

# **Baba Farid University of Health Sciences**



## **Ordinances & Syllabus**

### **Bachelor of Science in Dialysis Techniques**

#### **B.Sc.(DT)**

(3 Years Degree Programme)

(Applicable w.e.f. academic session 2019-20)

Faridkot -151203

**B.Sc. Dialysis Techniques  
B.Sc. (DT)**

**1. Duration of course**

Duration of course shall be 3 years.

**2. Admission criteria and qualifications:**

The students shall be admitted as per the admission criteria and qualifications prescribed in the Notification issued by the Government of Punjab or by Baba Farid University of Health Sciences, from time to time.

**3. Medium of Instructions**

The medium of instruction during the course and examinations shall be English.

**4. Examination Schedule**

4.1 The examination shall be held twice a year in the months of May/June and November/December or on such other dates as may be decided by the Board of Management on the recommendation of Faculty of Medical Sciences and Academic Council.

4.2 Normally, the University shall conduct not more than two examinations in a year, for any subject, with an interval of not less than four and not more than six months between the two examinations.

4.3 Normally, the last dates for receipt of examination form and late fee in the University Office shall be as under:-

<b>Examination Session</b>	<b>Date for late fee without fee</b>	<b>Date with late fee of Rs.200/-</b>	<b>Date with late fee of Rs.500/-</b>	<b>Date with late fee of Rs.1500/-</b>
May/June	March 1	March 15	March 31	April 15
Nov./Dec.	Sept. 15	Sept. 30	Oct. 15	Oct. 31

4.4 In the case of late declaration of result due to any reason, the last dates for receipt of examination form and fee in the University Office shall be as under:-

<b>Up to 15 days from the date of declaration of result</b>	<b>Up to 30 days from the date of declaration of result</b>	<b>Up to 45 days from the date of declaration of result</b>	<b>Up to 60 days from the date of declaration of result</b>
Without Late Fee	With a late fee of Rs.200/-	With a late fee of Rs.500/-	With a late fee of Rs.1500/-

- Note:
1. Examination Fee including cost of form should be submitted in the shape of Demand Draft in favour of "The Registrar, BFUHS" payable at Faridkot.
  2. The Vice chancellor may permit acceptance of admission form and fee ten days before the commencement of examination with a late fee of Rs.5000/.

### 5. First Year B.Sc. Dialysis Techniques Examination:

The First Year B.Sc. Dialysis Techniques Examination shall be open to a person who

- a) has been enrolled for one academic year preceding the examination in a College of Health Sciences affiliated to this University.
- b) has his/her name submitted to the Registrar by the Principal of the college with the following certificates:-
  - i) of having attended separately in theory and practical/clinical not less than 75% of the lectures delivered and practicals conducted in each of the subjects prescribed for the examination provided that deficiency in the number of lectures delivered and practicals conducted may be condoned by the Principal to the extent of 5% of the lectures delivered.
  - ii) of having secured at least 35% marks of the total marks fixed for internal assessment in each subject, separately, in order to be eligible to appear in all University examinations.
  - iii) of good moral character.

**Note:** If a candidate fulfils the condition laid down in clause 5(a) & (b) above for one or more subject (s) he/ she may be allowed to take the examination in such subject (s) in which he/ she fulfils the requirements.

- (c) The First Year B.Sc. Dialysis Techniques Annual Examination shall be held in May/June and the supplementary within six months of the annual examinations.
- d) The First Year B.Sc. Dialysis Techniques examination shall be in the following subjects and candidate shall be required to pass all the subjects:-

Sr. No.	Subject	Theory				Practical			Grand Total
		Marks	Int. Assessment	Oral/Viva	Total	Marks	Int. Assessment	Total	
1.	Anatomy	80	20	20	120	60	20	80	200
2.	Physiology	80	20	20	120	60	20	80	200
3.	Biochemistry	80	20	20	120	60	20	80	200
4.	Introduction to Computer*	50	-	-	50	50	-	50	100
5.	English*	80	20	-	100	-	-	-	100

\*Note: The Examination in the subject of Introduction to Computers and English will be conducted at College level and minimum pass marks in the subject of English shall be 35% and marks will be sent to the University for final inclusion in the result.

## 6. Second Year B.Sc. Dialysis Techniques Examination:

The Second Year B.Sc. Dialysis Techniques Examination shall be open to a person who

- a) has been enrolled for one academic year preceding the examination in a College of Health Sciences affiliated to this University.
- b) has previously passed the First Year B.Sc. Dialysis Techniques examination of this University or an examination of any other recognized University/Institution in India considered equivalent for the purpose by the University.
- c) has his/her name submitted to the Registrar by the Principal of the college with the following certificates:-
  - i) of having attended separately in theory and practical/clinical not less than 75% of the lectures delivered and practicals conducted in each of the subjects prescribed for the examination provided that deficiency in the number of lectures delivered and practicals conducted may be condoned by the Principal to the extent of 5% of the lectures delivered.
  - ii) of having secured at least 35% marks of the total marks fixed for internal assessment in each subject, separately, in order to be eligible to appear in all University examinations.
  - iii) of good moral character.

**Note:** If a candidate fulfils the condition laid down in clause 6 (a), (b) and (c) above for one or more subject (s) he/ she may be allowed to take the examination in such subject (s) in which he/ she fulfils the requirements.

- (d) The Second Year B.Sc. Dialysis Techniques Annual Examination shall be held in May/June and the supplementary within six months of the annual examinations.
- (e) The Second Year B.Sc. Dialysis Techniques examination shall be in the following subjects and candidate shall be required to pass all the subjects:-

Sr. No.	Subject	Theory				Practical			Grand Total
		Marks	Int. Assessment	Oral/Viva	Total	Marks	Int. Assessment	Total	
1.	Pathology – I	80	20	20	120	60	20	80	200
2.	Pathology – II	80	20	20	120	60	20	80	200
3.	Microbiology	80	20	20	120	60	20	80	200
4.	Pharmacology	80	20	20	120	60	20	80	200

### 7. Third Year B.Sc. Dialysis Techniques Examination:

The Third Year B.Sc. Dialysis Techniques Examination shall be open to a person who

- a) has been enrolled for one academic year preceding the examination in a College of Health Sciences affiliated to this University.
- b) has previously passed the Second Year B.Sc. Dialysis Techniques examination of this University or an examination of any other recognized University/Institution in India considered equivalent for the purpose by the University.
- c) his/her name submitted to the Registrar by the Principal of the college with the following certificates:-
  - i) of having attended separately in theory and practical/clinical not less than 75% of the lectures delivered and practicals conducted in each of the subjects prescribed for the examination provided that deficiency in the number of lectures delivered and practicals conducted may be condoned by the Principal to the extent of 5% of the lectures delivered.
  - ii) of having secured at least 35% marks of the total marks fixed for internal assessment in each subject, separately, in order to be eligible to appear in all University examinations.
  - iii) of good moral character.

**Note:** If a candidate fulfils the condition laid down in clause 7 (a), (b) & (c) above for one or more subject (s) he/ she may be allowed to take the examination in such subject (s) in which he/ she fulfils the requirements.

- (d) The Third Year B.Sc. Dialysis Techniques Annual Examination shall be held in May/June and the supplementary within six months of the annual examinations.

- (e) The Third Year B.Sc. Dialysis Techniques examination shall be in the following subjects and candidate shall be required to pass all the subjects:-

Sr. No.	Subject	Theory				Practical			Grand Total
		Marks	Int. Assessment	Oral/Viva	Total	Marks	Int. Assessment	Total	
1.	Principles of Nursing including Nutrition	80	20	20	120	60	20	80	200
2.	Dialysis Technology – I	80	20	20	120	60	20	80	200
3.	Dialysis Technology – II	80	20	20	120	60	20	80	200
4.	Clinical Skill Assessment	-	-	-	-	160	40	200	200

## 8. Internal Assessment

- i) Internal Assessment shall be submitted to the University at least two weeks before the commencement of theory examinations or within one week from the issuance of Roll Numbers by the University. All the colleges shall adopt uniform criteria for Internal Assessment as follows:-
  - a) Attendance above 90% to be acknowledged with 10% extra weight-age for Internal Assessment.
  - b) At least two tests to be held in each year in addition to the pre-final (send up) examination. The Internal Assessment should be the average of all awards of these tests taken together.
  - c) Criteria for calculation of Internal Assessment
    - i) House Examinations - 80%
    - ii) Attendance (above 90%) - 10%
    - iii) Subject assessment (candidate's conduct and extra curricular participation) - 10%
  - d) Additional mandatory requirement for Internal Assessment to be observed by all colleges.
    - i) All test marks obtained by candidates will be displayed on Notice Boards of respective departments as and when they are awarded.
    - ii) All computations of Internal Assessment of the entire class made by the HOD of the department shall be displayed on the notice board of the department showing individual test marks, advantage of all tests, attendance advantage and subjective assessment and the total Internal Assessment thus derived for at least one week before sending the awards to the Principal's office.
    - iii) Professor Incharge/HOD preparing Internal Assessment shall certify that the detailed assessment of the entire class has been displayed on the department Notice Board for at least one week prior to its being submitted for onward transmission to the University and that adequate opportunity has been given to all the students to file any objections and that the same have been addressed satisfactory.
    - iv) The Principal forwarding the Internal Assessment to the University shall countersign the above referred certificate of the HOD/Professor Incharge preparing the Internal Assessment.
  - e) The re-appear/fail students may be re-assessed for improvement in the Internal Assessment and awards of Internal Assessment of all the re-appear/fail students will be submitted to the University every time.

## 9. Promotion and number of attempts allowed

- a) A candidate who fails in all the subjects in the First Year B.Sc. Dialysis Techniques examination shall not be promoted to Second Year class.
- b) The candidate who will absent himself/herself from the examination will be deemed to have been failed in that subject.
- c) A candidate who passes in at least one subject of University level First Year B.Sc. Dialysis Techniques examination will be permitted to attend classes of Second Year. However, he/she will be allowed to appear in the Second Year B.Sc. Dialysis Techniques examination only after passing all the subjects of First Year B.Sc. Dialysis Techniques Examination.
- d) Candidate who passes in one or more subjects of First Year B.Sc. Dialysis Techniques examination shall be exempted from appearing in these subject at a subsequent examination, but the candidate must pass the examination in a maximum of four attempts (including first attempt, as a regular candidate), failing which he/ she shall not be allowed to continue his studies.
- e) A candidate who fails in all the subjects in the Second Year B.Sc. Dialysis Techniques examination shall not be promoted to Third Year class.
- f) A candidate who passes in at least one subject of University level Second Year B.Sc. Dialysis Techniques examination will be permitted to attend classes of Third Year. However, he/she will be allowed to appear in the Third Year B.Sc. Dialysis Techniques examination only after passing all the subjects of Second Year B.Sc. Dialysis Techniques Examination.
- g) Candidate who passes in one or more subjects of Second Year B.Sc. Dialysis Techniques examination shall be exempted from appearing in these subject at a subsequent examination, but the candidate must pass the examination in a maximum of four attempts including first attempt, as a regular candidate plus one mercy chance at the discretion of the Vice-Chancellor, failing which he/ she will have to appear in all the subjects of the examination.
- h) Candidate who passes in one or more subjects of Third Year B.Sc. Dialysis Techniques examination shall be exempted from appearing in these subject at a subsequent examination, but the candidate must pass the examination in a maximum of four attempts (including first attempt, as a regular candidate), failing which he/ she will have to appear in all the subjects

## 10. Appointment of Examiners:

The examiners shall be appointed by the University on the recommendations of the Board of Studies in Medical Sciences (Undergraduates)/Faculty of Medical Sciences.

- i) There shall be four examiners – two internal and two external.
- ii) Professor & Head of the Department shall be the Convener. The second Internal Examiner will be appointed by annual rotation from amongst the Professors/Associate Professors/Assistant Professor with at least 3 years post PG teaching experience. In case of non-availability of Professors/Associate Professors/Assistant Professor in the department the teacher working in another Medical College affiliated to this University, who fulfils the minimum requirements as per MCI norms for appointment as examiner may be appointed as Internal Examiner.

- iii) The examiners shall be appointed by the University from the teachers working in the Medical Colleges affiliated to it, preferably from the colleges where this course is being run, on the recommendations of the Board of Studies in Medical Sciences and Faculty of Medical Sciences.
- iv) In case of non-availability of External Examiners from amongst the affiliated colleges of BFUHS, External Examiners may be appointed from the colleges which are not affiliated to BFUHS, Faridkot, in and outside the State of Punjab.

#### 11. Paper setting and moderation of Question Papers

Each theory paper shall be of three hours duration. The paper setting and moderation of Question Papers will be got done under the direction of the Vice-Chancellor, if necessary.

The question paper covering the entire course shall be divided into two sections.

##### Section A:

**Question 1:** This will consist of five short answer questions with answer to each question up to 250 words in length. All questions will be compulsory. Each question will carry 5 marks total weight-age being 25 marks.

**Question 2:** This will consist of two long answer questions with answer to each question up to 1000 words in length in length. Two questions will be set by the examiner and the candidate will be required to attempt one. Each question will carry 15 marks.

##### Section B

**Question 1:** This will consist of five short answer questions with answer to each question up to 250 words in length. All questions will be compulsory. Each question will carry 5 marks total weight-age being 25 marks.

**Question 2:** This will consist of two long answer questions with answer to each question up to 1000 words in length. Two questions will be set by the examiner and the candidate will be required to attempt one. Each question will carry 15 marks.

#### 12. Evaluation of Answer Books

The answer books shall be got evaluated by putting fictitious roll numbers thereon or spot evaluation (table marking) or any other method under the direction of the Vice-Chancellor.

#### 13. Minimum pass marks:

The minimum number of marks to pass the examination shall be 50% in theory including Internal Assessment & Oral/Viva and 50% in practical including Internal Assessment in each subject separately except in the subject of English where minimum pass marks shall be 35%.

A successful candidate on the basis of theory and practical marks taken together shall be classified as under: -

- Second Class** : A candidate obtaining 50% or more marks but less than 60% marks
- First Class** : A candidate obtaining 60% or more marks
- First Class with Distinction** : A candidate obtaining 80% or more marks



**14. Grace Marks:**

That the grace marks up to 5 (five) be given to the best advantage of the students irrespective of Theory or Practical examinations.

**15. Declaration of Result**

The Registrar/Controller of Examinations shall publish the result after the examination. The candidates shall be issued Detailed Marks Certificate through their Principals.

**16. Award of Degree**

On successfully passing the Third Year B.Sc. Dialysis Techniques examination the students shall be awarded the Degree of Bachelor of Science Dialysis Techniques.

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**SYLLABUS**  
**First Year B.Sc. Dialysis Techniques**  
**Paper – I**

**ANATOMY**

Theory: 70 Hours  
 Practical: 20 Hours

**Theory:**

**1. Introduction:**

- Definition of anatomy and its divisions, Terms of location, positions and planes.
- Cell and its organelles, Tissues & its classification, Glands.

**2. Musculoskeletal system:**

- Structure of Bone & its types.
- Joints- Classification of joints with examples; details of synovial joint.
- Bones & joints of upper limb, lower limb and their movements.
- Axial skeleton & appendicular skeleton.
- Skull, spine & its movements, intervertebral disc.
- Muscles & its types.
- Muscles of the upper limb, lower limb, trunk and neck.

**3. Cardiovascular System:**

- Arteries & veins, Capillaries & arterioles.
- Heart- size, location, chambers, blood supply of heart, pericardium.
- Systemic & pulmonary circulation.
- Major blood vessels of Heart- Aorta, pulmonary artery, common carotid artery, subclavian artery, axillary artery, brachial artery, common iliac artery, femoral artery.
- Inferior vena cava, portal circulation, great saphenous vein.

**4. Lymphatic System:**

- Lymph & Lymph vessels.
- Structure of lymph node, names of regional lymphatics, axillary and inguinal lymph nodes.

**5. Gastro-intestinal System:**

- Parts of GIT, structure of tongue, pharynx, salivary glands.
- Location & Gross structure of Oesophagus, stomach, intestine (small and large), liver, gall bladder, pancreas, spleen.

**6. Respiratory system:**

- Parts of Respiratory system; Structure of nose, nasal cavity, larynx, trachea, lungs, pleura, bronchopulmonary segments.

**7. Urinary System:**

- Parts of Urinary system, location and gross structure of kidney, ureter, urinary bladder, urethra.

**8. Reproductive system:**

- Parts of male reproductive system, gross structure of testis, vas deferens, epididymis, prostate.
- Parts of female reproductive system, gross structure of uterus, ovary, fallopian tube, mammary gland.

**9. Endocrine glands:**

- Name of all endocrine glands, gross structure & functions of pituitary gland, adrenal gland, thyroid gland and parathyroid gland.

**10. Nervous system:**

- Neuron, classification of NS.
- Meninges, ventricles, CSF.
- Gross features of cerebrum, midbrain, pons, medulla oblongata, cerebellum, name of basal nuclei.
- Blood supply of brain, cranial nerves.
- Spinal cord and spinal nerves.
- Autonomic nervous system.
- Visual & auditory pathways

**11. Sensory Organs:**

- Skin & its appendages.
- Structure of eye & lacrimal apparatus, name of extraocular muscles.
- Structure of ear: external, middle & inner ear.

**Practical:**

**Demonstration** of all bones of the human body.

**Demonstration** of all organs of the human body.

**Histology:**

- Epithelium: Simple (squamous, cuboidal, columnar, ciliated), Stratified, Transitional
- Bone, muscles (skeletal, smooth, cardiac)
- Cartilage (hyaline, elastic, fibro cartilage).
- Connective Tissue (loose and dense).
- Arteries (large & medium sized), Veins.

**Radiographs:**

Normal Radiographs of Chest, Upper Limb, Lower Limb, pelvis & spine.

(Only for MRIT & Ortho. assistant students)

**Reference Books**

1. Ross and Wilson, Anatomy and Physiology, Churchill Livingstone.
2. Companion Pocketbook for quick review
3. B.D. Chaurasia's Human Anatomy -Vol. (1,2,3)
4. Anatomy for B.Sc. Nursing – Dr Renu Chauhan

**SYLLABUS**  
**First year B.Sc. Dialysis Techniques**

**Paper – II**

**Physiology**

Theory: 70 Hours  
Practical: 20 Hours

**Theory:**

**1. Blood**

- Red Blood Cells- Functions, count, Physiological variations. Erythropoiesis-stages
- Hemoglobin-Functions, Physiological variations.
- White Blood cells-Functions, count, morphology.
- Platelets-count, morphology, functions. Hemostasis-Definition, Mechanism, clotting factors.
- Blood groups-ABO system, Rh system, Blood transfusion- Indication, transfusion reactions.
- Anaemias-classification, morphological and Etiological, effects of anaemia on body.

**2. Cardiovascular System**

- Heart-Physiological Anatomy, Nerve supply, Properties of cardiac muscle.
- Cardiac Cycle-Events –systole, diastole
- Cardiac Output-Definition and factors affecting it.
- Heart sounds-normal heart sounds, its causes, areas of auscultations.
- Blood Pressure-Definition, normal value, Physiological variations, its measurement.
- ECG- normal waves.
- Shock-Definition, Types.

**3. Gastrointestinal System**

- Physiological Anatomy, functions of GIT.
- Salivary Gland-functions of saliva.
- Stomach- structure and functions, Gastric secretions-composition, functions, Mechanism
- Pancreas- structure, functions, composition of Pancreatic juice.
- Liver-Functions of liver.
- Bile-Composition, functions.
- Jaundice-Types and its causes.
- Gall Bladder- Functions
- Intestine- Movements of small and large intestine.
- Digestion and Absorption of Carbohydrates, Proteins, Fats.
- Hormones of GIT- Functions of Gastrin, Secretin, CCK-Pz.

**4. Respiratory System**

- Physiological Anatomy, Functions of the respiratory system.
- Types of respiration, respiratory membrane.
- Lung volumes and capacities, vital capacity and factors affecting it.
- Transport of Oxygen-Forms of transportation, Oxy-hemoglobin dissociation curve and factors affecting it.

- Transport of Carbon-Dioxide- Forms of transportation.
- Hypoxia-Definition, types, effects of hypoxia.
- Cyanosis-Definition and types.
- Artificial Respiration- CPR

## 5. Endocrine System

- Classification of Endocrine glands and their hormones.
- Thyroid Gland-Physiological Anatomy, hormones secreted, functions, disorders- Hypo and hyper secretion of hormone.
- Adrenal Gland-Adrenal Cortex-Physiological Anatomy, its hormones and functions.
- Adrenal Medulla-Hormones, functions.
- Pituitary Gland- Anterior and posterior pituitary hormones and their functions, disorders.
- Pancreas- Hormones and their functions, Diabetes Mellitus-types, pathophysiology, signs and symptoms.
- Parathyroid Gland- Hormones and their functions.

## 6. Central Nervous System

- Structure of neuron, functions of nervous system.
- Classification and properties of nerve fibres
- Synapse- structure and types
- Receptors-Definition, classification, properties, Reflex Arc
- Ascending and Descending tracts- names and functions
- Functions of Hypothalamus
- Functions of Cerebellum and Basal Ganglia
- Functions of Cerebral Cortex
- **Autonomic Nervous System-** Actions of sympathetic and parasympathetic system and their comparison.
- **Special Senses**-Eye-structure, functions of different parts, Visual acuity, Refractive errors  
Ear-structure, functions, General mechanism of hearing

## 7. Excretory System

- Kidneys-structure of nephron, functions of kidney
- Glomerular filtration Rate(GFR) and factors affecting it
- Counter Current Mechanism
- Bladder-its innervation, micturition reflex

**8. Reproductive System**

- Male Reproductive System-Stages of spermatogenesis, function of Testosterone
- Female Reproductive System-Ovulation, menstrual cycle, functions of Estrogen and progesterone

**9. Nerve Muscle Physiology**

- Classification of Muscle, structure of skeletal muscle
- Neuromuscular Junction
- Excitation Contraction Coupling

**Practicals:**

- Estimation of Hemoglobin Concentration
- Determination of Bleeding Time and Clotting Time
- Determination of Blood Groups
- Recording of normal Blood Pressure
- Clinical Examination of Arterial Pulse
- Determination of Vital Capacity

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## SYLLABUS

## First year B.Sc. Dialysis Techniques

Paper – III  
BIOCHEMISTRY

Theory : 70 Hours

Practical : 20 Hours

## THEORY

1. **Cell:** Morphology, structure & functions of cell, cell membrane, Nucleus, chromatin, Mitochondria, Endoplasmic Reticulum, Ribosomes.
2. **Carbohydrates:** Definition, chemical structure, functions, sources, classifications, Monosaccharides, Disaccharides, Polysaccharides, mucopolysaccharide and its importance, glycoproteins
3. **Lipids:** Definition, function, sources, classification, simple lipid, compound lipid, derived lipid, unsaturated and saturated fatty acid. Essential fatty acids and their importance, Blood lipids and their implications, cholesterol with its importance.
4. **Proteins :**Definition, sources, amino acids, structure of protein, their classification, simple protein, conjugated protein, derived proteins and their properties.
5. **Enzymes:** Definitions, mechanism of action, factors affecting enzyme action, enzyme of clinical importance.
6. **Nutrition**
  - 1) **Vitamins:** Types, functions and role.
  - 2) **Principal minerals** and their functions(Ca, P, Mg, Na, K, Cl)
  - 3) Balanced diet, Diet for Chronically and terminally ill patients, post operative patients
7. **Bioenergetics:** Energy rich compounds, Respiratory chain and Biological oxidation.
8. **Carbohydrate Metabolism:** Glycolysis, TCA cycle, Glycogen metabolism, Gluconeogenesis, Maintenance of Blood Glucose. Diabetes Mellitus and its complications.
9. **Lipid Metabolism:** Beta oxidation, Ketone bodies, Cholesterol and atherosclerosis, obesity.
10. **Protein Metabolism:** Transamination, Deamination, Fate of ammonia, urea synthesis and its inborn errors.
11. **Water and Electrolyte,** Fluid compartment, daily intake and output sodium and potassium balance
12. **Nerve tissue:** Neuro transmitters and nerve activity.
13. **Hormones:** Actions of Hormone Insulin, Glucagon, Thyroid and Parathyroid hormones, Cortical hormones.

14. **Biophysics:** Concepts of pH and buffers, osmotic pressure and its physiological applications. Acid Base Balance , role of lungs and kidneys,– Regulation of blood pH, acidosis, Alkalosis
15. **Physical Chemistry:** Osmosis, Dialysis, Donann membrane equilibrium
16. **Organ function Tests:** Renal and Liver Function Tests

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**PRACTICAL - SYLLABUS:****I. Introduction of Laboratory apparatus**

- a) Pipettes
- b) Burettes, Beakers
- c) Flasks
- d) Funnels
- e) Bottles, Reagent bottles
- f) Measuring cylinders
- g) Tubes – Test Tubes
- h) Cuvettes, significance of cuvettes in colorimeter, cuvette for visible, UV range, cuvette holders racks – Bottle, Test Tube, Pipette.
- i) Maintenance of lab glass ware and apparatus
- j) Care and cleaning of Glass and plastic ware in Laboratory

**II. Instruments (Theory & demonstration)**

- i. Water bath
- ii. Oven & incubators
- iii. Water distillation plant, water deionizers, deep freezers
- iv. Centrifuges
- v. Laboratory balances

**III Practicals**

1. **Urine Analysis** – normal constituents and detection of abnormal constituents
2. **Quantitative analysis** (keeping in view their clinical correlations)
  - a. Colorimeter
  - b. Analysis of blood sugar
  - c. RFTs (Estimation of blood urea, serum creatinine, creatinine clearance, and their implications)
3. **Clinical interpretation of**
  - a. Liver Function Tests ( serum bilirubin, SGOT, SGPT, ALP)
  - b. Electrolytes(sodium, potassium, Chloride)
  - c. Serum Calcium, magnesium
  - d. Arterial Blood Gas Analysis
- 4) **Investigative work out for**
  - a. Myocardial Infarction
  - b. Unconscious patient
  - c. Diabetic ketoacidosis

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**SYLLABUS****First year B.Sc. Dialysis Techniques****PAPER - IV****INTRODUCTION TO COMPUTERS**

Theory : 35 hours

Practicals : 35 hours

**COURSE CONTENT:**

Introduction to computer – I/O devices – memories – RAM and ROM – Different kinds of ROM – kilobytes, MB, GB their conversions – large computer – Medium, Micro, Mini computers – Different computer languages – Number system – Binary and decimal conversions – Different operating system – MS DOS – Basic commands – MD, CD, DIR, TYPE and COPY CON commands – Networking – LAN, WAN, MAN (only basic ideas)

Typing text in MS word – Manipulating text – Formatting the text – using different font sizes, bold, italics – Bullets and numbering – Pictures, file insertion – Aligning the text and justify – choosing paper size – adjusting margins – Header and footer, inserting page No's in a document – Printing a file with options – Using spell check and grammar – Find and replace – Mail merge – inserting tables in a document.

Creating table in MS-Excel – Cell editing – Using formulas and functions – Manipulating data with excel – Using sort function to sort numbers and alphabets – Drawing graphs and charts using data in excel – Auto formatting – Inserting data from other worksheets.

Preparing new slides using MS-POWERPOINT – Inserting slides – slide transition and animation – Using templates – Different text and font sizes – slides with sounds – Inserting clip arts, pictures, tables and graphs – Presentation using wizards.

Introduction to Internet – Using search engine – Google search – Exploring the next using Internet Explorer and Navigator – Uploading and Download of files and images – E- mail ID creation – Sending messages – Attaching files in E- mail – Introduction to “C” language – Different variables, declaration, usage – writing small programs using functions and sub – functions.

**PRACTICAL**

- Typing a text and aligning the text with different formats using MS-Word
- Inserting a table with proper alignment and using MS-Word
- Create mail merge document using MS-word to prepare greetings for 10 friends
- Preparing a slide show with transition, animation and sound effect using MS-Powerpoint
- Customizing the slide show and inserting pictures and tables in the slides using MS-powerpoint
- Creating a worksheet using MS-Excel with data and sue of functions Using MS-Excel prepare a worksheet with text, date time and data Preparing a chart and pie diagrams using MS-Excel
- Using Internet for searching, uploading files, downloading files creating e-mail ID
- Using C language writing programs using functions

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**SYLLABUS****First year B.Sc. Dialysis Techniques****PAPER – V****ENGLISH****Theory : 35 hours****Communication:-**

Role of communication Defining Communication Classification of communication Purpose of communication  
Major difficulties in communication Barriers to communication  
Characteristics of successful communication – The seven Cs Communication at the work place  
Human needs and communication “Mind mapping” Information communication

**Comprehension passage:-**

Reading purposefully  
Understanding what is read  
Drawing conclusion  
Finding and analysis

**Explaining:-**

How to explain clearly  
Defining and giving reasons  
Explaining differences  
Explaining procedures  
Giving directions

**Writing business letters:-**

How to construct correctly  
Formal language  
Address  
Salutation  
Body  
Conclusion

**Report writing:-**

Reporting an accident  
Reporting what happened at a session  
Reporting what happened at a meeting

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**SYLLABUS****First year B.Sc. Dialysis Technician****PAPER: I****Pathology – I****Theory : 70 Hours****Practical : 20 Hours****1. Cellular adaptation, Cell injury & cell death. Introduction to pathology.**

Overview: Cellular response to stress and noxious stimuli.  
 Cellular adaptations of growth and differentiation.  
 Overview of cell injury and cell death.  
 Causes of cell injury.  
 Mechanisms of cell injury.  
 Reversible and irreversible cell injury.  
 Morphology of cell injury and necrosis.  
 Examples of cell injury and necrosis  
 Apoptosis  
 Sub cellular responses to injury  
 Inter cellular accumulations  
 Pathologic calcification  
 Cellular aging.

**2. Inflammation.**

General features of inflammation Historical highlights  
 Acute inflammation  
 Chemical mediators of inflammation Outcomes of acute inflammation Morphologic  
 patterns of acute inflammation Summary of acute inflammation  
 Chronic inflammation  
 Systemic effects of inflammation  
 Consequences of defective or excessive inflammation

**3. Genetic disorders. Mutations Mendelian disorders**

Disorders with multifactorial inheritance Normal karyotype  
 Cytogenetic disorders  
 Single-gene disorders with nonclassic inheritance Molecular diagnosis  
 Diagnosis of genetic diseases

**4. Immunity disorders.**

General features of the immune system Disorders of the immune system

**5. Infectious diseases.**

General principles of microbial pathogenesis Viral infection  
 Bacterial infections-Rheumatic heart disease.  
 Fungal infections  
 Parasitic infections

**6. Neoplasia. Definitions Nomenclature**

Biology of tumor growth benign and malignant neoplasms Epidemiology  
Molecular basis of cancer  
Molecular basis of multistep carcinogenesis Carcinogenic agents and  
their cellular interactions Host defense against tumors-Tumor  
immunity Clinical features of tumors

**7. Environmental and nutritional disorders.**

Environmental and disease  
Common environmental and occupational exposures  
Nutrition and disease.  
Coronary artery disease.

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**SYLLABUS****First year B.Sc. Dialysis Techniques****PAPER: II****Pathology – II****Theory : 70 Hours****Practical : 20 Hours**

In the teaching of pathology, stress shall be laid on basic principles of the subject with more emphasis on its applied aspects

**Goal:**

The broad of the teaching of undergraduate students in pathology aims at providing comprehensive knowledge of the urinary system, kidney diseases (including Chronic Kidney Disease), Pathology of the kidney in various disease states, pathology of the Peritoneum and pathology of urinary tract infections.

**Objectives:****(A) Knowledge:**

At the end of the course the student shall be able to;

- a) Comprehend the congenital abnormalities of urinary system;
- b) Classify kidney diseases including glomerular, tubulointerstitial and vascular Diseases;
- c) Comprehend the causes and the pathology of Chronic Kidney Disease;
- d) Comprehend the pathology of the kidney on various disease states;
- e) Comprehend the pathology of the peritoneum in peritonitis;
- f) Comprehend the pathology of urinary tract infections.

**(B) Skills:**

At the end of the course the student shall be able to;

- a) Teach preventive strategies of urinary tract infections,
- b) Explain to patients the mechanisms to slow down the progression of Chronic Kidney Disease;
- c) Explain prevention of peritonitis to patients on peritoneal dialysis.

**(C) Integration:**

From the integrated teaching, the student shall be able to comprehend the measures to prevent and slow the course of Chronic Kidney Disease and prevent urinary tract Infections and peritonitis....

**SYLLABUS**

The course in Pathology is to provide an understanding of the pathology of urinary tract Infections, peritonitis and Chronic Kidney Disease.

1. Congenital abnormalities of urinary system
2. Classification of renal diseases
3. Glomerular diseases – causes, types & pathology
4. Tubulointerstitial 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 & sclerosing peritonitis
9. Pathology of urinary tract infections
10. Pyelonephritis & tuberculous pyelonephritis

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**SYLLABUS****Second year B.Sc. Dialysis Techniques****PAPER - III  
MICROBIOLOGY**

Theory: 70 Hours

Practical: 20 Hours

1. Introduction and History of Microbiology
2. Microorganisms
  - (a) Classification-Prokaryotes, Eukaryotes, Viruses, Fungi
  - (b) Morphology-size, shape, arrangement
  - (c) Special characteristics–spores, capsules, enzymes, mortality, reproduction
  - (d) Gram staining, ZN staining
  - (e) Different types of microscopes
3. **A : Sterilization**
  - (a) Definition.
  - (b) Different methods of sterilization including – Gaseous sterilization Plasma sterilization
  - (c) Advantage and disadvantage of various methods and their controls
  - (d) Sterilization of different instruments used in patients
  - (e) Preparation of materials for Autoclaving: packing, loading, holding time, unloading

**B : Disinfection**

  - (a) Definition
  - (b) Different type of methods including High level disinfectants
  - (c) Disinfection of patient care unit and rooms(O.T., Wards, ICUs & Laboratories)
  - (d) Central supply department Areas and floor plan for instrument cleaning high level disinfection & sterilizing area

**C : Asepsis**

  - (a) Universal Precautions
  - (b) Use of aseptic precautions to prevent infection,
  - (c) Safety mechanisms including vaccination in prevention of blood borne infections
4. Culture media- Liquid and Solid
5. Collection & transport of specimens for Microbiological Investigations
6. Infection
  - Source
  - Portals of entry
  - Spread of infection

7. Antimicrobial agents
  - Fundamental aspects
  - Antibiotic sensitivity testing
8. Immunity – Non specific
  - Natural & Acquired
  - Allergy and Anaphylaxis
9. Outline of common infections, diseases, etiology, treatment and prevention.
  - Skin and soft tissue infections
  - Respiratory tract infections
  - Meningitis
  - Enteric infections
  - Urinary tract infections
  - Ocular infections
  - Wound infections
  - PUO

Hospital acquired infections

  - Catheter associated urinary tract infections (CAUTI)
  - Ventilator associated pneumonia (VAP)
  - Catheter related blood stream infections (CRBSI)
  - Surgical Site Infection (SSI)
10. Pathogenic yeasts and fungi
11. Virology with special reference to hepatitis, poliomyelitis, HIV & Influenza
  - Viruses relevant in dialysis patients including their modes of transmission
  - Diseases communicable to healthcare workers in hospital set up and their prevention.
  - Prevention measures to combat spread of these infections by monitoring and control.
12. Microbial surveillance and sampling
  - (i) Bacteriology of air, water and food
  - (ii) Hospital infection Control.

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**SYLLABUS****Second year B.Sc. Dialysis Techniques****PAPER – IV  
PHARMACOLOGY****1. OBJECTIVES**

- a. B.Sc. student, at the end of training in Pharmacology, is expected to:
- b. Understand pharmacokinetic and pharmacodynamic principles involved in the use of drugs
- c. Understand and identify the various factors that can affect the action of drugs
- d. Know the various routes of drug administration with advantages and disadvantages of the various routes.
- e. To be able to identify and monitor adverse drug reactions (ADRs) and appreciate the importance of ADR reporting
- f. Know the drugs used in systemic illnesses, infections and chemotherapy etc. with main mechanism(s) of action, pharmacokinetics, uses, side-effects and indications
- g. Understand the principles and practice of pharmacy
- h. Have knowledge of common drugs and doses used for different ailments
- i. Have an understanding of basic mechanism by which a drug acts

**2. COURSE CONTENT**

The students should be able to enumerate the Classification of drugs and should be able to explain in details: The Mechanism of Action, Uses and Adverse Effects including interactions and contraindications of prototype drugs.

**Theory****(A) General Pharmacology (10 Hours)**

- a) Absorption, distribution, metabolism and elimination of drugs, routes of drug administration.
- b) Basic principles of drug action.
- c) Adverse reactions to drugs.
- d) Factors modifying drug response.

**(B) Autonomic nervous system & Peripheral nervous system (10 Hours)**

- a) Neurohumoral transmission
- b) Sympathetic nervous system - sympathomimetics, sympatholytics
- c) Parasympathetic - Cholinergics, Anticholinergics, Ganglion stimulants and blockers
- d) Skeletal muscle relaxants
- e) Local anaesthetics

**(C) Central nervous system (10 Hours)**

- a) General principles - neurotransmitters, definition and common transmitters
- b) Drug therapy of various CNS disorders like epilepsy, depression, Parkinson's disease, schizophrenia, neuro- degeneration etc.
- c) Pharmacotherapy of pain

- d) General anaesthetics
- e) Drugs for arthritis & gout

(D) Autacoids (5 Hours)

- a) Histamine and antihistaminics
- b) Prostaglandins, leukotrienes, thromboxane and PAF
- c) Substance P, bradykinin

(E) Cardiovascular system (10 Hours)

- a) Drug therapy of hypertension, shock, angina, cardiac arrhythmias
- b) Renin angiotensin system
- c) Diuretics
- d) Coagulants and anticoagulants, antiplatelet drugs
- e) Hypo-lipidemics

(F) Gastrointestinal and respiratory system (5 Hours)

- a) Emetics and antiemetics
- b) Drugs for constipation and diarrhoea
- c) Drug treatment of peptic ulcer
- d) Drug therapy of bronchial asthma
- e) Pharmacotherapy of cough

(G) Hormones (5 Hours)

- a) Drug therapy of Diabetes
- b) Thyroid hormones
- c) Pituitary-hypothalamic axis
- d) Corticosteroids
- e) Oxytocin and drugs acting on uterus
- f) Drugs affecting calcium balance

(H) Chemotherapy (12 Hours)

- a) General principles of antimicrobial chemotherapy, rational use of antibiotics
- b) Chemotherapeutic agents - b- Lactam Antibiotics, fluoroquinolones, macrolides, aminoglycoside, tetracyclines, chloramphenicol and polypeptide antibiotics.
- c) Chemotherapy of tuberculosis,
- d) Cancer Chemotherapy

(I) Miscellaneous (3 Hours)

- a) Immunomodulators
- b) Drug therapy of glaucoma and cataract
- c) Treatment of poisoning

**PRACTICALS**

- A) Experimental exercise on pharmacy (10 Hours)
  - a) General principles of pharmacy
  - b) Prescription writing exercises
  - c) Preparation and dispensing of powders, emulsions ointments, mixtures, liniments, suppositories and syrups
- B) Spotting exercise - Identify the commonly used items in Pharmacology (2 Hours)
- C) Exercises on drug interactions (8 Hours)

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**SYLLABUS****Third year B.Sc. Dialysis Techniques****PAPER: I****Principles of Nursing including Nutrition****Part A : Principles of Nursing****Theory : 70 Hours****Practical : 20 Hours**

In the teaching of the principles of nursing, stress shall be laid on basic principles of the subject with more emphasize on its applied aspects.

**Goal:**

The broad goal of the teaching of undergraduate students in the Principles of nursing aims at providing comprehensive knowledge of the principles of asepsis, assessment of vital signs, dressings, small procedures, assisting the physician in the care of the sick patient and adequate documentation of therapy instituted.

**Objectives****(A) Knowledge:**

At the end of the course the student shall be able to:

- (a) Explain the principles of asepsis and its necessity in the clinical area;
- (b) Assess the medical condition of the patient with respect to his vital signs;
- (c) Triage the patient needing immediate medical attention.

**(B) Skill**

At the end of the course the student shall be able to;

- (a) Perform small procedures like bed making, insertion of intravenous canulae, give Injections, cleaning and dressing of wounds, care of bed ridden patients, bladder catheterization.
- (b) Assist the physician in procedures and therapy of patients;
- (c) Document all treatments undertaken with medico-legal completeness.

**(C) Integration:**

At the end of the integrated teaching the student shall acquire an integrated knowledge of nursing principles and its importance in the care of the sick patient.

**SYLLABUS**

The course in Principles of Nursing is to provide understanding of essential principles in the care of the sick patient as to well as to learn the skills needed to assist the physician in the practice of dialysis therapy.

1. Bed making
2. Bladder catheterization
3. Injections – intravenous, intramuscular, subcutaneous
4. Insertion of intravenous canulae
5. Cleaning and dressing of wounds and vascular access sites AND PERITONEAL CATHETER EXIT SITE
6. Assisting the physician in procedures like minor surgery, vascular access, etc
7. Removal of sutures
8. Care of bed ridden patients,
9. Documentation
10. Collection of blood, urine and stool specimens and their transfer aseptic precautions to the laboratory
11. CAPD EXCHANGES

## Nice to Know

1. Introduction of vascular dialysis independently
2. Minor suturing

## **Part B :Nutrition**

In the teaching of nutrition, stress shall be laid on basic principles of the subject with More emphasize on its applied aspects.

### **Goal:**

The broad goal of the teaching of undergraduate students in nutrition aims at providing an introduction to the science of nutrition, comprehensive knowledge of nutrients and Planning a diet according to the nutritional requirements of the patients.

### **(ii) Objectives:**

#### **(A) Knowledge:**

At the end of the course the student shall be able to:

- (a) Comprehend the relation of diet to health and disease;
- (b) Classify various nutrients;
- (c) Plan a diet according to the nutritional need of a particular patient.

#### **(B) Skills:**

At the end of the course the student shall be able to;

- (a) Prepare basic diet plans for patients of various kidney diseases.

### **SYLLABUS**

The course in Nutrition is to provide an understanding of the nutritional needs of the Patients with kidney diseases and to learn to plan appropriate diet for them.

1. Introduction to science of nutrition
2. Food pattern and its relation to health
3. Factors influencing food habits, selection and food stuffs
4. Food selection, storage & preservation
5. Classification of nutrients – macronutrients and micronutrients
6. Proteins – types, sources requirements and deficiencies of proteins
7. Carbohydrates sources, requirements & efficiency
8. Fats – types, sources, requirements, deficiency and excess of fats
9. Water – sources of drinking water, requirements, preservation of water
10. Minerals – types, sources, requirements deficiencies of minerals
11. Vitamins – types, sources, requirements deficiencies of vitamins
12. Planning diets including renal diets
13. Introduction to cookery + and demonstrate to patients preparation of renal diet

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**SYLLABUS****Third year B.Sc. Dialysis Techniques****PAPER: II****Dialysis Technology – I****Theory : 70 Hours****Practical : 20 Hours****CONCEPTS OF DISEASE AND OUTLINES OF CLINICAL EVALUATION**

In the teaching of concepts of disease and clinical evaluation of patients, stress shall be laid on basic principles of the subject with more emphasize on its applied aspects

**(i) Goal:**

The broad goal of the teaching of undergraduate students in concepts of disease and Clinical evaluation aims at providing an introduction to various kidney disease and their evaluation.

**(ii) Knowledge**

At the end of the course the student shall be able to:

- (a) Comprehend the various presentations of kidney diseases;
- (b) Learn how to diagnose and evaluate patients with various disease conditions like Acute renal failure, nephrotic / nephritic syndrome, urinary tract infection, Asymptomatic urinary abnormalities, Chronic Kidney Disease (especially stage v), renal stone diseases, obstructive nephropathies, congenital & inherited renal diseases, pregnancy associated renal diseases, renal vascular disorders and hypertension associated renal diseases, renal vascular disorders and hypertension associated renal diseases;
- (c) Learn to order appropriate test towards confirmation of diagnosis;
- (d) Learn to initiate therapy in each of these conditions;
- (e) Learn the appropriate time of referral to nephrology services in each of the conditions.
- (f) Screening for renal diseases in the community and hospital patients.

**(B) Skills:**

At the end of the course the student shall be able to;

- (a) Collect medical history from patients with various kidney diseases;
- (b) Clinically examine patients with kidney diseases and order appropriate Investigations;
- (c) Write rational prescriptions for patients with kidney diseases.

**SYLLABUS**

The course in concepts of disease and clinical evaluation is to provide an understanding of the nature of various diseases and evaluation of the same.

1. Acute renal failure
2. Nephrotic syndrome – primary & secondary
3. Nephritic syndrome
4. Urinary Track Infection – urinary track infections
5. Asymptomatic urinary abnormalities
6. Chronic Kidney Disease
7. Renal stone diseases
8. Obstructive nephropathies
9. Congenital & inherited renal diseases

10. Pregnancy associated renal diseases

11. Renal vascular disorders & hypertension associated renal diseases

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**SYLLABUS****Third year B.Sc. Dialysis Techniques****PAPER: III****Dialysis Technology – II****Theory : 70 Hours****Practical : 20 Hours**

In the teaching of dialysis technology, stress shall be laid on basic principles of the Subject with more emphasize on its applied aspects.

**Goal:**

The broad goal of the teaching of undergraduate students in dialysis technology aims at Providing an in-depth knowledge of hemodialysis and peritoneal and peritoneal dialysis Therapy.

**Objectives:****(A) Knowledge:**

At the end of the course the student shall be able to:

- (a) Comprehend the various modalities of renal replacement therapy with knowledge of Merits and demerits of each;
- (b) Comprehend the principles of hemodialysis and peritoneal dialysis;
- (c) Learn how to offer dialytic therapy for renal failure patients;
- (d) Learn the various forms of hemodialysis and when each is to be applied;
- (e) Learn to manage complications of dialysis therapy;
- (f) Learn dialysis therapy in various special groups of patients e.g., unstable patients in the intensive care unit, children, cardiac patients etc;
- (g) Learn plasmapheresis, Continuous therapies
- (h) Manage anticoagulation on patients on dialysis;
- (i) Measure the adequacy of dialysis
- (j) Adminster various drugs in emergencies and as a routine
- (k) Use blood transfusion

**(B) Skills:**

At the end of the course the student shall be able to;

- (a) Start and close hemodialysis sessions independently;
- (b) Successfully cannulate arterio-venous fistulae for hemodialysis;
- (c) Train patients and their caregivers in performing peritoneal dialysis;
- (d) Do water maintenance for the hemodialysis room;
- (e) Maintain hemodialysis machines with respect to regular disinfection;
- (f) Operate hemodialysis machines, CAPD cylers reuse machines independently
- (g) Participate in Conduct of renal transplant programme.
- (h) Use pulse oximeters, pressure monitors defibrillators correctly

**SYLLABUS**

The course in dialysis technology is to provide an understanding of the various forms of renal replacement therapy and successful performance of the same in patients with renal failure.

**PART I**

1. History, types of Dialysis,
2. Principles of Dialysis, quantification of adequacy
3. Dialysis Team-rights-responsibilities-patient doctor relationship
4. Dialysis reuse
5. Dialyser Membranes
6. Vascular Access – Temporary & Permanent
7. Equipment – Accessories – Function
8. Computer applications in Dialysis
9. Dialysate delivery system
10. Composition of dialysate
11. High flux / high efficiency dialysis
12. Continuous Renal Replacement Therapy / Slow Low Efficiency Dialysis
13. Complications in dialysis patients
14. Water treatment-pre treatment, deionizer, Reverse Osmosis
15. Dialysis in Neonates, infants & children
16. Renal data maintenance

**PART II**

1. Machine and patient monitoring during hemodialysis
2. Patient Assessment – Pre, intra & post dialysis
3. Lab data analysis
4. Acute and chronic dialysis prescription
5. Medications in dialysis patients
6. Nutrition management in dialysis patients
7. Anticoagulation
8. Infection control and universal precautions
9. Psychosocial aspects & patient education
10. Quality assurance in dialysis
11. Complications of hemodialysis – Acute & chronic
12. Acute and Chronic Peritoneal Dialysis
13. History, access, physiology of Peritoneal Dialysis
14. PD – Transport kinetics, ultrafiltration, UF, Intermittent PD, Continuous Ambulatory Peritoneal Dialysis, Automated Peritoneal Dialysis, Dialysis Solutions, Novel uses of PD
15. Infectious and non infectious complications of PD
16. Renal transplant co-ordination  
(Recipient and donor workup, psychosocial and legal aspects, cadaver donor Maintenance, principles of post operative management and follow-up)
17. Principles of Intensive care  
(Monitoring and diagnostic procedures in ICU, General care of patient in ICU, Fluid management and parenteral nutrition, Infectious diseases in ICU, Respiratory Failure, Acid-base and electrolytes disorders, cardio vascular failure, liver failure, Head injury, principles of transfusion therapy)
18. Principles of Extracorporeal Short Wave Lithotripsy
19. Ventilator maintenance
20. An introduction to common Urosurgical procedures & instruments and their maintenance
21. Preparation of dialysis patients for various surgical procedure and post operative Dialysis support
22. Basic and advanced cardiac life support

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**SYLLABUS****Third Year B.Sc. Dialysis Techniques****Paper – VI****Clinical Skill Assessment****Preamble:**

A graduate technologist having undergone the required training should be able to recognize health needs of the community should be competent to handle effectively the medical problems and should be aware of the recent advances pertaining to his specialty. The graduate student should acquire the basic skills in teaching paramedical students.

**Program Objectives :**

A candidate upon successfully qualifying in the Graduation in B. Sc. Dialysis Technology examination should be able to :

- Practice his specialty ethically
- Demonstrate sufficient understanding of basic sciences related to his specialty
- Diagnose and manage majority of conditions in his specialty
- Plan and advise measures of prevention and rehabilitation of patients belonging to his specialty
- Play the assigned role in the implementation of Institution and National Health Programs
- Demonstrate competence in the basic concepts of research methodology
- Develop good teaching skills in his specialty.

**Specific Learning Objectives:**

- a) **Theoretical knowledge:** A student should have fair knowledge of basic sciences (Physics involved in Dialysis, Chemistry involved in Dialysis fluids, Human Anatomy, Physiology, Biochemistry, Microbiology, Pathology, Pharmacology, Medicine, Nephrology and computer sciences as applied to his specialty).
- b) **Clinical/Practical skills:** A student should be expert in good history taking, physical examination, providing basic life support and common procedures like Cleaning, Sterilization and Maintaining dialysis machines, making sure that everything is in good working order, Monitoring the safe water supply in Dialysis unit, Preparation of Dialysis fluids, Dialyzer use, Dialyzer Reuse, Vascular access for dialysis, Starting Dialysis procedure and monitoring various parameters and tackling various complications of Hemodialysis. . He should be able to choose the required investigations and treatment methodology. He should be well versed with Communication skills.
- c) **Teaching:** Should learn the basic methodology of teaching and develop competence in teaching paramedical students.

**SYLLABUS**

1. Soft skill & communication
2. Role of Dialysis Technician
3. Principle of Haemodialysis
4. Vascular access
5. Anticoagulation in haemodialysis
6. Dialyzer and extracorporeal circuit
7. Dialysate composition in Haemodialysis
8. Dialysis machines
9. Water Treatment for haemodialysis
10. Complication of Haemodialysis and management
11. Infection control in haemodialysis unit
12. Understanding of acute peritoneal dialysis and maintenance peritoneal dialysis
13. Extracorporeal detoxification

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