REVISED ORDINANCE GOVERNING
REGULATIONS & CURRICULUM FOR BACHELOR OF SCIENCE DEGREE
COURSES IN
ALLIED HEALTH SCIENCE FOR FIRST YEAR
BSc. Renal Dialysis Technology

1. Title of the Courses offered in Allied Health Sciences:

1. Bachelor of Science in Medical Laboratory Technology [B.Sc. (M.L.T.)]
2. Bachelor of Science in Operation Theatre Technology [BSc. O.T. Technology]
3. Bachelor of Science in Cardiac Care Technology [B.Sc Cardiac Care Technology]
4. Bachelor of Science in Perfusion Technology [B.Sc. Perfusion Technology]
5. Bachelor of Science in Neuro Science Technology [B.Sc. Neuro Science Technology]
6. Bachelor of Science in Renal Dialysis Technology [B.Sc. Renal Dialysis Technology]
7. Bachelor of Science in Respiratory Care Technology [B.Sc. Respiratory Care Technology]
8. Bachelor of Science in Anaesthesia Technology [B.Sc. Anaesthesia Technology]
9. Bachelor of Science in Imaging Technology [B.Sc. Imaging Technology]
10. Bachelor of Science in Radiotherapy Technology [B.Sc. Radiotherapy Technology]

2. Eligibility for admission:

A candidate seeking admission to the Bachelor of Science Degree Courses in the Allied Health Sciences course from Sl.No. 1 to 10 shall have studied English as one of the principal subject during the tenure of the course and for those seeking admission to the Bachelor of Science Degree Courses in the Allied Health Sciences courses from Sl.No. 1 to 8 mentioned above except for B.Sc. Imaging Technology and B.Sc. Radiotherapy Technology shall have passed:

1. Two year Pre-University examination or equivalent as recognized by Rajiv Gandhi University of Health Sciences with, Physics, Chemistry and Biology as principle subjects of study.

   OR

2. Pre-Degree course from a recognized University considered as equivalent by RGUHS, (Two years after ten years of schooling) with Physics, Chemistry and Biology as principal subjects of study.

   OR

3. Any equivalent examination recognized by the Rajiv Gandhi University of Health
4. The vocational higher secondary education course conducted by Vocational Higher Secondary Education, Government of Kerala with five subjects including Physics, Chemistry, Biology and English in addition to vocational subjects conducted is considered equivalent to plus TWO examinations of Government of Karnataka Pre University Course.

OR

5. Candidates with two years diploma from a recognized Government Board in a subject for which the candidate desires to enroll, in the respective Allied Health Sciences course mentioned in Sl. No. 1 to 10 shall have passed plus 12 [10+2] with Physics, Chemistry and Biology, as principal subjects or candidates with 3 years diploma from a recognized Government Board in a subject for which the candidate desires to enroll, in the respective Allied Health Sciences course mentioned in Sl. No. 1 to 10 should have studied Physics, Biology and Chemistry as principal subjects during the tenure of the course.

6. Lateral entry to second year for allied health science courses for candidates who have passed diploma program from the Government Boards and recognized by RGUHS, fulfilling the conditions specified above under sl. No. 5 and these students are eligible to take admission on lateral entry system only in the same subject studied at diploma level from the academic year 2008-09 vide RGUHS Notification no. AUTH/AHS/317/2008-09 dated 01.08.2008.

7. In case of admission to B.Sc. Imaging Technology or B.Sc. Radiotherapy Technology the candidate should have passed Pre-University or equivalent examination with Physics, Chemistry, Biology and Mathematics, as principal subjects of study.

Note:

a. The candidate shall have passed individually in each of the principal subjects.

b. Candidates who have completed diploma or vocational course through Correspondence shall not be eligible for any of the courses mentioned above.

3. Duration of the course:

   Duration shall be for a period of three and half years including six months of Internship.

4. Medium of instruction:

   The medium of instruction and examination shall be in English.
5. Scheme of examination:

There shall be three examinations one each at the end of 1st, 2nd and 3rd year.

6. Attendance

Every candidate should have attended at least 80% of the total number of classes conducted in an academic year from the date of commencement of the term to the last working day as notified by the university in each of the subjects prescribed for that year separately in theory and practical. Only such candidates are eligible to appear for the university examinations in their first attempt. Special classes conducted for any purpose shall not be considered for the calculation of percentage of attendance for eligibility. A candidate lacking in prescribed percentage of attendance in any subject either in theory or practical in the first appearance will not be eligible to appear for the University Examination in that subject.

7. Internal Assessment (IA):

Theory - 20 marks.
Practical - 10 marks. [Lab work - 06 marks and Record - 04 marks]

There shall be a minimum of two periodical tests preferably one in each term in theory and practical of each subject in an academic year. The average marks of the two tests will be calculated and reduced to 20. The marks of IA shall be communicated to the University at least 15 days before the commencement of the University examination. The University shall have access to the records of such periodical tests.

The marks of the internal assessment must be displayed on the notice board of the respective colleges within a fortnight from the date test is held.

If a candidate is absent for any one of the tests due to genuine and satisfactory reasons, such a candidate may be given a re-test within a fortnight.

* There shall be no University Practical Examination in First year.

8. Subject and hours of teaching for Theory and Practicals

The number of hours of teaching theory and practical, subject wise in first year, second year and third year are shown in Table-I, Table-II and Table-III.

Main and Subsidiary subjects are common in first year for all the courses in Allied Health Science.

The number of hours for teaching theory and practical for main subjects in first, Second and Third year are shown in Table-I, II and III.

**Table - I Distribution of Teaching Hours in First Year Subjects**

<table>
<thead>
<tr>
<th>S L No</th>
<th>Subject</th>
<th>Theory No. of Hours</th>
<th>Practical No. of Hours</th>
<th>Total No. of Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Human Anatomy</td>
<td>70</td>
<td>20</td>
<td>90</td>
</tr>
<tr>
<td>S L No</td>
<td>Subject</td>
<td>Theory No. of Hours</td>
<td>Practical No. of Hours</td>
<td>Clinical posting</td>
</tr>
<tr>
<td>-------</td>
<td>--------------------------------------------------</td>
<td>---------------------</td>
<td>------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>1</td>
<td>Applied anatomy &amp; physiology related to dialysis technology</td>
<td>80 (40+40)</td>
<td>30 (15+15)</td>
<td>--</td>
</tr>
<tr>
<td>2</td>
<td>Pharmacology related to dialysis technology</td>
<td>40</td>
<td>10</td>
<td>--</td>
</tr>
<tr>
<td>3</td>
<td>Concepts of renal disease</td>
<td>50</td>
<td>100</td>
<td>630</td>
</tr>
</tbody>
</table>

The classes in main and subsidiary subjects are to be held from Monday to Thursday. On Fridays and Saturdays students shall work in hospitals in the respective specialty or department chosen by them.

Subsidiary Subjects

- English 25 Hours
- Kannada 25 Hours
- Health-Care 40 Hours

Hospital posting –470 hours-
- Friday 9am – 1pm and 2 pm - 4-30 pm
- Saturday 9am - 1 pm

Table -II Distribution of Teaching Hours in Second Year Subjects

Main Subjects

<table>
<thead>
<tr>
<th>S L No</th>
<th>Subject</th>
<th>Theory No. of Hours</th>
<th>Practical No. of Hours</th>
<th>Clinical posting</th>
<th>Total No. of Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Applied anatomy &amp; physiology related to dialysis technology</td>
<td>80 (40+40)</td>
<td>30 (15+15)</td>
<td>--</td>
<td>110</td>
</tr>
<tr>
<td>2</td>
<td>Pharmacology related to dialysis technology</td>
<td>40</td>
<td>10</td>
<td>--</td>
<td>50</td>
</tr>
<tr>
<td>3</td>
<td>Concepts of renal disease</td>
<td>50</td>
<td>100</td>
<td>630</td>
<td>780</td>
</tr>
</tbody>
</table>
& its management

<table>
<thead>
<tr>
<th>No</th>
<th>Subject</th>
<th>Theory No. of Hours</th>
<th>Practical No. of Hours</th>
<th>Clinical posting</th>
<th>Total No. of Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Applied aspects of pathology &amp; microbiology</td>
<td>80 (40+40)</td>
<td>30 (15+15)</td>
<td></td>
<td>110</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>250</td>
<td>170</td>
<td>630</td>
<td>1050</td>
</tr>
</tbody>
</table>

Subsidiary Subjects

- Sociology: 20 Hours
- Constitution of India: 10 Hours
- Environmental Science & Health: 10 Hours
- Nutrition: 20 Hours
- Basics in Renal Dialysis Technology: 20 Hours

**Table - III Distribution of Teaching Hours in Third Year Subjects**

Main Subjects

<table>
<thead>
<tr>
<th>S L No</th>
<th>Subject</th>
<th>Theory No. of Hours</th>
<th>Practical No. of Hours</th>
<th>Clinical posting</th>
<th>Total No. of Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>APPLIED DIALYSIS TECHNOLOGY PAPER I</td>
<td>125</td>
<td>100</td>
<td>300</td>
<td>525</td>
</tr>
<tr>
<td>2</td>
<td>APPLIED DIALYSIS TECHNOLOGY PAPER II</td>
<td>125</td>
<td>100</td>
<td>300</td>
<td>525</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>250</td>
<td>200</td>
<td>600</td>
<td>1050</td>
</tr>
</tbody>
</table>

Subsidiary Subjects

- Ethics, Database Management: 50 Hours
- Research & Biostatistics: 20 Hours
- Computer application: 10 Hours
- Basic Sciences: 35 Hours

*There shall be no University Practical Examination in First year.*

10. **Scheme of Examination:**

There shall be three examinations, one each at the end of I, II and III year. The examination for both main and subsidiary subjects for all courses in Allied Health Sciences shall be common in the first year.
Distribution of Subjects and marks for First Year, Second year & Third year University theory and practical Examinations are shown in the Table – IV, V & VI.

**First year examination:**
The University examination for 1\textsuperscript{st} year shall consist of only theory examination and there shall be no University Practical Examination.

**Second & Third year examination:**
The University examination for 2\textsuperscript{nd} and 3\textsuperscript{rd} year shall consist of Written Examination & Practical.

**Written Examinations consists of**
04 papers in the 2\textsuperscript{nd} Year
02 papers in the 3\textsuperscript{rd} Year.

**Practical examination:**
Two practical examinations, at the end 2\textsuperscript{nd} Year and one practical examination at the end of the 3\textsuperscript{rd} year.

### TABLE-IV

**Distribution of Subjects and marks for First Year University theory Examination**

<table>
<thead>
<tr>
<th>A</th>
<th>Main Subjects*</th>
<th>Written Paper</th>
<th>I .A Theory</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Duration</td>
<td>Marks</td>
<td>Marks</td>
</tr>
<tr>
<td>1</td>
<td>Basic Anatomy</td>
<td>3 hours</td>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>[Including Histology]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Physiology</td>
<td>3 hours</td>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>Biochemistry</td>
<td>3 hours</td>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td>4</td>
<td>Pathology</td>
<td>3 hours</td>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>Microbiology</td>
<td>3 hours</td>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td>B</td>
<td>Subsidiary Subject**</td>
<td></td>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>1</td>
<td>English</td>
<td>3 hours</td>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>Kannada</td>
<td>3 hours</td>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>Health Care</td>
<td>3 hours</td>
<td>80</td>
<td>20</td>
</tr>
</tbody>
</table>

* I A = Internal Assessment
Main Subjects shall have University Examination.
There Shall be no University Practical Examination.

** Subsidiary subjects : Examination for subsidiary subjects shall be conducted by respective colleges.

### TABLE – V Distribution of Subjects and marks for Second Year Examination.

<table>
<thead>
<tr>
<th>Paper</th>
<th>Subjects</th>
<th>Theory</th>
<th>Viva-voca</th>
<th>IA</th>
<th>Sub Total</th>
<th>Practicals</th>
<th>I.A.</th>
<th>Sub Total</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Concepts of renal disease &amp; its management</td>
<td>100</td>
<td>30</td>
<td>20</td>
<td>150</td>
<td>80</td>
<td>20</td>
<td>100</td>
<td>250</td>
</tr>
<tr>
<td>II</td>
<td>Applied aspects of pathology &amp; microbiology</td>
<td>100</td>
<td>30</td>
<td>20</td>
<td>150</td>
<td>80</td>
<td>20</td>
<td>100</td>
<td>250</td>
</tr>
<tr>
<td>III</td>
<td>Applied anatomy &amp; physiology related to dialysis technology</td>
<td>80</td>
<td>--</td>
<td>20</td>
<td>100</td>
<td>No Practicals</td>
<td></td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>IV</td>
<td>Pharmacology related to dialysis technology</td>
<td>80</td>
<td>--</td>
<td>20</td>
<td>100</td>
<td>No Practicals</td>
<td></td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

Distribution of Subsidiary Subjects and marks for Second Year Examination.
<table>
<thead>
<tr>
<th>B</th>
<th>Subsidiary Subject**</th>
<th>Duration</th>
<th>Marks</th>
<th>I.A Theory Marks</th>
<th>Total Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sociology</td>
<td>3 hours</td>
<td>80</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>Constitution of India</td>
<td>3 hours</td>
<td>80</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>3</td>
<td>Environmental Science &amp; Health</td>
<td>3 hours</td>
<td>80</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>4</td>
<td>Nutrition</td>
<td>3 hours</td>
<td>80</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>5</td>
<td>Basics in Renal Dialysis Technology</td>
<td>3 hours</td>
<td>80</td>
<td>20</td>
<td>100</td>
</tr>
</tbody>
</table>

** Subsidiary subjects : Examination for subsidiary subjects shall be conducted by respective colleges

** TABLE – VI

Distribution of Subjects and marks for Third Year Examination.

<table>
<thead>
<tr>
<th>Paper</th>
<th>Subjects</th>
<th>Theory</th>
<th>Viva-voca</th>
<th>IA Sub Total</th>
<th>Practicals</th>
<th>I.A.</th>
<th>Sub Total</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Applied dialysis technology Paper I</td>
<td>100</td>
<td>30</td>
<td>20</td>
<td>80 (40+40)</td>
<td>20 (10+10)</td>
<td>100</td>
<td>400</td>
</tr>
<tr>
<td>II</td>
<td>Applied dialysis technology Paper II</td>
<td>100</td>
<td>30</td>
<td>20</td>
<td>150</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** Practicals-One common practical for the two papers with equal weight age of marks

i.e. 40 practical mark and 10 I.A. marks for each paper.

** Distribution of Subsidiary Subjects and marks for Third Year Examination.

<table>
<thead>
<tr>
<th>Subsidiary B</th>
<th>Subsidiary Subject**</th>
<th>Duration</th>
<th>Marks</th>
<th>I.A Theory Marks</th>
<th>Total Marks</th>
</tr>
</thead>
</table>
11. Pass criteria

11.1. First year examination.
   a. Main Subjects: A candidate is declared to have passed in a subject, if he/she secures, 50% of marks in University Theory exam and internal assessment added together.

   b. Subsidiary Subjects: The minimum prescribed marks for a pass in subsidiary subject shall be 35% of the maximum marks prescribed for a subject. The marks obtained in the subsidiary subjects shall be communicated to the University before the Commencement of the University examination.

11.2. Second and Third year Examination
   a. Main Subjects: A candidate is declared to have passed the Examination in a subject if he/she secures 50% of the marks in theory and 50% in practical separately. For a pass in theory, a candidate has to secure a minimum of 40% marks in the University conducted written examination, and 50% in aggregate in the University conducted written examination, internal assessment and Viva-Voce added together and for pass in Practical, a candidate has to secure a minimum of 40% marks in the university conducted Practical/Clinical examination and 50% in aggregate i.e. University conducted Practical/Clinical and Internal Assessment.

   b. Subsidiary Subjects: The minimum prescribed marks for a pass in subsidiary subject shall be 35% of the maximum marks prescribed for a subject. The marks obtained in the subsidiary subjects shall be communicated to the University before the commencement of the University examination.

12. Carry over benefit

12.1 First year examination:
   A candidate who fails in any two of the five main subjects of first year shall be permitted to carry over those subjects to second year.
However, he/she must pass the carry over subjects before appearing for second year examination; otherwise he/she shall not be permitted to proceed to third year.

12.2. Second year examination.
A candidate is permitted to carry over any one main subject to the third year but shall pass this subject before appearing for the third year examination.

13. Eligibility for the award of Degree:
A candidate shall have passed in all the subjects of first, second and third year to be eligible for award of degree.
14. Distribution of Type of Questions and Marks for Various Subjects

<table>
<thead>
<tr>
<th>SUBJECTS HAVING MAXIMUM MARKS = 100</th>
<th>TYPE OF QUESTION</th>
<th>NUMBER OF QUESTIONS</th>
<th>MARKS FOR EACH QUESTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESSAY TYPE</td>
<td>2</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>SHORT ESSAY TYPE</td>
<td>12 (10 × 5)</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>SHORT ANSWER TYPE</td>
<td>12 (10 × 3)</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUBJECTS HAVING MAXIMUM MARKS = 80</th>
<th>TYPE OF QUESTION</th>
<th>NUMBER OF QUESTIONS</th>
<th>MARKS FOR EACH QUESTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESSAY TYPE</td>
<td>2</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>SHORT ESSAY TYPE</td>
<td>8 (6 × 5)</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>SHORT ANSWER TYPE</td>
<td>12 (10 × 3)</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUBJECTS HAVING MAXIMUM MARKS = 60</th>
<th>TYPE OF QUESTION</th>
<th>NUMBER OF QUESTIONS</th>
<th>MARKS FOR EACH QUESTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESSAY TYPE</td>
<td>2</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>SHORT ESSAY TYPE</td>
<td>7 (5×5)</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>SHORT ANSWER TYPE</td>
<td>7 (5×3)</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUBJECTS HAVING MAXIMUM MARKS = 50</th>
<th>TYPE OF QUESTION</th>
<th>NUMBER OF QUESTIONS</th>
<th>MARKS FOR EACH QUESTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESSAY TYPE</td>
<td>2</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>SHORT ESSAY TYPE</td>
<td>5 (3×5)</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>SHORT ANSWER TYPE</td>
<td>7 (5×3)</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>
ANATOMY

No. of theory classes: 70 hours
No. of practical classes: 20 hours

1. Introduction: human body as a whole
   Theory:
   Definition of anatomy and its divisions
   Terms of location, positions and planes
   Cell and its organelles
   Epithelium-definition, classification, describe with examples, function
   Glands-classification, describe serous & mucous glands with examples
   Basic tissues – classification with examples
   Practical: Histology of types of epithelium
             Histology of serous, mucous & mixed salivary gland

2. Locomotion and support
   Theory:
   Cartilage – types with example & histology
   Bone – Classification, names of bone cells, parts of long bone, microscopy of compact bone, names of all bones, vertebral column, intervertebral disc, fontanelles of fetal skull
   Joints – Classification of joints with examples, synovial joint (in detail for radiology)
   Muscular system: Classification of muscular tissue & histology
   Names of muscles of the body
   Practical: Histology of the 3 types of cartilage
             Demo of all bones showing parts, radiographs of normal bones & joints
             Histology of compact bone (TS & LS)
             Demonstration of all muscles of the body
             Histology of skeletal (TS & LS), smooth & cardiac muscle

3. Cardiovascular system
   Theory:
   Heart-size, location, chambers, exterior & interior
   Blood supply of heart
   Systemic & pulmonary circulation
   Branches of aorta, common carotid artery, subclavian artery, axillary artery, brachial artery, superficial palmar arch, femoral artery, internal iliac artery
   Peripheral pulse
   Inferior venacava, portal vein, portosystemic anastomosis
   Great saphenous vein
   Dural venous sinuses
   Lymphatic system- cisterna chyli & thoracic duct
   Histology of lymphatic tissues
   Names of regional lymphatics, axillary and inguinal lymph nodes in brief
   Practical:
Demonstration of heart and vessels in the body
Histology of large artery, medium sized artery & vein, large vein
Microscopic appearance of large artery, medium sized artery & vein, large vein
Histology of pericardium
Histology of lymph node, spleen, tonsil & thymus
Normal chest radiograph showing heart shadows
Normal angiograms

4. Gastro-intestinal system
Theory:
Parts of GIT, Oral cavity (lip, tongue (with histology), tonsil, dentition, pharynx, salivary glands, Waldeyer’s ring)
Oesophagus, stomach, small and large intestine, liver, gall bladder, pancreas
Radiographs of abdomen

5. Respiratory system
Parts of RS, nose, nasal cavity, larynx, trachea, lungs, bronchopulmonary segments
Histology of trachea, lung and pleura
Names of paranasal air sinuses

Practical: Demonstration of parts of respiratory system.
Normal radiographs of chest
Histology of lung and trachea

6. Peritoneum
Theory: Description in brief
Practical: Demonstration of reflections

7. Urinary system
Kidney, ureter, urinary bladder, male and female urethra
Histology of kidney, ureter and urinary bladder
Practical: Demonstration of parts of urinary system
Histology of kidney, ureter, urinary bladder
Radiographs of abdomen-IVP, retrograde cystogram

8. Reproductive system
Theory:
Parts of male reproductive system, testis, vas deferens, epididymis, prostate (gross & histology)
Parts of female reproductive system, uterus, fallopian tubes, ovary (gross & histology)
Mammary glad – gross
Practical: Demonstration of section of male and female pelves with organs in situ
Histology of testis, vas deferens, epididymis, prostate, uterus, fallopian tubes, ovary
Radiographs of pelvis – hysterosalpingogram

9. Endocrine glands
Theory:
Names of all endocrine glands in detail on pituitary gland, thyroid gland, parathyroid gland, suprarenal gland – (gross & histology)
Practical: Demonstration of the glands
Histology of pituitary, thyroid, parathyroid, suprarenal glands

10. Nervous system
Theory:
Neuron
Classification of NS
Cerebrum, cerebellum, midbrain, pons, medulla oblongata, spinal cord with spinal nerve
(gross & histology)
Meninges, Ventricles & cerebrospinal fluid
Names of basal nuclei
Blood supply of brain
Cranial nerves
Sympathetic trunk & names of parasympathetic ganglia
Practical: Histology of peripheral nerve & optic nerve
Demonstration of all plexuses and nerves in the body
Demonstration of all part of brain
Histology of cerebrum, cerebellum, spinal cord

Sensory organs:
Theory:
Skin: Skin-histology
Appendages of skin
Eye: Parts of eye & lacrimal apparatus
Extra-ocular muscles & nerve supply
Ear: parts of ear- external, middle and inner ear and contents
Practical: Histology of thin and thick skin
Demonstration and histology of eyeball
Histology of cornea & retina

Embryology:
Theory:
Spermatogenesis & oogenesis
Ovulation, fertilization
Fetal circulation
Placenta
Internal Assessment
Theory - Average of two exams conducted. 20
Practicals: Record & Lab work* 10
* There shall be no University Practical Examination and internal assessment marks secured in Practicals need not be sent to the University.

Scheme of Examination Theory
There shall be one theory paper of three hours duration carrying 80 marks. Distribution of type of questions and marks for Anatomy shall be as given under.

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NO PRACTICAL EXAMINATION
REFERENCE BOOKS
Anatomy

1. William Davis (P) understanding Human Anatomy and Physiology MC Graw Hill

2. Chaursia –A Text book of Anatomy
   T.S. Ranganathan – A text book of Human Anatomy

3. Fattana, Human anatomy
   (Description and applied)

4. ESTER . M. Grishcimer,
   Physiology & Anatomy with Practical Considerations, J.P. Lippin Cott. Philadelphia
BSc. Renal Dialysis Technology

PHYSIOLOGY

Theory  70 hours
Practical  20 hours

Introduction – composition and function of blood
Red blood cells – Erythropoiesis, stages of differentiation function, count physiological variation.
Haemoglobin – structure, functions, concentration physiological variation
Methods of Estimation of Hb
White blood cells – Production, function, life span, count, differential count
Platelets – Origin, normal count, morphology functions.
Plasma Proteins – Production, concentration, types, albumin, globulin, Fibrinogen, Prothrombin functions.
Haemostasis & Blood coagulation
Haemostasis – Definition, normal haemostasis, clotting factors, mechanism of clotting, disorders of clotting factors.
Blood Bank
Blood groups – ABO system, Rh system
Blood grouping & typing
Crossmatching
Rh system – Rh factor, Rh in compatibility.
Blood transfusion – Indication, universal donor and recipient concept.
Selection criteria of a blood donor, transfusion reactions
Anticoagulants – Classification, examples and uses
Anaemias: Classification – morphological and etiological, effects of anemia on body
Blood indices – Colour index, MCH, MCV, MCHC
Erythrocyte sedimentation Rate (ESR) and Paced cell volume
Normal values, definition, determination
Blood Volume – Normal value, determination of blood volume and regulation of blood volume
Body fluid – pH, normal value, regulation and variation
Lymph – lymphoid tissue formation, circulation, composition and function of lymph

Cardiovascular system
Heart – Physiological Anatomy, Nerve supply
Properties of Cardiac muscle
Cardiac cycle-systole, diastole. Intraventricular pressure curves.
Cardiac Output – only definition
Heart sounds – Normal heart sounds, Areas of auscultation.
Blood Pressure – Definition, normal value, clinical measurement of blood pressure.
Physiological variations, regulation of heart rate, cardiac shock, hypotension, hypertension.
Pulse – Jugular, radial pulse, Triple response
Heart sounds – Normal heart sounds, cause characteristics and signification. Heart rate
Electrocardiogram (ECG) – significance.
Digestive System - Physiological anatomy of Gastro intestinal tract, Functions of digestive system
Salivary glands – Structure and functions.
Deglutination – stages and regulation
Stomach – structure and functions
Gastric secretion – Composition function regulation of gastric juice secretion
Pancrease – structure, function, composition, regulation of pancreatic juice
Liver – functions of liver
Bile secretion, composition, function regulation of bile secretion .Bilirubin metabolism
types of bilirubin, Vandernberg reaction, Jaundice- types, significance.
Gall bladder – functions
Intestine – small intestine and large intestine
Small intestine –Functions- Digestive, absorption ,movements.
Large intestine – Functions, Digestion and absorption of Carbohydrates,Proteins,
Fats,Lipids.Defecation
Respiratory system
Functions of Respiratory system, Physiological Anatomy of Respiratory system,
Respiratory tract, Respiratory Muscles, Respiratory organ-lungs, Alveoli, Respiratory
membrane, stages of respiration.
Mechanism of normal and rigorous respiration. Forces opposing and favouring expansion
of the lungs. Intra pulmonary pleural pressure, surface tension, recoil tendency of the wall.
Transportation of Respiratory gases :
Transportation of Oxygen : Direction, pressure gradient, Forms of transportation,
Oxygenation of Hb. Quantity of Oxygen transported.
Lung volumes and capacities
Regulation of respiration what? Why? How? Mechanisms of Regulation, nervous and
Applied Physiology and Respiration : Hypoxia, Cyanosis, Asphyxia, Dyspnea, Dysbarism,
Artificial Respiration, Apnoea.
Endocrine System - Definition Classification of Endocrine glands & their Harmones
Properties of Harmones .
Thyroid gland hormone – Physiological, Anatomy, Hormone scerated, Physiological
function, regulation of secretion. Disorders – hypo and hyper secretion of hormone
Adrenal gland, Adrenal cortex physiologic anatomy of adrenal gland,
Adrenal cortex, cortical hormones – functions and regulation
Adrenal medulla – Hormones , regulation and secretion. Functions of Adrenaline and nor
adrenaline
Pituitary hormones – Anterior and posterior pituitary hormones, secretion ,function
Pancreas – Hormones of pancreas
Insulín – secretion, regulation ,function and action
Diabetes mellitus – Regulation of blood glucose level
Parathyroid gland – function, action ,regulation of secretion of parathyroid hormone.
Calcitonin – function and action
Special senses
Vision – structure of eye. Function of different parts.
Structure of retina
Hearing structure and function of can mechanism of hearing
Nervous system
Functions of Nervous system, Neurone structure, classification and properties. Neuroglia,
nerve fiber, classification ,conduction of impulses continuous and saltatory. Velocity of
impulse transmission and factors affecting. Synapse – structure, types, properties.
Receptors – Definition, classification ,properties. Reflex action – unconditioned properties
of reflex action. Babinski’s sign. Spinal cord nerve tracts. Ascending tracts, Descending
tracts –
pyramidal tracts – Extrapyramidal tracts. Functions of Medulla, pons, Hypothalamic disorders. Cerebral cortex lobes and functions, Sensory cortex, Motor cortex, Cerebellum functions of Cerebellum. Basal ganglion functions. EEG.
Cerebro Spinal Fluid (CSF) : formation, circulation, properties, composition and functions lumbar puncture.
Autonomic Nervous System : Sympathetic and parasympathetic distribution and functions and comparison of functions.
Excretory System
Excretory organs
H + Cl aminoacids etc. TMG, Tubular lead, Renal threshold % of reabsorption of different substances, selective secretion.
Properties and composition of normal urine, urine output. Abnormal constituents in urine, Mechanism of urine concentration.
Counter – Current Mechanisms: Micturition, Innervation of Bladder, Cystourethrogram.
Diuretics: Water, Diuretics, osmotic diuretics, Artificial kidney Renal function tests – plasma clearance Actions of ADH, Aldosterone and PTH on kidneys. Renal function tests
Reproductive system
Muscle nerve physiology

Skin -structure and function
Body temperature measurement. Physiological variation, Regulation of body Temperature by physical chemical and nervous mechanisms. Role of Hypothalamus, Hypothermia and fever.

Practicals
Haemoglobinometry
White Blood Cell count
Red Blood Cell count
Determination of Blood Groups
Leishman’s staining and Differential WBC count
Determination of packed cell Volume
Erythrocyte sedimentation rate [ESR]
Calculation of Blood indices
Determination of Clotting Time, Bleeding Time
Blood pressure Recording
Auscultation for Heart Sounds
Artificial Respiration
Determination of vital capacity
Internal Assessment

Theory - Average of two exams conducted. 20
Practicals: Record & Lab work* 10
* There shall be no University Practical Examination and internal assessment marks secured in Practicals need not be sent to the University.

**Scheme of Examination Theory**

There shall be one theory paper of three hours duration carrying 80 marks. Distribution of type of questions and marks for Physiology shall be as given under.

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**NO PRACTICAL EXAMINATION**

**REFERENCE BOOKS**

**Physiology**

2. Chatterjee(CC) Human Physiology Latest Ed. Vol-1, Medical Allied Agency
3. Choudhari (Sujith K) Concise Medical Physiology Latest Ed. New Central Book,
BSc. Renal Dialysis Technology
BIOCHEMISTRY

No. Theory classes: 70 hours
No. of practical classes: 20 hours
Theory:
Specimen collection: Pre-analytical variables
  Collection of blood
  Collection of CSF & other fluids
  Urine collection
  Use of preservatives
  Anticoagulants
1. Introduction to Laboratory apparatus
Pipettes- different types (Graduated, volumetric, Pasteur, Automatic etc..)
Calibration of glass pipettes
Burettes, Beakers, Petri dishes, depression plates.
Flasks - different types )Volumetric, round bottmed, Erlemeyer conical etc.,)
Funnels – different types (Conical, Buchner etc.,)
Bottles – Reagent bottles – graduated and common, Wash bottles – different type
Specimen bottles etc.,
2. Measuring cylinders, Porcelain dish
Tubes – Test tubes, centrifuge tubes, test tube draining rack
Tripod stand, Wire gauze, Bunsen burner.
Cuvettes, significance of cuvettes in colorimeter, cuvettes for visible and UV range,
cuvette holders  Racks – Bottle, Test tube, Pipette
Dessicator, Stop watch, rimers, scissors
Dispensers – reagent and sample
Any other apparatus which is important and may have been missed should also be covered
Maintenance of lab glass ware and apparatus:
Glass and plastic ware in Laboratory
  *use of glass: significance of boro silicate glass ; care and cleaning
  of glass ware, different cleaning solutions of glass
  * care and cleaning of plastic ware, different cleaning solutions
3. Instruments (Theory and demonstration) Diagrams to be drawn
Water bath: Use, care and maintenance
Oven & Incubators : Use, care and maintenance.
Water Distilation plant and water deionisers. Use, care and maintenance
Refrigerators, cold box, deep freezers – Use, care and maintenance
Reflux condenser : Use, care and maintenance
Centrifuges (Theory and demonstration) Diagrams to be drawn
Definition, Principle, svedberg unit, centrifugal force, centrifugal field rpm,
ref.Conversion of G to rpm and vice versa.
Different types of centrifuges
Use care and maintenance of a centrifuge
Laboratory balances [Theory & Practicals) Diagrams to be drawn
Manual balances: Single pan, double pan, trip balance
Direct read out electrical balances.
Use care and maintenance. Guideline to be followed and precautions to be taken while weighing
Weighing different types of chemicals, liquids, hygroscopic compounds etc.
Colorimeter and spectrophotometer (Theory and Practicals) Diagrams to be drawn
Principle, Parts Diagram.
Use, care and maintenance.
pH meter (Theory & practicals) Diagrams to be drawn
principle, parts, Types of electrodes, salt bridge solution.
Use, care and maintenance of pH meter and electrodes
Guidelines to be followed and precautions to be taken while using pH meter
4. Safety of measurements
5. Conventional and SI units
6. Atomic structure
Dalton’s theory, Properties of electrons, protons, neutrons, and nucleus, Rutherford’s model
of atomic structure, Bohr’s model of atomic structure, orbit and orbital, Quantum numbers,
Heisenberg’s uncertainly principle.
Electronic configuration – Aufbau principle, Pauli’s exclusion principle, etc.
Valency and bonds – different types of strong and weak bonds in detail with examples
Theory & Practicals for all the following under this section
Molecular weight, equivalent weight of elements and compounds, normality molarity
Preparation of molar solutions (mole/litre solution) eg: 1 M NaCl, 0.15 M NaCl
1 M NaOH, 0.1 M HCl, 0.1 M H2SO4 etc.,
Preparation of normal solutions. eg., IN Na2CO3, O IN Oxalic acid, 0.1 N HCl, 0.1N
H2SO4, 0.66 N H2SO4 etc.,
Percent solutions. Preparation of different solutions – v/v w/v (solids, liquids and acids)
Conversion of a percent solution into a molar solution

Dilutions
Diluting solutions: eg. Preparation of 0.1 N NaCl from 1 N NaCl from 2 NHCl etc.,
Preparing working standard from stock standard, Body fluid dilutions, Reagent dilution
techniques, calculating the dilution of a solution, body fluid reagent etc.,
Saturated and supersaturated solutions.
Standard solutions. Technique for preparation of standard solutions eg: Glucose, urea, etc.,
Significance of volumetric flask in preparing standard solutions. Volumetric flasks of
different sizes, Preparation of standard solutions of deliquescent compounds (CaCl2,
potassium carbonate, sodium hydroxide etc.)
Preparation of standards using conventional and SI units
Acids, bases, salts and indicators.
Acids and Bases: Definition, physical and chemical properties with examples. Arrehenius
concept of acids and bases, Lowery – Bronsted theory of acids and bases classification of
acids and bases. Different between bases and alkali, acidity and basicity, monoprotonic
and polyprotonic acids and bases
Concepts of acid base reaction, hydrogen ion concentration, Ionisation of water, buffer, Ph
value of a solution, preparation of buffer solutions using Ph meter.
Salts: Definition, classification, water of crystallization – definition and different types,
deliquescent and hygroscopic salts
Acid- base indicators: (Theory and Practicals)
Theory – Definition, concept, mechanism of dissociation of an indicator, colour change of
an indicator in acidic and basic conditions, use if standard buffer solution and indicators for
Ph determinations, preparation and its application, list of commonly used indicators and
their Ph range, suitable pH indicators used in different titrations, universal indicators
Practicals – Titration of a simple acid and a base (Preparation of standard solution of oxalic
acid and using this solution finding out the normality of a sodium hydroxide solution)
Acid to be titrated using this base) Calculation of normality of an acid or a base after titration, measurement of hydrogen ion concentration

Quality control:  
Accuracy  
Precision  
Specificity  
Sensitivity  
Limits of error allowable in laboratory  
Percentage error

Normal values and Interpretations

Special Investigations:  
Serum Electrophoresis  
Immunoglobulins  
Drugs: Digitoxin, Theophyllines

Regulation of Acid Base status:  
Henderson Hasselback Equations  
Buffers of the fluid

pH Regulation  
Disturbance in acid Base Balance  
Anion Gap  
Metabolic acidosis  
Metabolic acidosis  
Metabolic alkalosis  
Respiratory acidosis  
Respiratory alkalosis

Basic Principles and estimation of Blood Gases and pH  
Basic principles and estimation of Electrolytes  
Water Balance

Sodium regulation  
Bicarbonate buffers  
Nutrition, Nutritional support with special emphasis on parental nutrition.  
Calorific Value  
Nitrogen Balance  
Respiratory Quotient

Basal metabolic rate  
Dietary Fibers  
Nutritional importance of lipids, carbohydrates and proteins  
Vitamins

PRACTICALS

Analysis of Normal Urine  
Composition of urine  
Procedure for routine screening  
Urinary screening for inborn errors of metabolism  
Common renal disease  
Urinary calculus

Urine examination for detection of abnormal constituents  
Interpretation and Diagnosis through charts  
Liver Function tests  
Lipid Profile  
Renal Function test  
Cardiac markers
Blood gas and Electrolytes

4. Estimation of Blood sugar, Blood Urea and electrolytes
5. Demonstration of Strips
Demonstration of Glucometer

Internal Assessment
Theory - Average of two exams conducted. 20
Practicals: Record & Lab work* 10
* There shall be no University Practical Examination and internal assessment marks secured in Practicals need not be sent to the University.

Scheme of Examination Theory

There shall be one theory paper of three hours duration carrying 80 marks. Distribution of type of questions and marks for Biochemistry shall be as given under.

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NO PRACTICAL EXAMINATION

REFERENCE BOOKS

Biochemistry
1. Varley – Clinical chemistry
2. TEITZ – Clinical chemistry
3. Kaplan – Clinical chemistry
4. Ramakrishna(S) Prasanna(KG), Rajna © Text book of Medical Biochemistry Latest Ed Orient longman Bombay –1980
5. Vasudevan (DM) Sreekumari(S) Text book of Biochemistry for Medical students ,Latest Ed
Syllabus for First year Allied Health science courses  
RGUHS
BSc. Renal Dialysis Technology

PATHOLOGY

Histo Pathology, Clinical Pathology, Haematology and Blood Banking

Theory – 70 hours
Practical – 20 hours
  - HistoPathology - Theory
    - Introduction to Histo Pathology
    - Receiving of Specimen in the laboratory
    - Grossing Techniques
    - Mounting Techniques – various Mountants
    - Maintenance of records and filing of the slides.
    - Use & care of Microscope
    - Various Fixatives, Mode of action, Preparation and Indication.
    - Bio-Medical waste management
      - Section Cutting
      - Tissue processing for routine paraffin sections
      - Decalcification of Tissues.
      - Staining of tissues - H& E Staining
      - Bio-Medical waste management
  - Clinical Pathology – Theory
    - Introduction to Clinical Pathology
    - Collection, Transport, Preservation, and Processing of various clinical specimens
    - Urine Examination – Collection and Preservation of urine.
      Physical, chemical, Microscopic Examination
    - Examination of body fluids.
    - Examination of cerebro spinal fluid (CSF)
    - Sputum Examination.
    - Examination of feces

Haematology – Theory
  - Introduction to Haematology
  - Normal constituents of Blood, their structure and function.
  - Collection of Blood samples
  - Various Anticoagulants used in Haematology
  - Various instruments and glassware used in Haematology, Preparation and use of glassware
  - Laboratory safety guidelines
  - SI units and conventional units in Hospital Laboratory
  - Hb, PCV
  - ESR
  - Normal Haemostasis
    - Bleeding Time, Clotting Time, Prothrombin Time, Activated Partial Thromboplastin Time.

Blood Bank
  - Introduction
Blood grouping and Rh Types
Cross matching

PRACTICALS
- Urine Examination.
- Physical
- Chemical
- Microscopic
- Blood Grouping Rh typing.
- Hb Estimation, Packed Cell Volume [PCV], Erythrocyte Sedimentation rate [ESR]
- Bleeding Time, Clotting Time.
- Histopathology – Section cutting and H &E Staining [For BSc MLT only]

Internal Assessment
Theory - Average of two exams conducted. 20
Practicals: Record & Lab work* 10
* There shall be no University Practical Examination and internal assessment marks secured in Practicals need not be sent to the University.

Scheme of Examination Theory
There shall be one theory paper of three hours duration carrying 80 marks. Distribution of type of questions and marks for Pathology shall be as given under.

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NO PRACTICAL EXAMINATION

REFERENCE BOOKS
Pathology –
1. Culling Histopathology techniques
2. Bancroft Histopathology techniques
3. Koss – cytology
4. Winifred greg – Diagnostic cytopathology
5. Orell – Cyto Pathology
6. Todd & Sanford Clinical Diagnosis by laboratory method
7. Dacie & Lewis – Practical Haematology
8. Ramanic Sood, Laboratory Technology (Methods and interpretation) 4th Ed.
   J.P. Bros, New Delhi –1996)
9. Satish Gupta Short text book of Medical Laboratory for technician
   J.P. Bros, New Delhi – 1998
Syllabus for First year Allied Health science courses   RGUHS
BSc. Renal Dialysis Technology
Microbiology

Objective : - This course introduces the principles of Microbiology with emphasis on
applied aspects of Microbiology of infectious diseases particularly in the following areas
Principles & practice of sterilization methods.
Collection and despatch of specimens for routine microbiological investigations.
Interpretation of commonly done bacteriological and serological investigations.
Control of Hospital infections
Biomedical waste management
Immunization schedule

Theory - 70 hours
1. Morphology        4 hours
   Classification of microorganisms, size, shape and structure of bacteria. Use of
   microscope in the study of bacteria.
2. Growth and nutrition                4 hours
   Nutrition, growth and multiplications of bacteria, use of culture media in diagnostic
   bacteriology.
3. Sterilisation and Disinfection        4 hours
   Principles and use of equipments of sterilization namely Hot Air oven, Autoclave
   and serum inspissrator. Pasteurization, Anti septic and disinfectants.
   Antimicrobial sensitivity test
4. Immunology      6 hours
   Immunity Vaccines, Types of Vaccine and immunization schedule
   Principles and interpretation of commonly done serological tests namely Widal,
   VDRL, ASLO, CRP, RF & ELISA. Rapid tests for HIV and HbsAg(Technical
details to be avoided)
5. Systematic Bacteriology      20 hours
   Morphology, cultivation, diseases caused ,laboratory diagnosis including
   specimen collection of the following bacteria( the classification, antigenic
   structure and pathogenicity are not to be taught)
   Staphyloccci, Streptococci, Pneumococci, Gonococci, Menigococci, C
diphtheriae, Mycobactria, Clostridia, Bacillus, Shigella, Salmonella, Esch coli,
Klebsiella, Proteus,vibrio cholerae, Pseudomonas & Spirochetes
6. Parasitology    10 hours
   Morphology, life cycle, laboratory diagnosis of following parasites
   E. histolytica, Plasmodium, Tape worms, Intestinal nematodes
7. Mycology                  4 hours
   Morphology, diseases caused and lab diagnosis of following fungi.
   Candida, Cryptococcus, Dermatophytes ,opportunistic fungi.
8. Virology         10 hours
   General properties of viruses, diseases caused, lab diagnosis and prevention of
   following viruses, Herpes, Hepatitis, HIV, Rabies and Poliomyelitis.
9. Hospital infection      Causative agents, transmission methods, investigation,
   prevention and control Hospital infection.    4 hours
10. Principles and practice Biomedical waste management     4 hours
Practical

20 hours

Compound Microscope.
Demonstration and sterilization of equipments – Hot Air oven, Autoclave, Bacterial filters.
Demonstration of commonly used culture media, Nutrient broth, Nutrient agar, Blood agar, Chacolate agar, Mac conkey medium, LJ media, Robertson Cooked meat media, Potassium tellurite media with growth, Mac with LF & NLF, NA with staph
Antibiotic susceptibility test
Demonstration of common serological tests – Widal, VRDL, ELISA.
Grams stain
Acid Fast staining
Stool exam for Helminthic ova
Visit to hospital for demonstration of Biomedical waste mangement.
Anaerobic culture methods.

Internal Assessment
Theory - Average of two exams conducted. 20
Practicals: Record & Lab work* 10
* There shall be no University Practical Examination and internal assessment marks secured in Practicals need not be sent to the University.

**Scheme of Examination Theory**
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**NO PRACTICAL EXAMINATION**

**REFERENCE BOOKS**

**Microbiology**
1. Anathanarayana & Panikar Medical Microbioloty
2. Roberty Cruckshank – Medical Microbiology – The Practice of Medical Microbiology
3. Chatterjee – Parasitology – Interpretation to Clinical medicine.
4. Rippon – Medical Mycology
5. Emmons – Medical mycology
6. Basic laboratory methods in Parasitology, 1st Ed, J P Bros, New Delhi – 199
7. Basic laboratory procedures in clinical bacteriology, 1st Ed, J P Brothers,
   New Delhi
8. Medical Parasitology – Ajit Damle

Syllabus for First year Allied Health science courses   RGUHS
BSc. Renal Dialysis Technology
SUBSIDIARY SUBJECTS

SOCIOLOGY

Teaching Hours : 20
Course Description
This course will introduce student to the basic sociology concepts, principles and social process, social institutions [in relation to the individual, family and community and the various social factors affecting the family in rural and urban communities in India will be studied.

Introduction :
Meaning – Definition and scope of sociology
Its relation to Anthropology, Psychology, Social Psychology
Methods of Sociological investigations – Case study, social survey, questionnaire, interview and opinion poll methods.
Importance of its study with special reference to health care professionals

Social Factors in Health and Disease:
Meaning of social factors
Role of social factors in health and disease

Socialization :
Meaning and nature of socialization
Primary, Secondary and Anticipatory socialization
Agencies of socialization

Social Groups:
1. Concepts of social groups, influence of formal and informal groups on health and sickness. The role of primary groups and secondary groups in the hospital and rehabilitation setup.

Family :
The family, meaning and definitions
Functions of types of family
Changing family patterns
Influence of family on individual’s health, family and nutrition, the effects of sickness in the family and psychosomatic disease and their importance to physiotherapy

Community :
Rural community: Meaning and features – Health hazards to rural communities, health hazards to tribal community.
Urban community – Meaning and features – Health hazards of urbanities

Culture and Health :
Concept of Health
Concept of culture
Culture and Health
Culture and Health Disorders
Social Change:
Meaning of social changes
Factors of social changes
Human adaptation and social change
Social change and stress
Social change and deviance
Social change and health programme
The role of social planning in the improvement of health and rehabilitation

Social Problems of disabled:
Consequences of the following social problems in relation to sickness and disability remedies to prevent these problems
Population explosion
Poverty and unemployment
Beggary
Juvenile delinquency
Prostitution
Alcoholism
Problems of women in employment

Social Security:
Social Security and social legislation in relation to the disabled

Social Work:
Meaning of Social Work
The role of a Medical Social Worker
COURSE OUTLINE

COURSE DESCRIPTION: This course is designed to help the student acquire a good command and comprehension of the English language through individual papers and conferences.

BEHAVIOURAL OBJECTIVES:
The student at the end of training is able to
1. Read and comprehend English language
   2. Speak and write grammatically correct English
3. Appreciates the value of English literature in personal and professional life.

UNIT - I: INTRODUCTION:
   Study Techniques
   Organisation of effective note taking and logical processes of analysis and synthesis
   Use of the dictionary
   Enlargement of vocabulary
   Effective diction

UNIT - II: APPLIED GRAMMAR:
   Correct usage
   The structure of sentences
   The structure of paragraphs
   Enlargements of vocabulary

UNIT - III: WRITTEN COMPOSITION:
   Precise writing and summarising
   Writing of bibliography
   Enlargement of vocabulary

UNIT - IV: READING AND COMPREHENSION:
   Review of selected materials and express oneself in one's words.
   Enlargement of Vocabulary

UNIT - V: THE STUDY OF THE VARIOUS FORMS OF COMPOSITION:
   Paragraph, Essay, Letter, Summary, Practice in writing

UNIT - VI: VERBAL COMMUNICATION:
   Discussions and summarization, Debates, Oral reports, use in teaching

Scheme of Examination
No Practical or Viva voce examination
This is a subsidiary subject, examination to be conducted by respective colleges. Marks required for a pass is 35%

REFERENCE
2. Wren and Martin - Grammar and Composition, 1989, Chanda & Co, Delhi
5. Journalism Made Simple D Wainwright
6. Writers Basic Bookself Series, Writers Digest series
7. Interviewing by Joan Clayton Platkon
BIO STATISTICS

Time Allotted: 20 Hours

Course Description:
Introduction to basic statistical concepts: methods of statistical analysis; and interpretation of data

Behavioural Objectives:
Understands statistical terms.
Possesses knowledge and skill in the use of basic statistical and research methodology.

Unit – I : Introduction
Meaning, definition, characteristics of statistics.
Importance of the study of statistics.
Branches of statistics.
Statistics and health science including nursing.
Parameters and estimates.
Descriptive and inferential statistics.
Variables and their types.
Measurement scales

Unit – II : Tabulation of Data
Raw data, the array, frequency distribution.
Basic principles of graphical representation.
Types of diagrams - histograms, frequency polygons, smooth frequency polygon, cumulative frequency curve, ogive.
Normal probability curve.

Unit - III : Measure of Central Tendency
Need for measures of central tendency
Definition and calculation of mean - ungrouped and grouped
Meaning, interpretation and calculation of median ungrouped and grouped.
Meaning and calculation of mode.
Comparison of the mean, and mode.
Guidelines for the use of various measures of central tendency.

Unit - IV : Measure of Variability
Need for measure of dispersion.
The range, the average deviation.
The variance and standard deviation.
Calculation of variance and standard deviation ungrouped and grouped.
Properties and uses of variance and SO

Unit - V : Probability and Standard Distributions.
Meaning of probability of standard distribution.
The Binominal distribution.
The normal distribution.
Divergence from normality - skewness, kurtosis.

Unit - VI : Sampling Techniques
Need for sampling - Criteria for good samples.
Application of sampling in Community.
Procedures of sampling and sampling designs errors.  
Sampling variation and tests of significance.

Unit - VII : Health Indicator  
Importance of health Indicator.  
Indicators of population, morbidity, mortality, health services.  
Calculation of rates and rations of health.

Recommended Books.
HEALTH CARE

Teaching Hours : 40

Introduction to Health

Definition of Health, Determinants of Health, Health Indicators of India, Health Team Concept.
National Health Policy
National Health Programmes (Briefly Objectives and scope)
Population of India and Family welfare programme in India

Introduction to Nursing

What is Nursing? Nursing principles. Inter-Personnel relationships. Bandaging: Basic turns; Bandaging extremities; Triangular Bandages and their application.

Nursing Position, Bed making, prone, lateral, dorsal, dorsal re-cumbent, Fowler's positions, comfort measures, Aids and rest and sleep.

Lifting And Transporting Patients: Lifting patients up in the bed. Transferring from bed to wheelchair. Transferring from bed to stretcher.

Bed Side Management: Giving and taking Bed pan, Urinal: Observation of stools, urine. Observation of sputum, Understand use and care of catheters, enema giving.

Methods Of Giving Nourishment: Feeding, Tube feeding, drips, transfusion

Care Of Rubber Goods

Recording of body temperature, respiration and pulse,
Simple aseptic technique, sterilization and disinfection.

Surgical Dressing: Observation of dressing procedures

First Aid:
Syllabus as for Certificate Course of Red Cross Society of St. John's Ambulance Brigade.
Prescribed for the First Year students of all degree classes

Unit-I: Meaning of the team ‘Constitution’ making of the Indian Constitution 1946-1940.

Unit-II: The democratic institutions created by the constitution Bicameral system of Legislature at the Centre and in the States.

Unit-III: Fundamental Rights and Duties their content and significance.


Unit-VI: Doctrine of Separation of Powers legislative, Executive and Judicial and their functioning in India.

Unit – VII: The Election Commission and State Public Service commissions.

Unit – VIII: Method of amending the Constitution.

Unit – IX: Enforcing rights through Writs:

Unit – X: Constitution and Sustainable Development in India.

Introduction to Environment and Health
Sources, health hazards and control of environmental pollution
Water
The concept of safe and wholesome water.
The requirements of sanitary sources of water.
Understanding the methods of purification of water on small scale and large scale.
Various biological standards, including WHO guidelines for third world countries.
Concept and methods for assessing quality of water.
Domestic refuse, sullage, human excreta and sewage their effects on environment and health, methods and issues related to their disposal.
Awareness of standards of housing and the effect of poor housing on health.
Role of arthropods in the causation of diseases, mode of transmission of arthropods borne diseases, methods of control

Recommended Books.

BASICS IN COMPUTER APPLICATIONS

The course enables the students to understand the fundamentals of computer and its applications.

Introduction to Data processing:
Features of computers, Advantages of using computers. Getting data into/out of computers. Role of computers. What is Data processing? Application areas of computers involved in Data processing. Common activities in processing. Types of Data processing, Characteristics of information. What are Hardware and Software?

Hardware Concepts:

Concept of Software:

Scheme of Examination for MEDICAL ELECTRONICS including COMPUTER APPLICATIONS

One Written (Theory) paper: Maximum Marks: –80 marks.
No Practical or Viva voce examination
Applied ANATOMY

1. BASIC ANATOMY OF URINARY SYSTEM – STRUCTURAL ANATOMY OF KIDNEY, BLADDER, URETR, URETHRA, PROSTATE
2. HISTOLOGY OF KIDNEY
3. BLOOD SUPPLY OF KIDNEY
4. DEVELOPMENT OF KIDNEY IN BRIEF
5. ANATOMY OF PERITONEUM INCLUDING CONCEPT OF ABDOMINAL HERNIAS
6. ANATOMY OF VASCULAT SYSTEM
   - UPPER LIMB VESSELS – COURSE, DISTRIBUTION, BRANCHES, ORIGIN & ABNORMALITIES
   - NECK VESSELS – COURSE, DISTRIBUTION, BRANCHES, ORIGIN & ABNORMALITIES
   - FEMORAL VESSELS - COURSE, DISTRIBUTION, BRANCHES, ORIGIN & ABNORMALITIES

PHYSIOLOGY

1. MECHANISM OF URINE FORMATION
2. GLOMURULAR FILTRATION RATE (GFR)
3. CLEARANCE STUDIES
4. PHYSIOLOGICAL VALUES – UREA, CREATININE, ELECTROLYTES, CALCIUM, PHOSPHOROUS, URIC ACID, MAGNESIUM, GLUCOSE
   24 HOURS URINARY INDICES – UREA, CREATININE, ELECTROLYTES, CALCIUM, MAGNESIUM
5. PHYSIOLOGY OF RENAL CIRCULATION
   - FACTORS CONTRIBUTING & MODIFYING RENAL CIRCULATION
   - AUTOREGULATION
6. HORMONES PRODUCED BY KIDNEY & PHYSIOLOGIC ALTERATIONS IN PREGNANCY
7. HAEMOSTASIS – COAGULATION CASCADE, COAGULATION FACTORS, AUTO REGULATION, BT, CT, PT, PTT, THROMBIN TIME
8. ACID BASE BALANCE – BASIC PRINCIPLES & COMMON ABNORMALITIES LIKE HYPOKALEMIA, HYponATREMIA, HYPERKALEMIA, HYPERNATREMIA, HYPOCALCEMIA, HYPERCALCEMIA, PH, etc.

9. BASIC NUTRITION IN RENAL DISEASES

**Scheme of Examination  Theory**

There shall be one theory paper of three hours duration carrying 80 marks. Distribution of type of questions and marks for APPLIED ANATOMY & PHYSIOLOGY RELATED TO DIALYSIS TECHNOLOGY PAPER 1 shall be as given under.

<table>
<thead>
<tr>
<th>Type of Questions</th>
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<tr>
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<td>Short Essay (SE)</td>
<td>8 (To attempt 6)</td>
<td>6 x 5</td>
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<tr>
<td>Short Answer (SA)</td>
<td>12 (To Attempt 10)</td>
<td>10 x 3</td>
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<td><strong>Total Marks</strong></td>
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**NO PRACTICAL EXAMINATION**
Syllabus for Second year Allied Health science courses  RGUHS

PHARMOCOLOGY RELATED TO HAEMO & PERITONEAL DIALYSIS PAPER II

1. IV FLUID THERAPY WITH SPECIAL EMPHASIS IN RENAL DISEASES
2. DIURETICS – CLASSIFICATION, ACTIONS, DOSAGE, SIDE EFFECTS & CONTRAINDICATIONS
3. ANTI HYPERTENSIVES – CLASSIFICATION, ACTIONS, DOSAGE, SIDE EFFECTS & CONTRAINDICATIONS, SPECIAL REFERENCE DURING DIALYSIS, VASOPRESSORS, DRUGS USED IN HYPOTENTION
4. DRUGS & DIALYSIS – DOSE & DURATION OF ADMINISTRATION OF DRUGS
5. DIALYSABLE DRUGS – PHENOBARBITONE, LITHIUM, METHANOL etc.
6. VITAMIN D & ITS ANALOGUES, PHOSPHATE BINDERS, IRON, FOLIC ACID & OTHER VITAMINS OF THERAPEUTIC VALUE
7. ERYTHROPOIETIN IN DETAIL
8. HEPARIN INCLUDING LOW MOLECULAR WEIGHT HEPARIN
9. PROTAMINE SULPHATE
10. FORMALIN, SODIUM HYPOCHLORITE, HYDROGEN PEROXIDE – ROLE AS DISINFECTANTS & ADVERSE EFFECTS OF RESIDUAL PARTICLES APPLICABLE TO FORMALIN
11. HAEMODIALYSIS CONCENTRATES – COMPOSITION & DILUTION (ACETATE & BICARBONATES)
12. PERITONEAL DIALYSIS FLUID IN PARTICULAR HYPERTONIC SOLUTIONS – COMPOSITION
13. POTASSIUM EXCHANGE RESINS WITH SPECIAL EMPHASIS ON MODE OF ADMINISTRATION

Scheme of Examination Theory
There shall be one theory paper of three hours duration carrying 50 marks. Distribution of type of questions and marks for PHARMOCOLOGY RELATED TO HAEMO & PERITONEAL DIALYSIS PAPER II
shall be as given under.

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</table>

NO PRACTICAL EXAMINATION

Syllabus for Second year Allied Health science courses  RGUHS

CONCEPTS OF RENAL DISEASES PAPER III

CLINICAL MANIFESTATIONS EVALUATION & MANAGEMENT OF THE FOLLOWING DISEASES

1. ACUTE RENAL FAILURE
2. NEPHROTIC SYNDROME – PRIMARY & SECONDARY
3. NEPHRITIC SYNDROME
4. UTI – URINARY TRACT INFECTIONS
5. ASYMPTOMATIC URINARY ABNORMALITIES
6. CHRONIC RENAL FAILURE
7. RENAL STONE DISEASES
8. OBSTRUCTIVE UROPATHIES
9. CONGENITAL & INHERITED RENAL DISEASES
10. TUMORS OF KIDNEY
11. PREGNANCY ASSOCIATED RENAL DISEASES
12. RENAL VASCULAR DISORDERS & HYPERTENSION ASSOCIATED RENAL DISEASES
Scheme of Examination Theory

There shall be one theory paper of three hours duration carrying 50 marks.

Distribution of type of questions and marks for CONCEPTS OF RENAL DISEASES PAPER III

<table>
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<th>TYPE OF QUESTION</th>
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PRACTICAL EXAM: 80 Marks
Syllabus for Second year Allied Health science courses  RGUHS

APPLIED ASPECTS OF PATHOLOGY & MICROBIOLOGY

PAPER IV

PATHOLOGY

1. CONGENITAL ABNORMALITIES OF URINARY SYSTEM
2. CLASSIFICATION OF RENAL DISEASES
3. GLOMERULAR DISEASES – CAUSES, TYPES & PATHOLOGY
4. TUBULOCORTICAL DISEASES
5. RENAL VASCULAR DISORDERS
6. END STAGE RENAL DISEASES – CAUSES & PATHOLOGY
7. PATHOLOGY OF KIDNEY IN HYPERTENSION, DIABETES MELLITUS, PREGNANCY
8. PATHOLOGY OF PERITONEUM – PERITONITIS – BACTERIAL, TUBULAR & SCLEROUSING PERITONITIS DIALYSIS INDUCED CHANGES
9. PATHOLOGY OF URINARY TRACT INFECTIONS
10. PYELONEPHRITIS & TUBERCULOUS PYELONEPHRITIS

MICROBIOLOGY

1. HEPATOTROPHIC VIRUSES IN DETAIL – MODE OF TRANSFUSION, UNIVERSAL PRECAUTIONS, VACCINATIONS
2. HUMAN IMMUNODEFICIENCY VIRUS (HIV), MODE OF TRANSFUSION, UNIVERSAL PRECAUTIONS
3. OPPURTUNISTIC INFECTIONS
4. MICROBIOLOGY OF URINARY TRACT INFECTIONS
5. MICROBIOLOGY OF VASCULAR ACCESS INFECTION (FEMORAL, JUGULA, SUBCLAVIAN CATHETERS)
6. SAMPLING METHODOLOGIES FOR CULTURE & SENSITIVITY

Scheme of Examination  Theory
There shall be one theory paper of three hours duration carrying 50 marks. Distribution of type of questions and marks for APPLIED ASPECTS OF PATHOLOGY & MICROBIOLOGY

**PAPER IV**

<table>
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<tr>
<th>TYPE OF QUESTION</th>
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PRACTICAL EXAM: 80 Marks
BASICS OF DIALYSIS TECHNOLOGY

1. INDICATIONS OF DIALYSIS
2. TYPES OF DIALYSIS
3. PRINCIPLES OF DIALYSIS – DEFINITION
4. HAEMODIALYSIS APPARATUS – TYPES OF DIALYSER & MEMBRANE
5. TYPES OF VASCULAR ACCESS FOR HAEMODIALYSIS
6. INTRODUCTION TO HAEMODIALYSIS MACHINE
7. PRIMING OF DIALYSIS APPARATUS
8. DIALYSER REUSE
9. COMMON COMPLICATIONS OF HAEMODIALYSIS
10. MONITORING OF PATIENTS DURING DIALYSIS

NUTRITION

INTRODUCTION TO SCIENCE OF NUTRITION

- DEFINITION
- FOOD PATTERN AND ITS RELATION TO HEALTH
- FACTORS INFLUENCING FOOD HABITS, SELECTION AND FOOD STUFFS
- SUPERSTITIONS, CULTURE, RELIGION, INCOME, COMPOSITION OF FAMILY, AGE, OCCUPATION, SPECIAL GROUP etc
- FOOD SELECTION, STORAGE & PRESERVATION
- PREVENTION OF BLOOD ADULTERATION

CLASSIFICATION OF NUTRIENTS

- MACRONUTRIENTS AND MICRONUTRIENTS
- PROTEINS – TYPES, SOURCES, REQUIREMENTS AND DEFICIENCIES OF PROTEINS
- CARBOHYDRATES SOURCES, REQUIREMENTS & DEFICIENCY
- FATS – TYPES, SOURCES, REQUIREMENTS AND DEFICIENCY OF FATS
- WATER – SOURCES OF DRINKING WATER, REQUIREMENTS, PRESERVATION OF WATER
- MINERALS – TYPES, SOURCES, REQUIREMENTS DEFFICIENCIES OF MINERALS
- VITAMINS - TYPES, SOURCES, REQUIREMENTS DEFFICIENCIES OF VITAMINS
PLANNING DIETS

- NEED FOR PLANNING DIETS
- CONCEPT OF A BALANCED DIET
- FOOD GROUP & BALANCED DIET
- INFLUENCE OF AGE, SEX, OCCUPATION & PHYSIOLOGICAL STATE
- RECOMMENDED DIETARY INTAKE IN PLANNING DIET
- STEPS IN PLANNING BALANCED DIET
- PLANNING RENAL DIET

INTRODUCTION TO COOKERY

- PURPOSES AND METHODS OF COOKING
- EFFECTS OF HEAT ON COOKING OF FOODS
- PREPARATION OF BASIC RECIPES – CLEAR FLUIDS
- FULL FLUIDS, VEGETABLE PREPARATION, EGG RECIPES, FISH AND MEAT RECIPES, LIGHT PUDDINGS

Syllabus for Third year Allied Health science courses   RGUHS
BSc. Renal Dialysis Technology

MAIN SUBJECTS

APPLIED DIALYSIS TECHNOLOGY PAPER I

1. INDICATIONS OF DIALYSIS
2. HISTORY & TYPES OF DIALYSIS
3. THEORY OF HAEMODIALYSIS – DIFFUSION, OSMOSIS, ULTRAFILTERATION & SOLVENT DRAG
4. HAEMODIALYSIS APPRATUS – TYPES OF DIALYSER & MEMBRANE, DIALYSATE
5. PHYSIOLOGY OF PERITONEAL DIALYSIS
6. VASCULAR ACCESS FOR HAEMODIALYSIS & ASSOCIATED COMPLICATIONS
7. PERITONEAL ACCESS DEVICES – TYPES OF CATHETER, INSERTION TECHNIQUES & ASSOCIATED COMPLICATIONS
8. DIALYSIS MACHINES - MECHANISM OF FUNCTIONING & MANAGEMENT
   - HAEMODIALYSIS MACHINE
   - PERITONEAL DIALYSIS MACHINE
9. COMPLICATIONS OF DIALYSIS
• HAEMODIALYSIS – ACUTE & LONG TERM COMPLICATIONS
• PERITONEAL DIALYSIS – MECHANICAL & METABOLIC COMPLICATIONS

10. BIOCHEMICAL INVESTIGATIONS REQUIRED FOR RENAL DIALYSIS

11. ADEQUACY OF DIALYSIS
• HAEMODIALYSIS
• PERITONEAL DIALYSIS
• PERITONEAL EQUILIBRIATION TEST (PET)

12. ANTI COAGULATION

13. PERITONITIS & EXIT SITE INFECTION

14. WITHDRAWAL OF DIALYSIS CRITERIA
• ACUTE DIALYSIS
• CHRONIC DIALYSIS

**Scheme of Examination Theory**
There shall be one theory paper of three hours duration carrying 100 marks.

**Distribution of type of questions and marks for APPLIED DIALYSIS TECHNOLOGY PAPER I**

**TECHNOLOGY PAPER I shall be as given under.**

<table>
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<th>Type of Questions</th>
<th>No. of Questions</th>
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**PRACTICAL EXAMINATION**

One common practical for all the three papers with equal weight age of marks i.e. 40 practical marks for each paper.

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**Syllabus for Third year Allied Health science courses  RGUHS BSc. Renal Dialysis Technology**

**APPLIED DIALYSIS TECHNOLOGY PAPER II**

1. DIALYSIS IN SPECIAL SITUATIONS
• PATIENTS WITH CONGESTIVE CARDIAC FAILURE
• ADVANCED LIVER DISEASE
PATIENTS POSITIVE FOR HIV, HBsAg & HCV
- FAILED TRANSPLANT
- POISONING CASES
- PREGNENCY

2. DIALYSIS IN INFANTS & CHILDREN
3. DIALYSER REUSE
4. SPECIAL DIALYSIS PROCEDURES
   - CONTINUOUS THERAPIES IN HAEMODIALYSIS
   - DIFFERENT MODALITIES OF PERITONEAL DIALYSIS
   - HAEMODIAFILTRATION
   - HAEMOPERFUSION
   - SLED
   - MARS

5. PLASMAPHERESIS

6. SPECIAL PROBLEMS IN DIALYSIS PATIENTS
   - PSYCHOLOGY & REHABILITATION
   - DIABETES
   - HYPERTENSION
   - INFECTIONS
   - BONE DISEASES
   - ALUMINIUM TOXICITY

7. RECENT ADVANCES IN HAEMODIALYSIS
   - NOCTURNAL DIALYSIS
   - ONLINE DIALYSIS
   - DAILY DIALYSIS

8. TELEMEDICINE IN DIALYSIS PRACTICE

9. WATER TREATMENT SYSTEM
10. RENAL ANAEMIA MANAGEMENT

- CHRONIC DIALYSIS

**Scheme of Examination Theory**
There shall be one theory paper of three hours duration carrying 100 marks.

Distribution of type of questions and marks for APPLIED DIALYSIS
TECHNOLOGY PAPER II shall be as given under.

<table>
<thead>
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PRACTICAL EXAMINATION

One common practical for all the three papers with equal weight age of marks i.e. 40 practical marks for each paper.

Syllabus for Third year Allied Health science courses  RGUHS
BSc. Renal Dialysis Technology

PRACTICAL SCHEDULE

1. SETTING UP DIALYSIS MACHINE FOR DIALYSIS
2. A V CANNULATION
3. A V FISTULA/A V GRAFT CANNULATION
4. INITIATION OF DIALYSIS THROUGH CENTRAL VENOUS CATHETERS LIKE INTERNAL JUGULAR, FEMORAL & SUBCLAVIAN VEIN
5. PACKING & STERILISATION OF DIALYSIS TRAYS
6. CLOSING OF DIALYSIS
7. PREPARATION OF CONCENTRATES DEPENDING ON THE SITUATIONS
8. REUSE OF DIALYSIS APPARATUS
9. ISOLATED ULTRAFILTRATION
10. PERFORMANCE OF PERITONEAL DIALYSIS EXCHANGE MANUALLY
11. SETTING UP OF AUTOMATED PERITONEAL DIALYSIS EQUIPMENT
12. FIRST ASSISTANT IN MINOR PROCEDURES
13. SKIN SUTURING
14. CPR DEMONSTRATIONS

Scheme of examination for Practicals
Syllabus for Third year Allied Health science courses   RGUHS  
BSc. Renal Dialysis Technology

Subsidiary Subjects

BASIC SCIENCE

1. MEDICAL ETHICS & THE RELEVANT MEDICO LEGAL ASPECTS
   • RESPONSIBILITIES & DUTIES
   • ETHICAL BEHAVIOUR & CONDUCT
   • MEDICO LEGAL ASPECTS AND ITS RELATION TO CONSUMER PROTECTION ACT
2. BIOMEDICAL WASTE & ITS MANAGEMENT
3. CARDIO PULMONARY RESUSCITATION – BASIC CARDIAC LIFE SUPPORT & ADVANCED CARDIAC LIFE SUPPORT
4. CRITICAL CARE NEPHROLOGY – MANAGEMENT OF RENAL FAILURE IN ICU
5. BASIC PRINCIPLES OF BLOOD TRANSFUSION & FLUID THERAPY
6. STERILISATION – MATERIAL & METHODS
7. RENAL TRANSPLANTATION – PRINCIPLES, IMMUNOLOGY, PATIENTS SELECTION, SURGICAL PROCEDURE, COMPLICATIONS, POST TRANSPLANT EVALUATION & MANAGEMENT