



# Programme Specifications

**B.Sc. (Hons) Programme**

**Programme:**  
Dialysis Therapy Technology (DTT)

**Department:**  
Allied Health Sciences

Faculty of Life and Allied Health Sciences  
M.S. Ramaiah University of Applied Sciences

<b>Programme Specifications: B.Sc. (Hons)-Dialysis Therapy and Technology</b>	
<b>Faculty</b>	Faculty of Life and Allied Health Sciences
<b>Department</b>	Allied Health Sciences
<b>Programme</b>	B.Sc. (Hons)-Dialysis Therapy Technology
<b>Dean of Faculty</b>	Dr. Sundaresh D.C.
<b>Head of the Department</b>	Dr. Medha A. Joshi

- 1. Title of the Award**  
B.Sc. (Hons) -Dialysis Therapy 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 2019
- 7. Date of Programme Approval by the Academic Council of MSRUAS**  
May 2019
- 8. Next Review Date**  
April 2023
- 9. Programme Approving Regulatory Body and Date of Approval**  
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- 10. Programme Accrediting Body and Date of Accreditation**
- 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

Advances in science and technology have made a paradigm shift in health care over the past decade resulting in wider appreciation of the fact that health service delivery should go beyond just physicians and nurses and involve team work among clinicians and non-clinicians or allied health professionals. India is fast emerging on a global medical tourism hub with international patient base growing in double digits every year. This rising trend has resulted in an increase in investment by health care providers installing best in class equipment, upgrading medical technology and quality accreditation. In the current scenario physicians dependent on sophisticated machinery and technology to arrive at an appropriate diagnosis. Allied healthcare professionals (AHPs) who can handle these equipments form an indispensable member of the team for successful management of patients.

Dialysis therapy technologists play a major role in patient care, patient education and patient compliance with the acquisition of necessary clinical skills and technical knowledge to perform dialysis successfully.

With an increase in the incidence of diabetes related to life style modifications, patient population requiring dialysis has increased exponentially. Dialysis treatment has been viewed as a life-sustaining therapy that aims to extend survival and improve the quality of life. To cater to this increased demand, dialysis centres have been established at various health care delivery levels. There is an acute shortage of well-trained competent dialysis therapy technologists who can maintain and operate the machines and educate the patients.

While the damaged kidneys are under treatment or when a person is waiting for a kidney transplant, dialysis is a lifesaving therapy that eliminates salts and other waste products that would otherwise accumulate in the blood and poison the person. Frequency of dialysis for a patient depends on the severity of the disease. Majority of these patients may not fully comprehend the medical information, and may not be able to communicate effectively with healthcare providers, Understanding of the functioning of the body during health and disease is particularly important for kidney patients undergoing dialysis. These patients need to attend treatment sessions regularly and on time, follow dietary and fluid restrictions, and adhere to complex medication regimens, all of which requires appropriate communication and building of rapport with patients.

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 are 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 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 specialization, open electives and one year of internship make the students more versatile generating wide range of opportunities including registering for Masters in dialysis e therapy 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 specialty. 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. These learning goals are divided into nine key areas,

1. Clinical care
2. Communication
3. Membership of a multidisciplinary health 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 Lifelong learning

**17. Programme Goal**

The programme acts as a specialized 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 student can progress to pursue a career in academics or health care industry or as a researcher.

**18. Programme Objectives**

The Bachelor of Science Honors degree programme in Dialysis Therapy Technology imparts knowledge and understanding of structure and function of human body. The programme provides sufficient understanding and cognitive abilities to operate, develop and incorporate quality scientific methods, techniques, and processes applicable to various health care delivery systems to achieve the desired results. In addition, the programme imparts knowledge and training to develop transferable skills and ability to work in communities.

**Specialization: Dialysis Therapy Technology**

**Learning Objectives:** At the completion of this course, the student should be able to

1. apply the principles of dialysis and skills necessary to provide safe and effective care to the patient undergoing hemodialysis treatments
2. demonstrate the use and maintenance of hemodialysis equipment and alternate dialysis procedures
3. function as a dialysis professional under the supervision of the physician or nephrologist in a dialysis facility
4. assess for any complications with a knowledge of the underlying problem and recognize the need to report the complications to the superiors
5. respond effectively to the physical and emotional needs of the patient undergoing dialysis treatment.
6. identify the problem and troubleshoot and undertake minor repair in dialysis equipment unit such as hemodialysis machine, water treatment plant, dialyzer reprocessing machine, etc. under sterile conditions

**Graduate attributes**

1. The primary goal of the degree program is to prepare competent professionals in dialysis therapy technology with adequate clinical skills for patient care with chronic kidney disease who require dialysis and technical knowledge to operate and maintain dialysis equipment,
2. the graduates receive the training in research in the field of dialysis in the academic sphere as a researcher, as an academic dialysis professional to address problems in renal dialysis therapy.
3. The course aims at preparing the dialysis therapy technologist as an independent care provider in the field of dialysis.

**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
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, sociology and ethics.
- KU3: Explains principles of management
- KU4: Collates and analyses 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: Able to communicate effectively with the team members, patients and their 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

**Dialysis Therapy Technologist (Semester 4 to 8)****1. Knowledge and Understanding**

- KU1: Explains the abnormal structure and function of human renal system as related to dialysis
- KU2: Explains the role of drugs in dialysis
- KU3: Recognizes biochemical processes involved in dialysis techniques and effect of nutrition on patients on dialysis
- KU4: Collates data required for implementing appropriate dialysis technique.

**2. Cognitive Skills**

- CS1: Demonstrates ability to formulate and implement a plan for examination of a patient in need of dialysis
- CS2: Compare and contrast various dialysis techniques.
- CS3: Assesses the patient for any complications with an understanding of the problem and recognizes the need to report the complications to the physician or nephrologist
- CS4: Responds effectively to the physical and emotional needs of the patient undergoing dialysis treatment

**3. Practical Skills**

- PS1: Demonstrates ability to manage acute emergent complications in a patient on dialysis
- PS2: Administers medications under the supervision of nephrologist
- PS3: Performs peritoneal dialysis
- PS4: Demonstrates ability to operate and maintain all equipment in the dialysis unit

**4. Capability / Transferable Skills**

- TS1: Demonstrates ability to provide safe and effective care to the individual
- TS2: Explains the process of operating dialysis equipment and how to perform alternate dialysis procedures.
- TS3: Demonstrates a sensitive and caring attitude towards the patient
- TS4: Communicates relevant information to other members and completes accurate documentation

**20. Programme Structure for B.Sc. (Hons) Dialysis Therapy Technology (DTT)****Basic Foundation Courses (Semester 1 to Semester 3) for all Streams (MRIT, DTT and OTT): 74 credits**

<b>SEMESTER 1</b>						
S. No.	Code	Course Title	Theory (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	18AHG101A	Healthcare Delivery System India	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
11	18AHG110A	Medical Sociology	2	0	2	50
Total			<b>19</b>	<b>08</b>	<b>23</b>	700
<b>Total number of contact hours per week</b>			<b>27 hours</b>			
<b>SEMESTER 2</b>						
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			<b>18</b>	<b>12</b>	<b>24</b>	<b>900</b>
<b>Total number of contact hours per week</b>			<b>30 hours</b>			

**(Revised Credits from Semester 3 to 8 as approved in the Academic Council meeting held on 24<sup>th</sup> July'2019)**

### SEMESTER 3

S.No.	Code	Course Title	Theory (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	18AHG201A	General Pathology	2	2	3	100
2	18AHG202A	Pharmacology	2	2	3	100
3	18AHG203A	Clinical Medicine	3	0	3	100
4	18AHG204A	Communication Skills for Health Care Professionals	2	0	2	50
5	18AHG205A	Research Methodology and Biostatistics	2	0	2	50
6	18AHG206A	Basic Medical Instrumentation	3	0	3	100
7	18AHG207A	Environmental Science and Health	2	0	2	50
8	18AHG208A	Early Clinical Exposure	0	6	3	50
Total			<b>16</b>	<b>10</b>	<b>21</b>	<b>600</b>
<b>Total number of contact hours per week</b>			<b>28 hours</b>			

### SEMESTER 4

S. No.	Code	Course Title	Theory (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	18DTT211A	Applied Anatomy and Physiology for Dialysis Technology	2	2	3	100
2	18DTT212A	Pharmacology for Dialysis Technology	2+1 (Tut)		3	100
3	18DTT213A	Applied Pathology and Microbiology for Dialysis Technology	2	2	3	100
4	18DTT214A	Directed clinical education – I (Studentship)	0	24	12	100
Total			<b>7</b>	<b>28</b>	<b>21</b>	<b>400</b>
<b>Total number of contact hours per week</b>			<b>35 hours</b>			

### SEMESTER 5

S. No.	Code	Course Title	Theory (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	18DTT301A	Concepts of Renal Disease and Nutrition	4	0	4	150
2	18DTT302A	Applied Dialysis Therapy Technology - I	2	8	6	200
3	18DTT303A	Directed clinical education – II (Studentship)		20	10	100
4	18OEE31xA	Open Elective-I			2	50
Total			<b>6</b>	<b>28</b>	<b>22</b>	<b>600</b>
<b>Total number of contact hours per week</b>			<b>34 hours</b>			



**SEMESTER 6**

S. No.	Code	Course Title	Theory (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	18DTT311A	Applied Dialysis Therapy Technology -II	2	8	6	200
2	18DTT312A	Directed clinical education – III (Studentship)		26	13	100
3	18OEE32xA	Open Elective-II			2	50
Total			2	34	21	250
<b>Total number of contact hours per week</b>			<b>36 hours</b>			

**SEMESTER 7 and SEMESTER 8**

S. No.	Code	Course Title	Theory (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	18DTT401A	Research Project		8	4	100
2	18DTT402A	DTT Internship		88	44	300
Total				96	48	400
<b>Total number of contact hours per week</b>						

**Total program credits 132+48=180**

**Open Elective Courses:** A number of open elective courses 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. The students can also register through online mode as per the regulations

**21. Programme Delivery: As per Time Table****22. Teaching and Learning Methods****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 specialty training. It is envisaged that the Allied Health Professionals (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.

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 clinical skill center, laboratories and high-fidelity simulation laboratories to enhance the practice and training for allied and healthcare students and professionals. The skills training in the center 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.

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

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

### 23. Assessment and Grading

1. Every course will be assessed for 200/150/ 100/50 Marks
2. The weightage of marks for components are as follows:
  - i) Course without Laboratory
 

Theory (Core Course)	:100 marks (60% for CE and 40% for SEE)
Theory (Non-core Course)	: 50 marks (30 for CE and 20 for SEE)
  - ii) Course with Laboratory
 

Theory	: 70% Marks (50% for CE and 20% for SEE)
Lab	: 30% Marks (20% CE and 10% for SEE)
  - iii) Laboratory/ Clinical (only) : 50/100 Marks (CE)
3. A minimum of overall 40% is required for a pass in the courses and attendance in SEE component is compulsory
4. The total marks for each course is given in the programme structure - section 20
5. Other flexibilities (exceptions) as per the programme regulations

\*\* 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 75% attendance is compulsory to appear for semester end examinations. 7) Marks will be awarded to the student with more than 75% attendance as a part of Continuous Evaluation. The marks will be awarded as follows:

- 75-80% =2 marks
- 81-85%= 4 marks
- 86-90%= 6 marks
- 91-95%= 8 marks
- 96-100%= 10 marks

< 75%= 0

### **25. Award of Class**

As per the Academic Regulations for B.Sc. (Hons)

### **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. Hospital facility
8. Staff support
9. Lounges for discussions
10. Any other support that enhances their learning

### **27. Quality Control Measures**

Following are the Quality Control Measures:

1. Review of question papers and assignment questions
2. Student Feedback
3. Opportunities for the students to see their assessed work
4. Staff Student Consultative Committee meetings
5. Student exit feedback
6. Subject Assessment Board (SAB)
7. 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									✓	✓		
18DTT211A	✓				✓	✓	✓					
18DTT212A		✓			✓	✓	✓					
18DTT213A			✓		✓	✓	✓					
18DTT214A					✓	✓	✓	✓	✓			
18DTT301A					✓	✓	✓					
18DTT302A			✓			✓						
18DTT303A			✓		✓	✓	✓		✓	✓		
18OFF31xA												
18DTT311A					✓	✓	✓		✓	✓	✓	
18DTT312A									✓	✓	✓	✓
18OFF32xA												
18DTT401A								✓				
18DTT402A								✓			✓	✓

**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	✓			✓				✓	✓
18DTT211A	✓	✓	✓						
18DTT212A	✓	✓	✓						
18DTT213A	✓	✓	✓						
18DTT214A			✓	✓	✓	✓	✓	✓	
18DTT301A	✓	✓	✓						
18DTT302A	✓	✓	✓						
18DTT303A			✓	✓	✓	✓	✓	✓	
18OEE31xA									
18DTT311A						✓	✓	✓	✓
18DTT312A			✓	✓	✓	✓	✓	✓	
18OEE32xA									
18DTT401A	✓	✓	✓	✓	✓	✓	✓		
18DTT402A	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

**30. 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.

**31. Cultural and Literary Activities**

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

**32. Sports and Athletics**

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