ROYAL GLOBAL UNIVERSITY
GUWAHATI

ROYAL SCHOOL OF MEDICAL AND ALLIED SCIENCES (RSMAS)

DEPARTMENT OF OPERATION THEATRE TECHNOLOGY

COURSE STRUCTURE & SYLLABUS
(BASED ON NATIONAL EDUCATION POLICY2020)

FOR

B.Sc. IN OPERATION THEATRE TECHNOLOGY
(4 YEARS SINGLE MAJOR)

W.E.F
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PREAMBLE

The National Education Policy (NEP) 2020 conceives a new vision for India's highereducation system. It recognizes that higher education plays an extremely important rolein promoting equity, human as well as societal well-being and in developing India asenvisionedinitsConstitution.Itisdesiredthathighereducationwillsignificantlycontribute towards sustainable livelihoods and economic development of the nation asIndiamovestowardsbecomingaknowledgeeconomyandsociety.

If we focus on the 21st century requirements, the higher education framework of thenation must aim to develop good, thoughtful, well-rounded, and creative individuals andmust enable an individual to study one or more specialized areas of interest at a deeplevel,andalsodevelopcharacter,ethicalandConstitutionalvalues,intellectualcuriosity,scientifictemper,creativity,spiritofservice,andtwenty-first-centurycapabilitiesacrossarangeofdisciplinesincludingsciences,socialsciences,arts,humanities,languages,aswellasprofessional,technical,andvocationalsubjects.Aquality higher education should be capable enough to enable personal accomplishmentand enlightenment, constructive public engagement, and productive contribution to thesociety.Overall,itshouldfocusonpreparingstudentsformoremeaningfulandsatisfying livesandworkrolesand enableeconomicindependence.

Towardstheattainmentofholisticandmultidisciplinaryeducation,theflexiblecurricula of the University will include credit-based courses, projects in the areas ofcommunityengagementandservice,environmentaleducation,andvalue-basededucation.Aspartofholisticeducation,studentswillalsobeprovidedwithopportunities for internships with local industries, businesses, artists, crafts persons,and so on, as well as research internships with faculty and researchers at the University,so that students may actively engage with the practical aspects of their learning andtherebyimprovetheiremployability.

The undergraduate curriculums are diverse and have varied subjects to be covered tomeettheneedsoftheprograms.AspertherecommendationsfromtheUGC,

introduction of courses related to Indian Knowledge System (IKS) is being incorporatedin the curriculum structure which encompasses all of the systematized disciplines ofKnowledgewhichweredevelopedtoahighdegreeofsophisticationinIndiafromancient times and all of the traditions and practises that the various communities ofIndia—includingthetribalcommunities—haveevolved,refinedandpreservedovergenerations,like forexampleVedicMathematics,Vedangas,IndianAstronomy,FineArts,Metallurgy,etc.

At RGU, we are committed that at the societal level, higher education will enable eachstudent to develop themselves to be an enlightened, socially conscious, knowledgeable,and skilled citizen who can find and implement robust solutions to its own problems.For the students at the University, Higher education is expected to form the basis forknowledge creation andinnovation thereby contributing toa more vibrant, sociallyengaged,cooperativecommunityleadingtowardsahappier,cohesive,cultured,productive,innovative,progressive,andprosperousnation."

Operation Theatre Technology is a branch of paramedical science which deals with different aspects related to surgery performed at the operation theatre. Those who have expertise of this technology are called Operation Theatre Technicians. Institutes offer various diploma and degree courses in the Operation Theatre Technology which make candidates learn the skill of this field. The courses in Operation Theatre Technology intend to impart through knowledge of this field so that these professionals can help experts performing various procedures smoothly. These technicians are in great demand in surgery unit, emergency departments, and various intensive care units at hospitals.

At present, in our country very few universities are generating health professionals specialized in OT technology. The OT Technology Program introduced by Royal School of Medical and Allied Sciences, The Assam Royal Global University promises to generate OT professionals having extensive and elaborate knowledge in the fields of OT technology, both in theory and practical.

As operation theatre is available in nearly every hospital nowadays, these professionals are in high demand. Graduates in Operation Theatre Technology are easily recruited as assistant to Surgeons and Anaesthesiologists in surgical units in various departments.

As these professionals have expertise in managing different tasks at the operation theatre, the field offers a bright career prospect to students. Not only they assist doctors during operation with their technical knowledge of different tools and equipment, but they also help patients in post operation recovery.

Those who want to make career in this field should have certain skill sets apart from the degree they hold that include compassionate, disciplined, accountable, and team player. Accountability must be there among such professionals as operation is life saving act and there is no scope of mistake and negligence in operation theatre

Abbreviations

1. Cr. - Credit
2. Major - Core Courses of a Discipline
3. Minor - May/may not be related to Major.
4. SEC - Skill Enhancement Course
5. VAC - Value Addition Course
6. AEC- Ability Enhancement Course
7. GEC - Generic Elective Course
8. IKS - Indian Knowledge System
9. AICTE - All India Institute of Technical Education
10. CBCS - Choice Based Credit System
11. HEIs - Higher Education Institutes
12. MSDE - Ministry of Skill Development and Entrepreneurship
13. NAC - National Apprenticeship Certificate
14. NCrF - National Credit Framework
15. NCVET - National Council for Vocational Education and Training
16. NEP - National Education Policy
17. NHEQF - National Higher Education Qualification Framework
18. NSQF - National Skill Qualifications Framework
19. NTA - National Testing Agency
20. SDG - Sustainable Development Goals
21. UGC - University Grants Commission
22. VET - Vocational Education and Training
23. ME-ME - Multiple Entry Multiple Exit
24. OJT - On Job Training
25. NCH - Notional Credit Hours

INTRODUCTION

The National Education Policy (NEP) 2020 clearly indicates that higher education playsan extremely important role in promoting human as well as societal well-being in India.As envisioned in the 21st-century requirements, quality higher education must aim todevelop good, thoughtful, well-rounded, and creative individuals. According to the neweducation policy, assessments of educational approaches in undergraduate educationwillintegratethehumanitiesandartswithScience,Technology,EngineeringandMathematics(STEM)thatwillleadtopositivelearningoutcomes. Thiswillleadtodevelop creativity and innovation, critical thinking and higher-order thinking capacities,problem-solving abilities, teamwork, communication skills, more in-depth learning, andmastery of curricula across fields, increases in social and moral awareness, etc., besidesgeneral engagementand enjoyment oflearning.andmorein-depthlearning.

The NEP highlights that the following fundamental principles that have a direct bearingonthecurricula would guidetheeducationsystematlarge,viz.

i. Recognizing, identifying, and fostering the unique capabilities of each student topromoteher/hisholisticdevelopment.
ii. Flexibility,sothatlearnerscanselecttheirlearningtrajectoriesandprogrammes, andthereby choose theirown pathsinlife accordingtotheirtalentsandinterests.
iii. Multidisciplinary andholistic educationacrossthe sciences, social sciences,arts,humanities,and sportsfor amultidisciplinaryworld.
iv. Emphasisonconceptualunderstandingratherthanrotelearning,criticalthinkingtoencouragelogical decision-makingandinnovation;ethicsandhuman&constitutionalvalues,andlifeskillssuchascommunication,teamwork,leadership,andresilience.
v. Extensiveuseoftechnologyinteachingandlearning,removinglanguagebarriers, increasing access for Divyang students, and educational planning andmanagement.
vi. Respect for diversity and respect for the local context in all curricula, pedagogy,and policy.
vii. Equity and inclusion as the cornerstone of all educational decisions to ensurethatallstudentscanthriveintheeducationsystemandtheinstitutionalenvironmentareresponsivetodifferencestoensurethathigh-qualityeducationisavailableforall.
viii. RootednessandprideinIndia,anditsrich,diverse,ancient,andmodernculture,languages,knowledgesystems,and traditions.

Operation Theatre Technology professionals have sound knowledge of different procedures and play a crucial role in providing quality care to patients in the operation theatre. Operation Theatre Technicians work closely with the operation unit comprising surgeon, nurse, and anaesthesiologist. Their main function is to manage the operation theatre during and after procedures, including looking after all the surgical instruments, their sterilisation, and preparation of operation theatre table. They ensure availability of various tools and equipment required for the surgery and ensures team never gets short supply in the case of emergency. They assist the operation team at both sterile and non sterile area.

Operation Theatre Technology is a paramedical field which deals with assistance and preparation of the Operation Theatre. An operation theatre (OT) technologist forms an intrinsic part of any hospital. He / she is a member of a multidisciplinary team in operation theatres who plays an active role in smooth functioning of operation theatre. He / she assist anaesthesiologist and surgical team during perioperative period and provide support to patients. He / she play an important role in advance preparation of equipments that are necessary for various anaesthesia / surgical procedures. He/she also looks after all the work and management of the OT which includes managing the patients in & out of operation theatre, care and maintenance of all the OT equipments as well as management of the staff.

As the surgical branch has various subspecialties including General Surgery, Eye, ENT, OBG, Cardiac, Ortho, genito-urinary, neuro and reconstructive surgeries, the OT technologist needs to know about these various subspecialties. Moreover, a variety of electrical and electronic equipments are in use in modern operation theatres for monitoring anaesthesia & surgical procedures. The success of the procedures and safety of patients depend largely on the reliability, smooth and trouble free performance of these equipments and ability of skilled manpower to operate the same. Thus, there is increased need for qualified and trained OT Technologists not only in India, but also in other developing countries. This course is aimed at satisfying this need.

B.Sc. Operation Theatre Technology is a three year undergraduate course including one-year compulsory internship in the field of health science. These medical professionals are an important part of the operation unit team who work alongside with the surgeon, anaesthesiologist and nurse in order to provide quality patient care throughout the surgery. These technicians make sure that every process in the operation theatre is as secure and safe meeting to students. Their prime duty is to take care of all the work and management of the operation theatre which comprise looking after all the surgical instruments, their sterilization, preparation of dressing table, operation theatre table, instrument table as well as anaesthesia table. They also look after the drugs necessary for surgery, anaesthetic gases, drapes and all the linen and their sterilization.

Apart from the fundamental educational requirement, outstanding scientific skills, communication skills and behavioural skills are necessary for surgical technologists. An eye for detail, accuracy and critical thinking is a must. Team work is essential as this job necessitate the person to work in partnership with

other healthcare providers. Other prerequisites necessary are optimistic attitude, compassion and high levels of endurance and dedication. They must have the aptitude to work under minimal regulation, unpredictable shifts and long hours and must remain alert during operations.

Approach to Curricular Planning:

CreditsinIndianContext:

ChoiceBasedCreditSystem(CBCS)ByUGC

Under the CBCS system, the requirement for awarding a degree or diploma or certificateisprescribedintermsofnumberofcreditstobeearnedbythestudents.Thisframework is being implemented in several universities across States in India. The mainhighlightsofCBCS areasbelow:

- TheCBCSprovidesflexibilityindesigningcurriculumandassigningcreditsbasedonthecourseconte ntandlearninghours.
- TheCBCSprovidesfora systemwhereinstudentscantakecoursesoftheirchoice, learn at their own pace, undergo additional courses and acquire morethantherequiredcredits,andadoptaninterdisciplinaryapproach tolearning.
- CBCSalsoprovidesopportunityforverticalmobilitytostudentsfromabachelor's degreeprogrammeto mastersandresearch degreeprogrammes.

Definitions

AcademicCredit:

An academic credit is a unit by which a course is weighted. It is fixed by the number ofhoursofinstructionsofferedper week.Asper theNationalCreditFramework

1Credit=30NOTIONALCREDITHOURS(NCH)

YearlyLearningHours=1200 NotionalHours(@40 Creditsx30NCH)

30NotionalCreditHours		
Lecture/Tutorial	**Practicum**	**ExperientialLearning**
1 Credit = 15 -22 LectureHours	10-15 PracticumHours	0-8 Experiential LearningHours

Course ofStudy:

Courseofstudyindicatepursuanceofstudyinaparticulardiscipline/programme.Discipline/ProgrammeshallofferMajorCourses(Core),MinorCourses,SkillEnhancementCourses(SEC),ValueAddedCourses(VAC),AbilityEnhancementCompulsoryCourses(AECCs)andInterdisciplinarycourses.

DisciplinaryMajor:

The major would provide the opportunity for a student to pursue in-depth study of aparticular subject or discipline. Students may be allowed to change major within thebroad discipline at the end of the second semester by giving her/him sufficient time toexploreinterdisciplinarycoursesduringthefirstyear.Advanced-leveldisciplinary/interdisciplinarycourses,acourseinresearchmethodology,andaproject/dissertation will be conducted in the seventh semester. The final semester willbedevotedtoseminarpresentation,preparation,andsubmissionofprojectreport/dissertation. The project work/dissertation will be on a topic in the disciplinaryprogrammeofstudyoraninterdisciplinarytopic.

Disciplinary/interdisciplinaryminors:

Studentswillhavetheoptiontochoosecoursesfromdisciplinary/interdisciplinaryminors and skill-based courses. Students who take a sufficient number of courses in adiscipline or an interdisciplinary area of study other than the chosen major will qualifyfor a minor in that discipline or in the chosen interdisciplinary area of study. A studentmay declare the choice of the minor at the end of the second semester, after exploringvariouscourses.

CoursesfromOtherDisciplines(Interdisciplinary):

All UG students are required to undergo 3 introductory-level courses relating to any ofthebroaddisciplinesgivenbelow.Thesecoursesareintendedtobroadentheintellectualexperienceandformpartofliberalartsandscienceeducation.Studentsare notallowedtochoose orrepeatcoursesalreadyundergone atthe higher secondarylevel(12thclass)intheproposedmajor and minorstream under thiscategory.

i. NaturalandPhysicalSciences:Studentscanchoosebasiccoursesfromdisciplinessuchas Natural Science,forexample,Biology,Botany,Zoology,Biotechnology,Biochemistry,Chemistry,Physics, Biophysics,AstronomyandAstrophysics,Earthand EnvironmentalSciences,etc.

ii. Mathematics,Statistics,andComputerApplications:Coursesunderthiscategory will facilitate the students to use and apply tools and techniques in theirmajor and minor disciplines. The course may include training in programmingsoftware like Python among others and applications software like STATA, SPSS,Tally, etc. Basic courses under this category will be

helpful for science and socialsciencein dataanalysisandtheapplicationofquantitativetools.

iii. Library, Information, and Media Sciences: Courses from this category willhelpthestudentstounderstandtherecentdevelopmentsininformationandmediascience(journalism,massmedia,andcommunication)

iv. CommerceandManagement:Coursesincludebusinessmanagement,accountancy,finance,financial institutions,fintech,etc.,

v. Humanities and Social Sciences: The courses relating to Social Sciences, forexample,Anthropology,CommunicationandMedia,Economics,History,Linguistics, Political Science, Psychology, Social Work, Sociology, etc. will enablestudents to understand the individuals and their social behaviour, society, andnation. Students be introduced to survey methodology and available large-scaledatabasesforIndia.Thecoursesunderhumanitiesinclude,forexample,Archaeology,History,ComparativeLiterature,Arts&Creativeexpressions,CreativeWritingandLiterature,language(s),Philosophy,etc.,andinterdisciplinary courses relating to humanities. The list of Courses can includeinterdisciplinarysubjectssuchasCognitiveScience,EnvironmentalScience,Gender Studies, Global Environment & Health, International Relations, PoliticalEconomyandDevelopment,SustainableDevelopment,Women's,andGenderStudies,etc.willbeusefultounderstand society.

1.3.6.

AbilityEnhancementCourses(AEC): ModernIndianLanguage(MIL)&Englishlanguagefocusedonlanguageandcommunicationskills.Studentsarerequiredtoachievecompetencyina ModernIndianLanguage(MIL)andintheEnglish language with special emphasis on language and communication skills. Thecourses aim at enabling the students to acquire and demonstrate the core linguisticskills, including critical reading and expository and academic writing skills, that helpstudents articulate their arguments and present their thinking clearly and coherentlyand recognize the importance of language as a mediator of knowledge and identity.Theywouldalsoenablestudentstoacquaintthemselveswiththeculturalandintellectual heritage of the chosen MIL and English language, as well as to provide areflective understanding of the structure and complexity of the language/literaturerelated to both the MIL and English language. The courses will also emphasize thedevelopment and enhancement of skills such as communication, and the ability toparticipate/conductdiscussionanddebate.

1.3.7.SkillEnhancementCourse(SEC): Thesecoursesareaimedatimpartingpractical skills, hands-on training, soft skills, etc., to enhance the employability ofstudents and should be related to Major Discipline. They will aim at providing hands-on training, competencies, proficiency, and skill to students. SEC course will be abasketcoursetoprovideskill-basedinstruction.Forexample,SECofEnglishDisciplinemayincludePublicSpeaking,Translation&Edi

ting and Contentwriting.

A student shallhave the choice tochoose froma list, adefined track of coursesofferedfrom1st to3rd semester.

1.3.8.Value-AddedCourses(VAC):

i. Understanding India: The course aims at enabling the students to acquire anddemonstrate the knowledge and understanding of contemporary India with itshistorical perspective, the basic framework of the goals and policies of nationaldevelopment,andtheconstitutionalobligationswithspecialemphasisonconstitutional values and fundamental rights and duties. The course would alsofocusondevelopinganunderstandingamongstudent-teachersoftheIndianknowledge systems, the Indian education system, and the roles and obligations ofteacherstothenationingeneralandtotheschool/community/society.Thecoursewillattempttodeepenknowledgeaboutandunderstandingof India'sfreedom struggle and of the values and ideals that it represented to develop anappreciationofthecontributionsmadebypeopleofallsectionsandregionsofthe country, and help learners understand and cherish the values enshrined in theIndian Constitution and to prepare them for their roles and responsibilities aseffectivecitizensofademocraticsociety.

ii. Environmental science/education:The course seekstoequip studentswiththe ability toapply theacquired knowledge, skills, attitudes, and valuesrequiredtotakeappropriateactionsformitigatingtheeffectsofenvironmentaldegradation,climatechange,andpollution,effectivewastemanagement,conservation of biological diversity, management of biological resources, forestand wildlife conservation, and sustainable development and living. The course willalsodeepentheknowledgeandunderstandingofIndia'senvironmentinitstotality, its interactive processes, and its effects on the future quality of people'slives.

iii. Digital and technological solutions: Courses in cutting-edge areas that arefast gaining prominences, such as Artificial Intelligence (AI), 3-D machining, bigdataanalysis,machinelearning,dronetechnologies,andDeeplearningwithimportant applications to health, environment, and sustainable living that will bewovenintoundergraduateeducationforenhancingtheemployabilityoftheyouth.

iv. Health & Wellness, Yoga education, sports, and fitness: Course componentsrelatingtohealthandwellnessseektopromoteanoptimalstateofphysical,emotional, intellectual, social, spiritual, and environmental well-being of a person.Sportsandfitnessactivitieswillbe organizedoutside the regularinstitutionalworking hours. Yoga education would focus on preparing the students physicallyand mentally for the integration of their physical, mental, and spiritual faculties,and equipping them with basic knowledge about one's

personality, maintainingself-discipline and self-control, to learn to handle oneself well in all life situations.Thefocusofsportsandfitnesscomponentsofthecourseswillbeontheimprovementofphysicalfitnessincludingtheimprovementofvariouscomponentsofphysicalandskills-relatedfitnesslikestrength,speed,coordination,endurance,andflexibility;acquisitionofsportsskillsincludingmotorskillsaswellasbasicmovementskillsrelevanttoaparticularsport;improvementoftactical abilities;andimprovementofmental abilities. These are a common pool of courses offered by different disciplines and aimedtowards embedding ethical, cultural and constitutional values; promote criticalthinking.Indianknowledgesystems;scientific temperamentofstudents.

1.3.9. Summer Internship /Apprenticeship:

The intention is induction into actual work situations. All students must undergo internships / Apprenticeships in a firm, industry, or organization or Training in labs with faculty and researchers in their own or other HEIs/research institutions during the summer term. Students should take up opportunities for internships with local industry, business organizations, health and allied areas, local governments (such as panchayats, municipalities), Parliament or elected representatives, media organizations, artists, crafts persons, and a wide variety of organizations so that students may actively engage with the practical side of their learning and, as a by-product, further improve their employability. Students who wish to exit after the first two semesters will undergo a 4-credit work-based learning/internship during the summer term to get a UG Certificate. **1.3.9.1. Community engagement and service:**

The curricular component of 'community engagement and service' seeks to expose students to the socioeconomic issues in society so that the theoretical learnings can be supplemented by actual life experiences to generate solutions to real-life problems. This can be part of summer term activity or part of a major or minor course depending upon the major discipline.

1.3.9.2. Field-based learning/minor project: The field-based learning/minor project will attempt to provide opportunities for students to understand the different socio-economic contexts. It will aim at giving students exposure to development-related issues in rural and urban settings. It will provide opportunities for students to observe situations in rural and urban contexts, and to observe and study actual field situations regarding issues related to socioeconomic development. Students will be given opportunities to gain a first hand understanding of the policies, regulations, organizational structures, processes, and programmes that guide the development process. They would have the opportunity to gain an understanding of the complex socio-economic problems in the community, and innovative practices required to generate solutions to the identified problems. This may be a summer term project or part of a major or minor course depending on the subject of study.

1.3.10. Indian Knowledge System: In view of the importance accorded in the NEP 2020 to rooting our curricula and pedagogy in the Indian context all the students who are enrolled in the four-year UG programmes should be encouraged to take an adequate number of courses in IKS

so that the total credits of the courses taken in IKS amount to at least five per cent of the total mandated credits (i.e. min. 8 credits for a 4 yr. UGP & 6 credits for a 3 yr. UGP). The students may be encouraged to take these courses, preferably during the first four semesters of the UG programme. At least half of these mandated credits should be in courses in disciplines which are part of IKS and are related to the major field of specialization that the student is pursuing in the UG programme. They will be included as a part of the total mandated credits that the student is expected to take in the major field of specialization. The rest of the mandated credits in IKS can be included as a part of the mandated Multidisciplinary courses that are to be taken by every student. All the students should take a Foundational Course in Indian Knowledge System, which is designed to present an overall introduction to all the streams of IKS relevant to the UG programme. The foundational IKS course should be broad-based and cover introductory material on all aspects.

1.3.10. Indian Knowledge System: In view of the importance accorded in the NEP 2020 to rooting our curricula and pedagogy in the Indian context all the students who are enrolled in the four-year UG programmes should be encouraged to take an adequate number of courses in IKS so that the total credits of the courses taken in IKS amount to at least five per cent of the total mandated credits (i.e. min. 8 credits for a 4 yr. UGP & 6 credits for a 3 yr. UGP). The students may be encouraged to take these courses, preferably during the first four semesters of the UG programme. At least half of these mandated credits should be in courses in disciplines which are part of IKS and are related to the major field of specialization that the student is pursuing in the UG programme. They will be included as a part of the total mandated credits that the student is expected to take in the major field of specialization. The rest of the mandated credits in IKS can be included as a part of the mandated Multidisciplinary courses that are to be taken by every student. All the students should take a Foundational Course in Indian Knowledge System, which is designed to present an overall introduction to all the streams of IKS relevant to the UG programme. The foundational IKS course should be broad-based and cover introductory material on all aspects

1.3.11. Experiential Learning: One of the most unique, practical & beneficial features of the National Credit Framework is assignment of credits/credit points/ weightage to the experiential learning including relevant experience and professional levels acquired/ proficiency/ professional levels of a learner/student. Experiential learning is of two types:

a. Experiential learning as part of the curricular structure of academic or vocational program. E.g., projects/OJT/internship/industrial attachments etc. This could be either within the Program- internship/ summer project undertaken relevant to the program being studied or as a part time employment (not relevant to the program being studied- up to certain NSQF level only). In case where experiential learning is a part of the curricular structure the credits would be calculated and assigned as per basic principles of NCrF i.e., 40 credits for 1200 hours of

notional learning.

b. Experiential learning as active employment (both wage and self) post completion of an academic or vocational program. This means that the experience attained by a person after undergoing a particular educational program shall be considered for assignment of credits. This could be either Full or Part time employment after undertaking an academic/ Vocation program. In case where experiential learning is as a part of employment the learner would earn credits as weightage. The maximum credit points earned in this case shall be double of the credit points earned with respect to the qualification/ course completed. The credit earned and assigned by virtue of relevant experience would enable learners to progress in their career through the work hours put in during a job/employment

AwardofDegree

The structure and duration of undergraduate programmes of study offered by the University as per NEP 2020 include:

2.1. Undergraduate programmes of either 3 or 4-year duration with Single Major, with multiple entry and exit options, with appropriate certifications:

2.1.1. UG Certificate: Students who opt to exit after completion of the first year and have secured 40 credits will be awarded a UG certificate if, in addition, they complete one vocational course of 4 credits during the summer vacation of the first year. These students are allowed to re-enter the degree programme within three years and complete the degree programme within the stipulated maximum period of seven years.

2.1.2. UG Diploma: Students who opt to exit after completion of the second year and have secured 80 credits will be awarded the UG diploma if, in addition, they complete one vocational course of 4 credits during the summer vacation of the second year. These students are allowed to re-enter within a period of three years and complete the degree programme within the maximum period of seven years.

2.1.3. 3-year UG Degree: Students who will undergo a 3-year UG programme will be awarded UG Degree in the Major discipline after successful completion of three years, securing 120 credits and satisfying the minimum credit requirement.

***2.1.4. 4-year UG Degree (Honours*)**: A four-year UG Honours degree in the major discipline will be awarded to those who complete a four-year degree programme with 160 credits and have satisfied the credit requirements as given in Table 6 in Section 5.

2.1.5. 4-year UG Degree (Honours with Research): Students who secure 75% marks and above in the first six semesters and wish to undertake research at the undergraduate level can choose a research stream in the fourth year. They should do a research project or dissertation under the guidance of a Faculty Member of the University. The research project/dissertation will be in the major discipline. The students who secure 160 credits, including 12 credits from a research project/dissertation, will be awarded UG Degree (Honours with Research).

Table: 1: Award of Degree and Credit Structure with ME-ME

Award	Year	Credits toearn	Additional Credits	Re-entry allowedwithin(yrs)	Years toComplete
UGCertificate	1	40	4	3	7
UGDiploma	2	80	4	3	7
3-yearUGDegree(Major)	3	120	x	x	x
4-year UG Degree(Honours)	4	160	x	x	x

Award	Year	Credits toearn	Additional Credits	Re-entry allowedwithin(yrs)	Years toComplete
4-yearUGDegree (Honors withResearch):	4	160	Studentswhosecurecumulative75% marksandaboveinthefirstsixsemesters		

Credit,CreditPoints&Credithoursfordifferenttypes Ofcourses

3.1.Introduction:

*'**Credit**'*isrecognitionthatalearnerhascompletedapriorcourseoflearning,corresponding to a qualification at a given level. For each such prior qualification, thestudent would have put in a certain volume of institutional or workplace learning, andthe more complex a qualification, the greater the volume of learning that would havegoneintoit.Creditsquantifylearningoutcomesthataresubjectachievingtheprescribedlearningoutcomestovalid,reliablemethodsofassessment.

The ***credit points*** will give the learners, employers, and institutions a mechanism fordescribing and comparing the learning outcomes achieved. The credit points can becalculatedascreditsattainedmultiplied with thecreditlevel.

The workload relating to a course is measured in terms of credit hours. A credit is a unitby which the coursework is measured. It determines the number of hours of instructionrequiredperweekoverthedurationofasemester(minimum15weeks).

Eachcoursemayhaveonlyalecturecomponentoralectureandtutorialcomponentora lecture and practicum component or a lecture, tutorial, and practicum component, oronlypracticumcomponent.RefertotheSection 1.3.1

A course can have a combination of ***lecture credits, tutorial credits, practicum creditsandexperientiallearningcredits.***

The following types of courses/activities constitute the programmes of study. Each ofthemwillrequireaspecificnumberofhoursofteaching/guidanceandlaboratory/studio/workshop activities, field-based learning/projects, internships, andcommunityengagement andservice.

- **Lecture courses:** Courses involving lectures relating to a field or discipline by anexpert or qualified personnel in a field of learning, work/vocation, or professionalpractice.
- **Tutorial courses:** Courses involving problem-solving and discussions relating to afield or discipline under the guidance of qualified personnel in a field of learning,work/vocation, or professionalpractice.Should also refer tothe RemedialClasses,flip classrooms and focus on both Slow and Fast Learners of the class according totheirmerit.

- **PracticumorLaboratorywork:** Acourse requiringstudentstoparticipateinaprojectorpracticalorlabactivitythatappliespreviouslylearned/studiedprinciples/theoryrelatedtothechosenfieldoflearning,work/vocation,orprofessional practice under the supervision of an expert or qualified individual in thefieldoflearning,work/vocationor professionalpractice.
- **Seminar:** Acourserequiringstudentstoparticipateinstructureddiscussion/conversation or debate focused on assigned tasks/readings, current orhistoricalevents,orsharedexperiencesguidedorledbyanexpertorqualifiedpersonnel inafieldoflearning,work/vocation,or professional practice.
- **Internship:** A course requiring students to participate in a professional activity orwork experience, or cooperative education activity with an entity external to theeducationinstitution,normallyunderthesupervisionofanexpertofthegivenexternal entity. A key aspect of the internship is induction into actual work situations.Internshipsinvolveworkingwithlocalindustry,governmentorprivateorganizations, business organizations, artists, crafts persons, and similar entities toprovideopportunities forstudentsto activelyengageinon-siteexperientiallearning.
- **Studio activities:** Studio activities involve the engagement of students in creative orartistic activities. Every student is engaged in performing a creative activity to obtainaspecificoutcome.Studio-basedactivitiesinvolvevisual-oraesthetic-focusedexperiential work.
- **Fieldpractice/projects:** Coursesrequiring studentstoparticipateinfield-basedlearning/projects generally under the supervision of an expert of the given externalentity.
- **Community engagement and service:** Courses requiring students to participate infield-basedlearning/projects generallyunder the supervision ofanexpertofthegivenexternalentity.Thecurricularcomponentof'communityengagementandservice' willinvolveactivitiesthatwouldexposestudentstothesocio-economicissues in society so that the theoretical learnings can be supplemented by actual lifeexperiencestogeneratesolutionstoreal-lifeproblems.

Table 2:Coursewise DistributionofCredits

BroadCategoryofCourse	**MinimumCreditRequirement**	
	3-yearUG	**4-YearUG**
Major(Core)	60	80
MinorStream	24	32
Interdisciplinary	9	9
AbilityEnhancement Courses(AEC)	8	8

SkillEnhancement Courses (SEC)	9	9
ValueAddedCoursescommonforallUG	6	6
SummerInternship	4	4
ResearchProject/Dissertation	NA	12
Total	**120**	**160**

Table3:CreditDistributionfor3-yearCourse

Semester	CourseCredits							
	Major	**Minor**	**ID**	**AEC**	**SEC**	**VAC**	**SI**	**Total**
I	6	3	3	2	3	3	0	**20**
II	6	3	3	2	3	3	0	**20**
III	8	4	3	2	3	0	0	**20**
IV	12	6	0	2	0	0	0	**20**
V	12	4	0	0	0	0	4	**20**
VI	16	4	0	0	0	0	0	**20**
	60	**24**	**9**	**8**	**9**	**6**	**4**	**120**

Table 4:CreditDistributionfor4-yearCourse

Semester	CourseCredits								Total
	Major	**Minor**	**ID**	**AEC**	**SEC**	**VAC**	**SI**	**RP**	
I	6	3	3	2	3	3	0	0	**20**
II	6	3	3	2	3	3	0	0	**20**
III	8	4	3	2	3	0	0	0	**20**
IV	12	6	0	2	0	0	0	0	**20**
V	12	4	0	0	0	0	4	0	**20**
VI	16	4	0	0	0	0	0	0	**20**
VII	16	4	0	0	0	0	0	0	**20**
VIII	4	4	0	0	0	0	0	12	**20**

	80	**32**	**9**	**8**	**9**	**6**	**4**	**12**	**160**

LevelofCourses

4.1 NHEQF levels:

The NHEQF levels represent a series of sequential stages expressed in terms of a rangeoflearningoutcomesagainstwhichtypicalqualificationsarepositioned/located.NHEQF level 4.5 represents learning outcomes appropriate to the first year (first twosemesters) of the undergraduate programme of study, while Level 8 represents learningoutcomesappropriatetothedoctoral-levelprogrammeofstudy.

Table:5:NHEQFLevels

NHEQF level	**Examples of higher education qualifications located withineachlevel**	**CreditRequirements**
Level 4.5	UndergraduateCertificate.Programmeduration:Firstyear(firsttwo semesters) of the undergraduate programme, followed byan exit4-creditskills-enhancementcourse(s).	40
Level 5	Undergraduate Diploma. Programme duration: First two years(first foursemesters)oftheundergraduateprogramme, followed by an exit 4-credit skills-enhancement course(s)lasting twomonths.	80
Level 5.5	Bachelor'sDegree.Programmeduration:Firstthreeyears(Six semesters)ofthefour-yearundergraduateprogramme.	120
Level 6	Bachelor'sDegree(Honours/HonourswithResearch). Programmeduration:Fouryears(eightsemesters).	160
Level 6	Post-Graduate Diploma. Programme duration: One year (twosemesters)forthosewhoexitaftersuccessfulcompletionofthefirsty ear(twosemesters)ofthe2-yearmaster'sprogramme	160
Level 6.5	Master's degree. Programme duration: Two years (foursemesters)afterobtaininga 3-yearBachelor'sdegree(e.g.B.A.,B.Sc.,B.Com.etc.).	80
Level 6.5	Master's degree. Programme duration: One year (twosemesters) after obtaining a 4 -year Bachelor's degree(Honours/HonourswithResearch)(e.g.B.A.,B.Sc., B.Com.etc.).	40
Level 7	Master's degree. (e.g., M.E./M.Tech. etc.) Programme duration:Two years (four semesters) after obtaining a 4-year Bachelor'sdegree.(e.g.,B.E./B.Tech.etc.)	80
Level 8	DoctoralDegree	Credits forcourse work,Thesis, and published work

4.2.CourseCodebasedonLearningOutcomes:

Courses are coded based on the learning outcomes, level of difficulty, and academicrigor.Thecodingstructureisasfollows:

i. 0-99: ***Pre-requisite courses*** required to undertake an introductory course which willbe a pass or fail course with no credits. It will replace the existing informal way ofoffering bridgecoursesthatareconducted insomeofthecolleges/universities.

ii. 100-199: ***Foundation or introductory courses*** that are intended for students to gainanunderstandingandbasicknowledgeaboutthesubjectsandhelpdecidethesubjector discipline of interest. These courses may also be prerequisites for courses in themajor subject. These courses generally would focus on foundational theories, concepts,perspectives,principles,methods,andproceduresofcriticalthinkinginordertoprovideabroad basisfor takingupmoreadvancedcourses.

iii. 200-299: ***Intermediate-level courses*** including subject-specific courses intended tomeet the credit requirements for minor or major areas of learning. These courses can bepartofamajor and canbepre-requisitecoursesfor advanced-level majorcourses.

iv. 300-399:*Higher-levelcourses*whicharerequiredformajoringinadisciplinary/interdisciplinaryareaofstudyfortheawardofadegree.

v. ***400-499: Advanced courses*** which would include lecture courses with practicum,seminar-basedcourse,termpapers,researchmethodology,advancedlaboratoryexperiments/softwaretraining,researchprojects,hands-on-training,internship/apprenticeshipprojectsattheundergraduatelevelorFirstyearpost-graduatetheoreticalandpracticalcourses.

vi. 500-599: ***Courses at first-year PG degree level*** for a 2-year post-graduate degreeprogramme

vii. 600-699: ***Courses for second year of 2-year PG*** or 1-year post-graduate degreeprogramme

viii. 700-799&above: Courseslimitedtodoctoralstudents.

Section5

CourseStructureoftheFramework

Table6.Semesterwiseandcomponentwisedistributionofcredit(FourYearUGP-SingleMajor) [6]

Year	Semester	Component	Cousecode	Number ofCourses	Credit perCourse	Total creditin thecomponent
FirstYear	I	Major(Core)	C-101,C-102	2	3	6
		Minor (May or may not berelatedtomajor)	M-101	1	3	3
		Interdisciplinary	IDC-1	1	3	3
		AEC1-Language	AEC-1	1	2	2
		SEC- (To choose from a pool ofcourses.ToberelatedtoMajor)	SEC-1	1	3	3
		VAC- (To choose from a pool ofcourses)	VAC-1	1	3	3
				7		**20**
	II	Major(Core)	C-103,C-104	2	3	6
		Minor (May or may not berelatedtomajor)	M102	1	3	3
		Interdisciplinary	IDC-2	1	3	3
		AEC1-Language	AEC-2	1	2	2
		SEC (Tochoosefromapoolof courses.Tobe relatedtoMajor)	SEC-2	1	3	3
		VAC- (Choose from a pool ofcourses)	VAC-2	1	3	3
				7		**20**
SecondYear	III	Major(Core)	C-201,C-202	2	4	8
		Minor (May or may not berelatedtomajor)	M-201	1	4	4
		Interdisciplinary	IDC-3	1	3	3
		AEC1-Language	AEC-3	1	2	2
		SEC- (To choose from a pool ofcourses.ToberelatedtoMajor)	SEC-3	1	3	3
				6		**20**
	IV	Major(Core)	C-203, C-204,C-205	3	4	12
		Minor (May or may not berelatedtomajor)	M-202,M-203	2	3	6
		AEC1-Language	AEC-4	1	2	2

				6		**20**

Year	Semester	Component	Cousecode	Number ofCours es	Credit perCo urse	Total creditin thecompone nt
ThirdYear	V	Major(Core)	C-301, C-302,C-303	3	4	12
		Minor (May or may not berelatedtomajor)	M-301	1	4	4
		Internship		1	4	4
				5		**20**
	VI	Major(Core)	C-304, C-305,C-306,C-307	4	4	16
		Minor (May or may not berelatedtomajor)	M-302	1	4	4
				5		**20**
FourthYear	VII	Major(Core)	C-401, C-402,C-403,C-404	4	4	16
		Minor (May or may not berelatedtomajor)	M-401	1	4	4
				5		**20**
	VIII	Major(Core)	C-405 (RM-301)	1	4	4
		Research Methodology	M-402	1	4	4
		Dissertation/ResearchProject		1	12	12
		Or 400 level advanced course Core(inlieuof Dissertation/Research Project)	C-407, C-408,C-409	3	4	
				3/5		**20**

GraduateAttributes&LearningOutcomes

Introduction

As per the NHEQF, each student on completion of a programme of study must possessanddemonstratetheexpected***GraduateAttributes***acquiredthroughoneormoremodes of learning, including direct in-person or face-to-face instruction, online learning,and hybrid/blended modes. The graduate attributes indicate the quality and features orcharacteristics of the graduate of a programme of study, including learning outcomesrelating to the disciplinary area(s) relating to the chosen field(s) of learning and genericlearning outcomes that are expected to be acquired by a graduate on completion of theprogramme(s)ofstudy.

Thegraduateprofile/attributesmustinclude,

- capabilities thathelpwidenthecurrentknowledgebaseandskills,
- gainand applynew knowledgeandskills,
- undertakefuturestudiesindependently,performwellinachosencareer,and
- playaconstructiveroleasaresponsiblecitizeninsociety.

Thegraduateprofile/attributesareacquiredincrementallythroughdevelopmentofcognitive levels and describe a set of competencies that are transferable beyond thestudy of a particular subject/disciplinary area and programme contexts in which theyhavebeendeveloped.

Graduateattributes include,

- ***learningoutcomesthatarespecifictodisciplinaryareas***relatingtothechosenfield(s)oflearningwithinbroadmultidisciplinary/interdisciplinary/transdisciplinary contexts.
- ***generic learning outcomes*** that graduate of all programmes of study shouldacquireanddemonstrate.

GraduateAttributes:

Table:7:TheLearningOutcomesDescriptorsandGraduateAttributes

Sl.no.	**GraduateAttribute**	**TheLearningOutcomesDescriptors *(Thegraduatesshouldbeabletodemonstratethecapability to:)***
GA1	DisciplinaryKnowledge	acquireknowledgeandcoherentunderstanding ofthechosendisciplinary/interdisciplinaryareasofstudy.

Sl.no.	GraduateAttribute	TheLearningOutcomesDescriptors *(Thegraduatesshouldbeabletodemonstratethecapabilityto:)*
GA2	Complex problemsolving	solvedifferentkindsofproblemsinfamiliarandnon-familiarcontextsandapplythelearningto real-lifesituations.
GA3	Analytical&Critical thinking	apply analytical thought including the analysisand evaluation of policies, and practices. Able toidentify relevant assumptions or implications.Identifylogicalflawsandholesintheargumentsof others. Analyse and synthesize data from avarietyofsources anddraw validconclusions andsupportthemwithevidenceandexamples.
GA4	Creativity	create, perform, or think in different and diverseways about the same objects or scenarios anddeal with problems and situations that do nothave simple solutions. Think 'out of the box' andgenerate solutions to complex problems inunfamiliarcontexts byadoptinginnovative, imaginative,lateralthinking,interpersonalskills,and emotionalintelligence.
GA5	Communicatio nSkills	listen carefully, read texts and research papersanalytically,andpresentcomplex informationina clear and concise manner to differentgroups/audiences. Express thoughts and ideaseffectivelyinwritingandorallyandcommunicate withothersusingappropriatemedia.
GA6	Research-relatedskills	developakeensenseofobservation,inquiry,andcapability for asking relevant/ appropriatequestions. Should acquire the ability toproblematize, synthesize and articulate issuesand design research proposals, define problems,formulate appropriate and relevant researchquestions,formulatehypotheses,testhypothesesusing quantitative and qualitative data, establishhypotheses, make inferences based on theanalysis and interpretation of data, and predictcause-and-effect relationships. Should developthe ability to acquire the understanding of basicresearch ethicsandskillsinpracticing/doing ethicsinthefield/inpersonalresearchwork.
GA7	Collaboration	work effectively and respectfully with diverseteams intheinterestsofacommoncauseand workefficientlyas amemberofateam.
GA8	Leadershipreadiness/qualities	plan the tasks of a team or an organization andsettingdirectionbyformulating aninspiring vision and building a team that can help achievethevision.

GA9	Digitaland technological skills	useICT inavarietyoflearning andwork situations. Access, evaluate, and use a variety of relevant information sources and use appropriate software for analysis of data.
GA 10	Environmental awareness and action	mitigate the effects of environmental degradation, climate change, and pollution. Should develop the technique of effective waste management, conservation of biological diversity, management of biological resources and biodiversity, forest and wildlife conservation, and sustainable development and living.

Programme Learning Outcomes in B.Sc. Operation Theatre Technology

Program LearningOutcomes (PLO)

PLO1:Knowledge of Operation Theatre Technology

Possess an acquired scientific knowledge to become a healthcare professional.

PLO2: Develop complex problemsolving skills

Demonstrate and solve technical complexities and to implement the preventive, assessment and management plans for quality health care services.

PLO3: Develop analytical&Critical thinking skills

Ability to think and act in stressful situation and apply the knowledge in emergency real life circumstances.

PLO4:Develop the ability to create

Possess creative skills to deal with difficult scenarios by adopting ingenious ways of achieving the goals without compromising the desired outcome.

PLO5:Develop effective CommunicationSkills

Practice soft skill and good communicating skills to effectively and appropriately communicate with the patients, clients, co workers and other health professionals with the OT, hospital and the community.

PLO6:Developresearch-related skills

A sense of inquiry and investigation for raising relevant and contemporary questions, synthesizing and articulating.

PLO7:Develop the capability of team building

Ability to work effectively and respectfully with interdisciplinary team members to achieve coordinated, high quality health care.

PLO8: Develop leadershipreadiness/qualities

Ability to employ reflective thinking along with the ability to create the sense of awareness of one self and society.

PLO9:Develop digitaland technological skills

Ability to use ICT in variety of situations and possess learning and applying digitally.

PLO10: - Develop environmental awareness andaction

Possess knowledge and technicality to raise awareness for the benefit of the society.

Programme Specific Outcomes (PSO):

PSO 1: Students will be competent to work in various Operation Theatres. Students will understand the importance of the various departments of the hospital and their contribution to the well being of a patient.

PSO 2: Students will acquire in-depth knowledge of Anesthesia

PSO 3: This Program will create a great source of manpower which can, Surgery, Critical care and pain Management. Students will be skilled in problem solving, critical thinking and will be able to assist the Surgeon or Anesthetist. aid in our health sector especially in Operation Theatres. Students will be able to act on real life emergencies and apply their knowledge of assessment and management on various diseases and conditions.

PSO 4: Students will be able to explore new areas of research in both Anesthesia & Surgery and can also advance for research as well. Students will be able to explore their integrate knowledge of various types of Surgical Procedures & Anesthetic procedures.

TheQualificationSpecifications:

Table:8:NHEQFQualificationspecifications

Qualificationtype	**Purposeof thequalification**
UndergraduateCertificate	The students will be able to apply technical and theoreticalconceptsandspecializedknowledgeandskillsinabroadrange ofcontexts toundertakeskilledorparaprofessional work and/ortopursuefurtherstudy/learningathigherlevels.
UndergraduateDiploma	The students will be able to apply specialized knowledge in arangeofcontextstoundertakeadvanced skilledor paraprofessionalworkand/ortopursuefurtherlearning/studyathigherlevels.
Bachelor'sdegree	Thestudentswillbeabletoapplyabroadand coherentbodyof knowledgeandskills inarangeofcontextstoundertakeprofessional workand/or for further learning.
Bachelor's degree(Honours/ HonourswithResearch)	Thestudentswillbeabletoapplytheknowledgeinaspecific context to undertake professional work and for research andfurther learning.
	The students will be able to apply an advanced body of knowledgein a range of contexts to undertake professional work and applyspecialized knowledge and skills for research and scholarship,and/orfor furtherlearningrelating tothechosenfield(s)of learning,work/vocation,orprofessionalpractice.

Master'sdegree (1year/2semestersofstudy)	The students will be able to apply an advanced body of knowledgein a range of contexts for professional practice, research, andscholarshipand asapathwayfor furtherlearning.Graduatesat this level are expected to possess and demonstrate specializedknowledgeandskillsforresearch,and/orprofessionalpractice and/or for further learning.
Master's degree (2 years /4 semesters of study)	The students will be able to apply an advanced body of knowledge in a range of contexts for professional practice, research, and scholarship and as a pathway for further learning. Graduates at this level are expected to possess and demonstrate specialized knowledge and skills for research, and/or professional practice and/or for further learning. Master's degree holders are expected to demonstrate the ability to apply the established principles and theories to a body of knowledge or an area of professional practice.
Doctoral degree	The Doctoral degree qualifies students who can ask relevant and new questions and develop appropriate methodologies and tools for collecting information in pursuit of generating new knowledge and new data sets; and apply a substantial body of knowledge to undertake research and investigations to generate new knowledge, in one or more fields of inquiry, scholarship or professional practice. Graduates at this level is expected to have a systematic and critical understanding of a complex field of learning and specialized research skills for the advancement of knowledge and/or professional practice and making a significant and original contribution to the creation of new knowledge relating to a field of learning or in the context of an area of professional practice.

Teaching Learning Process

Teaching and learning in this programme involves classroom lectures as well as tutorial and remedial classes.

Tutorial classes: Tutorials allow closer interaction between students and teacher as each student gets individual attention. The tutorials are conducted for students who are unable to achieve average grades in their weekly assessments. Tutorials are divided into three categories, viz. discussion-based tutorials (focusing on deeper exploration of course content through discussions and debates), problem-solving tutorials (focusing on problem solving processes and quantitative reasoning), and Q&A tutorials (students ask questions about course content and assignments and consolidate their learning in the guiding presence of the tutor).

Remedial classes: The remedial classes are conducted for students who achieve average and above average grades in their weekly assessments. The focus is laid to equip the students to perform better in the exams/assessments. The students are divided into small groups to provide dedicated learning support. Tutors are assigned to provide extra time and resources to help them understand concepts

with advanced nuances. Small groups allow tutors to address their specific needs and monitor them. Following methods are adopted for tutorial and remedial classes:

- Written assignments and projects submitted by students
- Project-based learning
- Group discussions
- Home assignments
- Class tests, quizzes, debates organised in the department
- Seminars and conferences
- Extra-curricular activities like cultural activities, community outreach programmes etc.
- Field trip, excursions, study tour, interacting with eminent authors, etc.

Assessment Method

8.1 The Programme structures and examinations shall normally be based on Semester System. However, the Academic Council may approve Trimester/Annual System for specified programmes.

8.2 In addition to end term examinations, student shall be evaluated for his/her academic performance in a Programme through, presentations, analysis, homework assignments, term papers, projects, field work, seminars, quizzes, class tests or any other mode as may be prescribed in the syllabi. The basic structure of each Programme shall be prescribed by the Board of Studies and approved by the Academic Council.

8.3 Each Programme shall have a number of credits assigned to it depending upon the academic load of the Programme which shall be assessed on the basis of weekly contact hours of lecture, tutorial and laboratory classes, self-study. The credits for the project and the dissertation shall be based on the quantum of work expected.

8.4 Depending upon the nature of the programme, the components of internal assessment may vary. However, the following suggestive table indicates the distribution of marks for various components in a semester: -

<table>
<tr><th></th><th>Component of Evaluation</th><th>Marks</th><th>Frequency</th><th>Code</th><th>Weightage (%)</th></tr>
<tr><td>A</td><td>Continuous Evaluation</td><td></td><td></td><td></td><td></td></tr>
<tr><td>i</td><td>Analysis/Class test</td><td rowspan="5">Combination of any three from (i) to (v) with 5 marks each</td><td>1-3</td><td>C</td><td rowspan="6">25%</td></tr>
<tr><td>ii</td><td>Home Assignment</td><td>1-3</td><td>H</td></tr>
<tr><td>iii</td><td>Project</td><td>1</td><td>P</td></tr>
<tr><td>iv</td><td>Seminar</td><td>1-2</td><td>S</td></tr>
<tr><td>v</td><td>Viva-Voce/Presentation</td><td>1-2</td><td>V</td></tr>
<tr><td>vi</td><td>MSE</td><td>MSE shall be of 20 marks</td><td>1-3</td><td>Q/CT</td></tr>
</table>

vii	Attendance	Attendance shall be of 5 marks	100%	A	5%
B	Semester End Examination		1	SEE	70%
	Project				**100%**

Programme Structure

Semester wise Details of B.Sc. Operation Theatre Technology Course and Credit Scheme

B.Sc. (OTT)

Programme Structure

1st Semester				
Sl.No.	**Subject Code**	**Names of subjects**	**Course Level**	**Credits**
Major Subjects				
1	OTT242M101/ OTT242M111	Anatomy-I (Theory & Practical)	100	3
2	OTT242M102/ OTT242M112	Physiology- I (Theory & Practical)	100	3
3	OTT242M103	Hospital Duty and Patient Care	100	3
Interdisciplinary				
4	IKS992K101	IKS-I	100	3
Ability Enhancement Compulsory Courses (AEC)				
5	CEN982A101	Communicative English- I	100	1
6	BHS982A102	Behavioural Science-I	100	1
Skill Enhancement Course (SEC)				
7	OTT242S101	SEC-1 Biochemistry(Theory)	100	3
Value Added Courses (VAC)				
8		VAC-1 Select one course from a basket of course	100	3
9	SWAYAM	MOOC Course		3
		TOTAL		**23**

2nd Semester				
Sl.No.	**Subject Code**	**Names of subjects**	**Course Level**	**Credits**
Major Subjects				
1	OTT242M201/ OTT242M211	Anatomy-II (Theory & Practical)	100	3
2	OTT242M202/ OTT242M212	Physiology- II (Theory & Practical)	100	3
3	OTT242M203	Introduction to Operation Theatre	100	3
Interdisciplinary				
4	IKS992K201	IKS-II	100	3

Ability Enhancement Compulsory Courses (AEC)				
5	CEN982A201	Communicative English II	100	1
6	BHS982A202	Behavioural Science-II	100	1
Skill Enhancement Course (SEC)				
7	OTT242S201/ OTT242S211	SEC-2 Basics of surgical instrumentation and OT Equipments	100	3
Value Added Courses (VAC)				
8		VAC-2 Select one course from a basket of course	100	3
9	SWAYAM	MOOC Course		3
		TOTAL		**23**

3rd Semester				
Sl.No.	**Subject Code**	**Names of subjects**	**Course Level**	**Credits**
Major Subjects				
1	OTT242M301/ OTT242M311	Principles of Anesthesia (Theory + Practical)	200	4
2	OTT242M302/ OTT242M312	Basics of OT and Surgical Procedures (Theory + Practical)	200	4
3	OTT242M303	Basic techniques of Anesthesia	200	4
Interdisciplinary				
4		IKS-III Select one course from a basket of course	200	3
Ability Enhancement Compulsory Courses (AEC)				
5	CEN982A301	Communicative English III	100	1
6	BHS982A302	Behavioural Science-III	100	1
Skill Enhancement Course (SEC)				
7	OTT242S301	SEC-3 Pharmacology	200	3
8	SWAYAM	MOOC Course		3
		TOTAL		**23**

4th Semester				
Sl.No.	**Subject Code**	**Names of subjects**	**Course Level**	**Credits**
Major Subjects				

1	OTT242M401/ OTT242M411	CSSD and Surgical Procedures (Theory + Practical)	200	4
2	OTT242M402/ OTT242M412	Microbiology and Pathology (Theory + Practical)	200	4
3	OTT242M403	Obstetrics and Gynaecology	200	4
4	OTT242M404	Patient Assessment	200	3
5	OTT242M405	Cardiovascular Emergencies and Management	200	3
Ability Enhancement Compulsory Courses (AEC)				
6	CEN982A401	Communicative English IV	100	1
7	BHS982A402	Behavioural Science-IV	100	1
8	SWAYAM	MOOC Course		3
		TOTAL		**23**

5th Semester				
Sl.No.	**Subject Code**	**Names of subjects**	**Course Level**	**Credits**
Major Subjects				
1	OTT242M501/ OTT242M511	Specialized anesthesia and surgery(Theory+ Practical)	300	4
2	OTT242M502/ OTT242M512	Basic Life Support and Advance Cardiac Life Support (Theory+ Practical)	300	4
3	OTT242M503	Medical Emergencies	300	4
4	OTT242M504	Post Anesthesia Care	300	4
4	OTT242M525	Clinical Posting	300	4
		TOTAL		**20**

6th Semester				
Sl.No.	**Subject Code**	**Names of subjects**	**Course Level**	**Credits**
Major Subjects				
1	OTT242M601/ OTT242M611	Advance anesthetic techniques (Theory+ Practical)	300	4
2	OTT242M602/ OTT242M612	Emergency and Intensive Care Unit (Theory+ Practical)	300	4

3	OTT242M603	Biostatistics and Research Methodology	300	4
5	OTT242M604	Operation Theatre Technology-Advanced	300	4
6	OTT242M605	Airway management and Respiratory Emergencies	300	4
		TOTAL		**20**

7th Semester				
Sl.No.	**Subject Code**	**Names of subjects**	**Course Level**	**Credits**
1	OTT242M711	General Surgery Techniques and Procedures	400	4
2	OTT242M712	Applied Orthopaedic Surgery	400	4
3	OTT242M713	Advanced Gastrointestinal and Laparoscopic Surgery	400	4
4	OTT242M714	Applied Trauma and Emergency Surgery	400	4
5	OTT242M71**5**	Disaster Management and Ambulance Operations	400	4
		TOTAL		**20**

8th Semester				
Sl.No.	**Subject Code**	**Names of subjects**	**Course Level**	**Credits**
Major				
1	OTT242M811	Surgical Critical Care and Postoperative Management	400	6
2	OTT242M812	Medicine Relevant To Operation Theatre	400	6
3	OTT242M822	Major Project/Dissertation	400	12
		TOTAL		**24**

Bachelor of Operation Theater Technology

1st Semester

Subject Name: Anatomy-I (THEORY& PRACTICAL)
Course type: Major
Course Code: OTT242M101/ OTT242M111
Course Level: 100

L-T-P-C – 2-0-2-3 **Scheme of Evaluation: (T/P/TP)**

Objective: This course will provide students in-depth instruction in the organization, structures, and functions of the human body. Students will learn the anatomic terminology of each body system and how they interrelate to maintain homeostasis.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Understand** the gross structures of the systems and organs of the human body.	**BT 1**
CO2	**Communicate** information related to these systems through written and verbal format in order to assess current knowledge, answer investigative questions, and explore new questions for additional research.	**BT 2**
CO3	**Apply** concepts and knowledge of the general terminology, cell structure and function, histology, gross anatomy of several organs to clinical	**BT 3**
CO4	**Analyze** the correct location of bones of the human skeleton and the human organs which is necessary for describing and assessing their status.	**BT 4**

Detailed Syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	**Introduction:** • Definition of anatomy and its divisions, Terms of location, positions and planes. • Cell and its organelles, Tissues & its classification, Glands.	**10hours**
II.	**Musculoskeletal System:** • Structure of Bone & its types. • Joints- Classification of joints with examples; details of synovial joint. • Axial skeleton & appendicular skeleton • Bones of appendicular skeleton • Bones of axial skeleton • Locomotor system - bone , cartilage, ligaments and tendons	**10 hours**

	• Skull, spine & its movements, intervertebral disc. Muscles & its types.	
III.	**Gastro-Intestinal System:** • Parts of the GIT - mouth, pharynx, oesophagus, stomach • Abdominal cavity - divisions and regions • Liver • Pancreas • Spleen • Gall Bladder • Intestine (small and large)	**12hours**
IV.	**Cardiovascular System:** • Arteries & veins, Capillaries & arterioles. • Heart- size, location, chambers, blood supply of heart, pericardium. • Systemic & pulmonary circulation. • Major blood vessels of Heart. **Lymphatic System:** • Lymph and Lymph vessels. • Structure of lymph node, names of regional lymphatics, axillary and inguinal lymph nodes.	**12hours**
TOTAL		**44hours**

ANATOMY-I Practical
Detailed Syllabus

Modules	Topics (if applicable) & Course Contents	Periods
I.	• Introduction of the human body. • Organisation of tissues of the body. • Planes of the human body.	**7.5 hours**
II.	• Demonstration of all bones of the human body. • Cavities of the human body. • Body Movement terminology.	**7.5 hours**
III.	• Identification ofthe quadrants and regions of the body. • Arteries and Veins • Bone,muscles (Skeletal, smooth, cardiac)	**7.5 hours**
IV.	• Heart • Kidney • Liver • Stomach	**7.5 hours**
TOTAL		**30 hours**

Credit Distribution		
Theory/ Tutorial	**Practicum**	**Experiential Learning**
44 hours	30 hours	16 hours (Hospital visits, Demonstration, Case study)

Text Book:

1. Sembulingam, K., Sembulingam, P. (2012). Essentials of Medical Physiology, 6th Edition, New Delhi: Jaypee brothers medical publishers.
2. Wilson, J.W., Livingstone, K. C. (1987). Anatomy and Physiology in Health and Illness, 6th Revised Edition, New York: Churchill Livingstone.
3. Tandon, O.P., Tripathi, R. (2011). Best and Tailor's Physiological basis of Medical Practice, 13th Edition, USA: Williams & Wilkins

Reference Books:

1. Tandon, O.P., Tripathi, R. (2011). Best and Tailor's Physiological basis of Medical Practice. 13thEdition. USA: Williams & Wilkins
2. Arthur, C. Guyton., Hall, E. J. (2011). Text book of Medical Physiology. 12th Edition. USA: Elsevier's.
3. Chatterrje, C.C. (2017). Human Physiology. 11th Edition. Kolkata: Academic Publishers.

Subject Name: Physiology-I (Theory&Practical)
Course type: Major
Course Code: OTT242M102/ OTT242M112
Course Level: 100

L-T-P-C – 2-0-2-3 **Scheme of Evaluation: (T/P/TP)**

Objective: The objective of this course is to provide exposure to the students on cells, structural and functional units of living organisms, and their intricate organization. Moreover, they will learn the functions and vital processes of an organism/an organ /system of organs.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Relate** and understand deep insight into homeostatic mechanisms and the functions of the various organs and organ systems in humans. They will also be able to understand how physiological parameters are measured in humans and animal preparations including blood parameters.	**BT 1**
CO2	**Compare** the physiological aspects of normal growth and development.	**BT 2**
CO3	**Apply** physiologic knowledge to narrate the contribution of each organ system to the maintenance of homeostasis.	**BT 3**
CO4	**Utilize** scientific laboratory equipment in order to gather and **analyze** data on human anatomy and physiology.	**BT 4**

Detailed Syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	**Blood** • Red Blood Cells- functions, count, physiological and pathological variations. Erythropoisis-stages. • Hemoglobin-Functions, Physiological variations. • White Blood cells-Functions, count, morphology. • Platelets-count, morphology, functions. • Hemostasis-Definition, Mechanism, clotting factors. • Blood groups-ABO system, Rh system, Blood transfusion-Indication, transfusion reactions. • Anaemia-classification, effects of anaemia on body.	**10 hours**
II.	**Gastro- Intestinal System** • Physiological Anatomy, functions of GIT. • Salivary Gland-functions of saliva. • Stomach-structure and functions, Gastric secretions-composition, functions, Mechanism • Pancreas-structure, functions, composition of Pancreatic juice. • Liver-Functions of liver.	**14 hours**

	• Bile-Composition, functions. • Jaundice-Types and its causes. • Gall Bladder- Functions • Intestine-Movements of small and large intestine. • Digestion and Absorption of Carbohydrates, Protiens, Fats. • Hormones of GIT-Functions of Gastrin, Secretin.	
III.	**Cardiovascular System** • Heart-Physiological Anatomy, Nerve supply, Properties of cardiac muscle. • Cardiac Cycle-Events–systole, diastole. • Cardiac Output-Definition and factors affecting it.	**10hours**
IV.	**Excretory System** • Kidneys-structure of nephron, functions of kidney. • Glomerular filtration Rate(GFR) and factors affecting it. • Urine formation. • Renal function test.	**10hours**
TOTAL		**44hours**

PHYSIOLOGY-I Practical
Detailed Syllabus

Modules	Topics (if applicable) & Course Contents	Periods
I.	• Identification of laboratory apparatus. • Study of compound microscope.	**7.5hrs**
II.	• Determination of blood haemoglobin level.	**7.5hrs**
III.	• Determination of bleeding time.	**7.5hrs**
IV.	• Determination of clotting time. • Blood smear preparation staining and differential leukocyte count.	**7.5hrs**
TOTAL		**30 hrs**

Credit Distribution		
Theory/ Tutorial	**Practicum**	**Experiential Learning**
44 hours	30 hours	16 hours (Hospital visits, Demonstration, Case study)

Text Book:

1. Sembulingam, K., Sembulingam, P. (2012). Essentials of Medical Physiology, 6th Edition, New Delhi: Jaypee brothers medical publishers.
2. Wilson, J.W., Livingstone, K. C. (1987). Anatomy and Physiology in Health and Illness, 6th Revised Edition, New York: Churchill Livingstone.

Reference Books:

1. Tandon, O.P., Tripathi, R. (2011). Best and Tailor's Physiological basis of Medical Practice. 13th Edition. USA: Williams & Wilkins
2. Arthur, C. Guyton., Hall, E. J. (2011). Text book of Medical Physiology. 12th Edition. USA: Elsevier's.
3. Chatterjee, C. C. (2017). Human Physiology 11th Edition. Kolkata: Academic Publishers.

Subject Name: Hospital Duty and Patient Care (THEORY)
Course type: Major
Course Code: OTT242M103
Course Level: 100

L-T-P-C – 3-0-0-3 **Scheme of Evaluation: (T/P/TP)**

Objective: This syllabus has been formulated to impart knowledge on assessment, identification and management of patients suffering from common conditions and the drugs commonly administered. It also emphasized on the sterilization techniques and its importance.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**List** and identify, assess, manage life threatening conditions in or out hospital.	**BT 1**
CO2	**Outline** the different most commolife threatening conditions perceived during pre- operative assessment and assemble a management plan.	**BT 2**
CO3	**Apply** knowledge of sterilization and its essentials in the Operation Theatre and the hospital.	**BT 3**
CO4	**Categorize** certain drugs and their uses for medical purposes.	**BT 4**

Detailed Syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	**Hospitals:** • Introduction, Functions of Hospitals. • Classification of Hospitals. • Organization of Hospitals. • Department of Hospitals. • Management of Hospitals. • Different services in a Hospital. **Records and Reports:** • Definition, Different types of records. • Values & Objectives. • Maintenance of records. • Principle of good record writing. • Difference of records & reports.	**16 hours**
II.	**First Aid:** • Introduction, Aims & objectives of first aid. • Priorities of first aid. • Golden rules of first aid. • Qualities & responsibilities of first aider.	**18 hours**

	• Simple first aid measures in selected conditions like – Food poisoning, Snake bite, Scorpion bite, Dog bite, Foreign bodies in various organs, • Burns & scalds. **Hygiene:** • Personal Hygiene. • Maintenance of Hygiene. • Maintaining therapeutic environment. **Vital Signs of Patients:** • Blood Pressure • Temperature • Pulse • Respiration	
III.	**Hyperglycemia:** • Definition, Clinical features, Diabetes laboratory tests for diabetes. **Hypoglycemia:** • Definition, Etiology & Clinical Features, Investigations for hypoglycemia. **Hemorrhage:** • Internal haemorrhage. • External haemorrhage. **Shock:** • Definition. • Types of shock. • Management of shock. **Poisoning:** • Definition, Causes of poisoning, Sources of Poisoning, Symptoms of poisoning, First aid & Management, Antidotes, Common drugs poisoning, Carbon monoxide poisoning**.**	**14 hours**
IV.	**Drugs:** • Definition, Names & classification of drugs, Different preparations of drugs, Effects of drugs, Adverse effects of drugs, Tolerance, Abuse, addiction of drugs, Different routes of drug administration, Storing of medicine, Units of standard measurement**.** **Sterilization techniques:** • Definition, types, methods, CSSD, Nosocomial infection, Infection control in the Operation Theatre.	**12 hours**

	Safety in the laboratory: Common laboratory accidents, physical injuries, electrical shock, chemical injury, bleeding, burn, eye accidents**,** biological hazards.	
TOTAL		**60hours**

Credit Distribution		
Theory/ Tutorial	**Practicum**	**Experiential Learning**
60 hours	-	30 hours (Hospital visit, Home assignments, project, seminar)

Text Book:

1. Patient Care Management, A.K. Mohiuddin, Red Flower Publication Pvt. Ltd.
2.Fundamnetals of Hospital Practice and Patient Care, VyakarnamNageshwar,Paras Medical Books Put. Ltd.
3. Manual of First Aid- Management of General Injuries, Sports Injuries and Common Ailments, L.C.Gupta and Abhitabh Gupta, Jaypee.

Reference Books:

1. Hospital supporting services and system, Dr. M.A. Goerge, Daya Publishers.
2. Manual of First Aid, L.C. Gupta and Abhitabh Gupta, Jaypee Publication.

Subject Name: Biochemistry
Course type: SEC
Course Code: OTT242S101
Course Level: 100

L-T-P-C – 3-0-0-3 **Scheme of Evaluation: (T/P/TP)**

Objective: This course is designed to introduce the organic structure of living systems mainly dealing with biomolecules like carbohydrates, proteins, lipids, and nucleic acids laying the foundation for other advanced courses like physiology, cell biology, molecular biology, and immunology.The scope of the subject is providing biochemical facts and the principles to understand metabolism of nutrient molecules in physiological and pathological conditions.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Define** the role of biomolecules and their functions.	**BT 1**
CO2	**Understand** the integration of the various aspects of metabolism, and their regulatory pathways.	**BT 2**
CO3	**Identify** the synthesis of proteins, lipids, nucleic acids, and carbohydrates and their role in metabolic pathways along with their regulation at the epigenetic, transcriptional, translational, and post-translational levels including RNA and protein folding, modification, and degradation.	**BT 3**
CO4	**Analyze** structural-functional relationships of genes and proteins.	**BT 4**

Detailed Syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	**Carbohydrates:** • Definition and classification of carbohydrates. • Common carbohydrates (Glucose, Fructose, Starch, Glycogen, Starch) and their sources. • Biological significance of Carbohydrate. • Properties of carbohydrates.	**6 hours**
II.	**Lipids:** • Definition and classification of lipids. • Classification of Fatty Acids • Examples and functions of some common lipids (Phospholipids, Glycolipids, Steroid).	**6 hours**

III.	**Nucleic Acids:** • Basic idea of the structure of DNA and RNA • Function of DNA and RNA. • Types of RNA and DNA. • Chargaff's Rule.	**6 hours**
IV.	**Proteins:** • Definition of Proteins along with the Biological significance. • Amino acids and its classification. • Essential and Non-essential amino acids. **Acid-Base Buffers**: • Basic idea of acids, bases, pH, buffer, Acid base balance. **Enzymes** : • Definition and classification of enzyme. • Basic idea of co-enzyme, iso- enzyme. • Mechanism of enzyme Action, Factors affecting enzyme action.	**12 hours**
Total		**44hours**

Credit Distribution		
Theory/ Tutorial	**Practicum**	**Experiential Learning**
60 hours	-	30 hours (Hospital visit, Home assignments, project, seminar)

Text Book:

1. Nelson, D.L., Cox, M.M. (2017). Lehninger Principles of Biochemistry, 7th Edition; WH Freeman publishers.
2. Robert, K., Murry, Daryl., Granner, K., Victor, W.R. (2015). Harper's Biochemistry, 30th Edition, New Delhi: McGraw-Hill Education / Medical publishers.

Reference Book:

1.Rajagopal, G. & Tura, B.D. (2005). Practical Biochemistry for Medical students. 2nd Edition. Ahuja Publishing House.
2. Harold, Varley. (2005). Practical Biochemistry. 4th Edition. CBS publishers and distributors.

Bachelor of Operation Theater Technology

2nd Semester

Subject Name: Anatomy- II (THEORY+ PRACTICAL)
Course type: Major
Course Code: OTT242M103/ OTT242M113
Course Level: 100

L-T-P-C – 2-0-2-3 **Scheme of Evaluation: (T/P/TP)**

Objective: This course will provide students in-depth instruction in the organization, structures, and functions of the human body. Students will learn the anatomic terminology of each body system and how they interrelate to maintain homeostasis.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Recall** the gross structures of the systems and organs of the human body.	**BT 1**
CO2	**Illustrate** the information related to these systems through written and verbal format in order to assess current knowledge, answer investigative questions, and explore new questions for additional research.	**BT 2**
CO3	**Apply** concepts and knowledge of the general terminology, cell structure and function, histology, gross anatomy of several organs to clinical scenarios.	**BT 3**
CO4	**Analyze** and identify the correct location of bones of the human skeleton and the human organs which is necessary for describing and assessing their status.	**BT 4**

Detailed Syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	**Respiratory System:** • Parts of Respiratory system • Structure of nose, nasal cavity, larynx, trachea, lungs, pleural, broncho pulmonary segments. **Urinary System:** • Parts of Urinary system, location and gross structure of kidney, ureter, urinary bladder, urethra.	**11hours**
II.	**Endocrine glands:** • Name of all endocrine glands, gross structure & functions of pituitary gland, adrenal gland, thyroid gland and parathyroid gland. **Reproductive System:**	**11 hours**

	• Parts of male reproductive system, gross structure of testis, vas deferens, epididymis, prostate. • Parts of female reproductive system, gross structure of uterus, ovary, fallopian tube, mammary gland.	
III.	**Nervous System:** • Neuron, classification of NS. • Meninges, ventricles, CSF. • Gross features of cerebrum, midbrain, pons, medulla oblongata, cerebellum, name of basal nuclei. • Blood supply of brain, cranial nerves. • Spinal cord and spinal nerves. • Autonomic nervous system. • Visual & auditory pathways	**11hours**
IV.	**Sensory Organs:** • Skin & its appendages. • Structure of eye & lacrimal apparatus, name of extra ocular muscles. • Structure of ear: external, middle & inner ear.	**11 hours**
TOTAL		**44hours**

ANATOMY-II Practical
Detailed Syllabus

Modules	Topics (if applicable) & Course Contents	Periods
I.	• Identification of clavicle. • Identification of scapula.	**7.5 hours**
II.	• Identification of the Humerus. • Identification of the Radius. • Identification of Ulna.	**7.5 hours**
III.	• Identification of the femur. • Identification of the tibia. • Identification of the fibula	**7.5 hours**
IV.	• Identification of the bones of the skull • Identification of the vertebral column.	**7.5 hours**
TOTAL		**30 hours**

Credit Distribution		
Theory/ Tutorial	**Practicum**	**Experiential Learning**
44 hours	30 hours	16 hours (Hospital visits, Demonstration, Case study)

Text Book:

1. Sembulingam, K., Sembulingam, P. (2012). Essentials of Medical Physiology, 6th Edition, New Delhi: Jaypee brothers medical publishers.
2. Wilson, J.W., Livingstone, K. C. (1987). Anatomy and Physiology in Health and Illness, 6th Revised Edition, New York: Churchill Livingstone.
3. Tandon, O.P., Tripathi, R. (2011). Best and Tailor's Physiological basis of Medical Practice, 13th Edition, USA: Williams & Wilkins.

Reference Books:

1. Tandon, O.P., Tripathi, R. (2011). Best and Tailor's Physiological basis of Medical Practice. 13thEdition. USA: Williams & Wilkins

2. Arthur, C. Guyton., Hall, E. J. (2011). Text book of Medical Physiology. 12th Edition. USA: Elsevier's.
3. Chatterrje, C.C. (2017). Human Physiology. 11th Edition. Kolkata: Academic Publishers.

Subject Name: Physiology- II (THEORY& PRACTICAL)
Course type: Major
Course Code: OTT242M104/ OTT242M114
Course Level: 100

L-T-P-C – 2-0-2-4 **Scheme of Evaluation: (T/P/TP)**

Objective: The objective of this course is to provide exposure to the students on cells, structural and functional units of living organisms, and their intricate organization. Moreover, they will learn the functions and vital processes of an organism/an organ /system of organs.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Relate** and understand deep insight into homeostatic mechanisms and the functions of the various organs and organ systems in humans. They will also be able to understand how physiological parameters are measured in humans and animal preparations including blood parameters.	**BT 1**
CO2	**Compare** the physiological aspects of normal growth and development.	**BT 2**
CO3	**Apply** physiologic knowledge to narrate the contribution of each organ system to the maintenance of homeostasis.	**BT 3**
CO4	**Utilize** scientific laboratory equipment in order to gather and **analyze** data on human anatomy and physiology.	**BT 4**

Detailed Syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	**Respiratory System:** • General organization. • Mechanics of respiration. • Regulation of respiration. • Gaseous exchange in lungs and tissues. • Pulmonary ventilation, volumes and capacities. • Effects of exercise on respiration, hypoxia.	**10 hours**
II.	**CentralNervousSystem** • Structure of neuron, functions of nervous system. • Classification and properties of nerve fibres • Synapse- structure and types • Receptors-Definition, classification, properties, Reflex Arc • Ascending and Descending tracts- names and functions • Functions of Hypothalamus • Functions of Cerebellum and Basal Ganglia	**12hours**

	• Functions of Cerebral Cortex • Autonomic Nervous System- Actions of sympathetic and parasympathetic system and their comparison. • Special Senses-Eye-structure, functions of different parts, Visual acuity, Reflective errors. • Ear-structure, functions, General mechanism of hearing.	
III.	**Endocrine System** • Classification of Endocrine glands and their hormones. • Structure and hormones of endocrine glands, pituitary, thyroid, parathyroid, pancreas, adrenal, testes and ovary. • Functions and gulaion of secretion of hormones.	**12 hours**
IV.	**Reproductive System** • Male Reproductive System-Stages of spermatogenesis, function of Testosterone • Female Reproductive System-Ovulation, menstrual cycle, functions of estrogen and progesterone	**10 hours**
TOTAL		**44hours**

PHYSIOLOGY-II (Practical)
Detailed Syllabus

Modules	Topics (if applicable) & Course Contents	Periods
I.	Determination of Erythrocyte Sedimentation Rate.	**6 hours**
II.	Determination of Platelet count.	**6 hours**
III.	Qualitative test for ABO grouping.	**6 hours**
IV.	Differential Leukocytes count.	**6 hours**
V.	Determination of Haematocrit.	**6 hours**
VI.	Total Erythrocyte count using a Hemacytometer.	**6 hours**
TOTAL		**30 hrs**

Credit Distribution		
Theory/ Tutorial	**Practicum**	**Experiential Learning**
44 hours	30	16 hours (Hospital visits, Demonstration, Case study)

Text Book:

1. Sembulingam, K., Sembulingam, P. (2012). Essentials of Medical Physiology, 6th Edition, New Delhi: Jaypee brothers medical publishers.
2. Wilson, J.W., Livingstone, K. C. (1987). Anatomy and Physiology in Health and Illness, 6th Revised Edition, New York: Churchill Livingstone.

Reference Books:

1. Tandon, O.P., Tripathi, R. (2011). Best and Tailor's Physiological basis of Medical Practice. 13thEdition. USA: Williams & Wilkins

2. Arthur, C. Guyton., Hall, E. J. (2011). Text book of Medical Physiology. 12th Edition. USA: Elsevier's.

3.Chatterrje, C.C. (2017). Human Physiology. 11th Edition. Kolkata: Academic Publishers.

Subject Name: Introduction to Operation Theatre
Course type: Major
Course Code: OTT242M203
Course Level: 100

L-T-P-C – 3-0-0-3 **Scheme of Evaluation: (T/P/TP)**

Objective: After completion of the course the students will assist the doctors in Operation Theatres and be an integral part of the care delivery system.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Define** and understand the complexities of Operation Theatre Technology.	**BT 1**
CO2	**Demonstrate** cognitive skills to handle emergencies and patient breakdowns during complex procedures.	**BT 2**
CO3	**Identify** and have efficiency in handling different types of equipment.	**BT 3**
CO4	**Analyze** and take part in maintaining the OT and patient preparation.	**BT 4**

Detailed Syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	**C.S.S.D and logistics:** Cleaning and dusting – methods of cleaning, General care and testing of instruments-forceps haemostatic, needle, holders, Knife, blade, scissor, use/ abuse, care during surgery, Disinfectants and there instruments and Sterilization-Definition, Methods cleaning agents detergents, Mechanical washing, ultrasonic cleaner, lubrication inspection and pitfalls, Various methods of chemical treatment-formalin, glutraldehyde etc. Thermal. Hot air oven- dry heat, Autoclaving, steam Sterilization water etc. UV treatment. Instrument's Etching, care of micro surgical and titanium instruments, Sterilization of equipments – Arthroscope, Gastroscope, imago Lamp, Suction Apparatus, Anesthetic equipments, endotracheal tubes, OT Sterilization including laminar Air flow, Troubleshooting – colored spots and corrosion, staining, dust deposit, Recent amendment in EPA with reference to waste disposal.	**6 hours**
II.	**Layout of the OT** **Anesthesia Service:** History, pre-operative, Intra operative &post operative care.	**6 hours**

III.	**O. T. Techniques:** OT environment, control of infection scrubbing, theater clothes including lead apron and goggles. Care, maintenance and operational capabilities of beds, lights and other apparatus.	**6 hours**
IV.	**Blood transfusion:** Collection of blood, its preservation and standardization, Various types of blood and blood products(Packed cells, PRP, FFP) , Pre-transfusion checks, Transfusion reactions.	**6 hours**
TOTAL		**60hours**

Credit Distribution		
Theory/ Tutorial	**Practicum**	**Experiential Learning**
60 hours	-	30 hours (Hospital visits, Demonstration, Case study)

Text Book(s):

1. Berry, Edna carnelia and Mary Louise Kohn - *Introduction to Operating Room technique, 4th edition,* Blukiston Publication
2. Manual of Anaesthesia for Operation theatre Technician, Pillai Ahanatha, Jaypee publishers
3. Fundamentals of operation theatre services, Datta,2nd edition, Jaypee publishers

Reference Book(s):

1. Operation theatre techniques and Management , MP Sharma, AITBS publishers
2. Short book of Anesthesia, Ajay Yadav, 6th edition, Jaypee Publishers
3. Textbook for operation theatre technician, Neelam Rai, Arpit Ravindra Lal, Jaypee publishers.

Subject Name: Basics of Surgical Instrumentation and OT Equipments(Theory & Practical)
Course type: SEC
Course Code: OTT242S201/ OTT242S211
Course Level: 100

L-T-P-C – 2-0-2-3 **Scheme of Evaluation: (T/P/TP)**

Objective: The student will be able prepare instrumentsand supplies necessary for the continual function of the operating room and multifunction disciplines in the hospital and specialty settings.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Define** basic categories of surgical instruments based upon their functions	**BT 1**
CO2	**Demonstrate** proper care, handling techniques, and safety precautions of *surgical instruments*	**BT 2**
CO3	**Identify** the various surgical instruments and instrument sets and why they are selected for specific surgical procedures	**BT 3**
CO4	**Examine** the instruments' lubrication, and review tray assembly safeguards.	**BT 4**

Detailed Syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	**Introduction to surgical instruments** • History • Fabrication of instruments • Care and handling of instruments • Parts of an instruments • Instrument categorization • Basic Instrument set **Basic Instruments** • Accessory instruments • General Instruments	**11 hours**
II.	**Laparoscopic instruments** • Move to viewing • Probing and dilating instruments • Obstetrics and gynecologic instruments • Genitourinary instruments • Ophthalmic instruments	**11 hours**
III.	• Cardiovascular and thoracic instruments • Neurological instruments • Orthopedic instruments.	**11 hours**

IV.	• Surgical set-up • Case preparation • Preparation to set up the sterile file	**11 hours**
TOTAL		**44 hours**

Basics of Surgical Instrumentation and OT Equipments (Practical)

Detailed Syllabus

Modules	Topics (if applicable) & Course Contents	Periods
I.	• Demonstration of job description of various members of Surgical team. • Technique of using Pneumatic Tourniquet. • Technique of insertion of Urinary Catheter • Skin preparation	**7.5 hours**
II.	• Technique of Insertion of IV Cannula. • Technique of insertion of Ryle's Tube. • Drapes and draping	**7.5 hours**
III.	• Demonstration of Transportation of Patient. • Technique of Blood Transfusion & Collection. • Patient Positioning demonstration.	**7.5 hours**
IV	• Insertion & removal technique of Drains. • Techniques of Suturing. • Preoperative preparation of the patient	**7.5 hours**
TOTAL		**30hr**

Credit Distribution		
Theory/ Tutorial	**Practicum**	**Experiential Learning**
44	30	16 hours (Hospital visits, Demonstration, Case study)

Text Book:

1. Goyal R. C. (1993). Handbook of Hospital Personal Management, Prentice Hall of India, New Delhi, 17–41. Ministry of Health and Family Welfare (1984). National Health Policy, Annual Report (1983–4), Government of India, New Delhi.
2. Surgical Instrumentation, Renee Nemitz.
3. Operation theatre techniques and Management, MP Sharma, AITBS publishers

3rd Semester

Subject Name: Principles of Anaesthesia (Theory+ Practical)
Course Code: OTT242M301/ OTT242M311
Course Type: Major
Course Level: 200
L-T-P-C – 2-0-4-4 Scheme of Evaluation: (T/P/TP)

Objective: This syllabus is been formulated to develop confidence and maximize skills in anaesthesia work station.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Name** the different component of the anaesthesia machine.	**BT 1**
CO2	**Demonstrate** the working mechanism of the anaesthesia machine and drugs.	**BT 2**
CO3	**Organize** the equipments and devices used in anaesthesia station.	**BT 3**
CO4	**Inspect** the different devices and equipments before and after use and maintenance of the devices.	**BT 4**

Detailed Syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	**Anaesthesia Machine:** • Basic Boyles Machine and its functions. • Modern anesthesia machine: Parts and safety features • Hanger and Yoke system, Pin index • Pressure regulator , Pressure gauge • Flowmeters, Vaporisers, scavenging system, ether bottle, Flow meter assembly. • Vaporizers-Types, Hazards, maintenance, Filling and Draining **Breathing System:** • Classification of breathing system • Open, Semi closed and Closed Circuits • Mapleson breathing systems • Jackson and Rees system-Bain's circuit Closed circuit: Components, advantages, disadvantages	**10 hours**

II.	**Anesthesia Equipment Maintenance:** • Method of cleaning and disinfection of anesthetic equipments. • Handling and maintenance of various equipments used in OT • Setting of alarm limits in monitors and ventilators Electrical faults, earthing	**10 hours**
III.	**Monitors and Gas Analyzers:** • Pulse oxymeter / Plethysmograph • EtCO2 Monitor / Capnograph • NIBP, IBP, Temperature, ECG • FiO2 • Transcutaneous oxygen monitor • Inhalational agentsanalyser, BIS, Nerve stimulator • Resuscitation Techniques in OT	**12 hours**
IV.	**Artificial Airways:** • Parts of airway (nasal/oral) : • Types, Sizes, insertion techniques, indications for use • Face mask- Types, sizes and its uses. • Supraglottic Airway devices : LMAs – Types, sizes, method of insertion • Endotracheal tubes: Types, sizes, parts • Double lumen tubes, Bronchial blockers, Laryngeal tubes **Minimum Standards of Anaesthesia** • Pre-anaesthesia check list -Drugs and equipments to be kept ready before anaesthesia • Pre operative preparation of patient, Drugs and doses for Premedication • Management of pre operative room and PACU • Transportation Techniques of patient in conscious, semi conscious and unconscious patient to and from operation theatre	**12 hours**
TOTAL		**44hours**

Principles of AnaesthesiaPractical
Detailed Syllabus

Modules	Topics (if applicable) & Course Contents	Periods
I.	• Functioning of Anaesthesia Machine, Safety Mechanism of Anaesthesia machine. • Pressor gauge and Pressor Regulater, vapourisers	**7.5 hours**

II.	• Semi – Closed, closed circuits. • Cleaning and Maintenance of Anaesthesia Equipments	**7.5 hours**
III.	• Capnography, Plathysmography, Gas Analysers • Maintenance of Airway, CPR Technique, Defibrillation, AMBU Bag	**7.5 hours**
IV.	• Oropharyngeal and nasopharyngeal airways, face masks-types and sizes • Pre anaesthesia checklist	**7.5 hours**
TOTAL		**30 hours**

Text Book:

1. Sembulingam, K., Sembulingam, P. (2012). Essentials of Medical Physiology, 6th Edition, New Delhi: Jaypee brothers medical publishers.
2. Wilson, J.W., Livingstone, K. C. (1987). Anatomy and Physiology in Health and Illness, 6th Revised Edition, New York: Churchill Livingstone.
3. Tandon, O.P., Tripathi, R. (2011). Best and Tailor's Physiological basis of Medical Practice, 13th Edition, USA: Williams & Wilkins

Credit Distribution		
Theory/ Tutorial	**Practicum**	**Experiential Learning**
44 hours	30 hours	16 hours (Hospital visits, Demonstration, Case study)

Reference Books:

1. Tandon, O.P., Tripathi, R. (2011). Best and Tailor's Physiological basis of Medical Practice. 13thEdition. USA: Williams & Wilkins
2. Arthur, C. Guyton., Hall, E. J. (2011). Text book of Medical Physiology. 12th Edition. USA: Elsevier's.
3. Chatterrje, C.C. (2017). Human Physiology. 11th Edition. Kolkata: Academic Publishers.

Subject Name: Basics of OT and Surgical Procedures (Theory & Practical)
Course type: Major
Course Code: OTT242M302/ OTT242M312
Course Level: 200

L-T-P-C – 2-0-4-4 **Scheme of Evaluation: (T/P/TP)**

Objective: The syllabus is formulated to make the students familiar with blood and its derivatives, keeping blood and its products safe, and paying attention to patients during blood infusion and its possible side effects. Students will learn about certain coexisting diseases, necessary preparations in the event of possible complications, anesthesia techniques in diversity of surgeries and gaining the required skills and ability to take care of the patients in different stages of general and local anesthesia.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Define** the different surgical procedures performed in the OT.	**BT 1**
CO2	**Discuss** the preparation and working of different equipments used in the OT and Healthcare.	**BT 2**
CO3	**Interpret** any underlying conditions that can abrupt the surgery.	**BT 3**
CO4	**Examine** the working of surgical instruments before, during and after surgery.	**BT 4**

Detailed Syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	**C.S.S.D and logistics:** Cleaning and dusting – methods of cleaning, Packing and General care and testing of Surgical Instruments. Mechanical washing, ultrasonic cleaner, Etching, lubrication, inspection and pitfalls. **Sterilization and Disinfection:** -Definition, Methods, Physical Sterilization, Chemical Sterilization and Gaseous Sterilization. **Autoclave, Hot air oven, EO Sterilizer:** Structure, Working and Maintenance. **Biomedical Waste Management;** Collection, Segregation, Storage, Transportation and Disposal. Universal standard Precautions. Infection Control and patient safety in Hospitals. Layout of the OT, OT Environment, Gowning and Gloving.	**10 hours**

II.	**Equipment used in OT:** • **Operating tables:** structure, material used, maintenance, control, Hydraulic system and Electrical system. • **Diathermy Machine;** Different types of diathermy machine. Monopolar, Bipolar, • **Harmonic Scalpel**, Principle, hazards, prevention, functioning and maintenance. • **Operation Theatre lights and light sources:** Features, Care, cleaning, sterilization and maintenance. • **Suction Apparatus;** Structure, Working, Uses and Maintenance.	**14 hours**
III.	**Blood Bank and IV Fluids** • Collection of blood, its preservation, Storage and Transfusion. • Various types of blood and blood products(Whole Blood,Packed cells, FFP, Cryoprecipitates) • Pre-transfusion checks and Transfusion reactions. • IV Fluids (Crystalloids and Colloids)	**10 hours**
IV.	**Principles of surgery and Surgical Procedures** • Positioning of patient; Care, Prevention and indications. • General Principles of surgery, Preparation of patient for Surgery. • Surgical Safety Checklist • Various Surgical Procedures; Thyroidectomy, Appendectomy, Cholecystectomy, Nephrectomy, Mastectomy, CABG, Gastrectomy, Haemerroidectomy, TKR and THR. • Minimally Invasive Surgery (Laparoscopic Surgery), Instruments used for laparoscopy and their sterilization. • Drains and its types	**10 hours**
TOTAL		**44hours**

Basics of OT and Surgical ProceduresPractical
Detailed Syllabus

Modules	Topics (if applicable) & Course Contents	Periods
I.	• Operation Theatre sterilization, Methods and recent advancements. • Fumigation	**5hrs**
II.	• Preparation of the patient for Surgery • Patient positioning during surgery	**7.5hrs**
III.	• Electrocautery- Preparation, types, working mechanism and usage. • C-ARM- Working, uses in surgery and risks associated with it.	**7.5hrs**
IV.	• Monitoring during Surgery. • Tourinquet, Infusion Pump.	**10hrs**
TOTAL		**30 hrs**

Credit Distribution		
Theory/ Tutorial	**Practicum**	**Experiential Learning**
44 hours	30 hours	16 hours (Hospital visits, Demonstration, Case study)

Text Book:

1. Sembulingam, K., Sembulingam, P. (2012). Essentials of Medical Physiology, 6th Edition, New Delhi: Jaypee brothers medical publishers.

2. Wilson, J.W., Livingstone, K. C. (1987). Anatomy and Physiology in Health and Illness, 6th Revised Edition, New York: Churchill Livingstone.

Reference Books:

1. Tandon, O.P., Tripathi, R. (2011). Best and Tailor's Physiological basis of Medical Practice. 13th Edition. USA: Williams & Wilkins

2. Arthur, C. Guyton., Hall, E. J. (2011). Text book of Medical Physiology. 12th Edition. USA: Elsevier's.

3. Chatterjee, C. C. (2017). Human Physiology 11th Edition. Kolkata: Academic Publishers.

Subject Name: Techniques of Anesthesia (THEORY)
Course type: Major
Course Code: OTT242M303
Course Level: 200

L-T-P-C – 3-1-0-4 **Scheme of Evaluation: (T/P/TP)**

Objective: The learning objectives are designed to provide a thorough grasp of the significance of preoperative assessment and patient preparation in assessing Anaesthesia risks and planning appropriate care. The design, components, and performance of the anaesthesia machine, safety systems, fluid management strategies, emergency drugs, anaesthetic induction and airway management procedures, and airway devices are all covered in this course. It also discusses the principles of balanced anaesthesia, the administration of inhalation and intravenous anaesthetics, vital sign monitoring techniques, depth of anaesthesia, and oxygenation.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**List** the different equipments use for patient assessment in anaesthesia.	**BT 1**
CO2	**Compare** normal and abnormal rhythm of the hear.	**BT 2**
CO3	**Identify** any underlying conditions that can abrupt the surgery.	**BT 3**
CO4	**Examine** the different equipments before aanesthesia administration and surgery.	**BT 4**

Detailed Syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	• Preoperative assessment and patient preparation: Understanding the importance of preoperative evaluations, patient history, and physical examinations to assess Anaesthesia risks and plan appropriate care. • Perioperative Fluid Management: Strategies and Considerations. (Crystalloids and Colloids). • Perioperative Emergency Medications: Indications, Administration, and Management.	**16 hours**
II.	• Anaesthesia Machine: Design, Components, and Functionality. • Safety systems in Anaesthesia machine. Flow systems, CO2 Absorbents, Circuit types, Humidification devices.	**18 hours**
III.	• Anaesthetic induction and airway management: Learning about various induction techniques, airway devices, and strategies for maintaining a patent airway during surgery.	**14 hours**

IV.	• Maintenance of Anaesthesia and monitoring: Understanding the principles of balanced Anaesthesia, administration of inhalation and intravenous anaesthetics, and monitoring techniques for vital signs, depth of Anaesthesia, and oxygenation	**12 hours**
TOTAL		**60 hours**

Credit Distribution		
Theory/ Tutorial	**Practicum**	**Experiential Learning**
90 NCH	-	30NCH (Hospital visit, Home assignments, project, seminar)

Text Books:

1. Clinical Anesthesia by Barash.

2. Morgan & Mikhail's Anesthesiology Cases.

3. Manual of Anesthesia for Undergraduates by Satish G. Deshpande

Reference books:

1. The Anesthesia Technician and Technologist's Manual by Syed Arslan.

2. Drugs in Anaesthesiology – JAYPEE

Subject Name: Pharmacology
Course type: SEC
Course Code: OTT242S301
Course Level: 200

L-T-P-C – 2-1-0-3 **Scheme of Evaluation: (T/P/TP)**

Objective: The prime concern of this syllabus is to integrate basic knowledge and understanding of the elements of pharmacology as well as rational use of drugs, its report to clinical applications, side effects and toxicities of drugs used in medicine and to translate pharmacological principles into clinical decision-making.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**List** the different drugs and identify the pharmacological actions of different categories of drugs.	**BT 1**
CO2	**Understand** the pharmacological actions of different categories of drugs.	**BT 2**
CO3	**Apply**pharmacological actions of different categories of drugs.	**BT 3**
CO4	**Analyze** basic pharmacological knowledge in the prevention and treatment of various diseases.	**BT 4**

Detailed Syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	**Introduction:** • Definitions, Sources, Common Terminologies used, Types / Classification , Pharmacodynamics: Actions, Therapeutics, Adverse Effect, Toxic Effect , Pharmacokinetics: Absorption, Distribution, Metabolism, Interaction, Excretion , Review: Routes and principles of administration of drugs , Indian Pharmacopoeia(IP): Legal issues , Rational use of drugs.	**6 hours**
II.	**Autonomic Nervous system:** • General Considerations, The sympathetic and parasympathetic system and Receptors, Somatic nervous system, Cholinergic and Anti – Cholinergic drugs, Adrenergic and Adrenergic blocking drugs,Skeletal muscle relaxants.	**6 hours**
III.	**Neuropharmacology:** • Sedative-Hypnotic Drugs: Barbiturates, Benzodiazepines, Antianxiety Drugs: Benzodiazepines, Other Anxiolytics, Antiepileptic drugs, Narcotic analgesics.	**6 hours**

IV.	**Cardiovascular Pharmacology:** Drugs used in the treatment of Heart Failure(Digitalis, Diuretics, Vasodilators), ACE inhibitors Antihypertensive drugs, Beta blockers, Calcium channel Blockers, Central acting Alpha agonists, Peripheral Alpha antagonists, Direct acting vasodilators, Drugs used in the treatment of vascular disease and tissue ischemia, Vascular diseases, Lipid lowering Agents, Antithrombotic, Anticoagulants and Thrombolytics,Ischemic Heart Disease – Nitrates, Beta Blockers, Calcium channel blockers.	**12 hours**
Total		**60 hours**

Credit Distribution		
Theory/ Tutorial	**Practicum**	**Experiential Learning**
60 hours	-	30 hours (Hospital visit, Home assignments, project, seminar)

Text Books:

1. Essentials of Medical Pharmacology: K D Tripathy,8th edition, Jaypee publishers.

2. Textbook of Pharmacology: S D Seth, 3rd edition, Elsevier

Reference books:

1. Basic and Clinical Pharmacology, Katzung and Bertram, 14th edition, Mcgraw Hill Publisher.

2. Pharmacology for undergraduates, Agarwal SL, 3rd edition, CBS publisher.

4th semester

Subject Name: CSSD and Surgical Procedures (THEORY+PRACTICAL)
Course Code: OTT242M401/OTT242M411
Course Type: Major
L-T-P-C – 3-0-2-4 **Scheme of Evaluation: (T/P/TP)**

Objective: The aim of this course is to equip students with the knowledge and skills required for the proper sterilization, storage, and distribution of surgical instruments through CSSD practices, and to assist in and perform safe, efficient surgical procedures while adhering to aseptic techniques and infection control protocols.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Define** the basic concepts of sterilization, disinfection, and the role of CSSD in maintaining surgical asepsis.	**BT 1**
CO2	**Illustrate** the workflow of a typical surgical procedure, including preoperative, intraoperative, and postoperative protocols.	**BT 2**
CO3	**Demonstrate** the preparation of the operating room, patient draping, and assisting surgeons during surgical procedures.	**BT 3**
CO4	**Evaluate** the effectiveness of aseptic practices and identify potential risks in surgical procedures to mitigate infection and ensure patient safety.	**BT 4**

Detailed syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	**Sterilization and Disinfection** • Principles of sterilization and disinfection • Role of CSSD in Healthcare • Central Pipeline System **Methods of sterilization**: • Dry Sterilization. • Moist sterilization. • Gaseous sterilization. • Chemical sterilization. • Sterilization by radiation (Gamma rays, ultraviolet rays) • New methods of Sterilization	**11 hours**

II.	**Pre-Operative Phase** • Preoperative Patient preparation • Preoperative fasting guidelines • Premedication • Preoperative Investigations • Surgical Safety Checklist **Intraoperative Phase** • Principles of asepsis • Handling and Passing instruments • Classification of Surgical Instruments **Postoperative Phase** • PACU • Wound care and Management • Pain Management • Discharge criteria • Documentation	**11 hours**
III.	• Instruments used for making Incision. • Excision of subcutaneous lipoma, I and D, Muscle Biopsy. • Cholecystectomy • Pancreaticoduedenectomy (Whipple Procedure) • Hepatic Resection • Gastrectomy • Appendectomy	**11 hours**
IV.	• Transuretheral Resection of Prostate (TURP) • Anal Fistulotomy and Fissurectomy • Open Reduction and Internal Fixation • Total knee Replacement • Total Hip Replacement • Craniotomy • Laminectomy	**11 hours**
TOTAL		**44 hours**

CSSD and Surgical Procedures (Practical)
Detailed Syllabus

Modules	Topics (if applicable) & Course Contents	Periods
I.	• Autoclave • Hot air Oven	**7.5 hours**
II.	• Preoperative preparartion of patient • Surgical Hand washing, Gowning and Gloving • General Surgical Instruments	**7.5 hours**
III.	• Minor Surgical Procedures • Abdominal procedures	**7.5 hours**
IV.	• Surgical needles and suturing • Universal precautions for surgical Procedures	**7.5 hours**
TOTAL		**30 hours**

Credit Distribution		
Theory/ Tutorial	**Practicum**	**Experiential Learning**
44 hours	30 hours	16 hours (Hospital visits, Demonstration, Case study)

Text Books:

1. Sterilization of Medical Devices - CRC Press Book by Anne Booth.

2. Pocket Guide to Operation Room by Maxine A. Goldman

3. Manipal Manual of Surgery by K Rajgopal Shenoy

Reference books:

1. Disinfection, Sterilization, and Preservation by Seymour Stanton Block.

Subject Name: Microbiology and Pathology (THEORY+PRACTICAL)
Course type: Major
Course Code: OTT242M402/ OTT242M412
Course Level: 100

L-T-P-C – 3-0-2-4 **Scheme of Evaluation: (T/P/TP)**

Objective: The objective of this course is to provide exposure to the students on cells, structural and functional units of living organisms, and their intricate organization. Moreover, they will learn the functions and vital processes of an organism/an organ /system of organs.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Relate** and understand deep insight into homeostatic mechanisms and the functions of the various organs and organ systems in humans. They will also be able to understand how physiological parameters are measured in humans and animal preparations including blood parameters.	**BT 1**
CO2	**Compare** the physiological aspects of normal growth and development.	**BT 2**
CO3	**Apply** physiologic knowledge to narrate the contribution of each organ system to the maintenance of homeostasis.	**BT 3**
CO4	**Utilize** scientific laboratory equipment in order to gather and **analyze** data on human anatomy and physiology.	**BT 4**

Detailed Syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	• Bacteria: Cell structure, elementary idea about classification and morphological basis. Staining reactions: Gramstaining, spore staining, acid fast staining. Bacterial growth: nutritional requirements, physical factor affecting,culture media, and growth curve. Elementary idea about bactericidal agents: Phenol, alcohol. • Sterilization (principles, types & methods). Pasteurization. Antibiotics: Bacteriostatic and bactericidal effects. • Virus: elementary knowledge of viral-morphology, viral genome and classification, viral replication. Herpesviruses, hepatitis viruses, miscellaneous viruses, human immunodeficiency viruses.	**10 hours**
II.	• Microbial growth & death, Laboratory culture, host pathogen interactions, antimicrobial chemotherapy,pathogenic mechanisms common to external ocular infections process – clinical pathology. • Physiology, pathology, treatment & epidemiology of infectious diseases caused by bacteria, virus, fungi &parasitic organisms in hot climate as in India.	**12 hours**

III.	General Pathology • Structure & function of immune system – Structure and function of thymus, spleen & red bone narrow- Immunity& its types , plasma proteins & immune reaction, cells involved in immune system. Humoral immunity theories ofantibodies formation. • Structure & function of lymph nodes. Structure & function of thymus, spleen & red bone marrow. • Non specific immunity, Antibody mediated immunity, specific immunity, cell modified immunity, Activeimmunity, Passive immunity. • The acute inflammatory reaction – changes in acute inflammation, changes in the calibre of the blood vessels,changes in blood flow, changes associated with exudation.	**12 hours**
IV.	Inflammation & Repair: • Inflammation. Role of the mast cell in inflammation. Role of the platelets in inflammation. Chronic inflammation– cause, classification, general features. • Source of infection. Transmission of organisms to the body. wound infections. Wound healing. • Immuno-pathogenesis – type I, II, III & IV hypersensitivity. Mechanism of autoimmunity. Organ specific & nonorgan specific auto immune disease. The HLA system – histocompatibility complex. Pyogenic & bacterialinfection. • Disorder of growth – metaplasia, dysplasia, neoplasia. Circulatory disturbances – thrombosis, infarction, ischemia,embolism. Degeneration (calcification).	**10 hours**
TOTAL		**60hours**

Microbiology and Pathology (Practical)
Detailed Syllabus

Modules	Topics (if applicable) & Course Contents	Periods
I.	• Handling and use of Compound Microscope • Identification of bacterial morphology using Gram Staining	**7.5 hours**
II.	• Autoclaving and Sterilization Techniques • Surgical Hand washing, Gowning and Gloving	**7.5 hours**
III.	• Tissue processing and Staining • Peripheral Blood smear preparation and examination	**7.5 hours**
IV.	• Urine examination • Blood Grouping	**7.5 hours**
TOTAL		**30 hours**

Credit Distribution		
Theory/ Tutorial	**Practicum**	**Experiential Learning**
44 hours	30 hours	16 hours (Hospital visits, Demonstration, Case study)

Text Books:

1. Sterilization of Medical Devices - CRC Press Book by Anne Booth.

2. Essentials of Medical Microbiology by Apurba S Sastry, Sandhya Bhat

3. Synopsis of clinical Pathology and Microbiology by J Sengupta

Subject Name: Obstetrics and Gynaecology (Theory)
Course type: Major
Course Code: OTT242M403
Course Level: 200

L-T-P-C – 4-0-0-4 **Scheme of Evaluation: (T/P/TP)**

Objective: To provide students with comprehensive knowledge and skills in managing women's health, including reproductive, maternal, and neonatal care. It emphasizes diagnosing and treating gynecological conditions and conducting surgical procedures like cesarean sections, hysterectomies, and laparoscopies. The focus is on delivering patient-centered care through evidence-based practices and surgical expertise.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Recall** the anatomy and physiology of the female reproductive system and the stages of normal pregnancy, labor, and postpartum.	**BT 1**
CO2	**Explain** the etiology, clinical features, and management of common gynecological disorders and complications of pregnancy and childbirth.	**BT 2**
CO3	**Demonstrate** the ability to assist in basic obstetric and gynecological procedures, including normal deliveries and minor	**BT 3**
CO4	**Analyze** patient histories, diagnostic findings, and treatment options to plan and prioritize care in obstetric and gynecological emergencies.	**BT 4**

Detailed Syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	Amenorrhea, Physiology of Pregnancy Normal delivery, Forceps delivery Twin pregnancy, Fetal Presentations, Ectopic pregnancy Complications related to pregnant women: Supine hypotension syndrome of pregnancy, Mendelson syndrome of pregnancy, Eclampsia/Pre-eclampsia, PPH.	**14 hours**
II.	**Birth control methods & Procedures** Medical termination of pregnancy Instruments & Techniques of MTP	

	GYNECOLOGY: Clinical methods in gynecological examination Common diseases of vulva, vagina Disorders of menstruation Various operative positions **Disorders of the female reproductive system:** Endometriosis Myoma formation Tubal blockage Cyst formation Abnormal menstruation STD's	**16 hours**
III.	**Normal Labor:** Normal labor and delivery, Intrapartum fetal monitoring, Induction of labor, Obstetric Analgesia and Anesthesia. **Abnormal Labor:** Abnormal uterine action in labor Abnormal labor patterns Prolonged labor Obstructed labor Dystocia Complications of the third stage of labor Injuries to the birth canal	**14 hours**
IV.	**Diagnostic procedures in gynecology and obstetrics:** Culdoscopy Hysteroscopy Endometrial tissue biopsy **Surgical procedures:** Incisions given in gynecology procedure Episiotomy, D&C, D&E, MTP Caesarean section, Tubal ligation Abdominal and vaginal hysterectomy Myomectomy, Oophorectomy Lap. Assisted vaginal hysterectomy, Tubectomy.	**16 hours**
TOTAL		**60hours**

Credit Distribution		
Theory/ Tutorial	**Practicum**	**Experiential Learning**
60	-	30 hours (Hospital visits, Demonstration, Case study)

Suggested Books:

1.DC Dutta's Textbook of Obstetrics Gynaecology, Jaypee Brothers Medical Publishers.

2. Holland and Brews, Manual of Obstetrics , Miscellaneous Publishers

3. Cs Dawn, Textbook of Gynaecology contraception and Demography, Dawn Books.

Subject Name: Patient Assessment

Course Code: OTT242M404
Course Type: Major
L-T-P-C – 2-1-0-3 **Scheme of Evaluation: (T/P/TP)**

Objective: The overall goal of the Patient assessment is to have all students develop a comprehensive approach to the evaluation and care of the adult,pediatric and geriatric medical patient. During the course, students will continue to improve their ability to obtain, record, analyze and communicate clinical information

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Recal**l the pathophysiological principles and assessment findings to formulate a field impression; and implement treatment and management of life threatening conditions.	**BT 1**
CO2	**Interpret** data from assessing the patient in or out hospital.	**BT 2**
CO3	**Identify** any life threatening conditions and plan for the management.	**BT 3**
CO4	**Analyze** data based on patient's head to toe assessment and formulate a management and transportation plan.	**BT 4**

Detailed syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	**Patient assessment** • Medical patient assessment • Trauma patient assessment	**10 hours**
II.	**History taking** • Techniques of history taking. • Special assessment challenges. • Vital signs • Head to toe physical examination • Limits of physical exam.	**14 hours**

III.	**Interpretation & Special Situations** • Concept formation • Data interpretation • Application of principle • Reflection in and on action. • Various communication matters. • Documentation techniques. • Verbal and non verbal skills. • Special interview situations.	**10 hours**
IV.	**Venous access** • Fluid composition &distribution in the body • I.V. fluid composition • Routes of medication administration. • Calculating fluid infusion rates.	**14 hours**
TOTAL		**48 hours**

Text Books:

1.Nancy Caroline's Emergency Care in the Streets, AAOS.

2. Compact Clinical guide to critical care, trauma and Emergency Pain Management: An Evidence based Approach for Nurses, Liza Marmo, Yvonne M. Darcy, 1st Edition, Springer publishing house

Reference books:

1. Central Venous access devices: care and Management, Lisa Dougherty, Wiley Blackwell publishers
2. Vessel health and preservation:The right Approach for Vascular Access, edited by Nancy Moureau,Springer publishing.

Subject Name: Cardiovascular Emergencies and Management (T)
Course type: Major
Course Code: OTT242M405
Course Level: 200

L-T-P-C – 2-1-0-3 **Scheme of Evaluation: (T/P/TP)**

Objective: The goal of this syllabus is to familiarize the students with the different techniques and devices used for cardiovascular emergencies and their functions to improve and monitor health.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Define** the different cardiovascular and neurological conditions.	**BT 1**
CO2	**Illustrate** the use of basic assessment and management equipments.	**BT 2**
CO3	**Identify** life threatening cardiovascular and neurologic conditions.	**BT 3**
CO4	**Take part in** assisting and managing life threatening conditions.	**BT 4**

Detailed Syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	**Cardiovascular System – Emergencies:** Review of Anatomy & Physiology, Assessment & management of Chest pain, Acute coronary syndromes: Pathophysiology & Diagnosis, Management & Complications, Pulmonary Edema, Severe heart failure, Pericardial Diseases, Hypertensive Urgencies & Crisis, Pathophysiology & Classification of Shock States.	**12 hours**
II.	**Resuscitation** from Circulatory Shock, Mechanical Support in Cardiogenic Shock, Resuscitation of Hypovolemic Shock, Epistaxis.	**12 hours**
III.	**ECG & arrhythmias: 12 lead ECG's:** Different waves of ECG, Depolarization & Repolarization, different heart rhythm, ECG reading.	**12 hours**
IV.	**Basic & advanced cardiac life support:** Cardiopulmonary resuscitation, Low Systemic Arterial Blood Pressure, Tachycardia & Bradycardia, Supraventricular Arrhythmias, Ventricular Arrhythmias, Conduction Disturbances & cardiac Pacemakers, Sudden cardiac Death, Implantable Defibrillators.	**12 hours**

	Debrillation: • Manual Defibrillation • Automated External Defibrillator.	
TOTAL		**60 hours**

Credit Distribution		
Theory/ Tutorial	**Practicum**	**Experiential Learning**
60	-	30 hours (Hospital visits, Demonstration, Case study)

Text Book:

4. Goyal R. C. (1993). Handbook of Hospital Personal Management, Prentice Hall of India, New Delhi, 17–41. Ministry of Health and Family Welfare (1984). National Health Policy, Annual Report (1983–4), Government of India, New Delhi.
5. Surgical Instrumentation, Renee Nemitz.
6. Operation theatre techniques and Management, MP Sharma, AITB

Fifth Semester

Subject Name: Specialized anesthesia and surgery (Theory+ Practical)
Course Code: OTT242M501/OTT242M511
Course Type: Major
Course Level: 300
L-T-P-C – 3-0-2-4 **Scheme of Evaluation: (T/P/TP)**

Objective: The objective of **Specialized Anesthesia and Surgery** is to provide in-depth knowledge of advanced anesthesia techniques and their applications in complex surgical procedures. It aims to develop critical skills in patient assessment, anesthesia administration, and perioperative management for specialized surgeries. The course also emphasizes safety protocols, complication management, and evidence-based practices to enhance patient outcomes.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	***Recall*** the classification, indications, and contraindications of different anesthesia techniques.	**BT 1**
CO2	***Describe*** the perioperative roles and responsibilities of the anesthesia and surgical team.	**BT 2**
CO3	***Demonstrate*** the correct airway management techniques and anesthesia equipment usage.	**BT 3**
CO4	***Analyze*** patient conditions and choose appropriate anesthesia techniques for specialized surgeries.	**BT 4**

Detailed syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	***Basics of Anesthesia*** • **Anaesthesia Machine:** Basic Boyles Machine and its functions. • **Breathing System:** Classification of breathing system • **Intubation**: Equipments used for Intubation • **Anaesthesia and its types:** • General Anaesthesia • Regional Anaesthesia • Local anaesthesia • Drugs used for General Anaesthesia • Muscle Relaxants	**11 hours**

	• Monitoring during anesthesia (ECG, BP, SpO_2, Capnography)	
II.	***Anesthesia for Specialized Surgeries*** • Anesthesia for cardiac and thoracic surgeries • Anesthesia for neurosurgery • Anesthesia for obstetric and pediatric cases • Anesthesia for trauma and emergency surgeries **Chronic Pain & Palliative Anesthesia** • Multimodal analgesia approaches • Epidural and intrathecal pain therapy • Cancer pain management • Postoperative pain control strategies	**11 hours**
III.	**Fundamentals of Specialized Surgery** • Principles of surgical asepsis • Surgical Incission and its types • Classification of surgical Instruments • Tumors- benign and malignant • Biopsy and its types • I&D, Abdominal paracentesis. • D&C, D&E • Caesarean section (LSCS), tubal ligation • Transuretheral Resection of Prostate (TURP)	**11 hours**
IV.	***Basics of Specialized Surgeries*** • Minimally invasive and robotic surgeries • Plastic & Reconstructive Surgery • Burn Surgery & Anesthesia • Coronary artery bypass grafting (CABG) • Craniotomy and brain tumor excision • Liver transplantation and resection • Bariatric surgery techniques • Medicolegal and ethical considerations in specialized surgery	**11 hours**
TOTAL		**44 hours**

Specialized anesthesia and surgery (Practical)

Detailed Syllabus

Modules	Topics (if applicable) & Course Contents	Periods
I.	• Endotracheal Intubation • Spinal Anaesthesia • Epidural Anaesthesia	**7.5 hours**
II.	• Ventilator and its Modes • Breathing Circuits	**7.5 hours**
III.	• Surgical Incission and its types • Classification of surgical Instruments	**7.5 hours**
IV.	• Laparoscopic Instruments • Powered Surgical Instruments	**7.5 hours**
TOTAL		**30 hours**

Credit Distribution		
Theory/ Tutorial	**Practicum**	**Experiential Learning**
44 hours	30 hours	16 hours (Hospital visits, Demonstration, Case study)

Subject Name: Basic Life Support and Advanced Cardiac Life Support (Theory+ Practical)
Course Code: OTT242M502/OTT242M512
Course Type: Major
Course Level: 300
L-T-P-C – 3-0-2-4 **Scheme of Evaluation: (T/P/TP)**

Objective: The objective of **Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS)** is to equip students with the skills to recognize and respond to life-threatening emergencies through high-quality CPR, AED use, airway management, ECG interpretation, and advanced interventions to improve patient outcomes.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Recall** the fundamental concepts of Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS), including CPR techniques, emergency protocols, and resuscitation guidelines.	**BT 1**
CO2	**Explain** the importance of early intervention in cardiac arrest cases, the chain of survival, and the roles of healthcare providers in life-threatening emergencies.	**BT 2**
CO3	**Demonstrate** the correct sequence of BLS and ACLS procedures, including chest compressions, airway management, defibrillation, and drug administration in simulated emergency scenarios.	**BT 3**
CO4	**Analyze** patient conditions and interpret ECG rhythms to make informed decisions regarding appropriate ACLS interventions and advanced airway management strategies.	**BT 4**

Detailed syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	Introduction to Basic Life Support (BLS) 1. **Principles of Basic Life Support** • Chain of survival • Importance of early recognition and response • Differences between adult, child, and infant BLS 2. **Cardiopulmonary Resuscitation (CPR)** • High-quality chest compressions (rate, depth, recoil) • Rescue breaths (mouth-to-mouth, bag-mask ventilation) • Hands-only CPR for untrained responders	**11 hours**

	3. **Automated External Defibrillator (AED) Use** • Indications and safety precautions • AED operation and pad placement • Shock delivery and post-shock care 4. **Relief of Foreign Body Airway Obstruction (Choking Management)** • Heimlich maneuver (conscious and unconscious patients) • Airway management for infants, children, and adults	
II.	Advanced Life Support & Airway Management 1. **Introduction to ACLS and Advanced Airway Techniques** • ACLS algorithms and team dynamics • Basic vs. advanced airway management 2. **Bag-Mask Ventilation and Endotracheal Intubation** • Manual ventilation techniques • Indications and contraindications for intubation • Laryngeal mask airway (LMA) and supraglottic devices 3. **Pharmacology in ACLS** • Common drugs used in cardiac arrest (epinephrine, amiodarone, atropine) • Vasopressors and antiarrhythmics • Medication routes (IV, IO, endotracheal)	**11 hours**
III.	Cardiac Arrest Management & ECG Interpretation 1. **Cardiac Arrest Recognition and Management** • ACLS algorithms (VF/pVT, PEA, asystole) • High-performance team resuscitation • Post-cardiac arrest care 2. **Electrocardiogram (ECG) Interpretation** • Identifying life-threatening arrhythmias • Bradycardia and tachycardia management • ST-segment elevation and ischemic changes 3. **Defibrillation and Pacing** • Synchronized vs. unsynchronized cardioversion • Indications for transcutaneous pacing	**11 hours**

	• Energy levels for defibrillation in different rhythms .	
IV.	Special Resuscitation Situations & Team Dynamics 1. **Stroke, Acute Coronary Syndrome (ACS), and Special Cases** • Early recognition and management of stroke (FAST assessment) • ACS treatment, including fibrinolytics and PCI • Resuscitation of special populations (pregnancy, trauma, drowning, hypothermia) 2. **Effective Resuscitation Team Roles and Communication** • Team leader and member responsibilities • Closed-loop communication and effective handovers • Ethical and legal considerations in resuscitation	**11 hours**
TOTAL		**44 hours**

Basic Life Support and Advanced Cardiac Life Support Practical)

Detailed Syllabus

Modules	Topics (if applicable) & Course Contents	Periods
I.	• ECG Interpretation • Use of Automated External Defibrillator (AED)	**7.5 hours**
II.	• Bag-mask ventilation • oropharyngeal and nasopharyngeal airway insertion.	**7.5 hours**

III.	• Laryngeal mask airway (LMA) • Airway management for infants, children	**7.5 hours**
IV.	• Basic First Aid for Cardiac Emergencies • Ethical and Legal Considerations in Resuscitation	**7.5 hours**
TOTAL		**30 hours**

Credit Distribution		
Theory/ Tutorial	**Practicum**	**Experiential Learning**
44 hours	30 hours	16 hours (Hospital visits, Demonstration, Case study)

Subject Name: Medical Emergencies (Theory)
Course Code: OTT242M503
Course Type: Major
Course Level: 300
L-T-P-C – 3-1-0-4 **Scheme of Evaluation: (T/P/TP)**

Objective: The student demonstrates the ability to conduct a focused medical history and targeted physical examination appropriate to the patient's chief complaints and the history of the present illness and apply appropriate clinical pharmacological principles in the selection of drugs to treat common problems.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Recall** the fundamental concepts of medical emergencies, including emergency response protocols, triage, and basic life support (BLS & ALS)**.**	**BT 1**
CO2	**Explain** the pathophysiology and clinical presentation of cardiovascular, respiratory, neurological, and trauma-related emergencies**.**	**BT 2**
CO3	**Demonstrate** the ability to perform airway management, CPR, administration of emergency medications, and wound **care** in various emergency scenarios..	**BT 3**
CO4	**Differentiate** between different types of shock, poisoning, and endocrine emergencies to determine appropriate diagnostic and treatment approaches**.**	**BT 4**

Detailed Syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	**General Principles of Medical Emergencies** • Introduction to Medical Emergencies • Emergency Response Systems (BLS & ALS) • Triage and Initial Assessment (ABCDE Approach) • Airway Management and Oxygen Therapy • Shock: Types, Recognition, and Management • Legal and Ethical Aspects in Emergency Care • Medical Documentation in Emergencies • Communication in Emergency Situations • Infection Control and Safety Precautions	**10 hours**

II.	**Cardiovascular & Respiratory Emergencies** • Cardiac Arrest and CPR Guidelines • Acute Coronary Syndromes (MI, Angina) • Hypertensive Crisis and Arrhythmias • Pulmonary Embolism and Deep Vein Thrombosis • Stroke and Transient Ischemic Attacks (TIA) • Congestive Heart Failure (CHF) Exacerbation • Respiratory Distress and Acute Respiratory Failure • Asthma and Chronic Obstructive Pulmonary Disease (COPD) Exacerbation • Pneumothorax and Pleural Effusion • Anaphylaxis and Severe Allergic Reactions	**14 hours**
III.	**Neurological & Trauma Emergencies** • Seizures and Status Epilepticus • Traumatic Brain Injury (TBI) and Spinal Cord Injuries • Heat Stroke and Hypothermia • Drowning and Near-Drowning Emergencies • Fractures, Dislocations, and Soft Tissue Injuries • Burns: Classification and Emergency Management • Poisoning and Drug Overdose • Pain Management in Trauma Patients	**10 hours**
IV.	**Endocrine, Toxicological & Special Emergencies** • Diabetic Emergencies (DKA, Hypoglycemia, HHS) • Adrenal Crisis and Thyroid Emergencies • Renal Emergencies (Acute Kidney Injury, Electrolyte Imbalances) • Obstetric Emergencies (Eclampsia, Postpartum Hemorrhage)) • Psychiatric Emergencies (Suicidal Attempts, Psychosis) • Infectious Disease Emergencies (Sepsis, Meningitis) • Toxicological Emergencies (Organophosphate Poisoning, Alcohol Poisoning) • Disaster and Mass Casualty Management	**14 hours**
TOTAL		**48 hours**

Subject Name: Post Anesthesia Care (Theory+Practical)
Course Code: OTT242M504/ OTT242M514
Course Type: Major
Course Level: 300
L-T-P-C – 3-0-2-4 **Scheme of Evaluation: (T/P/TP)**

Objective: The objective of **Post-Anaesthesia Care** is to ensure safe recovery by managing pain, monitoring complications, promoting wound healing, and supporting early mobilization. It also focuses on patient education, nutritional management, and effective communication for comprehensive post-surgical care.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Recall** the fundamental principles of post-operative care, including pain management, wound care, and monitoring for complications.	**BT 1**
CO2	**Explain** the importance of early mobilization, fluid and nutritional management, and infection control in post-surgical recovery.	**BT 2**
CO3	**Demonstrate** proper techniques for wound dressing, patient positioning, pain assessment, and post-operative monitoring.	**BT 3**
CO4	**Analyze** patient recovery progress, identify potential complications, and make informed decisions for appropriate post-operative interventions.	**BT 4**

Detailed Syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	***Setting up of PACU:*** • Definition of PACU • Set up • Staff/patient ratio • Monitoring in PACU • Criteria for Shifting patient out of PACU • Aldrete score / Modified Aldrete score Discharge criteria	**11 hours**

II.	***Post-Operative Monitoring and Complications***
	• Vital signs monitoring and early detection of complications
	• Pain management: pharmacological and non-pharmacological approaches
	• Post-operative complications:
	  • Respiratory (atelectasis, pneumonia)
	  • Cardiovascular (DVT, shock)
	  • Gastrointestinal (paralytic ileus, nausea, vomiting)
	  • Wound healing issues (infection, dehiscence, evisceration)
		11 hours

	• Fluid and electrolyte balance management	
III.	***Wound Care and Rehabilitation*** • Types of surgical wounds and classification • Wound dressing techniques and drainage systems (e.g., JP drain, chest tube) • Early mobilization and physiotherapy for post-surgical recovery • Nutrition and diet in post-operative care • Psychological support and patient education	**11 hours**
IV.	***Post operative pain relief*** • Management of postoperative pain- narcotics, NSAID (IM/IV), local anaesthetics through catheters, transdermal patches **Causes of mortality in PACU** • Mortality -myocardial infarction, arrhythmias, hypoxia, electrolyte imbalance, respiratory depression. • Massive haemorrhage, embolism. • Components of Emergency tray / Trolley in PACU □ Discharge planning and home-based post-operative care □ Legal and ethical considerations in post-operative care	**11 hours**
TOTAL		**44 hours**

Post Anaesthesia Care (Practical)
Detailed Syllabus

Modules	Topics (if applicable) & Course Contents	Periods
I.	• Laryngeal mask airway (LMA) • Bag Mask Ventilation	**7.5 hours**
II.	• IV Fluid Therapy • Parenteral Nutrition	**7.5 hours**
III.	• Wound Management • Dressing and Bandaging	**7.5 hours**
IV	• Central Venous Pressure Monitoring	**7.5 hours**

	• Pain Management in PACU	
TOTAL		**30 hours**

Credit Distribution		
Theory/ Tutorial	**Practicum**	**Experiential Learning**
44 hours	30 hours	16 hours (Hospital visits, Demonstration, Case study)

Subject Name: Internship V / Clinical Posting
Course Code: OTT242M525
Course Level: 300

L-T-P-C – 0-0-8-4 **Scheme of Evaluation: (T/P/TP)**

Objective: The objective of the course is to educate the students and prepare them for future real-life situations and to enhance the delivery of health care in the Operation Theatre setting.

1. Students will observe the basic operations of the operation theatre while interacting with the multidisciplinary team members involved in providing optimal care to the patients. The student will be introduced to terminologies, equipment, and techniques used for preparation and management of the OT.
2. Students will gain additional skills in clinical preparation, interaction with patients and professional personnel. Students apply knowledge from previous clinical learning experience under the supervision of a senior technical officer
3. Students will improve their skills in clinical procedures. Progressive interaction with patients and professional personnel are monitored as students practice in a supervised setting. Additional areas include problem solving, identifying machine components and basic side effect management. Students will demonstrate competence in beginning, intermediate, and advanced procedures.
4. The course provides students the opportunity to continue to develop confidence and increased skill in simulation and treatment delivery. Students will demonstrate competence in beginning, intermediate, and advanced procedures in both areas. Students will participate in advanced and specialized treatment procedures.

Sixth Semester

Subject Name: Advanced Anesthesia Techniques (Theory+ Practical)
Course Code: OTT242M601/OTT242M611
Course Level: 300
Course Type: Major
L-T-P-C – 3-0-2-4 **Scheme of Evaluation: (T/P/TP)**

Objective: The objective of **Advanced Anesthesia Techniques** is to provide in-depth knowledge of specialized anesthesia methods, including regional, total intravenous, and balanced anesthesia. It focuses on patient monitoring, complication management, and the safe administration of anesthesia in complex surgical procedures.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Recall** advanced anesthesia techniques, including regional, total intravenous, and balanced anesthesia, and the principles of their application in surgery.	**BT 1**
CO2	**Explain** the pharmacology and physiological effects of anesthetic agents and how they influence various body systems during surgery.	**BT 2**
CO3	**Demonstrate** proficiency in administering advanced anesthesia techniques, including monitoring vital signs and managing airway during complex procedures.	**BT 3**
CO4	**Analyze** patient conditions and surgical requirements to choose the most appropriate anesthesia technique while identifying and managing potential complications.	**BT 4**

Detailed syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	***Fundamentals of Anesthesia and Advanced Techniques*** • Overview of anesthesia: types and classifications • Principles of general anesthesia • Introduction to regional anesthesia techniques (spinal, epidural, nerve blocks) • Total intravenous anesthesia (TIVA) principles and applications • Balanced anesthesia: techniques and pharmacologic considerations • Preoperative assessment and risk stratification in anesthesia • Airway management techniques in advanced anesthesia • Monitoring techniques during anesthesia (invasive vs. non-invasive)	**11 hours**

II.	***Anesthetic Agents and Monitoring*** • General anesthetic agents: volatile anesthetics vs. intravenous agents • Analgesics, muscle relaxants, and adjunct medications • Local anesthetics: properties, mechanism of action, and side effects • Sedatives and hypnotics in anesthesia • Monitoring anesthesia depth: clinical vs. technological methods • Respiratory monitoring: capnography, pulse oximetry, and blood gases • Cardiovascular monitoring: ECG, blood pressure, and central venous pressure • Neurological monitoring in anesthesia (EEG, BIS monitoring)	**11 hours**
III.	***Complications and Special Anesthesia Techniques*** • Management of airway complications (difficult intubation, aspiration) • Postoperative nausea and vomiting: prevention and treatment • Malignant hyperthermia: pathophysiology, diagnosis, and treatment • Anesthesia in patients with comorbidities (cardiac, respiratory, hepatic) • Anesthesia for obstetric surgeries (cesarean section, epidural labor analgesia) • Anesthesia for pediatric and geriatric populations • Regional anesthesia complications: nerve injury, hypotension • Blood loss and transfusion management during anesthesia • Anesthesia considerations for obese patients and bariatric surgeries	**11 hours**
IV.	***Advanced Techniques and Emerging Trends*** • Neuromuscular blockade and monitoring during anesthesia • Enhanced recovery after surgery (ERAS) and anesthesia protocols • Perioperative anesthesia management in minimally invasive surgeries • Anesthesia for organ transplant surgeries • Multimodal anesthesia and analgesia techniques • Regional anesthesia in orthopedics: blocks for joint replacement surgeries • Anesthesia for cardiac surgeries: specific considerations and techniques • Anesthesia for neurosurgery: challenges and techniques • Emerging trends in anesthesia: robotic surgery and telemedicine in anesthesia management	**11 hours**
	TOTAL	**44 hours**

Advanced Anesthesia Techniques (Practical)

Detailed Syllabus

Modules	Topics (if applicable) & Course Contents	Periods
I.	• Preoperative Anesthesia Assessment • Anesthesia Monitoring	**7.5 hours**
II.	• Airway Management Techniques • Management of Difficult Airway	**7.5 hours**
III.	• Spinal Anaesthesia • Epidural Anaesthesia	**7.5 hours**
IV.	• CVP • Intravenous Cannulation and Infusion Techniques	**7.5 hours**
TOTAL		**30 hours**

Credit Distribution		
Theory/ Tutorial	**Practicum**	**Experiential Learning**
44 hours	30 hours	16 hours (Hospital visits, Demonstration, Case study)

Subject Name: Emergency and Intensive Care Unit (Theory & Practical)
Course Code: OTT242M602/ OTT242M612
Course Type: Major
Course Level: 300
L-T-P-C – 3-0-2-4 **Scheme of Evaluation: (T/P/TP)**

Objective: The objective of the **Intensive Care Unit (ICU)** subject is to provide in-depth knowledge of critical care management, including patient assessment, monitoring, and advanced therapeutic interventions. It focuses on the multidisciplinary approach to treating critically ill patients with life-threatening conditions.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Recall** the essential principles of critical care, including monitoring techniques, patient assessment, and life-support interventions.	**BT 1**
CO2	**Explain** the physiological changes in critically ill patients and the rationale behind advanced interventions used in ICU settings.	**BT 2**
CO3	**Demonstrate** proficiency in performing and interpreting essential ICU procedures, including ventilator management, invasive monitoring, and drug administration.	**BT 3**
CO4	**Analyze** complex clinical scenarios in the ICU, identifying complications and making informed decisions for patient care and treatment adjustments.	**BT 4**

Detailed Syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	***Introduction to ICU and Basic Critical Care*** • Overview of the Intensive Care Unit (ICU): Structure, roles, and functions • Principles of critical care management and decision-making • Patient assessment in the ICU: History, physical examination, and diagnostics • Monitoring techniques in ICU: Vital signs, ECG, pulse oximetry • Oxygen therapy and mechanical ventilation principles • Assessment and management of airway: Endotracheal intubation, tracheostomy care • Introduction to invasive monitoring (CVP, arterial line, etc.) • Managing fluid and electrolyte balance in critically ill patients • Infection control practices in ICU settings	**11 hours**

II.	***Respiratory and Cardiovascular Support in ICU*** • Mechanical ventilation: Types, settings, and weaning protocols • Ventilator-associated pneumonia (VAP) prevention and management • Non-invasive ventilation: CPAP, BiPAP in ICU patients • Acute respiratory distress syndrome (ARDS): Diagnosis and management • Hemodynamic monitoring: Invasive and non-invasive methods • Pharmacological management of shock: Types and treatment strategies • Acute myocardial infarction (AMI) management in ICU • Advanced cardiovascular monitoring: Pulmonary artery catheter, cardiac output measurements • Management of arrhythmias and cardiac arrest in the ICU	**11 hours**
III.	***Renal, Metabolic, and Neurological Care in ICU*** • Acute kidney injury (AKI): Diagnosis, causes, and management • Renal replacement therapy (RRT): Hemodialysis, continuous renal replacement therapy (CRRT) • Managing acid-base and electrolyte imbalances in ICU • Nutrition in critically ill patients: Enteral and parenteral feeding • Neurological monitoring and assessment in ICU • Seizure management in critically ill patients • Stroke management in the ICU: Acute care and thrombolytic therapy • Pain, agitation, and sedation assessment tools in the ICU	**11 hours**
IV.	***Specialized ICU Care and Ethical Considerations*** • Trauma management in the ICU: Head injury, fractures, and polytrauma • ICU care for postoperative patients: Early mobilization and complications • Management of septic shock: Diagnosis, monitoring, and treatment • Organ transplantation: ICU management before, during, and after surgery • Multisystem organ failure (MSOF): Pathophysiology and management • Pediatric and neonatal ICU care: Special considerations and techniques • Geriatric ICU care: Challenges in elderly critically ill patients • Ethical issues in the ICU: End-of-life care, DNR, patient autonomy • Disaster management and mass casualty triage in ICU .	**11 hours**

TOTAL	44 hours

Emergency and Intensive Care Unit (Practical)
Detailed Syllabus

Modules	Topics (if applicable) & Course Contents	Periods
I.	• Airway Management in ICU • Ryle's Tube Insertion	**7.5 hours**
II.	• Mechanical Ventilation Setup • Intubation and Extubation	**7.5 hours**
III.	• Arterial Blood Gas (ABG) Interpretation • Catheterization- Male and Female	**7.5 hours**
IV	• Neurological Assessment and Monitoring • Chest Tube Insertion and Management	**7.5 hours**
TOTAL		**30 hours**

Credit Distribution		
Theory/ Tutorial	**Practicum**	**Experiential Learning**
44 hours	30 hours	16 hours (Hospital visits, Demonstration, Case study)

Text Book:
1.Mechanical Ventilation Book by C. Chang.
2. Handbook on Critical Care, Deepak Malviya & Somya Sankar Nath.

Reference Book:
1. The Washington Manual of Critical Care, Marin h. Koffef& A. Cole Burks.

Subject Name: Biostatistics and Research Methodology (Theory)
Course Code: OTT242M603
Course Type: Major
Course Level: 300
L-T-P-C – 3-1-0-4 **Scheme of Evaluation: (T/P/TP)**

Objective: The main objective of this course is to impart knowledge of statistics and develop data based research in healthcare.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Relate** statistics, biostatistics and its importance in health sciences.	**BT 1**
CO2	**Interpret** the meaning of research and find the solutions to the problems being faced in health sciences by applying research techniques.	**BT 2**
CO3	**Utilize** the data generated in health sciences using modern Statistical Methods and writing a report on results interpreted.	**BT 3**
CO4	**Analyze**statistical techniques to scientific research in health-related fields and the development of new tools to study these areas.	**BT 4**

Detailed Syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	**Introduction to research methods** • Types of Research • Literary research • Clinical research • Experimental research • Observation and field studies	**12 hrs**
II.	**Identifying research problem** • Definition Selection • Sources of research problems **Ethical issues in research** **Research design** • Types of Research design • Control in research design • Selection criteria • Placebo and plain control • Randomization Balancing and matching	**12 hrs**
III.	**Basic Concepts of Biostatistics** • Scope and utility of Biostatistics Descriptive Statistics • Analysis of Data • Probability	**14 hrs**

	Types of Data • Data collection, tabulation and presentation of data. • Measure of central tendency – Mean, Median and Mode. • Measures of dispersion: Range, quartile deviation, standard deviation.	
IV.	**Research tools and Data collection methods** • Interview, questionnaire, inventories, scales • Rating scales **Sampling methods** • Types and sample size • Randomized sampling **Developing a research proposal** • Protocols for experimental. • Clinical and community based research. • Writing research report. • References in research report.	**10 hrs**
Total		**48hrs**

Text Book:

1. Research methodology and Biostatics by Suresh K Sharma
2. Basic of Nursing Research and Biostatics by JAYPEE

Reference Book:

1. Research Methodology Methods and Techniques; C.R. Kothari; 2nd edition; New Age International ; 1990 (republished in 2009).
2. Research Methodology Methods and Statistical Techniques; Santosh Gupta; New Delhi: Deep & Deep Publications; 2000.

Subject Name: Operation Theatre Technology - Advanced

Course Code: OTT242M604
Course type: Major

L-T-P-C – 4-0-0-4 **Scheme of Evaluation: (T/P/TP)**

Objective: This syllabus has been formulated to impart and provide the students with professional skills and personal skills to assist and to be an integral part of the care delivery system in the Operation Theatre.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**List** the different instruments used for different types of surgery.	**BT 1**
CO2	**Demonstrate** patient positioning for different types of surgeries.	**BT 2**
CO3	**Organize** preoperative preparation for the different types of surgeries.	**BT 3**
CO4	**Take part in** assisting in anaesthetic management of different surgical procedures.	**BT 4**

Detailed Syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	**Management of a patient in crisis** • Management of poisoning, COPD, snakebite. • Gastric lavage, insertion of nasogastric tube • Ventilation of patient in crisis- Mouth to mouth, Mouth to mask, Ambu bag, short term ventilation/transport ventilator. • Monitoring during transport. • Management of Hypotension, hypoxia, cyanosis, burns	**11 hours**
II.	**Neuro surgery** • Introduction to different neurology surgery and position required for them - Preparation of patient and trolley. • Introduction to neurology special instruments. • Emergency neurology surgery, required instruments **Plastic and reconstructive surgery** • Introduction to Plastic and reconstructive surgeries • Preparation and Positions for different Plastic and reconstructive surgeries • Instrument required for different Plastic and reconstructive surgeries	**11 hours**
III.	**Otorhinolaryngologic surgery** • Introduction to Otorhinolaryngologic surgeries • Preparation and Positions for different ENT surgeries	**11 hours**

	• Instrument required for different Otorhinolaryngologic surgeries • Cochlear implant, endoscopy	
IV.	• Urology Surgery • Orthopedic Surgery • Ophthalmic Surgery • Thoracic Surgery • Cardiac and Vascular Surgery	**11 hours**
Total		**44 hours**

Subject Name: Airway Management and Respiratory Emergencies

Course Code: OTT242C605
Course Type: Major
L-T-P-C – 4-0-0-4 **Scheme of Evaluation: (T/P/TP)**

Objective: To provide students with theoretical and practical knowledge about the life saving procedures in case of an airway and respiratory emergency that can they can analyze and apply in the OT.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Recall** the basic management of airway and respiratory emergencies.	**BT 1**
CO2	**Demonstrate** the different procedures and management for airway and respiratory emergencies.	**BT 2**
CO3	**Identify** life threatening airway and respiratory conditions.	**BT 3**
CO4	**Analyze** various respiratory emergencies and perform basic life support (BLS) and advanced cardiac life support (ACLS) using airway management equipment.	**BT 4**

Detailed Syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	**Airway Management** • Review of Anatomy and Physiology • Basic Airway Management • Manual airway maneuvers • Airway Adjuncts • Supplemental O_2 therapy and delivery devices • Suctioning • Assisted and artificial ventilation	**11 hours**
II.	**Advanced airway management** • Endo tracheal intubations • Kings LT Airway • Digital intubations • Laryngeal mask airways and Combitube intubations	**11 hours**

	• Rapid sequence intubations.	
III.	• Surgical and non surgical airways. • Ventilator and its types • Nebulizer • AMBU • Emergency medications in respiratory conditions	**11 hours**
IV.	**Respiratory emergencies** • Obstructive airway diseases. • Assessment and management of various respiratory problems. • COPD • Asthma • Pneumonia • Pulmonary Embolism • ARDS	**11 hours**
TOTAL		**44 hours**

Seventh Semester

Subject Name: General Surgery Techniques and Procedures (Practical)
Course Code: OTT242M711
Course Type: Major
Course Level: 400
L-T-P-C – 0-0-8-4 **Scheme of Evaluation: (T/P/TP)**

Objective: The objective of **General Surgery Techniques and Procedures** is to equip students with fundamental surgical skills, aseptic techniques, minor and emergency procedures, and an introduction to laparoscopic and advanced surgical practices.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Recall** fundamental surgical principles, aseptic techniques, and the use of surgical instruments.	**BT 1**
CO2	**Explain** the steps involved in minor surgical procedures, wound management, and infection control practices.	**BT 2**
CO3	**Demonstrate** proper suturing techniques, local anesthesia administration, and basic emergency surgical interventions.	**BT 3**
CO4	**Examine** surgical cases, identify complications, and propose appropriate surgical techniques and management strategies.	**BT 4**

Detailed Syllabus

Modules	Topics (if applicable) & Course Contents	Periods
I.	• Fundamentals of General Surgery • Layout and equipment in the operating room (OR) • Aseptic Techniques & Infection Control • Handling and maintenance of surgical instruments • Suturing & Knot-Tying Techniques	**12 hours**
II.	• Minor Surgical Procedures & Wound Management • Local Anesthesia Techniques • Dressing types and techniques • Biopsy Techniques • Skills in minor surgical interventions and postoperative care.	**12 hours**

III.	• Major Surgical Techniques & Emergency Procedures • advanced surgical interventions and critical care management. • Surgical Incisions & Hemostasis • Laparotomy & Abdominal Procedures • Emergency Surgery Procedures	**12 hours**
IV.	• Laparoscopic Surgery & Advanced Techniques • Basic Laparoscopic Procedures • Robotic-Assisted Surgery • Use of electrocautery, harmonic scalpel, and LigaSure • Management of Surgical Complications	**12 hours**
TOTAL		**48 hours**

Subject Name: Applied Orthopaedic Surgery (Practical)
Course Code: OTT242M712
Course Type: Major
Course Level: 400
L-T-P-C – 0-0-8-4 **Scheme of Evaluation: (T/P/TP)**

Objective: To provide students with fundamental knowledge and practical skills in diagnosing, managing, and assisting in the treatment of musculoskeletal disorders, fractures, and orthopedic surgical procedures, with a focus on clinical application and patient care.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Recall** the basic anatomy, physiology, and common pathologies of the musculoskeletal system.	**BT 1**
CO2	**Explain** the principles of fracture management, joint replacement, and common orthopedic surgical procedures.	**BT 2**
CO3	**Demonstrate** the ability to assist in orthopedic procedures, apply splints and casts, and manage postoperative care.	**BT 3**
CO4	**Evaluate** orthopedic case studies, assess complications, and recommend appropriate surgical or non-surgical interventions.	**BT 4**

Detailed Syllabus

Modules	Topics (if applicable) & Course Contents	Periods
I.	• Bone and Joint Examination Techniques • Fundamentals of Orthopaedic Surgery • basic orthopedic principles, aseptic techniques, and essential orthopedic tools. • Orthopaedic Instruments & Equipment	**12 hours**
II.	• Clinical assessment of fractures, dislocations, and joint stability • Splinting, Casting, and Traction Techniques • Closed Reduction & Immobilization Techniques • Emergency Trauma Care in Orthopaedics • External Fixation Methods	**12 hours**
III.	• Basic and advanced orthopedic surgical procedures • Internal Fixation Methods • Joint Dislocation Management • Basic Arthroscopy Techniques • Use of plates, screws, and intramedullary nails	**12 hours**
IV.	• Joint Replacement Surgery • Spinal Surgery Techniques • Pediatric Orthopaedics & Deformity Correction • Postoperative Care & Rehabilitation • Physiotherapy and rehabilitation protocols • Advanced Orthopaedic Procedures & Rehabilitation	**12 hours**
TOTAL		**48 hours**

Subject Name: Advanced Gastrointestinal and Laparoscopic Surgery (Practical)
Course Code: OTT242M713
Course Type: Major
Course Level: 400
L-T-P-C – 0-0-8-4 **Scheme of Evaluation: (T/P/TP)**

Objective: To equip students with in-depth knowledge and hands-on skills in diagnosing and managing complex gastrointestinal disorders, mastering advanced laparoscopic techniques, and understanding minimally invasive surgical interventions for improved patient outcomes.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Recall** the anatomy, physiology, and common pathologies of the gastrointestinal (GI) system along with principles of laparoscopic surgery.	**BT 1**
CO2	**Explain** the indications, contraindications, and procedural steps of advanced GI surgeries and minimally invasive techniques.	**BT 2**
CO3	**Demonstrate** proficiency in handling laparoscopic instruments, trocar placement, pneumoperitoneum creation, and assisting in GI surgical procedures.	**BT 3**
CO4	**Evaluate** complex GI surgical cases, identify complications, and assess the advantages of laparoscopic versus open surgical approaches.	**BT 4**

Detailed Syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	• Principles of laparoscopic surgery • Laparoscopic Instruments & OT Setup • Basic Laparoscopic Skills & Camera Handling • Diagnostic Laparoscopy & Port Placement Techniques • Identification and handling of laparoscopic instruments	**12 hours**
II.	• Laparoscopic Cholecystectomy • Laparoscopic Appendectomy • Laparoscopic Hernia Repair (TEP & TAPP Approaches) • Upper GI Endoscopy & Laparoscopic Fundoplication • Laparoscopic Tubal Ligation	**12 hours**
III.	• Laparoscopic Management of Perforation Peritonitis • Laparoscopic Bowel Resection & Anastomosis • Laparoscopic Splenectomy & Adrenalectomy • Emergency GI Bleeding Management (Endoscopic & Laparoscopic Approaches)	**12 hours**

IV.	• Postoperative Monitoring & Pain Management • Complications in Laparoscopic Surgery & Their Management • Enteral vs. parenteral nutrition in post-GI surgery patients • Nutritional Support & Stoma Care	**12 hours**
TOTAL		**48 hours**

Subject Name: Applied Trauma and Emergency Surgery (Practical)
Course Code: OTT242M714
Course Type: Major
Course Level: 400
L-T-P-C – 0-0-8-4 **Scheme of Evaluation: (T/P/TP)**

Objective: To equip students with essential knowledge and practical skills in the rapid assessment, stabilization, and surgical management of trauma and emergency surgical conditions, ensuring prompt and effective patient care in critical situations.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Recall** the fundamental principles of trauma assessment, resuscitation protocols, and emergency surgical procedures.	**BT 1**
CO2	**Explain** the pathophysiology of traumatic injuries, principles of hemorrhage control, and emergency surgical interventions.	**BT 2**
CO3	**Demonstrate** proficiency in performing primary and secondary trauma assessments, airway management, and emergency surgical procedures such as chest tube insertion and damage control surgery.	**BT 3**
CO4	**Evaluate** trauma cases, identify life-threatening conditions, and determine appropriate surgical and non-surgical management strategies.	**BT 4**

Detailed Syllabus

Modules	Topics (if applicable) & Course Contents	Periods
I.	• Introduction to Trauma Surgery & Triage System • Primary & Secondary Trauma Assessment (ATLS Guidelines) • Airway Management & Resuscitation Techniques • Hemorrhage Control & Vascular Access • Fluid resuscitation and blood transfusion protocols	**12 hours**
II.	• Chest Trauma & Thoracic Surgical Interventions • Abdominal Trauma & Emergency Laparotomy • Pelvic Fractures & Limb Trauma Management • Head and Spine Trauma • Cervical spine stabilization techniques	**12 hours**
III.	• Principles of Damage Control Surgery (DCS) • Management of Septic Shock & Multi-Organ Dysfunction Syndrome (MODS) • Burns & Thermal Injury Management • Emergency Vascular Surgery • Amputation procedures in severe trauma cases	**12 hours**

IV.	• ICU care for post-surgical trauma patients • Complications of Trauma Surgery & Their Management • Rehabilitation & Physiotherapy for Trauma Patients • Simulation-based hands-on training for emergency surgical procedures	**12 hours**
TOTAL		**48 hours**

Subject Name: Disaster Management and Ambulance Operations (Theory)
Course Code: OTT242N715
Course Type: Major
Course Level: 400
L-T-P-C – 0-0-8-4 **Scheme of Evaluation: (T/P/TP)**

Objective: The objective of this course is to prepare the students to identify, minimize the hazard and patient care management during a disaster.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**List** the different natural and manmade disaster and its management.	**BT 1**
CO2	**Outline** the paramedic response to disasters.	**BT 2**
CO3	**Build** and initiate management plan for disaster affected patients.	**BT 3**
CO4	**Examine** and foresee any scene and initiate proper entry and exit plan.	**BT 4**

Detailed Syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	**Ambulance operations, Medical incident command** • Understanding your ambulance • Ambulance staffing and development • Emergency vehicle operation • Air medical transport • The incident command • Standard operating procedures • Medical incident command • Triage	**12 hours**
II.	**Terrorism and weapons of mass destruction, Rescue awareness and operations** • Terrorism • Weapons of mass destruction • Paramedic Response to terrorism • Chemical agents • Biological agents • Radiological/nuclear devices • Guide lines for operations • Steps of special rescue • General rescue scene procedure • Assisting rescue crews • Patient care	**12 hours**
III.	**Hazardous material incidents** • Identification of hazardous materials • Hazardous scene management	**12 hours**

	• Contamination and toxicology • Decontamination and treatment	
IV.	**Crime scene awareness** • Awareness • Highway incidents • Residential incidents • Violence on the streets • Hostage situations • Contact and cover • Self defence • Preserving crime scene evidence **Disaster management** • Understanding natural and manmade disasters • Understanding effects of disasters • Prevention, preparation, response • Medical response to disasters • Mock drills	**12 hours**
TOTAL		**48 hours**

Text Book:

1. Nancy Caroline's Emergency Care in the Streets, AAOS.
2. An introduction to Diasater Management: Natural Diasaters and Man Made Hazards by S. Vaidhyanathan.

Reference Book:

1. Emergency Medicine, trauma and Disaster Management: Prehospital to hospital care and beyond by Emmanouil Pikoulis and Jay Doucet.

2. Mahajan's Methods in Biostatistics for Medical Students and Research Workers by Bratati Banerjee.

8th Semester

Subject Name: Surgical Critical Care and Post Operative Management(Practical)
Course Code: OTT242M811
Course Type: Major
Course Level: 400
L-T-P-C – 0-0-12-6 **Scheme of Evaluation: (T/P/TP)**

Objective: To equip students with essential knowledge and practical skills in the critical care management of surgical patients, focusing on perioperative monitoring, complication prevention, pain management, and evidence-based postoperative care to optimize patient recovery and outcomes.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Recall** the fundamental principles of surgical critical care, perioperative monitoring, and postoperative management protocols.	**BT 1**
CO2	**Explain** the pathophysiology of postoperative complications, fluid and electrolyte balance, and pain management strategies.	**BT 2**
CO3	**Demonstrate** proficiency in ICU monitoring, ventilator management, wound care, and early mobilization techniques for postoperative patients.	**BT 3**
CO4	**Evaluate** postoperative cases, identify complications, and formulate appropriate management plans to improve surgical patient outcomes.	**BT 4**

Detailed syllabus

Modules	Topics (if applicable) & Course Contents	Periods
I.	• Preoperative Risk Assessment & Optimization • Hemodynamic Monitoring in Surgical Patients • Surgical Stress Response & Its Management • **Pain Management in the Perioperative Period** (Multimodal analgesia, PCA pumps, epidural analgesia) • Ethical & Legal Considerations in Surgical Critical Care	**10 hours**
II.	• Ventilator Management & Weaning Protocols • Acid-Base & Blood Gas Interpretation • Wound Care & Postoperative Infection Management • Sepsis & Septic Shock Management in Surgical Patients • Management of Postoperative Delirium & ICU Psychosis	**13 hours**

III.	• Early vs. Late Postoperative Complications • Surgical Site Infections (SSI) & Its Prevention • **Postoperative Bleeding & Hematoma Formation** (Causes, resuscitation, surgical intervention) • **Deep Vein Thrombosis (DVT) & Pulmonary Embolism (PE)** (Risk factors, prevention, treatment) • Cardiac Complications in Surgical Patients	**13 hours**
IV.	• Postoperative Nutritional Support & Long-Term Dietary Plans • Management of Stomas & Surgical Drains • Psychosocial Support & Mental Health in Postoperative Patients • Long-Term Pain Management & Opioid Stewardship • Rehabilitation in Major Surgeries (Orthopedic, Neurological, GI)	**12 hours**
TOTAL		**48 hours**

Text Books:

Subject Name: Medicine Relevant To Operation Theatre (Theory)
Course Code: OTT242N812
Course Type: Major
Course Level: 300
L-T-P-C 0-0-12-6 **Scheme of Evaluation: (T/P/TP)**

Objective: To provide students with theoretical and practical knowledge about the life saving procedures in case of an airway and respiratory emergency that can they can analyze and apply in the OT.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO1	**Remember** the various medical conditions encounter in the OT.	**BT 1**
CO2	**Understand** basic management of various medical conditions in the OT.	**BT 2**
CO3	**Apply** knowledge of pathophysiology of different medical conditions relevant to OT patients.	**BT 3**
CO4	**Analyze**the conditions and plan the management of the patient accordingly.	**BT 4**

Detailed syllabus

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	**Diabetes Mellitus (DM**) • Signs and symptoms Diabetes Mellitus • Diabetic complications, • Drugs used in diabetes mellitus • Anaesthetic implications of DM • Causes of DM- Type- 1, Type -2 - Gestational diabetes • Prevention • Management -Lifestyle, Medications **Anaemia** • Signs and symptoms • Anaesthetic implications • Causes • Diagnosis • Treatments • Epidemiology	**10 hours**
II.	**Hypertension** • Signs and symptoms • Management • Causes • Pathophysiology • Diagnosis –Prevention	**13 hours**

	Chronic renal failure • Signs and symptoms • Causes • Diagnosis • Treatment • Adjustment of drugs and doses	
III.	**Pregnancy shock** • Managements of various types of shocks during pregnancy • Types and Causes of pregnancy shocks • Clinical Picture of various Shocks **Chronic liver disease/failure** • Causes of chronic liver disease • Physical signs, Recognition, Treatment • Risk factors for various liver diseases • Adjustment of drugs and doses	**13 hours**
IV.	**Obesity** • Diseases associated with obesity • Anaesthetic problems in obese patients • Ideal body weight, adjusted body weight in obese of obesity • Effects on health • Causes • Management **Epilepsy** • Signs and symptoms • Management • Causes • Pathophysiology • Diagnosis • Prevention	**12 hours**
TOTAL		**48 hours**

Text Books:

1. Nancy Caroline's Emergency Care in the Streets.
2. Fundamentals of operation theatre services, Datta,2nd edition, Jaypee publishers

Reference books:

1. Textbook for operation theatre technician, Neelam Rai, ArpitRavindra Lal, Jaypee publishers

2. Emergency Airway Management by Calvin A. Brown

Subject Name: Major Project/ Dissertation
Course Code: OTT242M822
Course Level: 400

L-T-P-C – 0-0-24-12 **Scheme of Evaluation: (T/P/TP)**

Objective: The objective of the Major Research/Project in Operation Theatre Technology is to develop students' research skills, critical thinking, and technical expertise in perioperative care, fostering evidence-based practices, innovation, and ethical professionalism to improve surgical outcomes and patient safety.

Students will observe the basic operations of the operation theatre while interacting with the multidisciplinary team members involved in providing optimal care to the patients. Students must choose a topic related to Operation Theatre Technology**,** Surgical Techniques**,** Sterilization & Infection Control**,** Anesthesia Technology**, or** Perioperative Care.

At the end of Research Project Students will be able:

1) To develop research skills specific to perioperative care and operation theatre technology.
2) To enhance students' ability to analyze, interpret, and apply evidence-based practices.
3) To promote critical thinking and problem-solving in surgical technology.
4) To encourage innovation and improvement in surgical procedures and patient safety.
5) To prepare students for real-world challenges in OT management and infection control.

Suggested Research Areas:

1. Surgical Safety & Patient Care
2. Infection Control & Sterilization
3. Anesthesia & Airway Management
4. Minimally Invasive Surgery & Technology
5. Postoperative Recovery & Pain Management
6. Advancements in Anesthesia Techniques & Their Outcomes
7. OT Management & Human Factors