

## 2. PROGRAM EDUCATION OBJECTIVES (PEOs)

The overall objective of the learning outcome-based curriculum framework (LOCF) for MSc RRT & DT program as follows:

| PEO No. | Education Objective  |
|---------|--|
| PEO1    | Students will be able to use their fundamental knowledge and clinical competence in various scientific aspects of renal replacement therapy  |
| PEO2    | Students will demonstrate strong and well defined clinical / practical skills in renal replacement therapy   |
| PEO3    | Students will be able to practice the profession with highly professional and ethical attitude, strong communication skills, and to work in an inter-disciplinary team                                     |
| PEO4    | Students will be able to use interpersonal and collaborative skills to identify, assess and formulate problems and execute the solution  |
| PEO5    | Students will be able to imbibe the culture of research, innovation, entrepreneurship and incubation   |
| PEO6    | Students will be able to participate in lifelong learning process for a highly productive career and will be able to relate the concepts of renal replacement therapy towards serving the cause of society |





### 3. GRADUATE ATTRIBUTES

| S No. | Attribute                                    | Description  |
|-------|--|--|
| 1     | <b>Domain Knowledge</b>                      | Demonstrate comprehensive knowledge, competency and understanding of one or more disciplines that form a part of a professional domain   |
| 2     | <b>Clinical / Hands-on skills</b>            | Demonstrate clinical / hands-on skills in order to deliver and manage quality health care services   |
| 3     | <b>Communication Skills</b>                  | Demonstrate the ability to listen carefully, read and write analytically, and present complex information in a clear and concise manner to different groups using appropriate media.                               |
| 4     | <b>Team work</b>                             | Demonstrate the ability to effectively and efficiently work and collaborate with diverse teams in the best interest of health care needs of the community  |
| 5.    | <b>Professional ethics</b>                   | Demonstrate the ability to embrace moral/ethical values in conducting one's life, formulate a position/argument about an ethical issue from multiple perspectives, and use ethical practices in professional life. |
| 6.    | <b>Research / Innovation-related Skills</b>  | A sense of inquiry and investigation for raising relevant and contemporary questions, synthesizing and articulating.   |
| 7.    | <b>Critical thinking and problem solving</b> | Demonstrate capacity to think critically and extrapolate from what one has learned by applying their competencies and knowledge to solve different kinds of non-familiar problems in real life situations.         |



| S No. | Attribute                           | Description  |
|-------|-------------------------------------|--|
| 8     | <b>Information/Digital Literacy</b> | Demonstrate capability to use ICT in a variety of learning situations, demonstrate ability to access, evaluate, and use a variety of relevant information sources and to use appropriate software for analysis of data.  |
| 9     | <b>Multicultural Competence</b>     | Demonstrate knowledge of the values and beliefs of multiple cultures and a global perspective, effectively engage in a multicultural society, interact respectfully with diverse groups.   |
| 11.   | <b>Leadership qualities</b>         | Demonstrate leadership capability to formulate an inspiring vision, build a team, motivate and inspire team members to attain organizational vision  |
| 12.   | <b>Lifelong Learning</b>            | Demonstrate the ability to acquire knowledge and skills, that are necessary for participating in learning activities throughout life, through self-paced and self-directed learning aimed at personal development, meeting economic, social and cultural objectives, and adapting to demands of work place through knowledge/skill development/reskilling. |





### 5. PROGRAM OUTCOMES (POs):

After successful completion of Masters / MSc RRT & DT program students will be able to:

| PO No. | Attribute  | Competency   |
|--------|--|--|
| PO1    | <b>Domain knowledge</b>                            | Possess and acquire scientific knowledge to work as a health care professional   |
| PO2    | <b>Clinical/ Hands-on skills</b>                   | Demonstrate and possess clinical and hands-on skills to provide quality health care services   |
| PO3    | <b>Team work</b>                                   | Demonstrate team work skills to support shared goals with the interdisciplinary health care team to improve societal health                                  |
| PO4    | <b>Ethical value &amp; professionalism</b>         | Possess and demonstrate ethical values and professionalism within the legal framework of the society   |
| PO5    | <b>Communication</b>                               | Communicate effectively and appropriately with the interdisciplinary health care team and the society  |
| PO6    | <b>Evidence based practice</b>                     | Demonstrate high quality evidence based practice that leads to excellence in professional practice   |
| PO7    | <b>Life-long learning</b>                          | Enhance knowledge and skills with the use of advancing technology for the continual improvement of professional practice                                     |
| PO8    | <b>Entrepreneurship, leadership and mentorship</b> | Display entrepreneurship, leadership and mentorship skills to practice independently as well as in collaboration with the interdisciplinary health care team |







# MANIPAL COLLEGE OF HEALTH PROFESSIONS MANIPAL

(A constituent unit of MAHE, Manipal)

The subject code equivalence for subjects mentioned in syllabus copy of course **M.Sc. Renal Replacement Therapy & Dialysis Technology** from the academic year 2021-22 batch. These changes have been discussed in BOS meeting held on 13.12.2021 and subsequently approved in the 70<sup>th</sup> Academic Council meeting held on 14.01.2022.

## SEMESTER - I

| Course Title   | Old Course Code | Revised Course Code |
|--|-----------------|---------------------|
| Advanced Biostatistics & Research Methodology                | ABS6101         | ABS5101             |
| Anatomy and physiology related to kidney and dialysis        | RRT6101         | RRT5101             |
| Microbiology and pharmacology related to kidney and dialysis | RRT6102         | RRT5102             |
| Kidney disease & dialysis therapy                            | RRT6103         | RRT5103             |
| Comprehensive clinical skill - I                             | RRT6131         | RRT5131             |

## SEMESTER - II

| Course Title                                 | Old Course Code | Revised Course Code |
|--|-----------------|---------------------|
| Ethics & Pedagogy                            | EPG6201         | EPG5201             |
| Hospital organisation and Administration     | RRT6201         | RRT5201             |
| Complications of kidney disease and dialysis | RRT6202         | RRT5202             |
| Extracorporeal blood Therapies in Nephrology | RRT6203         | RRT5203             |
| Comprehensive clinical skill - II            | RRT6231         | RRT5231             |
| Research project -I                          | RRT6251         | RRT5251             |

## SEMESTER - III

| Course Title  | Old Course Code | Revised Course Code |
|---|-----------------|---------------------|
| Kidney transplantation  | RRT7101         | RRT6101             |
| Nutrition and Psychosocial aspects in kidney failure patients.  | RRT7102         | RRT6102             |
| Comprehensive clinical skill - III                              | RRT7131         | RRT6131             |
| Research Project - II   | RRT7151         | RRT6151             |
| <b>Program Elective:</b>  |                 |                     |
| Renal supportive care & Rehabilitation                          | RRT7011         | RRT6011             |
| Vascular access and Kidney transplantation physical counselling | RRT7021         | RRT6021             |

## SEMESTER - IV

| Course Title  | Old Course Code | Revised Course Code |
|---|-----------------|---------------------|
| Advances in Dialysis techniques                             | RRT7201         | RRT6201             |
| Rehabilitation and quality assurance in dialysis technology | RRT7202         | RRT6202             |
| Biomedical instrumentation related to dialysis technology   | RRT7203         | RRT6203             |
| Comprehensive clinical skill - IV                           | RRT7231         | RRT6231             |
| Research Project - III                                      | RRT7251         | RRT6251             |

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## 6. COURSE STRUCTURE, COURSE WISE LEARNING OBJECTIVE, AND COURSE OUTCOMES (COs)

### SEMESTER - I

| Course Code  | Course Title   | Credit Distribution (hours/week) |          |          |           |           | Marks Distribution |            |            |
|--------------|--|----------------------------------|----------|----------|-----------|-----------|--------------------|------------|------------|
|              |  | S                                | T        | PW       | CL        | C         | IAC                | ESE        | Total      |
| ABS6101      | Advanced Biostatistics & Research Methodology                | 3                                | 1        | -        | -         | 4         | 30                 | 70         | 100        |
| RRT6101      | Anatomy and physiology related to kidney and dialysis        | 1                                | 2        | -        | -         | 3         | 50                 | 50         | 100        |
| RRT6102      | Microbiology and pharmacology related to kidney and dialysis | 1                                | 2        | -        | -         | 3         | 50                 | 50         | 100        |
| RRT6103      | Kidney disease & dialysis therapy                            | 1                                | 2        | -        | -         | 3         | 50                 | 50         | 100        |
| RRT6131      | Comprehensive clinical skill - I                             | -                                | -        | -        | 21        | 7         | 100                | -          | 100        |
| <b>Total</b> |  | <b>6</b>                         | <b>7</b> | <b>-</b> | <b>21</b> | <b>20</b> | <b>280</b>         | <b>220</b> | <b>500</b> |

**Note:** ESE for:

- ABS6101 will be conducted for 50 marks and normalized to 70 marks for grading
- RRT6101, RRT6102 & RRT6103 will be conducted for 100 marks and normalized to 50 marks for grading

### SEMESTER - II

| Course Code  | Course Title                                 | Credit Distribution (hours/week) |          |          |           |           | Marks Distribution |            |            |
|--------------|--|----------------------------------|----------|----------|-----------|-----------|--------------------|------------|------------|
|              |  | S                                | T        | PW       | CL        | C         | IAC                | ESE        | Total      |
| EPG6201      | Ethics & Pedagogy                            | 1                                | 1        | -        | -         | 2         | 100                | -          | 100        |
| RRT6201      | Hospital organisation and Administration     | 3                                | -        | -        | -         | 3         | 50                 | 50         | 100        |
| RRT6202      | Complications of kidney disease and dialysis | 1                                | 2        | -        | -         | 3         | 50                 | 50         | 100        |
| RRT6203      | Extracorporeal blood Therapies in Nephrology | 1                                | 2        | -        | -         | 3         | 50                 | 50         | 100        |
| RRT6231      | Comprehensive clinical skill - II            | -                                | -        | -        | 21        | 7         | 50                 | 50         | 100        |
| RRT6251      | Research project - I                         | -                                | -        | 6        | -         | 2         | 100                | -          | 100        |
| <b>Total</b> |  | <b>6</b>                         | <b>5</b> | <b>6</b> | <b>21</b> | <b>20</b> | <b>380</b>         | <b>220</b> | <b>600</b> |

**Note:** ESE for:

- RRT6201, RRT6202, RRT6203 & RRT6231 will be conducted for 100 marks and normalized to 50 marks for grading



**SEMESTER - III**

| Course Code  | Course Title   | Credit Distribution (hours/week) |          |          |           |           | Marks Distribution |            |            |
|--------------|--|----------------------------------|----------|----------|-----------|-----------|--------------------|------------|------------|
|              |  | S                                | T        | PW       | CL        | C         | IAC                | ESE        | Total      |
| RRT7101      | Kidney transplantation   | 1                                | 2        | -        | -         | 3         | 50                 | 50         | 100        |
| RRT7102      | Nutrition and Psychosocial aspects in kidney failure patients. | 1                                | 1        | -        | -         | 2         | 50                 | 50         | 100        |
| RRT7131      | Comprehensive clinical skill - III                             | -                                | -        | -        | 27        | 9         | 100                | -          | 100        |
| RRT7151      | Research Project - II  | -                                | -        | 9        | -         | 3         | 100                | -          | 100        |
| RRT ****     | Program Elective   | 1                                | 2        | -        | -         | 3         | 50                 | 50         | 100        |
| <b>Total</b> |  | <b>3</b>                         | <b>5</b> | <b>9</b> | <b>27</b> | <b>20</b> | <b>350</b>         | <b>150</b> | <b>500</b> |

Note: ESE for

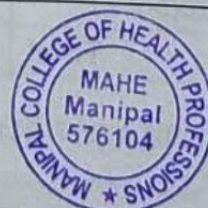
- RRT7101 will be conducted for 100 marks and normalized to 50 marks for grading
- RRT7102 will be conducted for 50 marks
- RRT \*\*\*\* is a **Program Elective**. ESE for program electives will be conducted out of 50.

**SEMESTER - IV**

| Course Code  | Course Title  | Credit Distribution (hours/week) |          |           |           |           | Marks Distribution |            |            |
|--------------|---|----------------------------------|----------|-----------|-----------|-----------|--------------------|------------|------------|
|              |   | S                                | T        | PW        | CL        | C         | IAC                | ESE        | Total      |
| RRT7201      | Advances in Dialysis techniques                             | 1                                | 2        | -         | -         | 3         | 50                 | 50         | 100        |
| RRT7202      | Rehabilitation and quality assurance in dialysis technology | 1                                | 1        | -         | -         | 2         | 50                 | 50         | 100        |
| RRT7203      | Biomedical instrumentation related to dialysis technology   | 1                                | 1        | -         | -         | 2         | 100                | -          | 100        |
| RRT7231      | Comprehensive clinical skill - IV                           | -                                | -        | -         | 27        | 9         | 50                 | 50         | 100        |
| RRT7251      | Research Project - III                                      | -                                | -        | 12        | -         | 4         | 50                 | 50         | 100        |
| <b>Total</b> |   | <b>3</b>                         | <b>4</b> | <b>12</b> | <b>27</b> | <b>20</b> | <b>300</b>         | <b>200</b> | <b>500</b> |

Note: ESE for

- RRT7201, RRT7231 & RRT7251 will be conducted for 100 marks and normalised to 50 marks for grading
- RRT7202 will be conducted for 50 marks





### LIST OF PROGRAM ELECTIVES

Program elective is credited and choice-based. The students make a choice from pool of electives offered by the department. The ESE is conducted for 50 marks.

| Elective Code | Program Elective Title  | S | T | P | CR |
|---------------|---|---|---|---|----|
| RRT7011       | Renal supportive care & Rehabilitation                          | 1 | 2 | - | 3  |
| RRT7021       | Vascular access and Kidney transplantation physical counselling | 1 | 2 | - | 3  |

Student makes a choice for any one of the program electives (RRT7011 & RRT7021)

### LIST OF NON-CORE COURSES

| Course Code | Course Title  | Credit Distribution (hours/week) |   |    |   |
|-------------|---|----------------------------------|---|----|---|
|             |   | S                                | T | CL | C |
| ABS6101     | Advanced Biostatistics & Research Methodology             | 3                                | 1 | -  | 4 |
| EPG6201     | Ethics & Pedagogy   | 1                                | 1 | -  | 2 |
| RRT6201     | Hospital organisation and Administration                  | 3                                | - | -  | 3 |
| RRT7203     | Biomedical instrumentation related to dialysis technology | 1                                | 1 | -  | 2 |

### OVERALL CREDIT DISTRIBUTION

| Semester           | Credit distribution |           |           |           |           | Marks Distribution |            |             |
|--------------------|---------------------|-----------|-----------|-----------|-----------|--------------------|------------|-------------|
|                    | S                   | T         | PW        | CL        | CR        | IAC                | ESE        | Total       |
| I - SEMESTER       | 6                   | 7         | -         | 21        | 20        | 280                | 220        | 500         |
| II - SEMESTER      | 6                   | 5         | 6         | 21        | 20        | 380                | 220        | 600         |
| III - SEMESTER     | 3                   | 5         | 9         | 27        | 20        | 350                | 150        | 500         |
| IV - SEMESTER      | 3                   | 4         | 12        | 27        | 20        | 300                | 200        | 500         |
| <b>Grand Total</b> | <b>18</b>           | <b>21</b> | <b>27</b> | <b>96</b> | <b>80</b> | <b>1310</b>        | <b>790</b> | <b>2100</b> |

### INTERNAL ASSESSMENT COMPONENT (IAC) WEIGHTAGE DISTRIBUTION

| Theory            |    | Practical           |    |
|-------------------|----|---------------------|----|
| Components        | %  | Components          | %  |
| Mid semester exam | 60 | Mid semester exam   | 60 |
| Class seminar     | 20 | Record submission   | 10 |
| Assignments       | 20 | Clinical competency | 30 |