation and Industrial Visit** **Type of Course: PWR**	**L-T-P- C**	3	0	0	3
Version No.	**1.0**					
Course Pre-requisites	None					
Anti-requisites	None					
Course Description	This course offers an immersive industrial exposure to students in the field of Operation Theatre and Anaesthesia Technology. It familiarizes students with the types of healthcare-related industries, their structures, processes, and professional practices. The course includes preparation, orientation, observation, interaction with professionals, and post-visit reflection. It aims to bridge the gap between theoretical learning and practical applications in real-world industry settings.					
Course Objective	• Understand the nature and scope of industries related to Operation Theatre and Anaesthesia Technology. • Recognize the importance of industrial visits for experiential learning. • Prepare for and engage meaningfully during industrial visits. • Observe, document, and analyze industry operations and professional practices. • Reflect on experiences to align academic knowledge with industry requirements.					
Basic skill sets required for the laboratory:	The students shall be able to develop: • Identify organizational structure and functions of healthcare industries. • Interact with professionals to understand practical workflows and responsibilities. • Demonstrate professional and ethical conduct during industry visits. • Prepare reports and presentations based on industrial observations.					
Course Out Comes	**On successful completion of the course the students shall be able to:** • Recognize various industrial sectors relevant to the profession.					

	• Prepare logistically and mentally for industrial visits. • Understand organizational frameworks and observe industry workflows. • Interact ethically and professionally with industry personnel. • Reflect and report on their visit experiences and relate them to their curriculum.			
Course Content:				
Module 1	**Introduction to Industrial Settings**	Assignment		**6 Sessions**
- Types of relevant industries: hospitals, pharma, medical devices - Scope and relevance to OT & Anaesthesia				
Module 2	**Planning and Preparation**	Assignment		**6 Sessions**
- Objectives of visits - Scheduling, logistics, attire, and safety protocols - Setting learning goals				
Module 3	**Industry Orientation and Interaction**	Assignment		**12 Sessions**
- Organizational structure and departments - Observation and guided tours - Interacting with staff				
Module 4	**Ethical and Professional Conduct**	Assignment		**6 Sessions**
- Confidentiality, IP rights, respectful behavior - Industrial etiquette and communication skills				
Module 5	**Reflection and Reporting**	Assignment		**10 Sessions**
- Reflective discussion and analysis - Report writing / presentation on industrial experience				
List of Laboratory Tasks: • Visit to relevant healthcare or allied industry (hospital OT, device company, or pharma setup) • Observational sessions on OT layout, sterilization, workflow, and logistics • Interaction with industry professionals on job roles and departmental operations • Daily log of observations and discussions • Ethical behavior simulation and discussion • Post-visit reflective discussions and presentations				
Targeted Application & Tools that can be used: • Observation checklists • Reflective journal templates • Industry visit evaluation forms • Report formatting tools (Word/PowerPoint)				
Project work/Assignment: Mention the Type of Project /Assignment proposed for this course:				

• Reflective report on the visited facility • Group presentation summarizing departments, workflows, and key takeaways • Poster on ethical conduct and professional behavior in healthcare industry settings
Online learning resources: • https://presiuniv.knimbus.com/user#/home
Topics relevant to "SKILL DEVELOPMENT": • Professional communication • Ethical decision-making • Real-world workflow understanding **Topics relevant to "ENVIRONMENT AND SUSTAINABILITY":** • Sustainable practices in healthcare industries • Hospital waste management observation • Energy-efficient practices in clinical settings

Semester IV

Course Code: BAOTT016	**Course Title: Advanced Anaesthesia Techniques.** **Type of Course: DSE**	**L-T-P- C**	6	0	2	7
Version No.	**1.0**					
Course Pre-requisites	None					
Anti-requisites	None					
Course Description	This course provides an in-depth understanding of anaesthetic practices for ENT and ophthalmic surgeries, focusing on advanced airway management, local and regional anaesthesia, patient positioning, and complication management. Emphasis is placed on clinical reasoning, decision-making, and skill-building to manage unique challenges and emergencies encountered during head and neck procedures.					
Course Objective	• Understand ENT and ophthalmic surgical anaesthesia challenges and protocols. • Perform and manage advanced airway techniques specific to ENT surgeries. • Learn and apply ophthalmic anaesthesia techniques and sedation strategies. • Demonstrate proficiency in local and regional anaesthetic blocks for head and neck. • Recognize, prevent, and manage complications in ENT and ophthalmic anaesthesia.					
Basic skill sets required for the laboratory:	The students shall be able to develop: • Assess and prepare patients for ENT and ophthalmic anaesthesia. • Perform fibreoptic intubation and supraglottic airway placement on mannequins. • Administer local and regional blocks specific to ophthalmic and head/neck surgeries. • Monitor patients during ENT/ophthalmic procedures and respond to emergencies. • Manage anaesthesia-related complications specific to delicate procedures.					

Course Out Comes	**On successful completion of the course the students shall be able to:** • Apply anaesthetic strategies tailored for ENT surgeries like tonsillectomy, sinus surgery. • Use fibreoptic scopes, LMAs, and video laryngoscopes in simulated airway scenarios. • Administer anaesthesia for ophthalmic procedures with appropriate blocks and sedation. • Demonstrate competence in local and regional techniques for head/neck surgeries. • Anticipate and manage anaesthetic complications in ENT and eye surgeries			
Course Content:				
Module 1	**Anaesthetic Considerations for ENT Surgeries**	Assignment		**20 Sessions**
- Challenges in ENT anaesthesia - Case studies: tonsillectomy, adenoidectomy, sinus surgeries - Airway patency and pain management strategies				
Module 2	**Advanced Airway Management in ENT Surgeries**	Assignment		**20 Sessions**
- Fibreoptic intubation - Supraglottic airway device usage - Video laryngoscopy techniques and practice				
Module 3	**Anaesthesia for Ophthalmic Procedures**			**20 Sessions**
- Anaesthetic protocols for cataract, retinal, glaucoma surgeries - Sedation, positioning, and intraoperative monitoring				
Module 4	**Local and Regional Anaesthesia for Head & Neck**			**20 Sessions**
- Principles of nerve blocks - Techniques: peribulbar, retrobulbar, topical, and regional blocks - Drug choice and safety				
Module 5	**Complication Management in ENT and Ophthalmic Anaesthesia**			**20 Sessions**
- ENT emergencies (e.g., airway obstruction) - Ocular emergencies (e.g., acute vision loss) - Emergency strategies and patient safety				

List of Laboratory Tasks:

- **ENT Anaesthesia Techniques:**
  - Patient positioning for tonsillectomy and adenoidectomy
  - Anaesthetic agent selection (inhalational/IV) for ENT surgeries
  - Anaesthesia strategies for sinus surgeries
- **Advanced Airway Management Practice:**
  - Fibreoptic intubation on airway mannequins
  - LMA insertion and placement
  - Emergency simulation: airway obstruction and alternate device insertion
- **Ophthalmic Anaesthesia Practice:**
  - Topical anaesthesia for cataract surgeries
  - Simulation: peribulbar and retrobulbar blocks
  - Monitoring protocols and sedation for eye surgeries
- **Complication Management Simulations:**
  - ENT airway emergencies: management and response
  - Ocular emergencies: sudden vision loss, intraocular pressure crises
  - Simulation drills on drug administration and emergency interventions

Targeted Application & Tools that can be used:

- Airway simulators and manikins
- Fibreoptic laryngoscopes
- Ophthalmic block injection tool
- Sedation monitoring systems

Project work/Assignment: Mention the Type of Project /Assignment proposed for this course:

- Presentation: Anaesthetic protocol for sinus vs. cataract surgery
- Practical assessment: fibreoptic intubation technique on mannequin
- Report: Complication case study and response plan
- Poster: Local and regional block sites in head and neck

Text Book

- Ajay Yadav – *Short Textbook of Anaesthesia*
- J.P. Atkinson – *Anaesthesia for ENT and Ophthalmic Surgery*

References

- Miller – *Basics of Anesthesia*
- Morgan & Mikhail – *Clinical Anesthesiology*
- K.K. Goyal – *Regional Anaesthesia Techniques*

Online learning resources:

- NPTEL – Anaesthesia Modules
- Medscape ENT/Ophthalmic Anaesthesia
- https://presiuniv.knimbus.com/user#/home
- YouTube Simulations: Fibreoptic Intubation, Peribulbar Blocks

Topics relevant to "SKILL DEVELOPMENT":

- Advanced airway skills
- Regional anaesthesia techniques
- Intraoperative complication response

Topics relevant to "ENVIRONMENT AND SUSTAINABILITY":

- Reusable airway devices and safety
- Reducing volatile anaesthetic waste
- Safe disposal of ophthalmic drugs and needles

Course Code: BAOTT017	**Course Title: Advanced Surgical Procedures** **Type of Course: DSE**	**L-T-P- C**	6	0	2	7
Version No.	**1.0**					
Course Pre-requisites	None					
Anti-requisites	None					
Course Description	This course provides in-depth knowledge and skills in advanced surgical procedures across ENT (ear, nose, and throat) and ophthalmology. It includes surgical techniques, disease profiles, endoscopic and laser-assisted procedures, and minimally invasive surgical approaches. Students will also learn laser safety standards, surgical instrumentation, patient positioning, and complication management, enabling them to assist effectively in advanced surgical settings and ensure optimal patient care.					
Course Objective	• Understand surgical procedures and diseases in ENT and ophthalmology. • Learn advanced surgical instrumentation and positioning requirements. • Apply principles of endoscopic and laser-assisted surgical techniques. • Demonstrate knowledge of laser safety protocols and minimally invasive surgery. • Recognize and manage complications in ENT and ophthalmic surgical contexts.					
Basic skill sets required for the laboratory:	The students shall be able to develop: • Identify ENT and ophthalmology surgical instruments. • Assist in endoscopic, laser, and minimally invasive procedures. • Apply knowledge of disease pathophysiology to surgical intervention. • Maintain laser safety and infection control during procedures. • Manage basic surgical complications under supervision.					
Course Out Comes	**On successful completion of the course the students shall be able to:** • Demonstrate understanding of ENT and ophthalmic surgeries and instruments. • Assist in surgical setup, patient positioning, and sterile technique. • Apply knowledge of laser and endoscopic procedures. • Understand disease-specific surgical considerations and treatment plans. • Manage complications and optimize patient safety and outcomes.					
Course Content:						
Module 1	**ENT Surgical Procedures and Disease Management**	Assignment			**30 Sessions**	
- ENT procedures: tonsillectomy, septoplasty, sinus surgery, laryngectomy - ENT diseases: sinusitis, tonsillitis, OSA, otitis media, laryngeal cancer - ENT surgical instruments and patient positioning						

Module 2	**Ophthalmic Diseases and Surgical Techniques**	Assignment		**30 Sessions**
- Ophthalmic diseases: cataracts, glaucoma, AMD, diabetic retinopathy, conjunctivitis, refractive errors, retinoblastoma - Surgical techniques: cataract extraction, keratoplasty, vitrectomy, LASIK				
Module 3	**Laser Safety and Laser-Assisted Surgeries**			**16 Sessions**
- Laser precautions: safety training, eyewear, plume, signage, interlocks - ENT and ophthalmic laser surgeries: laser tonsillectomy, LASIK, laser therapy for glaucoma and AMD				
Module 4	**Endoscopic and Minimally Invasive Surgical Approaches**			**14 Sessions**
- ENT and ophthalmology endoscopic procedures: sinus surgery, laryngoscopy, tracheostomy - Minimally invasive techniques: laparoscopic, robotic-assisted ENT/ophthalmic procedures				
Module 5	**Management of Surgical Complications and Patient Outcomes**			**10 Sessions**
- ENT/ophthalmic surgical complications - Prevention, recognition, and management strategies - Optimizing patient safety during advanced surgeries				
List of Laboratory Tasks: • Identification and handling of ENT and ophthalmic surgical instruments. • Hands-on practice with ENT procedures: tonsillectomy, septoplasty, sinus surgery. • Observing and simulating ophthalmic procedures: cataract extraction, keratoplasty. • Practicing endoscopic sinus surgery on models with sinus scopes. • Practicing instrument arrangement and positioning for laryngoscopic exams. • Simulated laser safety and surgical protocols. • Role-play and simulation for managing surgical complications and emergencies.				
Targeted Application & Tools that can be used: • ENT and ophthalmic surgical kits • Endoscopic towers, sinus scopes, and laryngoscopes • Laser surgical equipment and safety gear • Mannequins and anatomical models for simulations				
Project work/Assignment: Mention the Type of Project /Assignment proposed for this course: • Presentation on disease-specific surgical plans in ENT or ophthalmology • Poster on laser safety standards in the surgical suite • Case study on managing complications during eye surgery • Simulation-based report on endoscopic sinus surgery techniques				
Text Book				

• Cummings – *Otolaryngology: Head and Neck Surgery* • Jack J. Kanski – *Clinical Ophthalmology: A Systematic Approach*
References • Sih – *Textbook of Ear, Nose and Throat* • Yanoff & Duker – *Ophthalmology* • WHO Guidelines on Laser Safety in Surgical Settings **Online learning resources:** • NPTEL – ENT and Ophthalmic Surgery Modules • AAO (American Academy of Ophthalmology) Resources • ENT-UK Surgical Guidelines • https://presiuniv.knimbus.com/user#/home
Topics relevant to "SKILL DEVELOPMENT": • Use of specialized surgical tools • Laser handling and safety compliance • Complication identification and management

Course Code: BAOTT018	**Course Title: Basic Intensive Care** **Type of Course: CC**	**L-T-P- C**	3	0	4	5
Version No.	**1.0**					
Course Pre-requisites	None					
Anti-requisites	None					
Course Description	This course provides comprehensive training in basic intensive care skills, focusing on the care, maintenance, and operation of critical ICU equipment including ventilators, suction machines, monitors, and beds. Students will learn airway management, oxygen therapy, ventilation support, asepsis practices, and psychological aspects of ICU care. The course integrates theoretical knowledge with practical skills to prepare learners for real-time ICU situations in both adult and pediatric populations.					
Course Objective	• Understand principles and maintenance of ICU equipment such as ventilators, monitors, and suction machines. • Apply disinfection and sterilization protocols for ICU equipment. • Provide basic to advanced care for unconscious adult and pediatric patients. • Understand and administer oxygen therapy, airway management, and ventilation techniques. • Apply knowledge of ICU-specific systems like HVAC and pollution control. • Identify psychological needs of ICU patients, their families, and staff.					
Basic skill sets required for the laboratory:	The students shall be able to develop: • Operate and maintain ICU ventilators and monitoring systems. • Execute sterilization and disinfection of ventilatory support equipment. • Administer oxygen therapy and manage airway devices. • Monitor vital signs and expired gases. • Provide basic nursing care, hygiene, and positioning for unconscious patients. • Understand and operate dialysis equipment and support systems in ICU. • Address psychological needs in critical care settings.					

<table>
<tr><td>Course Out Comes</td><td colspan="4">On successful completion of the course the students shall be able to:
• Maintain, disinfect, and troubleshoot ventilators and ICU equipment.
• Understand and control ICU environment parameters like air quality and pollution.
• Deliver basic ICU nursing care to unconscious patients.
• Perform airway management, oxygen therapy, and manual ventilation techniques.
• Manage psychological aspects of critical care settings effectively.
• Understand principles of ABG, hemodialysis, hemofiltration, and monitoring tools.</td></tr>
<tr><td>Course Content:</td><td colspan="4"></td></tr>
<tr><td>Module 1</td><td>ICU Equipment Care & Maintenance</td><td>Assignment</td><td></td><td>15 Sessions</td></tr>
<tr><td colspan="5">- Ventilators, suction machines, monitors
- Beds, lights, and other ICU devices
- Troubleshooting and alarm systems
- Ventilator principles (volume/time/pressure cycled, HFV)</td></tr>
<tr><td>Module 2</td><td>Ophthalmic Diseases and Surgical Techniques</td><td>Assignment</td><td></td><td>10 Sessions</td></tr>
<tr><td colspan="5">- Disinfection/sterilization of ventilators
- HVAC, air filtration, and pollution control
- Management of asepsis in ICU</td></tr>
<tr><td>Module 3</td><td>Unconscious Patient Care</td><td></td><td></td><td>15 Sessions</td></tr>
<tr><td colspan="5">- Adult & pediatric unconscious patient management
- Hygiene, posture, pressure ulcer prevention
- Physiotherapy, Ryle’s tube insertion, hyperalimentation</td></tr>
<tr><td>Module 4</td><td>Airway & Ventilation Support</td><td></td><td></td><td>20 Sessions</td></tr>
<tr><td colspan="5">- Oxygen therapy & airway clearance
- Types of masks & airways
- Manual and mechanical ventilation (BVM, ET tube)
- Short-term/transport ventilators</td></tr>
<tr><td>Module 5</td><td>Monitoring, Emergencies & Psychological Care</td><td></td><td></td><td>30 Sessions</td></tr>
<tr><td colspan="5">- Monitoring: BP, temperature, expired gases
- ABG techniques & analysis
- Psychological aspects of ICU care</td></tr>
</table>

- Hemodialysis and hemofiltration
- Jet ventilation

List of Laboratory Tasks:

1. Ventilator Care and Maintenance

- Cleaning, disinfection, sterilization techniques
- Alarm troubleshooting and settings adjustments
- Understanding ventilator modes

2. Bed and Apparatus Care

- Bed adjustments and positioning
- Disinfection of beds and apparatus
- Maintenance of ICU lighting, pumps, and monitors

3. ICU Environmental Control

- Air conditioning system maintenance
- Humidity and temperature regulation
- Infection control protocols for airborne pathogens

4. Unconscious Patient Management

- Turning and positioning
- Vital sign monitoring and airway patency
- Hygiene and basic nursing for adult and pediatric patients

5. Oxygen Therapy and Airway Management

- Practice with nasal cannulas, non-rebreather masks, etc.
- BVM ventilation, airway insertion (oral/nasal/ETT)
- Manual ventilation methods for emergencies

6. Physiotherapy and Feeding

- Chest physiotherapy and postural drainage
- Ryle's tube insertion and enteral feeding simulations

7. Hemodialysis and Hemofiltration

- Machine setup and patient monitoring
- Simulation of renal replacement procedures

8. Psychological Aspects and Communication

- Interactive scenarios with patient and family care
- Role-playing for empathy and emotional support

Targeted Application & Tools that can be used:

- Ventilators (volume/time/pressure cycled)
- Oxygen delivery systems
- Spirometers, ABG analyzers
- Infusion pumps, monitors
- Ryle's tubes, suction catheters

Project work/Assignment: Mention the Type of Project /Assignment proposed for this course:

- Ventilator troubleshooting chart
- ICU disinfection protocol poster
- Patient care plan for unconscious ICU patient
- ABG case study report
- Comparative chart: Oxygen masks and airways

Text Book

- S.K. Jindal – *Textbook of Pulmonary and Critical Care Medicine*
- D. V. Parikh – *Textbook of Intensive Care Medicine*

References

• Marino – *The ICU Book* • Oh – *Oh's Intensive Care Manual* • George J. Augustine – *Principles and Practice of Critical Care* **Online learning resources:** • NPTEL: Critical Care Medicine Series • WHO – ICU & Ventilator Training Modules • https://presiuniv.knimbus.com/user#/home • Medscape and Cleveland Clinic ICU video series
Topics relevant to "SKILL DEVELOPMENT": • Ventilator and oxygen system operation • Airway management and BLS techniques • ICU monitoring and sterilization practices

Course Code: BAOTT019	**Course Title: Clinical Medicine & Related Management** **Type of Course: CC**	**L-T-P- C**	3	0	0	3
Version No.	**1.0**					
Course Pre-requisites	None					
Anti-requisites	None					
Course Description	This course provides essential knowledge and clinical skills related to the cardiovascular and respiratory systems, integrating disease mechanisms, diagnostic methods, and emergency management. Students will be trained in interpreting ECG, pulmonary function tests, and managing acute scenarios such as cardiac arrest and respiratory failure. The curriculum emphasizes common conditions such as ischemic heart disease, asthma, pneumonia, lung cancer, and tuberculosis through case-based learning and practical simulation.					
Course Objective	• Understand the structure, function, and clinical assessment of cardiovascular and respiratory systems. • Perform and interpret common diagnostic investigations such as ECG and spirometry. • Recognize symptoms, causes, and clinical management of common cardiopulmonary diseases. • Acquire emergency response skills, including airway management and chest tube placement. • Observe and analyze clinical cases involving pulmonary and cardiovascular pathologies.					
Basic skill sets required for the laboratory:	The students shall be able to develop: • Conduct cardiovascular and respiratory system examinations. • Interpret ECGs and perform pulmonary function testing. • Recognize and manage respiratory and cardiac emergencies. • Assist in procedures like airway management and chest tube insertion. • Use diagnostic tools for tuberculosis, lung cancer, and pleural diseases.					
Course Out Comes	**On successful completion of the course the students shall be able to:** • Demonstrate knowledge of cardiopulmonary anatomy and physiology. • Perform diagnostic investigations and interpret findings.					

	• Identify clinical features and outline management strategies for cardiac and respiratory diseases. • Respond to clinical emergencies related to respiratory and cardiovascular systems. • Correlate theoretical knowledge with practical, clinical case-based scenarios.			
Course Content:				
Module 1	**Introduction to Cardiovascular and Respiratory Systems**	Assignment		**10 Sessions**
- Overview of systems - Clinical examination techniques - Diagnostic investigations (ECG, PFTs)				
Module 2	**Common Cardiovascular Diseases**	Assignment		**16 Sessions**
- Ischemic heart disease - Valvular heart diseases - Arrhythmias - Hypertension - Heart failure - Cardiomyopathies				
Module 3	**Common Respiratory Diseases I**			**14 Sessions**
- Asthma, COPD - Pneumonia - Pulmonary tuberculosis - Bronchiectasis - Lung abscess				
Module 4	**Common Respiratory Diseases II**			**14 Sessions**
- Pneumothorax - Pleural effusion - Respiratory failure (types, causes, management) - Carcinoma lung				
Module 5	**Emergency and Procedural Management**			**6 Sessions**
- Airway management - Chest tube insertion - Emergency response (cardiac arrest, respiratory failure simulations)				

- Hemodialysis and hemofiltration
- Jet ventilation

List of Laboratory Tasks:

- Cardiovascular system examination and case review
- ECG interpretation and rhythm identification
- Pulmonary function testing (PFT) demonstration
- Case-based learning: Asthma, IHD, COPD, Lung Cancer
- Chest tube insertion simulation and airway management
- Observation of pleural effusion tapping and emergency response

Targeted Application & Tools that can be used:

- ECG machines and simulators
- Spirometer and Peak Flow Meters
- Airway management kits
- Diagnostic chest X-ray interpretation
- Tuberculosis diagnostic tools (Mantoux, GeneXpert demo)

Project work/Assignment: Mention the Type of Project /Assignment proposed for this course:

- Case presentation on IHD or COPD
- Interpretation of ECG and writing clinical notes
- Short assignment: Compare lung abscess vs pneumonia
- Poster: Classification and management of respiratory failure

Text Book

- Hutchison's Clinical Methods
- Davidson's Principles and Practice of Medicine
- J.E. Bennett – *Principles of Pulmonary Medicine*

References

- Braunwald's Heart Disease
- Murray & Nadel's Textbook of Respiratory Medicine
- WHO TB and Lung Disease Guidelines

Online learning resources:

- NPTEL – Clinical Medicine Basics
- Medscape ECG Library
- https://presiuniv.knimbus.com/user#/home
- WHO Online Training – Tuberculosis and Respiratory Infections

Topics relevant to "SKILL DEVELOPMENT":

- Clinical examination proficiency
- Diagnostic test interpretation
- Emergency procedure handling