

Programme Specifications



Programme: B.Sc. (Hons) –Operation Theatre
Technology

Department: Allied Health Sciences

Faculty of Life and Allied Health Sciences

Ramaiah University of Applied Sciences, University House,
New BEL Road, MSR Nagar, Bengaluru – 560 054 www.msruas.ac.in

Programme Specifications: B.Sc. (Hons)-Operation Theatre Technology	
Faculty	Faculty of life and Allied Health Sciences
Department	Allied health Sciences
Programme	B.Sc. (Hons)- Operation Theatre Technology
Head of the Department	
Dean Of Faculty	Dr. Pushpanajali K

- 1. Title of the Award**
B.Sc. (Hons) - Operation Theatre Technology
- 2. Modes of study**
Full-Time
- 3. Awarding Institution / Body**
M.S.Ramaiah University of Applied Sciences – Bengaluru, India
- 4. Joint Award**
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- 5. Teaching Institution**
Faculty of Life and Allied Health Sciences, Department of Allied Health Sciences, RUAS
- 6. Date of Programme Specifications review**

April 2018
- 7. Date of Programme Approval by the Academic Council of MSRUAS**

May 2018
- 8. Next Review Date**

April 2022
- 9. Programme Approving Regulatory Body and Date of Approval**
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- 10. Programme Accrediting Body and Date of Accreditation**
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- 11. Grade Awarded by the Accreditation Body**
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12. Programme Accreditation Validity

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13. Programme Benchmark

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14. Rationale for the Programme

There is a vast scope and need for the allied health professionals in India as well as in other developing countries. In modern operation theatres anaesthetist and surgeons are utilising a variety of electrical and electronic equipment for monitoring anaesthesia and surgical procedures. The successful patient outcome largely depend on the reliable and smooth performance of these equipments and skilled technologist to operate the same which are in acute short supply.

Therefore, an operation theatre (OT) technologist forms an integral part of the operation theatre in any hospital and facilitates the surgical procedures, by preparing in the equipment that are necessary for any surgical procedures. He/she also looks after all the work and management of the operation theatre which includes managing the patients in and out of operation theatre, looking after all the surgical equipment, arrangement of operation theatre table, dressing table, anaesthesia table as well as management of the staff. The technologist is trained in various surgical branches such as General Surgery, OBG, Cardiac, Orthopaedics and Urology.

This innovative competency based curriculum is adopted from the guidelines published by Ministry of Health and Family Welfare, allied health Section 2015- 2016.

A competency-based program focuses on blend of skills and knowledge based on the needs of the community. The main competencies that have been identified as essential in an allied health care professional are clinical knowledge, patient care and communication approaches, which is then developed to teach relevant content across a range of courses and settings.

The curriculum is outcome based and focuses on required theoretical concepts and practical skills in the domain. By undergoing this programme, students develop critical, analytical thinking and problem solving abilities for a smooth transition from academic to real-life work environment. Students do one year internship in the hospitals for skill development abilities to work in a team to enhance practical skills and problem solving abilities. The students are required to submit a well written project report as partial fulfilment for the award of the degree, which will help develop skills of documenting scientific work. In addition students are trained in communication skills and interdisciplinary topics to enhance their scope. The various new features such as foundation courses, early clinical exposure, bioengineering courses, major specialisation, open electives and one year of internship make the students more versatile generating wide range of opportunities including registering for Masters in operation theatre technology. Advanced teaching and learning resources, and experience of the faculty members with their strong connections with health care industry and research organizations makes this programme unique.

For global mobility and acceptability of the graduates, the current curriculum structure is divided into smaller sections with focus on hours of studying that are converted into credit hours as per the international norms followed by various countries

Integrated structure of the curriculum

This competency based curriculum follows horizontal and vertical integration between disciplines; and bridges the gaps between both theory and practice, and between hospital-based practice and community practice.

15. Programme Mission

The purpose of the programme is creation of knowledgeable human resources to work in government, semi-government, private and public sector owned hospitals and health care organizations and also to assume administrative positions. With further progression in education, graduates should be able to undertake teaching and research in colleges and universities as well as in scientific organizations.

16. Graduate Attributes

The courses have been designed with a focus on performance-based outcomes pertaining to operation theatre technology. The learning goals and objectives of the undergraduate education program is based on the performance expectations. They are articulated as learning goals (why we teach this) and learning objectives (what the students will learn). Using the framework, students will learn to integrate their knowledge, skills and abilities in a hands-on manner in a professional healthcare setting. The learning goals are divided into nine key areas,

1. Clinical care
2. Communication
3. Member of a multidisciplinary health care team
4. Ethics and accountability at all levels (clinical, professional, personal and social)
5. Commitment to professional excellence
6. Leadership and mentorship
7. Social accountability and responsibility
8. Scientific attitude
9. Lifelong learning

The aims of the curriculum is to produce Operation Theatre Technologists who are

1. technically and clinically competent
2. aware of safety issues and the importance of quality assurance
3. understand the theoretical basis for evidence based practice
4. effective members of the multidisciplinary team

17. Programme Goal

The programme acts as a specialised course and helps to develop critical, analytical and problem solving skills at first level. This foundation degree makes the graduates employable in health care organizations and also to assume administrative positions in various types of organizations. The students can progress to pursue a career in academics or health care industry or as a researcher.

18. Programme Objectives

1. Demonstrate ability to prepare and maintain Operation Theatre
2. Demonstrate ability to maintain equipment support in an acute care environment
3. Identify and inspire to maintain a sterile field
4. Follow infection control policies and procedures
5. Manage and maintain theatre equipment
6. Demonstrate ability to prepare the patient for operative procedures
7. Provide intra-operative equipment and technical support
8. Demonstrate skills and knowledge to assist anaesthetist in handling emergencies outside of OT Room
9. Manage hazardous waste and follow biomedical waste disposal protocols
10. Ensure availability of medical and diagnostic supplies
11. Monitor and assure quality
12. Work effectively as a team member
14. Maintain a safe, healthy, and secure working environment.

19. Intended Learning Outcomes of the Programme

The Intended Learning Outcomes (ILOs) are listed under four headings:

1. Knowledge and Understanding,
2. Cognitive Skills
3. Practical Skills and
4. Capability / Transferable Skills.

**Core course: Foundation course
(Semester one to three)****Knowledge and Understanding**

- KU1: Explains health care delivery system in India, basic medical terminology, computer and IT, physics, mathematics and environmental science.
- KU2: Describes human rights, medical law and ethics and Indian constitution including sociology and ethics.
- KU3: Explains principles of management
- KU4: Collates and analyse medical records

Cognitive Skills

- CS1: Describes structure, function and biochemical reactions of human body
- CS2: Correlates diseases and specific health care technology
- CS3: Explains abnormal functioning and structure, various infections and effects of drugs on human body
- CS4: Selects and defends appropriate research methodology and biostatistics technique for a given research problem

Practical Skills

- PS1: Demonstrates basic and emergency care and life support skills
- PS2: Demonstrate the ability to provide a safe and effective care to the patient
- PS3: Analyses data on medical record using appropriate software
- PS4: Applies statistical software for data mining and analysis of the research project related data.

Transferable Skills

- TS1: Communicates effectively with the team members, patients and relatives
- TS2: Manages clinical practice of the specialty technology within available resources
- TS3: Works under various situations such as community based or hospital based practice
- TS4: Adopts various quality assurance and patient safety measures

Operation Theatre Technology (SEM 4 to 8)**Knowledge and Understanding**

- KU1: Explains the basic and special anaesthetic procedures
- KU2: Describes the common surgical procedures
- KU3: Describe pharmacology of anaesthetic agents used for general and local anaesthesia
- KU4: Explain methods of sterilization of various equipment, medications and instruments used in OT.

Cognitive Skills

- CS1: Compare and contrast a various electronic system
- CS2: Applies SOPs for basic intensive care using the algorithms.
- CS3: Correlates anaesthetic procedures to surgical techniques
- CS4: Effectively manages the patient postoperatively including pain management

Practical Skills

- PS1: Demonstrates ability to prepare and maintain Operation Theatre
- PS2: Demonstrates ability to maintain equipment support in an acute care environment
- PS3: Provides intra-operative equipment and technical support
- PS4: Maintains a safe, healthy, and secure working and monitor and assure quality

Capability / Transferable Skills

- TS1: Follows infection control policies and procedures for a safe sterile environment for major and minor surgeries
- TS2: Demonstrates skills and knowledge to assist anaesthetist in handling emergencies outside of OT Room
- TS3: Manages hazardous waste and follow biomedical waste disposal protocols
- TS4: Works effectively with others

20. Programme Structure

Basic Foundation Courses (Semester 1 to Semester3) for all Streams (MRIT, DTT and OTT): 74 credits

SEMESTER 1

S. No.	Code	Course Title	Theory (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	18AHG101A	Healthcare Delivery System	3	0	3	100
2	18AHG102A	Computer Applications	1	2	2	50
3	18AHG103A	Communication Skills	3	0	3	100
4	18AHG104A	Medical Terminology and Record Keeping	1	2	2	50
5	18AHG105A	Constitution of India, Medical Law and Ethics	2	0	2	50
6	18AHG106A	Quality Assurance and Patient safety	2	2	3	150
7	18AHG107A	Health care Professionalism and values	2	0	2	50
8	18AHG108A	Principles of Management	2	0	2	50
9	18AHG109A	Community Orientation and clinical visit	1	2	2	50
10	18AHG110A	Medical Sociology	2	0	2	50
Total			19	8	23	700
Total number of contact hours per week			27 hours			

SEMESTER 2

S. No.	Code	Course Title	Theory (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	18AHG111A	General Anatomy	3	2	4	150
2	18AHG112A	General Physiology	3	2	4	150
3	18AHG113A	General Biochemistry	3	2	4	150
4	18AHG114A	General Microbiology	3	2	4	150
5	18AHG115A	Applied Physics	3	2	4	150
6	18AHG116A	Basic Electrical and Electronics	3	2	4	150
Total			18	12	24	900
Total number of contact hours per week			30 hours			

SEMESTER 3

S.No.	Code	Course Title	Theory (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	18AHG201A	General Pathology	3	2	4	150
2	18AHG202A	Pharmacology	3	2	4	150
3	18AHG203A	Clinical Medicine	3	2	4	150
4	18AHG204A	Communication Skills for health care professionals	3	0	3	100
5	18AHG205A	Research Methodology and Biostatistics	3	2	4	100
6	18AHG206A	Basic Medical Instrumentation	3	2	4	100
7	18AHG207A	Environmental Science and Health	2	0	2	50
8	18AHG208A	Early clinical exposure	0	4	2	50
Total			20	14	27	850
Total number of contact hours per week			34 hours			

Specialisation Courses (Semester 4 to Semester 8): 120 credits

SEMESTER 4

S.No.	Code	Course Title	Theory (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	18OTT211A	Principles of Anaesthesia	3	6	6	200
2	18OTT212A	Clinical Pharmacology	2	2	3	100
3	18OTT213A	Clinical Microbiology	2	2	3	100
4	18OTT214A	Basics of Surgical Procedures	2	2	3	100
5	18OTT215A	Directed Clinical Education -I (Studentship)		18	9	200
Total			09	30	24	700
Total number of contact hours per week			39 hours			

SEMESTER 5

S.No.	Code	Course Title	Theory (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	18OTT301A	Basic Techniques of Anaesthesia	3	6	6	200
2	18OTT302A	CSSD Procedures	2	2	3	100
3	18OTT303A	Electronics and Technology in Surgery and Anaesthesia	2	2	3	100
4	18OTT304A	Directed Clinical Education -II (Studentship)		18	9	200
5	18OEE31xA	Open Elective-I			3	100
Total			07	28	24	700
Total number of contact hours per week			35 hours			

SEMESTER 6

S.No.	Code	Course Title	Theory (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	18OTT311A	Advance Anaesthetic and Surgical Techniques	1	4	3	100
2	18OTT312A	Basic Intensive Care	2	4	4	100
3	18OTT313A	Specialty Surgery and Anaesthesia	3	4	5	200
4	18OTT314A	Directed Clinical Education -III (Studentship)		18	9	200
5	18OEE32xA	Open Elective-II			3	100
Total			06	30	24	700
Total number of contact hours per week			34 hours			

SEMESTER 7 and SEMESTER 8

S.No.	Code	Course Title	Theory (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	18OTT401A	Research Project		8	4	100
2	18OTT402A	OTT Internship Surgery		44	22	150
3	18OTT403A	OTT Internship Anaesthesia		44	22	150
Total				96	48	400
Total number of contact hours per week						

Open Elective Courses: A number of electives from faculty of Mathematical and Physical Sciences, Engineering, Management and Commerce, Art and Design, Hospitality Management and Catering Technology, Pharmacy, Dental Sciences will be announced one semester prior to the scheduled semester

20. Programme Delivery

As per Time Table

21. Teaching and Learning Methods

The module delivery comprises of a combination of few or all of the following:

1. Face to face lectures using audio-visuals
2. Workshops-group discussions, debates, presentations
3. Demonstrations
4. Guest lectures
5. Laboratory-work/Field work/Workshop
6. Hospital postings
7. Seminars
8. Group Exercises
9. Project Work

22. Learning methodologies

With a focus on self-directed learning, the curriculum will include a foundation course that focuses on communication, basic computer skills, professionalism, ethics and law. It also incorporate early clinical exposure and directed clinical education during speciality training. It is envisaged that the AHPs should have sufficient clinical exposure integrated with the learning of basic and laboratory sciences. There is an emphasis on the introduction of case scenarios for classroom discussion/case-based learning.

It is well documented in the literature that teaching and learning of clinical skills occur at the patient's bedside or other clinical areas supplemented by didactic teaching in classrooms and lecture theatres. Our institute has instituted clinical skill centres, laboratories and high-fidelity simulation laboratories to enhance the practice and training for allied and healthcare students and professionals. The skills training centre overcomes the shortcoming of patients being used to learn and practice the necessary skills. The use of simulators addresses many issues such as lack of confidence and inadequate skills in handling the equipment. Practice on simulators and with corrective measures students can hone the skills and gain confidence to perform in real life situations.

Teaching and Learning Methods

1. Team teaching/ Integrated teaching
2. Face to Face lectures using audio-visuals
3. Seminars/journal clubs/e-lectures
4. Case based discussions
5. Group discussions, debates, presentations
6. Demonstrations on videos, computers and models
7. Hospital based learning
8. Laboratory work
9. Dissertation/ Group project work
10. School visits/Outreach center visits
11. Interdepartmental meets
12. Continuing medical education programs/symposiums/workshops
state/national/international conferences and conventions

23. Assessment and Grading

1. Every course will be assessed for a weight of 100
2. There are two components- component-1 and component-2
3. Component-1 carries a weight of 50% and component -2 carries a weight of 50%
4. Component-1(CE) is subdivided in to a test and an assignment, test carries 25% weight and assignment carries 25% weight.
5. Component-2 is a written examination (SEE) carrying 50% weight
6. Laboratory /Clinical ** Examination will have two components:
Component-1(CE): Conduction of laboratory exercises and submission of report: 50% weight
Component-2: SEE (Semester end laboratory examination): 50% weight
7. A minimum of overall 50 % is required for pass with 50 % in each of the components for core subjects and overall 40% is required for a pass with 40% in each of the Components for ability enhancement compulsory courses.
8. The marks distribution for each course is given in the programme structure- section 20
9. Other flexibilities (exceptions) are as per the Academic Regulations of B.Sc. (Hons)-Healthcare Technology programme.

** Clinical examination includes

1. Objective Structured Clinical Examination (OSCE), Objective Structured Practical Examination (OSPE), Objective Structured Long Examination Record (OSLER)
2. Mini Case Evaluation Exercise (Mini-CEX)
3. Case-based discussion (CBD)
4. Direct observation of procedures (DOPs)
5. Portfolio
6. Multi-source feedback
7. Patient satisfaction questionnaire

24. Attendance

A minimum of 85% attendance is compulsory to appear for semester end examinations. Condoning of attendance shortage is as per the Academic Regulations of B.Sc. (Hons) - Operation Theatre Technology Programme.

25. Award of Class

As per the Academic Regulations for B.Sc. (Hons) - Operation Theatre Technology Programme

26. Student Support for Learning

Students are given the following support:

1. Course notes
2. Reference books in the library
3. Magazines and Journals
4. Internet facility
5. Computing facility
6. Laboratory facility
7. Staff support
8. Lounges for discussions

9. Any other support that enhances their learning

27. Quality Control Measures

Following are the Quality Control Measures:

1. Review of course notes
2. Review of question papers and assignment questions
3. Student feedback
4. Moderation of assessed work
5. Opportunities for the students to see their assessed work
6. Review by external examiners and external examiners reports
7. Staff Student Consultative Committee meetings
8. Student exit feedback
9. Subject Assessment Board (SAB)
10. Programme Assessment Board (PAB)

28. Curriculum Map

Course Code	Intended Learning Outcomes											
	Knowledge and Understanding				Cognitive (Thinking) Skills (Critical, Analytical, Problem Solving)				Practical skills			
	KU 1	KU2	KU3	KU4	CS1	CS2	CS3	CS4	PS1	PS2	PS3	PS4
18AHG101A	✓											
18AHG102A											✓	
18AHG103A												
18AHG104A				✓								
18AHG105A	✓											
18AHG106A										✓		
18AHG107A										✓		
18AHG108A			✓									
18AHG109A												
18AHG110A												
18AHG111A					✓	✓	✓					
18AHG112A					✓	✓	✓					
18AHG113A					✓	✓	✓					
18AHG114A					✓	✓	✓					
18AHG115A												
18AHG116A												
18AHG201A					✓	✓	✓					
18AHG202A					✓	✓	✓					
18AHG203A					✓	✓	✓					
18AHG204A												
18AHG205A												
18AHG206A												
18AHG207A	✓											
18AHG208A									✓	✓		
18OTT211A		✓										
18OTT212A		✓	✓									
18OTT213A		✓	✓	✓								
18OTT214A	✓											
18OTT215A					✓	✓	✓					
18OTT301A									✓		✓	
18OTT302A				✓	✓						✓	
18OTT303A				✓							✓	
18OTT304A					✓	✓	✓		✓	✓	✓	
18OEE31xA												
18OTT311A					✓		✓	✓	✓	✓	✓	
18OTT312A												
18OTT313A												
18OTT314A												
18OEE32xA												
18OTT401A								✓				
18OTT402A								✓			✓	✓

29. Capability / Transferable Skills Map

Course Code	Skills								
	GK	SL	WC	OC	P	B	IM	PM	L
18AHG101A	✓	✓	✓						
18AHG102A							✓		
18AHG103A						✓			✓
18AHG104A	✓	✓	✓						
18AHG105A	✓	✓	✓						
18AHG106A	✓	✓	✓						
18AHG107A						✓		✓	✓
18AHG108A						✓		✓	✓
18AHG109A				✓		✓			
18AHG110A	✓	✓			✓	✓			
18AHG111A	✓	✓	✓		✓				
18AHG112A	✓	✓	✓		✓				
18AHG113A	✓	✓	✓		✓				
18AHG114A	✓	✓	✓		✓				
18AHG115A				✓	✓			✓	✓
18AHG116A									
18AHG201A	✓	✓	✓		✓				
18AHG202A	✓								
18AHG203A	✓	✓	✓		✓				
18AHG204A	✓	✓	✓		✓				
18AHG205A	✓	✓	✓		✓				
18AHG206A	✓	✓	✓		✓				
18AHG207A	✓	✓							
18AHG208A	✓			✓				✓	✓
18OTT211A	✓	✓	✓	✓					
18OTT212A	✓	✓	✓	✓					
18OTT213A	✓	✓	✓	✓					
18OTT214A	✓	✓	✓						
18OTT215A		✓	✓	✓		✓	✓	✓	✓
18OTT301A	✓	✓	✓	✓	✓	✓	✓	✓	✓
18OTT302A	✓	✓	✓	✓	✓	✓	✓	✓	✓
18OTT303A	✓	✓	✓		✓		✓		
18OTT304A		✓	✓	✓		✓	✓	✓	✓
18OEE31xA									
18OTT311A	✓	✓	✓						
18OTT312A	✓	✓	✓						
18OTT313A	✓	✓	✓						
18OTT314A		✓	✓	✓		✓	✓	✓	✓
18OEE32xA									
18OTT401A	✓	✓	✓	✓	✓	✓	✓		
18OTT401A	✓	✓	✓	✓	✓	✓	✓	✓	✓
18OTT402A	✓	✓	✓	✓	✓	✓	✓	✓	✓

GK: Group Work; SL: Self Learning; WC: Written Communication; OC: Oral Communication P: Presentation; B: Behavioural; IM: Information Management; PM: Personal Management L: Leadership

28. Co-curricular Activities

Students are encouraged to take part in co-curricular activities like seminars, conferences, symposium, paper writing, attending industry exhibitions, project competitions and related activities to enhance their knowledge and network.

29. Cultural and Literary Activities

To remind and ignite the creative endeavours annual cultural festivals held and the students are made to plan and organize the activities.

30. Sports and Athletics

Students are encouraged to develop a habit of taking part in outdoor and indoor games on regular basis.