

Syllabus and Curriculum  
of  
Diploma in Dialysis Technician course

**(To be implemented From 2015 - 16 session)**

Uttar Pradesh State Medical Faculty, Lucknow.

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## OBJECTIVES OF THE COURSE

To prepare a **Dialysis technician** who -

- Can conduct dialysis procedure (including maintaining vascular access e.g. femoral, I J V, A-V fistula).
- Can use drugs for dialysis.
- Can perform CPR, if required.
- Can perform basic nursing procedures like IV/IM/SC injections, Nebulization, Oxygen therapy.
- Has basic understanding of Renal diseases.
- Can provide Psychological support to the patient & counsel him & his/her relatives.

# Outline of Curriculum of Diploma in Dialysis Technician course

## FIRST YEAR

### THEORY ( Classes: 9 AM to 12 Noon)

#### First paper : Syllabus covers -

1. General Anatomy & Physiology (Cytology, Histology, Osteology and only basics of all organ systems of body).
2. Only basics of General Pathology, Pharmacology & Microbiology.

#### Second paper : Syllabus covers -

1. Detailed Urology system's Anatomy , Physiology & Histology.
2. Basics of dialysis technics.
3. Hand hygiene & prevention of cross infection.
4. Basic life support (BLS) & Cardio-pulmonary resuscitation (CPR).

## FIRST YEAR

### PRACTICAL ( Classes: 1 PM to 4 PM)

Practical classes will be after lunch; from 1 PM to 4 PM.

Students must present in the hospital/dialysis lab for practicals.

**During first year, they should be there only as “Observers” in practical classes.**

(Observership for various Venous accesses, A-V fistula making, vitals recording, Procedure of dialysis).

**Following subjects must be taught; though there will not be any exam from these-**

1. Basic Computer skills.
2. Basic English.
2. **Soft skills like** - Interpersonal relationship skills & moral education.

# Outline of Curriculum of Diploma in Dialysis Technician course

## SECOND YEAR

### **THEORY ( classes:9 AM to 12 Noon)**

#### **First paper : Syllabus covers -**

1. Only relevant surgical & medical conditions (relevant to dialysis technician but other than nephrology).
2. Nursing Procedures like vital recording, IM/IV/SC injection, Oxygen therapy, Nebulization, IV infusion.

#### **Second paper : Syllabus covers -**

1. Diseases related to Nephrology.
2. Details about dialysis (Haemodialysis & CAPD) procedure.
3. Basic biomedical engineering physics of dialysis machine, multipara monitors.

## SECOND YEAR

### PRACTICAL ( classes:9 AM to 12 Noon)

Practical exams syllabus should cover-

- Hands on training of Vital Monitoring (invasive & non-invasive).
- Hands on training of femoral/jugular access.
- Assisting and Care of AV-Fistula.
- Hands on training of Haemodialysis.
- Hands on training of Peritoneal dialysis.
- Hands on training of BLS.
- Hands on training of use of drugs used in ICU.

## ELIGIBILITY CRITERIA FOR ADMISSION & DURATION OF THE COURSE

### **COURSE DURATION:-**

- It is 2 years, **full time** Diploma Course.

### **ELIGIBILITY:-**

- Candidate must have passed 12<sup>th</sup> with  
Physics, Chemistry, Biology  
Or  
Physics, Chemistry, Maths  
with 35% marks in Intermediate exams.  
  
(From UP board or any other recognised board).
- Candidate must have completed age of 17 years of age as on 31<sup>st</sup> December of admission year. There is no maximum age limit for the admission.



## SCHEDULE OF EXAMINATION

### FIRST YEAR

<u>Paper</u>	<u>Subjects</u>	<u>Mark</u>	<u>Internal Assessment Marks</u>	<u>Total Marks</u>	<u>Pass Marks</u>	<u>Duration of Exam.</u>
<b><u>First Paper Theory</u></b>	<p>1.General Anatomy &amp; Physiology (Cytology, Histology, Osteology and only basics of all organ systems of body).</p> <p>2.Only basics of General Pathology, Pharmacology &amp; Microbiology.</p>	75	25	100	50	3 Hours
<b><u>Second Paper Theory</u></b>	<p>1.Detailed Urology system's Anatomy , Physiology &amp; Histology.</p> <p>2. Basics of dialysis technicians.</p> <p>3.Hand hygiene &amp; prevention of cross infection.</p> <p>4.Basic life support (BLS) &amp; Cardio-pulmonary resuscitation (CPR).</p>	75	25	100	50	3 Hours
<b><u>Practical</u></b>	Oral & Practical	75	25	100	50	3 Hours

## SCHEDULE OF EXAMINATION

### SECOND YEAR

<u>Paper</u>	<u>Subjects</u>	<u>Mark</u>	<u>Internal Assessment Marks</u>	<u>Total Marks</u>	<u>Pass Marks</u>	<u>Duration of Exam.</u>
<b><u>First Paper Theory</u></b>	<p>1. Only relevant surgical &amp; medical conditions (relevant to dialysis technician but other than nephrology).</p> <p>2. Nursing Procedures like vital recording, IM/IV/SC injection, Oxygen therapy, Nebulization, IV infusion.</p>	75	25	100	50	3 Hours
<b><u>Second Paper Theory</u></b>	<p>1. Diseases related to Nephrology.</p> <p>2. Details about dialysis (Haemodialysis &amp; CAPD) procedure.</p> <p>3. Basic biomedical engineering physics of dialysis machine, multipara monitors.</p>	75	25	100	50	3 Hours
<b><u>Practical</u></b>	Oral & Practical	75	25	100	50	3 Hours

## SCHEDULE OF COURSE

(List of holidays, Total hours, Subject wise allotment of hours)

- **List of Holidays:-**

Sundays	- 52 days
Summer vacation	- 10 days
Winter vacation	- 10 days
Gazetted holidays	- 23 days
Preparatory holidays	- 10 days
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Total Holidays	- 105 days
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- **Total Hours :-**

Theory classes per day	- 3 Hours
Practical classes per day	- 3 Hours
Total hours per day	- 6 Hours
Total days & hours in One year (after deduction of holidays)	- 260 days or - 1560 Hours

## SCHEDULE OF COURSE

### Subject wise allotment of hours

#### FIRST YEAR

**Theory (780 Hours) Practical (780 Hours)**

<b><u>First Paper Theory</u></b>	1.General Anatomy & Physiology (Cytology, Histology, Osteology and only basics of all organ systems of body).	300 Hrs
	2.Only basics of General Pathology, Pharmacology & Microbiology .	100 Hrs
<b><u>Second Paper Theory</u></b>	1.Detailed Urology system's Anatomy , Physiology & Histology.	100 Hrs
	2. Basics of dialysis technicians.	140 Hrs
	3.Hand hygiene & prevention of cross infection.	30 Hrs
	4.Basic life support (BLS) & Cardio-pulmonary resuscitation (CPR).	40 Hrs
<b><u>Third Paper Practical</u></b>	As described in curriculum	780 Hrs
<b><u>Theory: Other Subjects</u></b> (These subjects must be taught; though there will not be any exam from these)	1.Basic Computer skills.	30 Hrs
	2.Basic English.	30 Hrs
	3.Soft skills like - Interpersonal relationship skills & moral education	10 Hrs

## SCHEDULE OF COURSE

### Subject wise allotment of hours

#### SECOND YEAR

**Theory (780 Hours) Practical (780 Hours)**

<b><u>First Paper Theory</u></b>	1. Only relevant surgical & medical conditions (relevant to dialysis technician but other than nephrology).	250 Hrs
	2. Nursing Procedures like vital recording, IM/IV/SC injection, Oxygen therapy, Nebulization, IV infusion.	20 Hrs
<b><u>Second Paper Theory</u></b>	1. Diseases related to Nephrology.	220 Hrs
	2. Details about dialysis (Haemodialysis & CAPD) procedure.	230 Hrs
	3. Basic biomedical engineering physics of dialysis machine, multipara monitors.	60 Hrs
<b><u>Third Paper Practical</u></b>	As described in curriculum.	780 Hrs

## Details of Curriculum for First Year Diploma in Dialysis Technician

<b>PAPER 1st Theory</b>	<b>Topics</b>	<b>Hours.</b>
<b>1.General Anatomy &amp; Physiology (Cytology, Histology, Osteology and only basics of all organ systems of body).</b>	1. General Orientation about parts of human body. Various terms used in Anatomy. Total numbers of bones, their names & location. Basic idea about organization of body ,from cell to organ systems.	06 Hrs
	2. Structure of Animal cell, Cell organelles & their functions	06 Hrs
	3. Human tissue, types, structure & functions.	10 Hrs
	4. Osteology: Names, location, identification and basic details of all bones. (Details of skull bones is not required).	20 Hrs
	5. Joints: types, basic structure & examples.	06 Hrs
	6. Skin & appendages.	02 Hrs
	7. GIT: : Location, Gross structure, various parts & their functions. Details of process of food ingestion, digestion, absorption & defaecation. (Microscopic structure is not required.)	30 Hrs
	8. Respiratory tract: Location, Gross structure, various parts & their functions. Details of breathing mechanism, different respiratory volumes. (Microscopic structure is not required.)	30 Hrs
	9. Male reproductive system: Only gross structure & functions of different parts. (Microscopic structure is not required.)	10 Hrs
	10. Female reproductive system: Only gross structure & functions of different parts. (Microscopic structure is not required.) Menstrual cycle.	10 Hrs

## Details of Curriculum for First Year Diploma in Dialysis Technician

PAPER 1st Theory	Topics	Hours.
<b>1.General Anatomy &amp; Physiology (Cytology, Histology, Osteology and only basics of all organ systems of body).</b>	<b>11.</b> Endocrine system: Hormones secreted by Pituitary, Thyroid, Parathyroid, Pancreas, Adrenal cortex, Adrenal medulla, Gonads & functions of different hormones. (Details of structure of these glands not required).	20 Hrs
	<b>12.</b> Gross structure of brain & spinal cord. Functions of different parts of brain & spinal cord.(Details not required.)	30 Hrs
	<b>13.</b> Blood: Composition & Functions. Details about Plasma, RBCs, WBCs, Platelets, Clotting system.	30 Hrs
	<b>14.</b> Gross structure & functions of sensory Organs - Eye, Ear, Nose, Tongue.(Details not required).	20 Hrs
	<b>15.</b> Basic gross structure of heart, vessels opening into heart & Leaving the heart. Arterial & Venous tree of body.	30 Hrs
	<b>16.</b> Lymphatic system: Structure & Functions.	10 Hrs
	<b>17. I        ne system:</b> Components & various mechanisms of defense.	20 Hrs

## Details of Curriculum for First Year Diploma in Dialysis Technician

PAPER 1st Theory	Topics	Hours.
<b>2.Only basics of relevant Pathology, Pharmacology &amp; Microbiology.</b>	1. Basic steps of Acute & chronic inflammation.	03 Hrs
	2. Basics of Necrosis & apoptosis.	03 Hrs
	3. Basics of Shock.	03 Hrs
	4. Basics of Disorders of blood coagulation system.	08 Hrs
	5. Basics of Disorders of Immune system of body.	05 Hrs
	6. Modes of disease transmission & prevention of infection.	05 Hrs
	7. Sterilization & methods of sterilization used in hospitals.	10 Hrs
	8. Basic idea about types of Bacteria, Virus, Fungi.	20 Hrs
	9. Routes of drug administration.	02 Hrs
	10. Adverse effects & side effects of drugs.	02 Hrs
	11. Basic idea of Analgesics : Opioid & NSAIDs.	02 Hrs
	12. Basic idea of Drugs use in Cough & expectoration.	01 Hrs
	13. Basic idea of Drugs used in B. asthma & COPD.	03 Hrs
	14. Basic idea of Drugs used in GIT.	05 Hrs
	15. Basic idea of Anti Microbials.	20 Hrs
	16. Basic idea of Anti H-1 Histaminics & Corticosteroids.	02 Hrs
	17. Diuretics.	03 Hrs
	18. Drugs used in anaemia.	05 Hrs



## Details of Curriculum for First Year Diploma in Dialysis Technician

PAPER 2nd Theory	Topics	Hours.
<b>1.Detailed Urology system's Anatomy , Physiology &amp; Histology.</b>	1. Surface marking of urological system.	05 Hrs
	2. Detailed structure of kidney including histology.	20 Hrs.
	3. Nephron structure & urine formation structure of Anatomy abdominal wall.	15 Hrs
	4. Process of Voiding.	05 Hrs
	5. Blood supply of Kidney.	05 Hrs
	6. Nerve supply of Kidney.	02 Hrs
	7. Blood pressure.	05 Hrs
	8. General structure of Arteries,veins, capillaries.	05 Hrs
	9. Arterial & Venous tree of body.	20 Hrs
	10. Structure of anterior abdominal wall.	05 Hrs
	11. Structure of anterior post abdominal wall.	05 Hrs

## Details of Curriculum for First Year Diploma in Dialysis Technician

PAPER 2nd Theory	Topics	Hours.
<b>2. Basics of dialysis technicians.</b>	1. Body fluids, Homeostasis & fluid balance.	05 Hrs
	2. Physics of Diffusion, Osmosis.	02 Hrs
	3. Types of dialysis & role of dialysis technician.	03 Hrs
	4. Principles & Procedure of haemodialysis.	20 Hrs
	5. Principles & Procedure of Peritoneal dialysis.	20 Hrs
	6. Instruments & Equipments used in dialysis.	30 Hrs
	7. Composition of dialysates (for Haemo & Peritoneal dialysis).	20 Hrs
	8. Types of dialyzers & their care.	10 Hrs
	9. Details about various types of access (I J V, Femoral & A-V fistula)	20 Hrs
	10. Record keeping;	10 Hrs

## Details of Curriculum for First Year Diploma in Dialysis Technician

PAPER 2nd Theory	Topics	Hours.
<b>3. Hand hygiene &amp; prevention of cross infection.</b>	1. Hand hygiene & method of Hand washing.	15 Hrs
	2. Prevention of cross infection.	15 Hrs

PAPER 2nd Theory	Topics	Hours.
<b>4. Basic life support (BLS) &amp; Cardio-pulmonary resuscitation (CPR).</b>	1. Code blue.	05 Hrs
	2. Details of basic life support (BLS) & Cardio-pulmonary resuscitation (CPR).	35 Hrs

Curriculum  
for  
Practical :- First Year  
Diploma in Dialysis Technician

<b>Practical</b>	Topics
	1.Orientation for Dialysis technician towards importance & need of the technician.
	2.Care of Unconscious patient.
	3.Monitoring Temperature(manual).
	4.Monitoring Pulse (manual).
	5.Monitoring Respiration (manual).
	6.Monitoring BP (manual).
	7. Monitoring Temperature (with Multiparamonitor).
	8.Monitoring Pulse (with Multiparamonitor).
	9.Monitoring Respiration (with Multiparamonitor).
	10.Monitoring BP (with Multiparamonitor).
	11. Obtaining femoral access.
	12.Obtaining jugular access.
	13. Process of Haemodialysis & peritoneal dialysis.
14.Basic life support (BLS).	

## Details of Curriculum for Second Year Diploma in Dialysis Technician

PAPER 1st Theory	Topics	Hours.
<b>1. Only relevant surgical &amp; medical conditions (relevant to dialysis technician but other than nephrology).</b>	1. History taking. General examination of the patient. Filling Case-sheet. Common clinical words.	15 Hrs
	2. Hypertension:- Def, Causes, Pathology, Clinical features, Investigation & Management.	05 Hrs
	3. Hypotension :- Def, Causes, Pathology, Clinical features, Investigation & Management.	02 Hrs
	4. Diabetes mellitus :- Def, Causes, Pathology, Clinical features, Investigation & Management.	10 Hrs
	5. <u>Diseases of blood</u> :- Anaemia, Basics of coagulation Bleeding disorders & Haemophilia.	30 Hrs
	6. <u>Respiratory Tract</u> :- Pneumonia, Tuberculosis, B. asthma, COPD, Bronchiectasis, Collapse of lung, Pneumonitis, Pleural effusion, Pneumothorax, Empyema thoracis, Cancer lung.	50 Hrs
	7. <u>Diseases of GIT &amp; Liver &amp; GB</u> :-Reflux Oesophagitis, Peptic ulcers, Gastritis, Intestinal Obstruction, Hepatitis, Cirrhosis of liver, Cholecystitis.	40 Hrs
	51 <u>Diseases of Nervous system</u> :- Stroke, Meningo-encephalitis, Glasgow coma scale, Epilepsy, Head Injury.	30 Hrs
	52 <u>Diseases of Urinary tract</u> :- Urolithiasis, Benign prostatic hyperplasia.	13 Hrs
	53 <u>Endocrine system</u> :- Diabetes mellitus, hypo & Hyper thyroidism.	10 Hrs
	54 <u>Miscellaneous</u> :- Hypo & Hyper Natraemia, Hypo & Hyper Kalaemia, Hypo & Hyper Calcaemia.	10Hrs
55 <u>Infections diseases</u> :- TB, Typhoid, Malaria, Dengue fever, Leprosy, AIDS, Amoebiasis.	30 Hrs	

## Details of Curriculum for Second Year Diploma in Dialysis Technician

PAPER 1st Theory	Topics	Hours.
<b>2.Nursing Procedures like vital recording, IM/IV/SC injection, Oxygen therapy, Nebulization, IV infusion.</b>	1. Temperature monitoring & Fever.	02 Hrs
	2. Pulse monitoring.	02 Hrs
	3. BP monitoring.	02 Hrs
	4. Respiration monitoring.	01 Hrs
	5. Types of Injection routes.	01 Hrs
	6. IM Injection.	01 Hrs
	7. IV Injection.	01Hrs
	8. SC Injection.	01 Hrs
	9. Oxygen Therapy.	03 Hrs
	10. Nebulization	03 Hrs
	11. IV Infusion (Also with infusion pump).	01 Hrs
	12. Care of Unconscious patient.	02 Hrs

## Details of Curriculum for Second Year Diploma in Dialysis Technician

PAPER 2nd Theory	Topics	Hours.
<b>1.Diseases related to Nephrology.</b>	1. ARF- Definition, causes, types, clinical features, investigations & management.	20 Hrs
	2. CRF – Definition, causes, types, clinical features, investigations & management.	20 Hrs
	3. Basics of various types of Glomerulonephritis.	30 Hrs
	4. Basics of Tubulo-interstitial diseases.	20 Hrs
	5. Diabetic Nephropathy : Definition, Pathology, Clinical features, Investigations & management.	15 Hrs
	6. Hypertensive nephropathy : Definition, Pathology, Clinical features, Investigations & management.	15 Hrs
	7. Basics idea of Analgesic & Heavy metal nephropathy	05 Hrs
	8. Urolithiasis – Definition, types, causes, effect on kidneys, Clinical features, Investigations & management.	20 Hrs
	9. Urinary tract infection & urosepsis.	10 Hrs
	10. Basics of Congenital abnormalities of kidney.	20 Hrs
	11. Nephro toxic drdugs.	10 Hrs
	12. Hypo & Hyper natraemia.	05 Hrs
	13. Hypo & Hyper Kalaemia.	05 Hrs
	14. Basics of acidosis (metabolic & respiratory).	05 Hrs
	15. Basics of Alkalosis (metabolic & respiratory).	05 Hrs
	16. Basics of other dys-electronaemia.	20 Hrs

## Details of Curriculum for Second Year Diploma in Dialysis Technician

PAPER 2nd Theory	Topics	Hours.
<b>2.Details about dialysis (Haemodialysis &amp; CAPD) procedure.</b>	1. Types of dialysis & role of dialysis technician.	05 Hrs
	2.Details about dialysis machine & other instruments/equipments used in dialysis.	25 Hrs
	3.Details about dialysate fluids & dialyzers.	10 Hrs
	4.Details about RO plant & water composition used in dialysis.	10 Hrs
	5. <u>Haemodialysis</u> - Indications, preprocedure care, detail procedure, post procedure care, interaction with patients, complications & their management, record keeping.	50 Hrs
	6. <u>Peritoneal dialysis</u> - Indications, preprocedure care, detail procedure, post procedure care, interaction with patients, complications & their management, record keeping.	50 Hrs
	7.Re-dialysis Assessment.	05 Hrs
	8.Anticoagulants used in dialysis.	10 Hrs
	9.Emergency drugs used during dialysis.	20 Hrs
	10.Venous accesses: types, procedure detail & role of technician.	40 Hrs
	11.Nutritional advices in a patient of dialysis.	05 Hrs

PAPER 2nd Theory	Topics	Hours.
<b>3.Basic biomedical engineering physics of dialysis machine, multipara monitors.</b>	1.Basics of biomedical physics of dialysis machine.	40 Hrs
	2Basics of biomedical physics of multi-para monitors.	20 Hrs



Curriculum  
for  
Practical :- Second Year  
Diploma in Dialysis Technician

	Topics
<b>Practical</b>	1. Hand on training of IM Injection.
	2. Hand on training of IV Injection.
	3. Hand on training of SC Injection.
	4. Use of Infusion pump.
	5. Hand on training of Nebulisation.
	6. Use of Defibrillator.
	7. Hands on training of femoral & jugular access.
	8. Hand on training of Assisting A-V fistula making.
	9. Hands on training of peritoneal dialysis (Pre, Intra & Post procedure role).
	10. Hands on training of Haemodialysis. (Pre, Intra & Post procedure role).
	11. Hands on training of use of regular & emergency drugs used in dialysis.
	12. Care & keeping of Instruments/equipments & consummables use in dialysis.
	13. Record keeping.