ANDHRA PRADESH PARA MEDICAL BOARD

HYDERABAD

(Established Under the Andhra Pradesh Para Medical Board Act, 2006)

(A.P. Act No. 38 of 2006)

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Syllabus for

DIPLOMA IN DIALYSIS TECHNICIAN COURSE

(TWO YEARS COURSE)

Secretary

In view of representation from the Faculty in Government colleges, in State of AP. The Syllabus for the 1st year in all Para medical courses is modified accordingly the modified Syllabus for 1st year is kept on website.

DIPLOMA IN DIALYSIS TECHNICIAN COURSE **(TWO YEARS COURSE)**	
Syllabus for First Year	
Paper-I	**BASIC HUMAN SCIENCES** A) Basics of Anatomy B) Basics of Physiology C) Basics of Bio-chemistry D) Basics of Bio-statistics
Paper-II	**PHYSICAL SCIENCES** A) Basics of Pathology B) Basics of Blood Banking C) Basics of Microbiology D) Basics of Central sterilization.
Paper-III	A) Hospital awareness, B) Familiarization of different tables/tubes in surgical dept. Surgical Awareness, Preparation of patient for surgery. C) Patient related services. D) Communication & computer skills, Audio and visual aids

DIPLOMA IN DIALYSIS TECHNICIAN COURSE
(TWO YEARS COURSE)

Syllabus for Second Year

Paper-I	A) Anatomy, Physiology, Infections & communicable diseases, Microbiology, Biochemistry, Pathology. B) Diseases of GIT, blood, cardiovascular system C) Diseases of ear, nose, eye & throat D) Body fluid & Electrolytes
Paper-II	A) Pharmacology, pathology, dialysis, management clinical nephrology & dialysis B) Dialysis management Tubulo-interstitial Disease. C) Effects of the drugs on the kidney. D) Different types of dialyzer.
Paper-III	A) Dailysis Techniques, diseases of kidney, Haemodailysis B) Dialysis equipment & Management. C) Concept of dialysis, Re-dialysis assessment. D) Instrumentation Study, Instrument Measurement & Critical Care Equipment.

1st YEAR

PAPER-I

Basics of Anatomy & Physiology

Basics of Anatomy

1. Introduction to Human Anatomy
2. Cell- Tissues Properties, Different Tissues
3. Digestive System & Hepatobiliary System
4. Respiratory System
5. Cardio Vascular System
6. Lymphatic System
7. Bones and Joints
8. Nervous System
9. Endocrine System
10. Sense Organs
11. Excretory System
12. Reproductive System

Basics of Physiology

1. Introduction to Human Physiology
2. Blood
3. Cardio Vascular System
4. Lymphoid System
5. Digestive System
6. Respiratory System
7. Nervous System
8. Endocrine System
9. Excretory System
10. Reproductive System
11. Sense Organs

Basics of Bio – Chemistry

1. Introduction to Basics of Bio-chemistry including code of ethics for Medical Lab Technicians and Medical Lab Organization.

2. Reception, Registration and bio-chemical parameters investigated.

3. Glassware and plastic ware used in a bio-chemical laboratory.

   a. **Glassware:**
      1) Types of glass and composition.
      2) Types of glassware used, their identification, application & uses.
      3) Cleaning, drying, maintenance and storage of glassware.

   b. **Plastic ware: Brief outline**

4. Instrumental methods of Bio-chemical analysis.

   a. **Colorimetry :**

      Visual and photoelectric methods, instrumentation, principle & laws involved construction, operation, care and maintenance, applications.

   b. **Spectrophotometry**

      Principle and theory, types, construction, & applications

5. Basic lab operations like

   a. **Separation of solids from liquids**

      1. Centrifugation: Principle, Different types of centrifuges care and maintenance, applications.
      2. Filtration using funnel.
      3. Weighing : Different types of balances used, care and maintenance.
      4. Evoporation
      5. Distillation
      6. Refluxing
      7. Drying different salts and dessicotion.

6. Water Chemicals and related substances
    a. Purity of chemicals
    b. Corrosives
    c. Hygroscopic Subsatance

7. Prevention, Safety and first aid in lab accidents.

8. Collection of Specimens

    a. Blood: Types of Spencimens, Collection, Precations during collection processing and preservation.

    b. Urine: Types of Specimens, Collection, Precautions during collection, Processing and Preservation.

9. Urine biochemical parameters.

10. Units of measurements

11. **Solutions :** Types based on solute and solvent, Types based on method of expressing concentration, calculations.

12. **Carbohydrates:** Definitions, Biological importance, Acid value, iodine value, saponification value.

13. Amino acids and Proteins Definition, Biological importance, Classification, Qualitative tests.

14. **Diagonistic tests :** Blood sugar, Glucose tolerance test, Blood urea, Serumuric acid, Serum creatinine.

15. Vitamins and Minerals

    a. Vitamins:
    Water Soluble vitamins, Fat Soluble vitamins, Sources, Daily requirements, Deficiency diseases.

    b. Minerals :

    Sources, Daily requirements, Deficiency diseases.

Paper-II

Basics of Pathology

Introduction to Pathology in brief

1. Urine – Analysis – Physical Examination – specific gravity PH, reaction,

   colour.

   Chemical Examination – Sugar Albumin,
   bile salts,

   bile Pigments etc.

   Microscopic,

   Sediment for RBC,

   WBC,

   Epitheleal cells,

   casts,

   crystals,

   parasites.

   Preparation of Reagents, procedure and principle of tests.

2. **Sputum Analysis** – Physical Examination,
   Preparation and staining smear for Microscopic Examination.

3. **Semen Analysis** – Physical Examination Microscopy – counting,
   motility,

   staining,

   Morphology,

   abnormal and normal forms.

4. **Body Fluids** – Differential count of Peritoneal, pericardial, pleural fluids and CSF, charging chamber, Identifying and counting the cells.

Basics of Microbiology

I. Introduction to Microbiology in brief

Definition,
History

II. Microscopy

a) Principle working and maintenance of compound Microscope.
b) Principle of Flourescent microscope, Electron Microscope, Dark Ground Microscope.

History
Types of Microscope: (a) Light Microscope, (b) DGI, (c) Fluroscent, (d) Phase contrast.

(e) Electron Microscope : a). Transmision**,** b) Scanning, Principles of operational mechanisms of various types of Microscopes.

III. Sterilization and disinfection – classification and Methods of sterilization.

Sterilization: Definition, types and principles of sterilization methods:

(a) Heat (dry heat, moist heat with special reference to autoclave, (b) Radiation, (c) Filtration, efficiency testing to various sterilizers.

Antiseptics and Disinfectants :

Definition, types and properties, mode of action, uses of various disinfectants, precautions while using the disinfectants, qualities of a good disinfectants, testing efficiency of various disinfectants.

1) Principle and Methods of sterilization by heat

    a) By Dry Heat, flaming, Red Heat, Hot air oven, incineration.
    b) By Merit Heat-pasteurization, Inspissation, tyndalisation, autoclave.

2) Filtration Methods

3) Ionising Radiation – Disinfection, Mode of action and uses of important chemical disinfections – Phenol and Phenolic compounds, alcohols, halogens, dyes and acids and alkalies.

4) Gaseous Methods of sterilization.

IV. Cleaning, drying & Sterilization of Glassware disposal of contaminated material i.e. clinical infective material inoculated culture media. Handling and Disposal of Biomedical waste.

V. **Biomedical waste management in a Microbiology Laboratory :** types of the waste generated, segregation, treatment, disposal.

VI. Morphology and classification of Bacteria Sp. of cell, capsule, flagella, spore, Anaerobic Methods of cultivation of Bacteria.

Paper-III

A. Hospital Awareness

A brief idea of hospital as on organization management different units of a hospital effective communication skills, communication channel

Maintenance of records
Effective leadership
General patient care
Medical terminologies
Vital signs
Unit preparation
Transporting & Transferring patients
Sterilization Techniques
Control of infection
Medication – Oral & parenteral
Admission – Discharge procedure
Bandages

Practicals : Posted in ward & taught clinically

A. Surgical Department

Familiarization of different tubes

1. Drainage tube
2. Post Operative Exercises
3. Post OP Management of Patient
4. Shock of Management
5. Changing Surgical Dressing.

1. Preoperative preparation of patient
2. Preanesthetic preparation
3. Assisting in operation
4. Anaesthesia
5. CSSD

1. Recovery room
2. Movement of papers
3. Scheduling of theaters
4. Supplying of articles
5. Specific area practices
    a. As scrubnurse
    b. As circulating nurse

D).Communication and Computer Skills, Audio & Visual Aids.

COMMUNICATION	Process Types of communication Strategies for effective Communication Barriers of communication
SOFT SKILLS	Presentation with the use of visual aids such as power point Conversation Extempore speech, usage of effective language for communication of health work. Case studies and situational analysis Survey and Reporting
COMPUTER	Computer basic MS – Office MS – Word MS – Excel MS – Power Point
INTERNET CONCEPTS	Browsing Down- Loading Use of Slide Projector

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SECOND

YEAR PAPER-I

A) INFECTIOUS & COMMUNICABLE DISEASES

Typhoid fever, Malaria, Tetanus, Diphtheria, Leprosy

Mumps, Measles,Cholera, Rubella

Gonorrhea, Syphilis, AIDS , .

Rheumatic fever

METABOLIC DISORDER :-

Diabetes, Obesity, Gout.

• DISEASES OF ENDOCRINE SYSTEM :-

Hyper & Hypo -secretion of Thyroid ,Parathyroid Gland

Hypo & hypersecretion of Pituitary & Adrenal Gland.

• DISEASES OF NERVOUS SYSTEM :-

Headache, Meningitis, Encephalitis, Poliomyelitis, Parkinsonism, Epilepsy

CVA ,Tumor.

B) **DISEASES OF GIT** :-

Gastric ulcer ,Peptic Ulcer , Gastritis .Hiatus Hernia , ,

Hepatitis , Cirrhosis of liver , Hepatic coma

Pancreatitis , Enteritis , Colitis , Spleenomegaly

Cholecystitis ,Cholelithiasis .

• DISEASES OF BLOOD :-

Anemia , Leukaemia , Haemophillia .

Agranulocytosis, Hodgkin’s disease

• DISEASES OF CARDIOVASCULAR SYSTEM

:- Pericarditis,Myocarditis ,endocarditis

IHD , Valvular disorders ,

Cardiac arrhythmia ,Heart block ,

Cardiac arrest , Cardiac failure

C) DISEASES OF EAR NOSE & THROAT :-

Oetitis , Otosclerosis , Furunculosis , Fungal infections ,

Injury , Wax, Mastoiditis , Otosclerosis.

Menier's disease , Deafness.

Laryngitis , Pharyngitis , Tonsilits Allergic rhinitis.

Rhinitis , Defleted nasal septum , Sinusitis , Adenoids ,

• DISEASES OF RESPIRATORY SYSTEM

:- Tuberculosis ,Pneumonia ,

Pleural effusion , Pleurisy ,

Empyaema, COPD.

• DISEASES OF EYE:-

Conjuctivitis , Dacrocystitis , Glaucoma ,

Cataract , Retinal detachment.

D) GENERAL SURGERY

• WOUND

• ULCER

• BURN

• SKIN GRAFT

• ORTHOPAEDIC CONDITIONS :- ,

Sprain, Dislocation,

Fracture ,Amputation

Arthritis, Osteomyelitis , Ankylosing spondylitis

Congeital deformities , Bone graft

Cervical spondylosis , Lumbar spondylosis ,.

• Gyanecological & obstretic conditions .

• Other surgical conditions : -

Pnuemenectomy, Lobectomy

Hysterectomy ,Mastectomy

Cholelithetectomy etc

PAPER –II

A) CLINICAL NEPHROLOGY

- Various diagnostic procedure of renal diseases.
- Manifestation of renal diseases.
- Renal vascular disease.
- Glomerular disease.

B) Tubulo-interstitial disease.

- Congenital abnormalities of kidneys.
- Renal involvement in systemic diseases.
- Infectious conditions of Kidney & urinary tract.
- Obstruction of urinary tract .

C) Effects of the drugs on the kidney.

- Tumuors of Kidney & urinary tract.
- Hard water syndrome.
- Water fluid & electrolyte imbalance.

D) DIFFERENT TYPES OF DIALYZER -

Description, reuse, indication, care,
Factors improving performance,
Choosing Dialyzer, Priming Sterility, Washing
Formalin-Use, hemofiltration,
haemoperfusion, aphresis,CAVH,CRRT.

PAPER_III

A) HAEMODAILYSIS

function of semi permeable membrane in
haemodailysis Waste product removed by
haemodailysis transport Rate of mass transfer-Solute
flux.
Diffusive transport & its importance,
Clearance, Ultra filtration & hydrostatic gradient, TMP

- Water for Dailysis procedure ,

Filtration ,Decantation ,Distillation
Softener, Deionizer

Reverse osmosis, Different impurities .

Role of charcoal, RO Plant.

Water used in Dailysis, Compare RO with DI.

B) DAILYSIS EQUIPMENT :-

Accessory equipments & functions, ,

Blood pump, Monitors of Temp., Flow

,Pressure Monitors of Dailysate concentration

pH

Chemicals used in dailysate-advantages & disadvantages

delivery system

• CARE ,ASSESSMENT PREPARATION :-

Pre- Dailysis assessment, preparation & care

Procedure & care for HD & PD

Post Dailysis care.

• COMPLICATION :-

Complications during & after dialysis, its

management. Potential problems during Dailysis,

Prevention, Hypovolaemia& its management.

• PERITONIAL DAILYSIS

Indication, Dailysate preparation, Procedure, Types

Care, complication-management,

Toxic substances added.

C) RE-DAILYSIS ASSESSMENT

• Cannulas ,shunt, AV fistulas ,internal graft

Catheter-subclavian Jugular, Femoral ,Blood line etc.

Temporary vascular access

• Goal of Dailysis

• Anticoagulant ,Drug added in PD.

• Emergency drugs & injections

• Disinfection procedure of machines & instrument

• Clinical basics of IV Fluid , creatinin clearance.

• Role of dialysis technician

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PRACTICALS

1. Assists the Anesthetist
2. Monitoring of vital signs, Spo2
3. Conducts ABG analysis
4. Has knowledge of types of Anesthesia required for different types of surgeries
5. Does a regular check of cannula and drains
6. Maintain records and reports
7. Transportation of patient to SICU
8. Suctioning of Endotracheal tube / Tracheostomy tube
9. After care of equipment
10. Mechanical ventilation – Settings and modes