SunRise University

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REGULATIONS AND CURRICULUM
B.Sc. Dialysis Technology

SunRise University

Alwar, Rajasthan

FIRST SEMESTER

PAPERS CODE	PAPERS NAME	INTERNAL	EXTERNAL	TOTAL
BSDT101	English	40	60	100
BSDT102	Environmental Science	40	60	100
BSDT103	Anatomy	40	60	100
BSDT104	Physiology	40	60	100
BSDT105	Basic Biochemistry	40	60	100
PRACTICAL				
BSDT106	Pathology Lab	60	40	100
BSDT107	Microbiology Lab	60	40	100
BSDT108	Pharmacology Lab	60	40	100
Total		**380**	**420**	**800**

SECOND SEMESTER

PAPERS CODE	PAPERS NAME	INTERNAL	EXTERNAL	TOTAL
BSDT201	Pathology-	40	60	100
BSDT202	Microbiology	40	60	100
BSDT203	Pharmacology	40	60	100
BSDT204	Health care	40	60	100
BSDT205	Psychology	40	60	100
PRACTICAL				
BSDT206	Pathology Lab	60	40	100
BSDT207	Microbiology Lab	60	40	100
BSDT208	Pharmacology Lab	60	40	100
Total		**380**	**420**	**800**

THIRD SEMESTER

PAPERS CODE	PAPERS NAME	INTERNAL	EXTERNAL	TOTAL
BSDT301	Applied pathology relatedto RDT	40	60	100
BSDT302	Applied Microbiology related to RDT	40	60	100
BSDT303	Introduction toRDT	40	60	100
BSDT304	Computer application	40	60	100
BSDT305	Environment science and Health	40	60	100
PRACTICAL				
BSDT306	Applied pathology relatedto RDT Lab	60	40	100
BSDT307	Applied Microbiology related to RDT Lab	60	40	100
BSDT308	Computer application Lab	60	40	100
Total		**380**	**420**	**800**

FOURTH SEMESTER

PAPERS CODE	PAPERS NAME	INTERNAL	EXTERNAL	TOTAL
BSDT401	Patient care andbasic nursing	40	60	100
BSDT402	Basic concepts of renal disease	40	60	100
BSDT403	Hemodialysis part 1	40	60	100
BSDT404	Biostatistics andResearch methodology	40	60	100
BSDT405	Constitutionof India	40	60	100
PRACTICL				
BSDT406	Patient care andbasic nursing Lab	60	40	100
BSDT407	Basic concepts of renal disease Lab	60	40	100
BSDT408	Hemodialysis part 1 Lab	60	40	100
Total		**380**	**420**	**800**

FIFTH SEMESTER

PAPERS CODE	PAPERS NAME	INTERNAL	EXTERNAL	TOTAL
BSDT501	Acute & chronickidney diseases & Nutrition	40	60	100
BSDT502	Hemodialysis part 2	40	60	100
BSDT503	Peritonealdialysis	40	60	100
BSDT504	**Elective 1**	40	60	100
BSDT505	Medical Ethics	40	60	100
PRACTICAL				
BSDT506	Acute & chronickidney diseases & Nutrition	60	40	100
BSDT507	Hemodialysis part 2	60	40	100
BSDT508	Peritonealdialysis	60	40	100
Total		**380**	**420**	**800**

SIXTH SEMESTER

PAPERS CODE	PAPERS NAME	INTERNAL	EXTERNAL	TOTAL
BSDT601	Hemodialysis part 3	40	60	100
BSDT602	Dialysis in special situations	40	60	100
BSDT603	Recent advancesin Dialysis Technology	40	60	100
BSDT604	**Elective 2**	40	60	100
BSDT605	Hospital Management	40	60	100
PRACTICAL				
BSDT606	Hemodialysis part 3	60	40	100
BSDT607	Dialysis in special situations	60	40	100
BSDT608	Research Project			100
Total		**320**	**380**	**800**

Table VII: Elective Subjects

Elective Subjects
Fifth Semester
Immunotechniques in diagnosis of diseases
Dental Radiography
Pulmonary Function Testing
Telemedicine
Hands on training in Continuous ambulatoryperitoneal dialysis
Echocardiography (Cardiology)
Echocardiography (CTVS)
Difficult airway intubation
Sixth Semester
Molecular Techniques
Digital Subtraction Angiography
Polysomnography
Practice Management
Renal Transplant
Coronary angiography
Intra Aortic Balloon pump
Ventilator management

I Semester
Core-1 Anatomy

Objectives:

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

Describe the structure, composition and functions of the organ systems of human body.

Describe how the organ systems function and interrelate.

Learn basic technical terminology and language associated with anatomy.

Learning Objectives: Skills

Use the process of prosection to investigate anatomical structure.

Use the microscope to learn anatomical or histological structure.

Learn how to study, interpret and care for anatomical specimens.

Contents
Theory:

Unit I

Organization of the Human Body **12hrs**

Introduction to the human body

Definition and subdivisions of anatomy

Anatomical position and terminology

Cell - Definition of a cell, shapes and sizes of cells

- Parts of a cell - cell membranes, cytoplasm, sub cellular organelles.

  Cell Division - Definition and main events in different stages of mitosis and meiosis.

Tissues - Tissues of the body

- Definition and types of tissues
- Characteristics, functions and locations of different types of tissues
- Epithelial tissue - definition, classification with examples
- Glands- classification with examples

Unit II

Locomotion and Support **12hrs**

1. **Cartilage - Types with examples**
2. **Skeletal system**

Skeleton - Definition, axial and appendicular skeleton with names and number of bones, Types of bones. Marking of bones. Functions of bones.Development (types and ossification) and growth of bone.Name, location and general features of the bones of the body.

Joints - Definition and types of joints with examples. Axes and kind of movements possible. Name, location, type, bones forming, ligaments, movements possible and the muscles producing such movements of the joints of the body.

3. Muscular system

Parts of the Skeletal muscle. Definition of origin and insertion. Classification of muscular tissue. Compartment muscles of upper limb, lower limb, sternocleidomastoid

Unit III

Maintenance of the Human Body **12hrs**

1. Cardio-vascular system

Types and general structure of blood vessels. Structure and types of arteries and veins. Structure of capillaries. Shape, size, location, coverings, external and internal features of heart. Structure of heart wall. Conducting system and blood supply of the heart. The systemic arteries and veins. Name, location, branches and main-distribution of major arteries and veins.

2. Lymphatic system

Lymph, lymphatic vessels, name, location and features of the lymphoid organs.

3. Respiratory system

Names of organs of respiration, Location and features of nose, pharynx, larynx, trachea, bronchi, lungs and pleura.

4. Digestive system

Names of organs of digestion. Location and features of mouth, pharynx, esophagus, stomach, small and large intestines. Location and features of salivary glands, pancreas, liver and gall bladder

Unit IV

1. Urinary system and Reproductive system **12hrs**

Names of urinary organs, location and features of kidney, ureter, urinary bladder and urethra.

Names of male and female organs of reproduction. Location and features of scrotum, testis, epididymis, vas deferens, seminal vesicle, ejaculatory duct, prostate gland, penis and spermatic cord.

Location and features of uterus & its supports, uterine tube, ovary & mammary gland.

2. Development

Gametes, period of gestation, gametogenesis, structure of sperm and ovum, growth of ovarian follicles, events of 1st, 2nd and 3rd weeks of development, folding of embryo. Derivatives of germ layers, placenta

Unit V

Control Systems of the Body **12hrs**

1. Nervous system

Sub-divisions of the nervous system

Brain - Sub-divisions, location external features and internal structure of medulla oblongata, pons, mid-brain, cerebellum and cerebrum.

Spinal cord - Location, extent, spinal segments, external features and internal structure.

Location and features of thalamus and hypothalamus.

Locations and subdivisions of basal ganglia. Meninges and spaces around them.

Name and location of ventricles of brain and circulation of cerebrospinal fluid.

Blood supply of the brain and spinal cord. Cranial nerves

2. Sense organs

Location and features of the nose, tongue, eye, ear and skin

3. Endocrine system

Names of the endocrine glands. Location and features of pituitary, thyroid, parathyroid, suprarenal, pancreas, ovaries and testes. Names of hormones produced by each gland.

Practical :

1. Demonstration of parts of microscope and its uses
2. Demonstration of skeleton and joint
3. Demonstration of deltoid and gluteus maximus, Cubital fossa
4. Demonstration of heart and its blood supply, demonstration of major arteries of upper limb and lower limb, histology of cardiac muscle and histology of vessels
5. Demonstration of location and parts of lungs, histology of trachea and lungs
6. Demonstration of location of stomach, small and large intestines. Location and features of pancreas, liver and gall bladder
7. Demonstration of location and features of kidney, ureter, urinary bladder and urethra. Histology of urinary system except urethra
8. Demonstration of location of male and female reproductive organs
9. Demonstration of brain and spinal cord
10. Histology of cornea and retina

Practical Examination Pattern **40 Marks**

1. Gross Anatomy- Discussion of any one specimen -10 Marks

   Disscusion of specimens of Cardiovascular system, Respiratory System, Gastrointestinal system, Urinary system, Reproductive system
2. Spotters - Cardiovascular system, Respiratory System, Gastrointestinal system, Urinary system, Reproductive system - 10x2=20 Marks
3. Histology discussion of any one demonstrated slide - 10 Marks

Recommended Books Recent Editions:

1. Ross and Wilson: Anatomy and Physiology in Health and illness
2. Understanding Human Anatomy and Physiology, William Davis (p) MC Graw Hill
3. Essentials of Human Embryology. Bhatnagar, Orient Blackswan Pvt. Ltd.
4. Anatomy for B.Sc Nursing by Renu Chauhan. Arichal publishing company 2012
5. Hand book of Anatomy BD Chaurasia
6. Basics in Human Anatomy for B.Sc. Paramedical Courses 1st edition 2008 Jaypee Publishers

Reference books:

1. B D Chaurasia: Regional Anatomy. Vol I, II, III 6th edition

I Semester
Core- 2 Physiology

Objectives

At the end of the semester students should be able to describe

1. Blood cell counts
2. Nerve and muscle functions
3. Cardiac functions
4. Pulmonary functions
5. Renal functions
6. The actions of various hormones
7. Functions of Central nervous system and special senses

Contents:

Theory

Unit -I

General physiology and Blood **12 Hrs**

General Physiology (2 Hrs)

- Organization of the cell and its function, homeostasis
- Transport across cell membrane
- Membrane Potentials - Resting Membrane Potential & Action Potential
- Body Fluid Compartments - Normal Values

Blood (10 Hrs)

- Introduction: composition and function of blood.
- Red blood cells: erythropoiesis, stages of differentiation, function, count, physiological variation.
- Structure, function, concentration, physiological variation, methods of estimation of haemoglobin.
- White blood cells: production, function, count.
- Platelets: origin, normal count, morphology & functions.
- Plasma proteins: types, functions
- Haemostasis: definition, normal haemostasis, clotting factors, mechanism of clotting, disorders of clotting - Blood groups: ABO system, Rh system. Blood grouping & typing, cross matching.

  Rh system: Rh factor, Rh incompatibility. Blood transfusion: indication. transfusion reactions.
- Anticoagulants: classification, examples and uses.

  Anaemias: morphological and etiological classification, -Blood indices: CI, MCH, MCV, MCHC.
- Erythrocyte sedimentation rate (ESR) and packed cell volume, normal values.

Unit -II

Digestive system & Respiratory system **12hrs**

Digestive System (4Hrs)

- Physiological anatomy of gastro intestinal tract, functions of digestive system.
- Salivary glands: structure and functions, deglutition: stages and regulation.
- Stomach: structure and functions. Gastric secretion: composition function regulation of gastric juice secretion.
- Pancreas : structure, function, composition of pancreatic juice
- Functions of liver. Bile secretion, composition, function. jaundice: types.
- Functions of gall bladder.
- Small intestine: functions, digestion, absorption, movements.
- Large intestine: functions, movements defecation

Respiratory system (8 Hrs)

- Functions of respiratory system, physiological anatomy of respiratory system, respiratory tract, respiratory muscles.
- Mechanism of normal and rigorous respiration, forces opposing and favoring expansion of the lungs. Intra pulmonary & intrapleural pressure.
- Surface tension, recoil tendency of the thoracic cage and lungs .
- Transport of respiratory gases: transport of oxygen & carbon dioxide, oxy haemoglobin dissociation curve, factors affecting it.
- Lung volumes and capacities - normal values
- Regulation of respiration: mechanisms of regulation, nervous and chemical regulation, respiratory centre.
- Applied physiology : hypoxia, cyanosis, dyspnoea, apnoea.

Unit -III

Cardiovascular and Endocrine system **12hrs**

Cardiovascular system (7Hrs)

- Heart: Physiological Anatomy, Nerve supply.
- Properties of cardiac muscle, cardiac cycle:
- Conducting System of Heart, Origin and Spread of Cardiac Impulse
- Electrocardiogram (ECG) waves and normal duration. Recording
- Cardiac Cycle: Phases and Volume Changes
- Normal heart sounds, areas of auscultation. Pulse: jugular, radial pulse,
- Cardiac output : definitions of stroke volume, cardiac index, factors Affecting It. measurement of Cardiac output.
- General principles of circulation
- Blood pressure: definition, normal value, clinical measurement of blood pressure, hypotension, hypertension. Factors affecting it and regulation

- Physiological variations & regulation of heart rate.
- Coronary circulation.
- Shock

Endocrine System (5 Hrs)

- Classification of endocrine glands & Definition of hormone.
- Pituitary hormones: anterior and posterior pituitary hormones, secretion, functions
- Thyroid gland: physiological anatomy, hormone secreted, physiological function, regulation, secretion, disorders (hypo and hyper secretion of hormone).
- Adrenal cortex: physiological anatomy. cortical hormones, functions and regulation.
- Adrenal medulla: hormones, regulation and secretion. Functions of adrenaline and nor adrenaline.
- Hormones of pancreas. Insulin: secretion, regulation, function and action.

  Diabetes mellitus: regulation of blood glucose level.
- Parathyroid gland: function, action, regulation of secretion of parathyroid hormone.

  Calcitonin:

Unit -IV

Excretory system and Reproductive system 12 hrs

Excretory System (8Hrs)

- Functional anatomy of kidney
- Juxta glomerular apparatus: structure and function.
- Glomerular filtration
- Tubular function(reabsorption and secretion)
- Micturition, innervation of bladder, cystometrogram.
- Artificial kidney, renal function tests skin and body temperature

Reproductive system (4Hrs)

- Male reproductive system: functions of testes, spermatogenesis: Endocrine functions of testes -Female reproductive system: oestrogen, progesteron, menstrual cycle: ovulation, physiological changes during pregnancy, pregnancy tests.
- Lactation: composition of milk, factors controlling lactation.

Unit -V

Muscle nerve physiology, Nervous system and Special senses 12hrs

Muscle nerve physiology (3Hrs)

- Classification and properties of neuron and neuroglia. Classification of nerve fibers
- Classification of muscle, structure of skeletal muscle,
- Neuromuscular junction. Transmission across nmj
- Excitation contraction coupling. muscle tone, fatigue, rigor mortis

Nervous system (5Hrs)

- Organisation of nervous system
- Synapse: structure, types, properties.
- Receptors: definition, classification, properties. Sensations-pain
- Organization Spinal cord. Ascending tracts, descending tracts.
- Reflex : definition reflex arc, clinical classification of reflexes : Babinski's sign.
- Hypothalamus- functions
- Cerebral cortex lobes - functions,
- Cerebellum- functions
- Basal ganglia functions.
- Cerebro Spinal Fluid (CSF) : formation, circulation & reabsorption . composition and functions. Lumbar puncture.
- Autonomic Nervous System: Sympathetic and parasympathetic distribution

Special senses (4Hrs)

- Vision: structure of eye, function of different parts. Structure of retina. visual pathway, errors of refraction
- Hearing: structure and functions of ear.
- Taste : taste buds and taste pathway.
- Olfaction : receptors, pathway.

Practicals (20 Hrs)

1. Haemoglobinometry.
2. Haemocytometry
3. Total leucocyte count.
4. Total Red blood cell count.
5. Determination of blood groups.
6. Differential WBC count.
7. Determination of clotting time, bleeding time.
8. Erythrocyte sedimentation rate (ESR). Determination of packed cell Volume, Calculation of Blood indices: CI, MCH, MCV, MCHC.
9. Blood pressure recording.
10. Spirometery, Artificial Respiration

Practical Examination : 40 Marks

1. Estimation of Hemoglobin. - 10 marks
2. Determination of Blood Groups. - 10 marks
3. Determination of Bleeding and Clotting time. - 10 marks
4. Spotters-Haemocytometer, (Identification of cells) Differential Count, Sphygmomanometer, Spirometer . - 10 marks

Recommended Books Recent Editions

1. A.K.Jain, Human Physiology and Biochemistry for Physical Therapy and Occupational Therapy, 1st Ed. Arya Publication.
2. Dr. Venkatesh.D and Dr. Sudhakar H.S.Basic of Medical Physiology, 2nd Ed., Wolter-Kluwer Publication.
3. Chaudhari (Sujith K) Concise Medical Physiology 6th Ed. New Central Book.

Reference Books

1. A.K.Jain, Text book of Physiology for Medical Students, 4th Ed. Arya Publiction.
2. Guyton (Arthur) Text Book of Physiology.11th Ed. Prism Publishers.
3. Ganong (William F) Review of Medical Physiology. 23rd Ed. Appleton.

I Semester
Core- 3- Basic Biochemistry

Unit I **12hrs**

Chemistry of Cell & Chemistry of Carbohydrates, Proteins, Lipids &Nucleotides-

Cell- Structure & Function of Cell Membrane, Subcellular Organelles and their Functions.

Carbohydrates- Definition, Classification & Biological importance of carbohydrates, Derivatives of Monosaccharides.

Proteins- Definition & Classification of amino acids & Proteins, Biologically important peptides Plasma proteins, Immunoglobulins.

Lipids- Definition, Classification & Biological importance and Functions of Lipids. Structure and functions of Cholesterol, types and functions of Lipoproteins.

Nucleotides- Structure and Functions of DNA & RNA. Biologically important nucleotides.

Unit II **12hrs**

Enzymes & Acid base balance

Enzymes- Definition and Classification. Factors affecting enzyme activity. Coenzymes and Cofactors. Enzyme inhibition & Regulation of enzyme activity

Acid Base balance- Acids, Bases & Body Buffers, Regulation of pH, Acid base disorders.

Unit III **12hrs**

Vitamins & Minerals

Vitamins-Classification, Sources, RDA, Functions(in brief), deficiency manifestations and hypervitaminosis.

Minerals- Classification, Sources, RDA, Functions (in Brief), deficiency manifestations of the following: calcium, phosphorous, iron, copper, iodine, zinc, fluoride, magnesium, selenium, sodium, potassium and chloride.

Unit IV **12hrs**

Nutrition, Blood chemistry & Urine Chemistry

Nutrition- Nutrients, Calorific value of food, BMR, SDA, respiratory quotient and its applications, Balanced diet based on age, sex and activity, biological value of proteins, nitrogen balance, Protein energy malnutrition, Total parenteral nutrition, dietary fibers.

Blood chemistry- Biochemical components & their reference ranges in normal & diseased states.

Urine chemistry- Biochemical components & their reference ranges in normal & diseased states

Unit V **12hrs**

Clinical Biochemistry- 10 hrs

Specimen Collection- Blood,Urine and Body fluids.

Preanalytical, analytical and postanalytical errors

Clinical Biochemistry- Parameters to diagnose Diabetes & Cardiovascular diseases.

Diagnostic enzymology, Assessment of arterial Blood gas status and electrolyte balance, Point of Care Testing. Renal Function tests(in brief), Liver function tests(in brief), Biomedical Waste Management.

Practicals

1. General Reactions of Carbohydrates.
2. Color reactions of Proteins.
3. Reactions of Non Protein nitrogenous substances.
4. Demonstration of pH meter, Colorimeter and spectrophotometer.
5. Demonstration of Chromatography and Electrophoresis.

Practical Examination

1. Identification of Substance of physiological importance - 10 Marks
2. Color reactions of Proteins - 10 Marks
3. Spotters - 10 Marks
4. Charts on Clinical biochemistry - 10 Marks

Recommended books Recent edition

1. Textbook of Biochemistry -D.M.Vasudevan
2. Biochemistry -Pankaja Naik
3. Clinical Biochemistry-Principles and Practice-Praful.B.Godkar
4. Textbook of Biochemistry-Chatterjea and Shinde
5. Textbook of Clinical Chemistry-Norbert W Teitz

Reference Books Recent Edition

1. Harpers Biochemistry
2. Clinical Biochemistry-Michael L.Bishop
3. Textbook of Biochemistry-Rafi M.D
4. Lippincott's Illustrated review of Biochemistry
5. Practical Clinical Biochemistry-Harold Varley

I Semester

Language-1English

Unit I

Introduction

a) Study Techniques - Reading Comprehension

Exercises on reading passages and answering questions based on the passage.

b) Organization of Effective Note Taking

Why good note-taking is important

Effective note-taking is an important practice to master at university. You have a lot of new knowledge and you need to develop reliable mechanisms for recording and retrieving it when necessary. But note-taking is also a learning process in itself, helping you to process and understand the information you receive.

c) Use of the Dictionary

Tips on how to use the dictionary

1. Choose the right dictionary.
2. Read the introduction.
3. Learn the abbreviations.
4. Learn the guide to pronunciation.
5. Looking Up a Word
   a) Find the section of the dictionary with first letter of your word.
   b) Read the guide words.
   c) Scan down the page for your word.
   d) Read the definition.
6. Online dictionaries
7. Research various facts.
8. Thesaurus

It is a dictionary of synonyms and antonyms, such as the online Thesaurus.com.

Enlargement of Vocabulary

Roots : A to G

Effective Diction

Foreign Expressions - meaning and pronunciation

Unit II

Applied Grammar

a) Correct Usage

The Eight Parts of Speech

1. Noun
2. Pronoun
3. Adjective
4. Verb
5. Adverb
6. Preposition
7. Conjunction
8. Interjection

b) The Structure of Sentences

What is a sentence?

What are clauses?

What are phrases?

Types of sentences:

1. Simple sentences
2. Compound sentences
3. Complex sentences

c) The Structure of Paragraphs

1. What is a Paragraph?

Paragraphs are comprised of sentences, but not random sentences. A paragraph is a group of sentences organized around a central topic.

2. The Secrets to Good Paragraph Writing:

Four Essential Elements

The four elements essential to good paragraph writing are: unity, order, coherence, and completeness.

4. Paragraph Structure

A paragraph consists of 3 main structures :

1. Claim
2. Evidence
3. Analysis

d) Enlargements of Vocabulary

Roots: H to M

Unit III

Written Composition

a) Precise writing and Summarizing

1. Definition of precise:

   A precise or summary is an encapsulation of someone's writing or ideas.

   Technically it should be one - third the length of the actual passage given.

2. Definition of summary:

   Summaries may not always follow a direct line through what they're summarizing - if you want to summarize someone else's ideas in a few sentences, it might make more sense if you begin with their conclusion, and work back to the arguments they use to develop that conclusion.

Guidelines to follow while writing a summary are:

1) Divide…and conquer.

2) Read.

3) Reread.

4) One sentence at a time.

5) Write a thesis statement.

6) Check for accuracy.

7) Revise.

b) Writing of a Bibliography

I. What is a bibliography?

A bibliography is an alphabetical list of all materials consulted in the preparation of your assignment.

II. What is an annotated bibliography?

An annotated bibliography is an alphabetical list of books or articles for which you have added explanatory or critical notes.

III. Why you must do a bibliography?

a) To acknowledge and give credit to sources of words, ideas, diagrams, illustrations and quotations borrowed, or any materials summarized or paraphrased.

b) To show that you are respectfully borrowing other people's ideas, not stealing them, i.e. to prove that you are not plagiarizing.

IV. What must be included in a bibliography?

a[redacted]

ti[redacted]

p[redacted]ublication

p[redacted]

d[redacted]blication

p[redacted]ber(s) (for articles from magazines, journals, periodicals, newspapers, encyclopedias, or in anthologies).

V. Writing a bibliography in MLA style

1. Standard Format for a Book:

Author. Title: Subtitle. City or Town: Publisher, Year of Publication.

If a book has no author or editor stated, begin with the title. If the city or town is not commonly known, add the abbreviation for the State or Province.

2. Standard Format for a Magazine, Periodical, Journal, or Newspaper Article:

Author. "Title: Subtitle of Article." Title of Magazine, Journal, or

Newspaper Day, Month, Year of Publication: Page Number(s).

c) Enlargement of Vocabulary

Roots - N to S

Unit IV

Reading and Comprehension

a) Review of selected materials and express oneself in one's words

Seminar for students on powerpoint presentation and book review.

b) Enlargement of Vocabulary

Roots - T to Z

Unit V

The study of Varioius forms of Composition

a) Paragraph

Exercises for students on short paragraph topics.

b) Essay

How to Write an Essay

The writing of an essay has three stages :

1. Essay writing
2. Close reading
3. Research

c) Letter

Mechanics of writing formal and business letters.

Exercises on writing letters for students.

d) Summary

Writing reports: project report, magazine article and reporting in newspapers on sporting events.

e) Practice In Writing

Exercises and assignments on report writing for students.

Unit VI

Verbal Communication

a) Discussions And Summarization

Tips on taking minutes of a meeting

Why Meeting Minutes Matter

Meeting minutes are important. They capture the essential information of a meeting - decisions and assigned actions. The following instructions will help you take useful and concise meeting minutes.

Before the Meeting

If you are recording the minutes, make sure you aren't a major participant in the meeting. You can't perform both tasks well.

Create a template for recording your meeting minutes and make sure you leave some blank space to record your notes.

Decide how you want to record your notes. If you aren't comfortable relying on your pen and notepad, try using a tape recorder or, if you're a fast typist, take a laptop to the meeting.

During the Meeting

As people enter the room, check off their names on your attendee list. Ask the meeting lead to introduce you to meeting attendees you aren't familiar with. This will be helpful later when you are recording assigned tasks or decisions.

After the Meeting

Review the notes and add additional comments, or clarify what you didn't understand right after the meeting.

a) Debates

Group Discussions:

1. Do's in a group discussion:

B[redacted]ent. Introduce yourself with warm smile and get into topic soon.

H[redacted]contact with all group members

L[redacted]sten.

B[redacted]

B[redacted] team player. Move with all group members and help them when needed.

2. Don'ts in a group discussion:

D[redacted]arsh when you are interrupted.

D[redacted]rupt the other person

D[redacted]o push your ideas on others.

D[redacted]e. Everyone is free to express their ideas.

c) Oral Reports

An oral report is a presentation, usually done for a student's teacher and classmates, though it can also be done for a larger segment of the school community, for parents, or for a more open group, depending on the circumstances. For example, at a science fair, a student might present a report on his or her project periodically for the class, for other visitors who pass by, and for judges.

d) Use in Teaching

Writing of dialogues

Originating from dialogos, the Greek word for conversation, the term dialogue refers to a verbal conversation between two or more people.

When writing dialogues, it is important to adhere to specific grammar rules. The following points need to be remembered while writing dialogues for role play.

1. Quotation Marks
2. Periods
3. Question Marks
4. Commas
5. Capitalization and Paragraphs
6. How Dialogue Enhances Writing

Dialogue reveals information about the speaker(s) within a written work. Dialogue also enhances the story line and plot.

a) Exposes Character Traits

Through indirect characterization, dialogue reveals details about a character by what they say, how they say it, and perhaps what they choose not to say.

b) Unveils Mood/Emotions

A character's word choice, description of tone, and choice of language reveal the inner state of the character without directly "telling" the audience. Showing instead of telling creates a deeper understanding of the character through the eyes of the reader or audience.

c) Reveals Motivation/Influences

Dialogue can illuminate a character's internal motivation or desires.

d) Establishes Relationships

Seeing how a character addresses and responds to other characters shows the type of relationships that they form and where their relationships currently stand. Dialogue can demonstrate how relationships change throughout the course of the story. It can show how a character changes or responds to various situations.

Exercises for students on preparing a dialogue exchange between two people

1. On the street (with a vegetable vendor)
2. At college with a lecturer (regarding admissions)
3. In a bank with the manager (for opening a bank account)
4. Telephone conversation with a hotel receptionist (make room reservations)
5. Telephone conversation (taking an appointment with the dentist/doctor)

I Semester

Language 2- Kannada

PÀ£ÀßqÀ : MAzÀÄ

¥ÀoÀåPÀæªÀÄzÀ gÀÆ¥ÀgÉÃSÉ

¸ÁÜ£À : ©.J¸ï.¹. (CeÉÊqï ºÉeïï ¸ÉÊ£ïPÉsÃ¸ïð) vÉszÀ®vÀµÀð

¸ÀvÀÄÄAiÀÄÄ : 30 WÀAmÉUÀ¼ÀÄÄ (vÀÄsvÀvÀÄ WÀAmÉUÀ¼ÀÄÄ)

¥ÀoÀåPÀæªÀÄzÀ «vÀgÀuÉ : «zÁåyð/ «zÁåyð¤AiÀÄgÀÄ ¢£À¤vÀå ¸ÀA¥ÀQð¸À§ºÀÄzÁzÀ d£À¸ÁvÀÀÁ£ÀågÉsqÀ£É ±ÀÄ±ÀsæµÉUÉ ¸ÀA§A¢¹zÀAvÉ PÀ£ÀßqÀzÀå ¸ÀA¨sÁµÀuÉ vÀÀÁqÀ®Ä ºÁUÀs w¼ÀÄvÀ½PÉ ¤ÃqÀ®Ä ¸ÀºÁAiÀgÀvÁUÀÄvÀAvÉ ¥ÀoÀåPÀæ5ÀzÀ 5ÀÁzÀjAiÀ£ÀÄ C¼À5Àr¸ÀÄ5ÀzÀÄ.

GzÉÝñÀ : ¢£À§¼ÀPÉAiÀÄ vÀåvÀºÁgÀzÀå ±ÀÄ±ÀsæµÀuÉUÉ ¸ÀA§AzÀ¥À¯ÁAvÉ PÀ£ÀßqÀ ¨sÁµÉUÉ C¼ÀvÀrPÉ.

PÀ£ÀßqÉÃvÀgÀjUÉ PÀ£ÀßqÀ ¨sÁµÉAiÀÄ ¥ÀjZÀAiÀÄ vÀÀÁrPÉsqÀÄvÀÄzÀÄ.

¥ÀoÀåPÀæªÀÄzÀ«vÀgÀuÉ

WÀlPÀMAzÀÄ (DgÀÄ WÀAmÉUÀ¼ÀÄ) : CPÀëgÀvÀÀÁeÉ, ¸ÀgÀUÀ¼ÀÄ, vÀåAd£ÀUÀ¼ÀÄ, PÁUÀÄtvÀ, §gÀvÀtUÉ, C¨sÁå¸À.

ZÀlÄvÀnPÉ : 1. PÀ£ÀßqÀ vÀtðvÀÀÁeÉAiÀÄ CPÀëgÀUÀ¼À£ÀÄß §gÉ¬Äj.

WÀlPÀJgÀqÀÄ (DgÀÄ WÀAmÉUÀ¼ÀÄ) : ¥ÀzÀ¥ÀjZÀAiÀÄ, ¥ÀzÀ¥ÀÄAd, ¢£À§¼ÀPÉAiÀÄ ¥ÀzÀUÀ¼ÀÄ, ¸ÀA§AzÀUÀ¼ÀÄ, £ÁvÀÄ¥ÀzÀ, ¸ÀvÀð£ÁvÀÄ, CAQUÀ¼À ¥ÀjZÀAiÀÄ, ¥ÀæÁxÀðPÀ ¥ÀzÀUÀ¼ÀÄ.

ZÀlÄvÀnPÉ : 1. ¤vÀÄäUÉ w½¢gÀÄvÀ «¼ÀzÀ gÉsÃUÀÄUÀ¼À ºÉ¸ÀgÀÄUÀ¼À£ÀÄß ¥ÀnÖvÀÀÁr.

2. ¤vÀÄäUÉ w½¢gÀÄvÀ wAr – w¤¸ÀÄUÀ¼À ºÉ¸ÀgÀÄUÀ¼À£ÀÄß ¥ÀnÖvÀÀÁr.

WÀlPÀªÀÄÆsgÀÄ (DgÀÄ WÀAmÉUÀ¼ÀÄ) : åAUÀ, vÀZÀ£À, CvÀåAiÀÄ, wAr – w¤¸ÀÄUÀ¼À ¥ÀjZÀAiÀÄ, zÉÃºÀzÀ CAUÀUÀ¼À ¥ÀjZÀAiÀÄ, «¼ÀzÀ §UÉAiÀÄ gÉsÃUÀUÀ¼À ¥ÀjZÀAiÀÄ.

ZÀlÄvÀnPÉ : gÉsÃVAiÀÄ «vÀgÀ w½AiÀÄ®Ä D¸ÀvÉAiÀÄå §¼À¸À¯ÁUÀÄvÀ £ÀvÀÄäs£ÉAiÀÄ vÀÀÁzÀjAiÀÄ£ÀÄß gÀa¹.

WÀlPÀ £Á®ÌÄ (DgÀÄ WÀAmÉUÀ¼ÀÄ) : ±ÀÄ±ÀsæµÀuÁ ¥ÀzÀUÀ¼ÀÄ, D¸ÀvÉAiÀÄå §¼À¸ÀÄvÀ «¼ÀzÀ £ÀvÀÄäs£ÉUÀ¼À ¥ÀjZÀAiÀÄ, £ÀvÀÄäs£ÉUÀ¼À gÀZÀ£É.

ZÀlÄvÀnPÉ : ±ÀÄ±ÀsæµÀgÀÄ vÀÄvÀÄ gÉsÃVAiÀÄ £ÀqÀÄ«£À ¸ÀA¨sÁµÀuÉAiÀÄ vÀÀÁzÀjAiÀÄ£ÀÄß vÀÀAiÀÄÁj¹.

WÀlPÀ LzÀÄ (DgÀÄ WÀAmÉUÀ¼ÀÄ) : ±ÀÄ±ÀsæµÀgÀ ºÁUÀs gÉsÃVUÀ¼À £ÀqÀÄªÉ £ÀqÉAiÀÄÄªÀ ¸ÀA¨sÁµÀuÉUÉ ¨ÉÃPÁzÀ vÁPÀåUÀ¼À ¥ÀjZÀAiÀÄ.

CzÀåAiÀÄ£ÀPÉ ²¥ÁgÀ¸ÀÄ vÀÀÁqÀ¯ÁVgÀÄªÀ UÀAxÀUÀ¼ÀÄ

1. PÀ£ÀßqÀ vÁPÀgÀt (8,9 vÀÄvÀÄ 10£ÉÃ vÀgÀUÀwUÀ½UÉ PÀ£Áð lPÀ ¸ÀPÁðgÀ, ¥ÀoÀå¥ÀÄ¸ÀPÀUÀ¼À EeÁSÉ)
2. vÀåvÀºÁjPÀPÀ£ÀßqÀ : J ZÉ¸É
3. ¥ÀvÀæ£ÃR£À : PÀ£ÀßqÀ¸Á»vÀå¥ÀjµÀvÀÄ
4. eÉÃR£PÀeÉ : J£ï¥Àæ ºÁzÀgÁvï
5. DgÉsÃUÀå vÀÄvÀÄ EvÀgÉ ¥À§AzÀUÀ¼ÀÄ : qÁ¦ ¦.J¸ï ±ÀAPÀgï
6. vÉÊzÀå ¥ÀzÀUÀ¼À ºÀÄlÖgÀZÀ£É : qÁ¦ r.J¸ï.²vÀ¥À

PÀ£ÀßqÀ: JgÀqÀÄ

¥ÀoÀåPÀæªÀÄzÀgÀs¥ÀgÉÃSÉ

¸ÁÜ£À : ©.J¸ï¹(CeÉÊqï ºÉeïï ¸ÉÊ£ïPÉsÃ¸ïð) vÉszÀ® vÀµÀð

¸ÀvÀÄÄAiÀÄÄ : 30 WÀAmÉUÀ¼ÀÄ (vÀÄsvÀvÀÄ WÀAmÉUÀ¼ÀÄ)

GzÉÝñÀ : d£ÀgÀ DgÉsÃUÀzÀ §UÉ ¸ÀvÀÄÄzÁAiÀÄPÉ w¼ÀÄvÀ½PÉ PÉsqÀÄvÀÄzÀÄ.

II Semester
Core 4-General Pathology

Unit I

Introduction- & scope of pathology **12hrs**

Cell injury and Cellular adaptations - Normal cell, Cell injury - types, etiology, morphology, Cell death-autolysis, necrosis, apoptosis, Cellular adaptations-atrophy, hypertrophy, hyperplasia, metaplasia.

Inflammation-Introduction, acute inflammation-vascular events, cellular events, chemical mediators, chronic inflammation-general features, granulomatous inflammation, tuberculosis.

Healing and repair - Definition, different phases of healing, factors influencing wound healing, fracture healing.

Haemodynamic disorders-Oedema, hypermia, congestion, haemorrhage, embolism, thrombosis, infarction.

Neoplasia - defintion, nomenclature, features of benign and malignant tumors, spread of tumors, dysplasia, carcinoma in situ, precancerous lesions.

Environmental and nutritional pathology - smoking, radiation injury, malnutrition, obesity, vitamin deficiencies.

Unit II

Haematological Disorders **12hrs.**

Introduction and Haematopoiesis

Anaemia - introduction and classification (morphological and etiological), iron deficiency anemia: distribution of body iron, iron absorption, causes of iron deficiency , lab findings, megaloblastic anamia: causes, labfindings, haemolytic anemias: definition. Causes, classification and labfindings.

WBC disorders - quantitative disorders, leukemia - introduction and classification, acute leukemias, chronic leukemias.

Bleeding disorders - introduction, physiology of hemostasis. Classification, causes of inherited and acquired bleeding disorders, thrombocytopenia, DIC, laboratory findings. Pancytopenia.

Unit- III

Basic Hematological Techniques **12 hrs**

Characteristics of good technician, Blood collection - methods (capillary blood, venipuncture, arterial puncture) complications, patient after care, anticoagulants, transport of the specimen, preservation, effects of storage, separation of serum and plasma, universal precautions, complete hemogram - CBC, peripheral smear, BT, CT, PT, APTT, ESR, disposal of the waste in the laboratory.

Unit IV

Transfusion Medicine **12 hrs**

Selection of donor, blood grouping, Rh typing, cross matching, storage, transfusion transmitted diseases, transfusion reactions, components - types, indications.

Unit V

Clinical Pathology **12 hrs**

Introduction to clinical pathology - collection, transport, preservation, and processing of various clinical specimens.

Urinalysis - collection. Preservatives, physical, chemical examination and microscopy. Physical examination; volume, color, odor, appearance, specific gravity and ph, Chemical examination; strip method- protein - heat and acetic acid test, sulfosalicylic acid method, reducing sugar-benedicts test, ketone bodies - rotheras test, bile pigments fouchet method, bile salt - hays method, blood - benzidine test, urobilinogen and porphobilinogen - ehrlich aldehyde and schwartz test, bence jones protein., microscopy.

Examination of cerebrospinal fluid - physical examination, chemical examination, microscopic examination, examination of body fluids (pleural, pericardial and peritoneal), physical examination, chemical examination, microscopic examination, sputum examination.

Practicals:

Laboratory organization-

Reception of specimen, dispatch of reports, records keeping, coding of cases.

Laboratory safety guidelines.

SI units and conventional units in hospital laboratory.

Haematology techniques

Basic requirements for hematology laboratory

Glasswares for hematology

Equipments for haematology.

Anticoagulant vials

Complete blood counts.

Determination of haemoglobin.

RBC count and TLC by hemocytometer.

Differential leukocyte count.

Determination of platelet count

Determination of ESR and PCV.

Erythrocyte Indices - MCV, MCH, MCHC.

Reticulocyte count

Absolute eosinophilic count

Morphology of blood cells

Urinanalysis

Examination of cerebrospinal fluid

Examination of body fluids (pleural, pericardial, peritoneal)

Sputum examination.

Practical Examination- 40 marks.

Spotters- 10 marks.

Estimation of Haemoglobin or blood grouping- 10 marks.

Urine analysis- 10 marks.

Determination of ESR and PCV- 10 marks.

1.Recommended Books Recent Editions.

1. Basic Pathology Robbins Saunders, an imprint of Elsevier Inc., Philadelphia, USA.
2. Text book of Pathology Harsha Mmohan Jaypee Brothers, New Delhi.
3. Practical Pathology P. Chakraborthy, Gargi Chakarborty New Central book agency, Kolkata.
4. Text book of Haematology Dr Tejinder Singh Arya Publications, Sirmour (H P)
5. Text book of Medical Laboratory Technology Praful Godkar Bhalani Publications house, Mumbai.
6. Textbook of Medical Laboratory Technology Ramanik Sood.
7. Practical Haematology Sir John Dacie Churchill Livingstone, London.
8. Todd and Sanford, Clinical Diagnosis and Management by Laboratory
9. Methods John Bernard Henry, All India Traveller Bookseller.
10. Histopathology Techniques, Culling.
11. Histopathology Techniques Bancroft.
12. Diagnostic Cytopathology Koss.
13. Diagnostic Cytopathology Winfred Grey.
14. Hand book of Medical Laboratory Technology, CMC Vellore.
15. Basic Haematological Techniques Manipal.

II Semester
Core 5- Microbiology
Theory

Unit - I

General Microbiology **12 hrs**

1. Morphology and classification of microorganisms.
2. Growth, nutrition and multiplication of bacteria
3. Sterilization and Disinfection - Principles and use of equipments of sterilization namely hot air oven, autoclave and serum inspissator, pasteurization, antiseptics and disinfectants
4. Immunology - antigen, Antibodies, Immunity, vaccines, types of vaccine and immunization schedule.
5. Hospital acquired infection - Causative agents, transmission methods, investigation, prevention and control of hospital Acquired infections.

Unit - II

Bacteriology **12 hrs**

Classification of bacteria, morphology, infections, lab diagnosis, treatment and prevention of common bacterial infections. Staphylococcus, Streptococcus, Pneumococcus, Neisseria, Corynebacterium diphtheriae, Clostridia, Enterobacteriaceae - Shigella, Salmonella, Klebsiella, E.coli, Proteus, Vibrio cholerae, Pseudomonas and Spirochetes

Unit III

Mycobacteriology & Parasitology **12 hrs**

Mycobacteria- classification, pathogenesis, lab diagnosis and prevention
Classification, infections and lab diagnosis of following parasites. Entamoeba, Giardia, Malaria, Hookworm, Roundworm and Filarial worms.

Unit IV

Mycology **12 hrs**

Morphology, disease caused and lab diagnosis of following fungi. Candida, Cryptococcus, Dermatophytes, opportunistic fungi (Aspergillus, Zygomycetes and Penicillium)

Unit V

Virology **12 hrs**

General properties of viruses, diseases caused lab diagnosis and prevention of following viruses, Herpes, Hepatitis, HIV, Dengue, Influenza, Chikungunya, Rabies and Poliomyelitis.

Practicals: 20 hours

1. Compound microscope and its application in microbiology.
2. Demonstration of sterilization equipments: hot air oven, autoclave, bacterial filters. Demonstration of commonly used culture media, nutrient broth, nutrient agar, blood agar, chocolate agar, Mac conkey medium, L J media, Robertson cooked meat media, MacConkey agar with LF & NLF, Nutrient agar with staph colonies.Anaerobic culture, Methods and Antibiotic susceptibility test.
3. Demonstration of common serological tests: Widal, VDRL, ASLO, CRP, RF, Rapid tests for HIV, Hbsag and HCV.
4. Grams staining.
5. Acid fast staining.
6. Principles and practice of Biomedical waste management.
7. Stool Microscopy.

Practical examination pattern

Spotters (10 spotters carrying 2 marks each) 20 marks

Culture media - 6

Equipments - 2

Slides - 2

Discussion:

1. Gram stain 10 marks
2. Ziehl - Neelsen stain 10 marks

Recommended Books Recent Editions.

1. Anathanarayana & Panikar: Medical Microbiology - Revised 8th edition University Press.
2. Parasitology by Chatterjee - Interpretation to Clinical Medicine.
3. Textbook of Microbiology - Baveja, 5th edition, Arya Publications
4. Textbook for Laboratory technicians by RamnikSood. Jaypee Publishers
5. Textbook of Parasitology by Paniker. 7th edition

II Semester
Core - 6 - Pharmacology

Unit I

General Pharmacology, ANS, PNS. **12 Hrs**

Sources of Drugs

Route of drug administration

Pharmacokinetics (Absorption, Metabolism, Distribution, Excretion)

Pharmacodynamics (Mechanisms of action)

Adverse drug reactions

ANS : ADRENERGIC Drugs - Adrenaline, Noradrenaline, Ephidrine, Dopamine, Dobutamine

Anti adrenergic - Phentolamine, Phenoxybenzamine, Prazocin, Tamsulosin, Propranolol, Atenolol, Carvidelol

Cholinergic drugs-Acetyl choline, Pilocarpine, Neostigmine, Organophosphorous compounds

Anti cholinergic agents-Atropine, Glycopyrrolate, Ipratropium Bromide, Dicyclomine

Unit II

PNS, CVS, Renal System **12 hrs**

Skeletal muscle relaxants - D Tubocurarine, Succinyl choline, Diazepam, Dantroline

Local anaesthetics - lignocaine, la + vasoconstrictor

CVS - ionotropic agents - Digoxin,

Antianginal drugs - GTN,

Antihypertensives - Betablockers (Propranolol, Atenolol, carvidelol), CCBs (Nifedeine), Diuretics (Thiazide, Furesemide, ace inhibitors, ARBs, Clonidine

Drugs used in treatment of different types of shock, Plasma expanders

Renal system - Diuretics Furosemide, Thiazide, Spiranolactone

Antidiuretics - Vasopressin

Unit III

CNS, Blood **12 hrs**

CNS - general Anaesthetics - nitrous oxide, Halothane, iv anaesthetics

Sedative hypnotics - diazepam, barbiturates, zolpidem

Antiepileptics - Phenytoin, carbamezapine, phenobarbitone, valproate

Opioid analgesics - morphine, pethidine, codiene

NSAIDS - Aspirin, Diclofenacibuprofen, Selective COX2 inhibitors

Respiratory system-treatment of cough And Bronchial asthma

Blood - Hematinics, Anticoagulants - Warfarin, Heparin

Thrombolytics & Antiplatelet drugs - streptokinase,/ aspirin, clopidogrel

Unit IV

GIT, Chemotherapy **12 hrs**

GIT - drugs used in peptic ulcer - ppi, H2 blockers, Antacids
Antiemetics - Metaclopromide, Domperidone, Ondensetron
Purgatives & Laxatives-bran, ispaghula, Lactulose, Bisacodyl &senna
Drugs used in Diarrhoea- ORS, Super ORS, Antimotility drugs (loperamide, diphenoxylate)
Chemotherapy - general considerations MOA, Resistance, Prophylaxis
Sulfonamides, cotrimoxazoles, Quinolones
Tetracyclines, chloramphenicol
Betalactam antibiotics

Unit V

Chemotherapy, Hormones. **12 hrs**

Aminoglycosides
Macrolides, other antibiotics (vancomycin, linezolid) & treatment of UTI
Antifungal (clotrimazole, flucanozole)
Antiviral (Acyclovir, Few drugs used in HAART,)
Cancer chemotherapy
(names, common Adverse effects, general principles in the treatment of cancer)
Hormones - Corticosteroids its uses and adverse effects,
Treatment of Diabetes mellitus(insulin, Metformin, Glibenclamide)

Practicals Syllabus : -20 hrs

Dosage forms
Solid Dosage forms
Liquid Dosage forms
Gaseous Dosage forms
Oral route
Parentral routes
Novel routes
Fixed dose combination - Amoxycillin + clavulinic acid - cotrimoxazole, Lignocaine + Adrenaline
Drug stations - Adrenaline, dopamine, Dobutamine)
Drug stations - Corticosteroids (hydrocortisone, prednisalone, inhaltional steroids)
Drug stations - common antibiotics (amoxycillin, ciprofloxacin, Azithromycin, Metronidazole, Cephalosporins)
Drug stations - Insulin preparations
Instrument & devices (Nasogastric tube, laryngoscope, Different Cathetors, nebulizers, Inhalers, Rotahalers)

Practical examination : 40 marks

1. Dosage Forms : 15 Marks (5 X 3)

Capsules, Tablets, Syrup, Iv, Im, Sc, Ia, Intra Articular -
Advantages (1 Mark), Disadvantages (1 Mark) Examples (1 Mark)

2. Mention the name of the Device / Instruments and uses : 15 marks (5X3)
   Inhalares, Rotahalers, Spacehalers, Dripsets, Vasofix, ryles tube, urinary catheter, Endotracheal tube, Hand gloves
3. 10 Spotters : 10 marks (10X 1) 2 uses of preparation

Recommended Books Recent Editions.

1. K.D. Tripathi, Essentials of Medical Pharmacology, V. Edition, M/s. Jaypee Brothers, Post Box, 7193, G-16, Emca House, 23/23, Bansari Road, Daryaganj, New Delhi.
2. Padmaja Udaykumar -Pharmacology for Allied Sciences.
3. R.S. Satoskar, S.D. Bhandarkar, S.S. Ainapure, Pharmacology and Pharmacotherapeutics, 18th edition, Single Volume, M/s Popular Prakashan, 350, Madan Mohan Marg, Tardeo, Bombay - 400 034.

II Semester
Allied - 1 Health Care

Learning Objectives

1. To define Health and understand various concepts of Health
2. To know the Health care delivery system in India
3. To know various National Health Programmes of India
4. To have overview of First Aid Principles and guidelines

Unit I

1a Concepts of Health

Definition of health; evolution in concepts of public health; public health events-sanitary awakening, germ theory of disease, rise of public health in various countries, changing concepts of health- biomedical concept, ecological concept, psycho-social concept and holistic concept.

1b. Dimensions of Health

Physical dimension, mental dimension, Social dimension etc; Common health problems in India - Communicable diseases, Non communicable diseases, MCH problems, Nutritional problems, Environmental sanitation, Glance over National Health profile.

Unit II

2a Evolution of health care delivery systems

History of health care delivery services; Genesis of primary health care; National health policy; MDGs.

2b Levels of health care

Primary health care, secondary health care, tertiary health care.

Primary health care-principles of primary health care, elements of primary health care.

Unit III

3a Primary health care: Delivery of services

Introduction; Structure of health care delivery system; Delivery of primary health care services at village level; Village health guide, ASHA, ICDS: Subcentre: Primary health centre.

3b Secondary and tertiary health care: Delivery of services

Community Health centre; First referral unit; District hospital.

Unit IV

4a Primary health care - Current status in India

Status of health care infrastructure; Health team concept; Health insurance; Social security and social assistance in health; AYUSH.

4b National Health Programmes

Introduction; National Vector Borne Disease Control Programme; National Leprosy Eradication Programme; Revised National Tuberculosis Control

Programme; National AIDS Control Programme; Universal Immunization Programme; National Rural Heath Mission.

Unit V

5a National Health Programmes

Reproductive and Child Health Programme; Integrated Management of Neonatal and Childhood Illnesses; National Nutritional Anemia Prophylaxis Programme; National Programme for Control of Blindness; National Cancer Control Programme; National Mental Health Programme.

5b First aid

Basic terminologies; general guidelines; first aid in specific situations; Wound, bleeding, fracture, choking, burns, epistaxis, strains and sprain, animal bites (classification, causes and first aid), Cardio-pulmonary resuscitation

Recommended Books Recent Editions.

1. Park K. Park's Textbook of Preventive and Social Medicine. 23rd ed. Jabalpur: Banarsidas Bhanot Publishers, 2015. p.135-141
2. Suryakantha. Textbook of Community Medicine with recent advances. 4th edition
3. Bhalwar R editor. Textbook of Public Health and Community Medicine. 2nd Pune, Department of Community medicine AFMC; 2012
4. Essentials of Community Medicine for Allied Health Sciences, JSS University Publications, 2015

II Semester

Allied -2- Psychology

Objective

After studying this applied paper, at the end of the semester students shall be able to demonstrate and develop the skills to understand patients better in the respective field.

Unit -I

Introduction to Psychology; Meaning and Definitions psychology. Evolution of modern psychology. Scope of Psychology. Branches of psychology. Concept of normality and abnormality.

Unit -II

Identifying psychological disorders. Anxiety disorders (panic, phobia, OCD, PTSD signs symptoms and management).

Unit -III

Stress, Hans Selye Model of stress. Lazarus and Folkman model of stress. Sources of stress. Stress, disease and health. Changing health- impairing behavior.

Unit-IV

Learning; Meaning, definition, Theories of learning .Pavlov's classical conditioning .Skinner's operant conditioning.

Unit-V

Therapeutic Techniques. Counselling-meaning and definition.
Psychotherapy- meaning and definition. Relaxation-types. (Brief introduction to psychoanalytical, behavioral and cbt techniques)

Recommended Books Recent Editions.

1. C.P. Khokhar (2003) Text book of Stress Coping and Management Shalab Publishing House.
2. S.M.Kosslyn and R.S.Rosenberg (2006) Psychology in Context. Pearson Education Inc.
3. C.R. Carson, J.N. Bitcher, S.Mineka and J.M. Hooley (2007), Abnormal Psychology13th, Pearson Education, Inc.
4. D.A. Barlow and V.M. Durand (2004) Abnormal Psychology Wadsworth, Thompson Learning, 3rd edition USA.
5. R.J . Gerrig & P.G. Zimbardo (2006) Psychology and life, Pearson Education, Inc.
6. Pestonjee, D.M. (1999). Stress & Coping, The Indian Experience 2nd edn. New Delhi, Sage India Publications.

B.Sc. Renal Dialysis Technology

III Semester

Core 7- Applied pathology related to Renal Dialysis Technology

UNIT I

* Congenital and cystic diseases of kidney
* Introduction and clinical manifestations of glomerular diseases
* Pathogenesis of glomerular diseases -brief

UNIT II

* Nephritic syndrome - Acute post infectious glomerulonephritis, Rapidly progressive glomerulonephritis
* Nephrotic syndrome - Membranous glomerulonephritis, Minimal change disease, Focal segmental glomerulosclerosis, Membranoproliferative glomerulonephritis

UNIT III

* IgA nephropathy and chronic glomerulonephritis
* Glomerular lesions in systemic diseases - diabetes, amyloidosis, systemic lupus erythematosus
* Vascular diseases - benign hypertension, malignant hypertension, renal artery stenosis, thrombotic microangiopathy

UNIT IV

* Tubulo-interstitial diseases:
    a. Acute tubular injury
    b. Pyelonephritis - acute and chronic
    c. Tubulointerstitial nephritis due to drugs and toxins, others mention briefly
* Obstructive uropathy

UNIT V

* Urolithiasis and lower urinary tract infections
* Pathology of peritoneum, peritonitis, bacterial, tubular &sclerosing peritonitis, dialysis induced changes

Practicals: (2nd B.Sc. RDT)

1. Urine examination: physical, chemical, microscopy
2. Blood grouping & Rh typing
3. Hemoglobinestimation, packed cell volume (PCV), erythrocyte sedimentation rate(ESR)
4. Histopathology: fixatives and preservation of tissues, processing, hematoxylin and eosin staining, special stains - PAS, MTS and Jones methanaminesilver, direct immunofluorescence staining

5. Charts:

1 Nephritic syndrome
2 Nephrotic syndrome
3 Pyelonephritis
4 Lower urinary tract infection
5 Acute renal failure
6 Chronic renal failure
7 Diabetic nephropathy
8 Peritoneal fluid analysis
9 Neutrophilia
10 Bleeding disorders
11 Clotting disorders

6. Specimens:

1 Small contracted kidney
2 Cystic diseases
3 Pyelonephritis
4 Hydronephrosis

Final examination (practicals)

1. Hemoglobin - 10 marks
2. Blood group - 10 marks
3. Charts + Specimens - 10 marks (5 marks each)
4. Urinalysis - 10 marks

Reference Books (latest edition)

1 Basic Pathology Robbins Saunders an imprint of Elsevier Inc., Philadelphia, USA
2 Text book of Pathology Harsh Mohan Jaypee Brothers, New Delhi
3 Practical Pathology P. Chakraborty, Gargi Chakraborty New Central Book Agency, Kolkata
4 Text Book of Haematology Dr. Tejinder Singh Arya Publications, Sirmour (H.P)
5 Text Book of Medical Laboratory Technology Praful Godkar, Bhalani Publication House, Mumbai
6 Text Book of Medical Laboratory Technology RamanikSood
7 Practical Haematology Sir John Dacie Churchill Livingstone, London.
8 Todd & Sanford, Clinical Diagnosis & Management by Laboratory Methods John Bernard Henry All India Travellar Booksellar
9 Histopathology Techniques. Culling
10 Histopathology Techniques Bancroft
11 Diagnostic Cytopathology Koss
12 Diagnostic Cytopathology Winifred grey
13 Hand-Book of Medical Laboratory Technology CMC Vellore
14 Basic Haematological Techniques Manipal Manual

III Semester
Core 8- Applied Microbiology Related to Renal Dialysis Technology

Unit I

Sterilization and disinfection **12 hours**

- Sterilization and disinfection - classification, principle, methods
- Central sterile supply department

Unit II

Importance of sterilization and disinfection **12 hours**

- Disinfection of instruments used in patient care
- Disinfection of patient care unit
- Infection control measures for ICUs

Unit III

Health care associated infections **12 hours**

- Surgical site infections
- Ventilator associated pneumonia
- Catheter associated blood stream infections
- Antibiotic associated diarrhea

Unit IV

Urinary tract infections **12 hours**

- Anatomy
- Types of infections
- Etiology
- Pathogenesis
- Laboratory diagnosis - Specimen collection, processing, interpretation

Unit V

Blood borne viral infections **12 hours**

Morphology, pathogenesis, clinical features, laboratory diagnosis and prophylaxis of following viral infections

Hepatitis B, D and C virus

Human immunodeficiency virus

Practicals (20 hours)

1. Sterilization and disinfection practices in tertiary care hospital
2. Quality control of sterilization and Interpretation of results of sterility testing
3. Collection of specimen from outpatient units, inpatient units, minor operation theatre and major operation theatre for sterility testing.
4. Preparation of materials for autoclaving - packing of materials, loading, holding time and unloading
5. Disinfection of wards, operation theatres, dialysis units and laboratory and air sampling methods
6. Sterility testing and interpretation of hemodialysis water/distilled water/deionized water

Practical examination pattern

1. Sterilization practices- principle, packing, operation. 10 marks
2. Quality control of sterilization methods/disinfectants. 10 marks
3. Methods of collection & processing of specimens from various wards/OT's/ICU's for sterility testing. 05 marks
4. Disinfection procedures for various wards/OT's/ICU's 05 marks
5. Sterility testing of hemodialysis water/distilled water/ deionized water 10 marks

Recommended Books

1. Textbook of Microbiology by Ananthnarayan and paniker
2. Textbook of hospital infection control by Purvamathur
3. Textbook of Microbiology by Baveja
4. Hospital Infection control manual by Mayhall
5. Guidelines for maintenance hemodialysis in India

III Semester
Core -9- Introduction to RDT

Unit I- **12 hrs**

Epidemiology of kidney disease/ magnitude of the problem in community/ Demographics of ESRD population/ global epidemiology of RRT options

UniII- **12hrs**

Applied renal anatomy and physiology, applied anatomy of neck, upper limb& lower limb vessels.

Unit III **12 hrs**

Clinical presentation of renal disease & history taking.

Unit IV **12 hrs**

Investigations in Nephrology- Urine examination, hemogram, serology, biochemical tests, radioimaging in nephrology, renal biopsy (indications, prerequisites, complications), Investigations required before starting of dialysis.

Unit V **12 hrs**

Screening for chronic kidney disease and preventive nephrology.

Practicals: 40 marks

Case discussion - Nephrotic syndrome, nephritic syndrome, Acute renal failure, chronic renal failure.

University practical examinations:

1. History taking -20 marks
2. General physical examination -20 marks (demonstration of pulse, BP, temperature, pallor, icterus, edema)

Recommended Books Recent edition

1. Dialysis therapy- Nissenson & Fine
2. Handbook of dialysis- Daugirdas ,Blake & Todd
3. Principles and practice of dialysis- Heinrich
4. Primer to kidney disease
5. CKD, Dialysis and transplant- A companion to Brenner & Rectors- The Kidney
6. Comprehensive Clinical nephrology -John Feehaly
7. Handbook of nutrition and kidney- Lippincott Williams & Wilkins

III Semester
Skill Enhancement-1
Computer Application

1 Overview

Fu[redacted]lities of a computer
D[redacted]
A[redacted]es
D[redacted]ages

2 Applications

B[redacted]
In[redacted]
E[redacted]
M[redacted]g
H[redacted]re
E[redacted]ng Design
M[redacted]
C[redacted]cation
G[redacted]nt

3 Generations

Fi[redacted]ration
S[redacted]eneration
Th[redacted]eration
Fo[redacted]neration
Fifth Generation

4 Types of Computer

P[redacted]nal Computer)
W[redacted]on
M[redacted]puter
M[redacted]e
S[redacted]puter

5 Components

In[redacted]
C[redacted]tral Processing Unit)
O[redacted]it

6 CPU - Central Processing Unit

M[redacted]r Storage Unit
C[redacted]nit
A[redacted]hmetic Logic Unit)
A[redacted]t Section
L[redacted]tion

7 Input Devices

- K[redacted]
- M[redacted]
- A[redacted]es
- J[redacted]
- L[redacted]
- T[redacted]
- S[redacted]
- D[redacted]
- M[redacted]ne
- M[redacted]Ink Card Reader(MICR)
- O[redacted]Character Reader(OCR)
- B[redacted]Readers
- O[redacted]ark Reader(OMR)

8 Output Devices

- M[redacted]
- C[redacted]Ray Tube (CRT) Monitor
- F[redacted] Display Monitor
- P[redacted]
- I[redacted]nters
- C[redacted]Printers
- D[redacted]x Printer
- D[redacted]eel
- L[redacted]ers
- D[redacted]ter
- C[redacted]ter
- N[redacted]ct Printers
- L[redacted]ters
- I[redacted]ters

9 Memory

- C[redacted]mory
- P[redacted]lemory (Main Memory)
- S[redacted] Memory

10 Random Access Memory

- S[redacted]M (SRAM)
- D[redacted]RAM (DRAM)

11 Read Only Memory

- M[redacted](Masked ROM)
- P[redacted](Programmable Read only Memory)
- E[redacted](Erasable and Programmable Read Only Memory)
- E[redacted](Electrically Erasable and Programmable Read Only Memory)
- A[redacted]es of ROM

12 Mother board

- F[redacted]f Mother board
- P[redacted]anufacturers
- D[redacted]n of Mother board

13Memory Units

14Ports

- S[redacted]
- P[redacted]ort
- P[redacted]
- V[redacted]
- P[redacted]nnector
- F[redacted]ort
- M[redacted]ort
- E[redacted]ort
- G[redacted]
- D[redacted]deo Interface, DVI port
- S[redacted]

15Hardware

- R[redacted]ip between Hardware and Software

16Software

- Sy[redacted]ftware
- A[redacted]n Software

17Number System

- D[redacted]Number System
- B[redacted]mber System
- O[redacted]mber
- H[redacted]nal Number System

18Data and Information

- D[redacted]essing Cycle

19Networking

- C[redacted]stics of Computer Network
- C[redacted]
- R[redacted]
- N[redacted]Card
- In[redacted]etwork Cards
- E[redacted]etwork Cards

20Operating System

- O[redacted]s of Operating System
- C[redacted]stics of Operating System

21Internet and Intranet

S[redacted]s in Internet and Intranet

D[redacted]s in Internet and Intranet

22Computer Viruses

T[redacted]omputer virus

U[redacted]tivirus software

Practicals:

Suggested Hands on Exercises

Operating System:

1. Starting the Windows Starting a program, running a program Running multiple programs and switching between windows Customizing the Task bar Recycle bin, restoring the deleted files
2. Creating and removing folders Making the taskbar wider, arranging icons on the Desktop Displaying and hiding the taskbar clock Controlling the size of start menu options Creating Shortcuts.
3. Customizing desktop view Adding a program to the start menu Adding a program shortcut in the Desktop Customizing the mouse settings
4. Expanding and collapsing a folder Recognizing File types using icons Running a program from explorer Renaming a file or folder Sorting a folder
5. Displaying the properties for a file or folder Using cut and paste operations to move a file Using copy and paste operations to copy a file Moving and copying files with mouse Searching a file or folder by using search command
6. Finding a file or folder, by name Defragmenting the disk, using disk defragmenter Controlling the speaker volume Recording and saving an audio file Connecting a printer to the PC

Word Processing:

1. Preparing a Govt. Order / Official Letter / Business Letter / Circular Letter Covering formatting commands - font size and styles - bold, underline, upper case, lower case, superscript, subscript, indenting paragraphs, spacing between lines and characters, tab settings etc.
2. Preparing a news letter: To prepare a newsletter with borders, two columns text, header and footer and inserting a graphic image and page layout.
3. Creating and using styles and templates To create a style and apply that style in a document To create a template for the styles created and assemble the styles for the template.
4. Creating and editing the table to create a table using table menu To create a monthly calendar using cell editing operations like inserting, joining, deleting, splitting and merging cells To create a simple statement for math calculations viz. Totaling the column.
5. Creating numbered lists and bulleted lists To create numbered list with different formats (with numbers, alphabets, roman letters) To create a bulleted list with different bullet characters.
6. Printing envelopes and mail merge. To print envelopes with from addresses and to

addresses To use mail merge facility for sending a circular letter to many persons To use mail merge facility for printing mailing labels.

7. Using the special features of word To find and replace the text To spell check and correct. To generate table of contents for a document To prepare index for a document.

8 Create an advertisement Prepare a resume. Prepare a Corporate Circular letter inviting the shareholders to attend the Annual Meeting.

Work Sheet:

1. Using formulas and functions: To prepare a Worksheet showing the monthly sales of a company in different branch offices (Showing Total Sales, Average Sales). Prepare a Statement for preparing Result of 10 students in 5 subjects (using formula to get Distinction, I Class, II Class and Fail under Result column against each student).
2. Operating on the sheets: Finding, deleting and adding records, formatting columns, row height, merging, splitting columns etc. Connecting the Worksheets and enter the data.
3. Creating Different type of Charts: To create a chart for comparing the monthly sales of a company in different branch offices.
4. Using the data consolidate command: To use the data consolidate command to calculate the total amount budgeted for all departments (wages, travel and entertainment, office supplies and so on) or to calculate the average amount budgeted for - say, department office expenses.
5. Sorting Data, Filtering Data and creation of Pivot tables.

Presentation::

1. Creating a new Presentation based on a template - using Auto content wizard, design template and Plain blank presentation.
2. Creating a Presentation with Slide Transition - Automatic and Manual with different effects.
3. Creating a Presentation applying Custom Animation effects - Applying multiple effects to the same object and changing to a different effect and removing effects.
4. Inserting Objects Creating and Printing handouts.
5. Publishing Presentation Exporting Presentations.

Internet:

1. Understanding different types of Browser Programs and Internet file types. (.html, pdf etc.)
2. Searching for a web site / application / text documents viewing and downloading.
3. Create an E-mail account, Retrieving messages from inbox, replying, attaching files filtering and forwarding
4. Operating on a Tablet / Smart Phone - browsing and practicing on some important applications (UcBrowser, Skype) - operating on internet - creating and sending messages / mails using the applications like WhatsApp and We Chat etc.- downloading text and media files and video conferencing using Skype.

III **Semester**

Allied-3- Environment Science and Health

Learning Objectives

1. To know various Environmental factors Health
2. To learn the modes of disease transmission and various control measures

Unit I

1. a. Introduction to Environment and Health and Water

Ecological definition of Health, Population perspective of relations, Health & environment perspective of relations, Environmental factors, Environmental Sanitation, Need to study environmental health, Predominant reasons for ill-health in India

1.b. Water

Safe and wholesome water, requirements, uses, sources; sanitary well; Hand pump; water Pollution; Purification of water; large scale & small scale; slow sand filters; rapid sand filters; Purification of Water on a small scale; Household purification, Disinfection of wells; water quality criteria & standards.

Unit II

Air, Light, Noise, Radiation

2 a. Air

Composition, Indices of Thermal Comfort, Air pollutants, Air Pollution - Health Effects, Environmental Effects, Green-house effect, Social & Economic Effects, Monitoring, Prevention & Control.

2. b. Light, Noise, Radiation

Natural and Artificial light; Properties, sources, noise pollution and its control, types, sources, biological effects and protection.

Unit III

Waste and Excreta Disposal

3 a. Disposal of Wastes

Solid Wastes, Health hazards, Methods of Disposal; Dumping, Controlled tipping/ sanitary landfill, Incineration, Composting.

3 b. Excreta Disposal

Public health importance, Health hazards, sanitation barrier, Methods of excreta disposal, unsewered areas and sewered areas, sewage, Modern Sewage Treatment.

Unit IV

Housing and Health and Medical Entomology

4 a. Housing and Health

Human Settlement, Social goals of housing, Criteria for Healthful Housing by Expert Committee of the WHO, Housing standards- Environmental Hygiene Committee, Rural Housing Standards, Overcrowding, Indicators of Housing.

4 b. Medical Entomology

Classification of Arthropods, Routes of Disease transmission, Control measures.

Unit V
Insecticides and Rodents

5 a. Insecticides
Types, mechanism of action, dosage and application for control of insects.

5 b. Rodents
Rodents and its importance in disease, along with anti-rodent measures.

Reference Books (latest edition)

1. Park K. Park's Textbook of Preventive and Social Medicine. 23rd ed. Jabalpur: Banarsidas Bhanot Publishers; 2015. p.135-141
2. Suryakantha. Textbook of Community Medicine with recent advances. 4th edition.
3. Bhalwar R. Textbook of Public Health and Community Medicine. 2nd edition. Pune: Department of Community Medicine AFMC, 2012
4. Essentials of Community Medicine for Allied Health Sciences, JSS University Publications, 2015.

IV Semester

Core-10- Patient Care and Basic Nursing

Objectives:

To learn about patient care and basics of nursing activities, communication and documentation, infection control, medication administration and wound care.

Unit I -

Introduction, Communication and Documentation - 12 hours

1. Introduction to Patient Care:

a) Principles of patient care
b) Types of patients (gender, age, diseases, severity of illness, triage)

2. Communication & Documentation:

a) Communication with doctors, colleagues and other staffs.
b) Non-verbal communication, Inter-personnel relationships.
c) patient contact techniques, communication with patients and their relatives

3. Documentation:

a. Importance of documentation,
b. initial and follow up notes;
c. documentation of therapy, procedures and communication

Unit II -

Universal Precautions and Infection Control - 10 hours

4. Universal Precautions and Infection Control:

a) Hand washing and hygiene.
b) Injuries and Personal protection, Insulation and safety procedures.
c) Aseptic techniques, sterilization and disinfection.
d) Disinfection and Sterilization of devices and equipment
e) Central sterilization and supply department
f) Biomedical Medical waste management

Unit III -

Medication Administration and Transport of patient - 14 hours

5. Medication Administration:

a) Oral / Parenteral route
b) Parenteral medication administration: Intra venous, intra muscular, sub-cutaneous, intra dermal routes, Intra venous Infusion
c) Aerosol medication administration, Oxygen therapy
d) Intravenous fluids
e) Blood and blood component transfusion

6. Position and Transport of patient:

a) Patient position, prone, lateral, dorsal, dorsal recumbent, Fowler's positions, comfort measures, bed making, rest and sleep.

b) Lifting and transporting patients: lifting patients up in the bed, transferring from bed to wheel chair, transferring from bed to stretcher.
c) Transport of ill patients (inotropes, intubated / ventilated patients)

Unit IV -

Bedside care and monitoring - 14 hours

7. Bedside care:

a) Methods of giving nourishment: feeding, tube feeding, drips, transfusion.
b) Recording of pulse, blood pressure, respiration, saturation and temperature.
c) Bed side management: giving and taking bed pan, urine container.
d) Observation of stools, urine, sputum, drains
e) Use and care of catheters and rubber goods.
f) Care of immobile/bed ridden patients, bed sore and aspiration prevention

8. Monitoring of Patient:

a) Pulse, ECG (Cardiac Monitor), Oxygen Saturation, Blood Pressure, Respiration
b) Multi parameter monitors, Capnography and End Tidal CO2 (ETCO2)
c) Hydration, intake and output monitoring
d) Monitoring ventilator parameters: Respiratory Rate, Volumes, Pressures, Compliance, Resistance

Unit IV -

Wound care and first aid - 10 hours

9. Dressing and wound care:

a) Bandaging: basic turns, bandaging extremities, triangular bandages and their application.
b) Surgical dressing: observation of dressing procedures.
c) Suture materials and suturing techniques
d) Splinting
e) Basic care of patient with burns

10. First Aid and Basic Life Support (BLS)

Practical:

1. Demonstration of Patient care Procedures:

a) Positioning of patient, transport of the patient, Dressing and Bandaging, Care of inter costal drain tube, Insertion of naso-gastric tube and feeding
b) Phlebotomy and obtaining blood samples, Arterial Blood sampling for ABG
c) Injections: intra muscular, intra venous, sub cutaneous, intra dermal
d) Insertion of intra venous catheter and infusion of medications, blood transfusion
e) Recording of ECG and monitoring of patient
f) Oxygen therapy: oxygen cannula, masks. Aerosol therapy: nebulization, inhalers

g) Suctioning and care of artificial airway
h) Insertion of urinary bladder catheter

2. Uses, principles, advantages and disadvantages of instruments and Devices in patient care
3. First aid and Basic Life Support (BLS)

Practical Exam Pattern:

Spotters, Drugs, Instruments and devices - identification and usage, demonstration of patient care procedures.

Reference Books:

1. Principles and practice of Nursing - Sr Nancy
2. Introduction to Critical Care Nursing - Mary Lou Sole
3. First Aid - Redcross society guidelines
4. Basic Life Support (BLS) - American Heart Association guidelines

IV Semester
Core -11- Basic Concepts of Renal Disease

Unit I: **15 hrs**

Fluid and electrloyte disorders-
Hyponatremia, hypernatremia, hypokalemia& hyperkalemia: Etiology, clinical presentation and management
Disorders of calcium, phosphorous & magnesium ions.
Acid- base disorders : Basics of ABG
Metabolic acidosis & metabolic alkalosis: pathophysiology, etiology , clinical features and management.

Unit II: **10 hrs**

Urinary tract infections: Definition, types of UTI, risk factors, diagnosis, treatment

Unit III: **10 hrs**

Renal stone diseases, inherited and cystic renal diseases
Composition of kidney stones, risk factors for recurrent stones, clinical presentation, prevention of recurrent stones & treatment

Unit IV
10hrs.
Hypertension- normal BP control, definition, evaluation, primary & secondary HTN, complications, antihypertensive drugs

Unit V: **15 hrs**

Nephrotic syndromes- definition, clinical features, causes(MCNS, FSGS, MGN…), Primary & secondary NS, complications, management
Acute glomerulonephritis/RPGN- definition, causes(PSGN,vasculitis, anti GBM, SLE, HSP….), clinical features, management.

PRACTICALS Examinations: 40 marks

1. Priming of dialysis apparatus Or 20 marks
   Demonstration of dialyser reuse
2. Charts /spotters : nephrotic syndrome, nephritic, AKI, CKD, BP apparatus, stehoscope, pulse oximeter, cardiac monitor, thermometer.20 marks

Recommended Books Recent edition

1. Dialysis therapy- Nissenson & Fine
2. Handbook of dialysis- Daugirdas ,Blake & Todd
3. Principles and practice of dialysis- Heinrich
4. Primer to kidney disease
5. CKD, Dialysis and transplant- A companion to Brenner & Rectors- The Kidney
6. Comprehensive Clinical nephrology -John Feehaly
7. Handbook of nutrition and kidney- Lippincott Williams & Wilkins

IV Semester

Core-12- Acute and chronic kidney diseases and nutrition

Unit I: **15 hrs**

AKI- definition, classification, etiology, strategies of reducing risk for AKI, complications, Non dialysis management of AKI dialysis therapy for AKI , Dialysis in ICU setting

Unit II: **15 hrs**

Chronic kidney diseases- definition, staging , GFR calculation, causes for CKD, steps to retard progression of CKD, complications of CKD(cardiovascular, hematologic, mineral bone disorders, dermatologic, neuropsychiatric…), evaluation of CKD, management and RRT options

Unit III: **10 hrs**

Nutritional requirements of healthy adults, RDA, effects of renal failure on nutrient metabolism, lipid abnormalities, overview of calcium phosphorous metabolism, trace elements and vitamins

Unit IV: **10 hrs**

Sources and types of proteins, fats, carbohydrates and planning balanced diet

Unit V: **10 hrs**

Diet in nephrotic syndrome, AKI, predialysis CKD, Nutrition in dialysis patients, foods to be avoided in CKD, fliuid restriction.

Practicals

1. Priming of dialysis apparatus Or 20 marks
   Demonstration of dialyser reuse
2. Spotters- HD catheters, dialysers, AV needle, tubings, dialysis machine, PD set, perm catheters, dialysis solutions, chemicals used in hemodialysis. 20 marks

Recommended Books Recent edition

1. Dialysis therapy- Nissenson & Fine
2. Handbook of dialysis- Daugirdas ,Blake & Todd
3. Principles and practice of dialysis- Heinrich
4. Primer to kidney disease
5. CKD, Dialysis and transplant- A companion to Brenner & Rectors- The Kidney
6. Comprehensive Clinical nephrology -John Feehaly
7. Handbook of nutrition and kidney- Lippincott Williams & Wilkins

IV Semester
Skill Enhancement-2
Biostatistics and Research Methodology

Learning Objectives

1. To have a basic knowledge of biostatistics and its applications in medicine
2. To know various types of data presentation and data summarization in Medical field
3. To have overview of data analysis and sampling techniques
4. To understand various study designs in Medical field
5. To know applications of various study designs in Medical Research

Unit I-

Introduction and Presentation of data

Meaning, Branches of Statistics, Uses of statistics in medicine, Basic concepts, Scales of measurement, Collection of data, Presentation of data; Tabulation, Frequency Distribution, Diagrammatic and Graphical Representation of Data.

Unit II-

Measures of central tendency and Measures of Variation

Arithmetic Mean (Mean), Median, Mode, Partition values, Range, Interquartile range , Mean Deviation, Standard Deviation, Coefficient of Variation.

Unit III-

Probability and standard distributions

Definition of some terms commonly encountered in probability, Probability distributions; Binomial distribution, Poisson distribution, Normal distribution, Divergence from normality; Skewness and kurtosis

U**nit IV-**

Census and Sampling Methods

Census and sample survey, Common terms used in sampling theory, Non-probability (Non random) Sampling Methods; Convenience sampling, Consecutive Sampling, Quota sampling, Snowball sampling, Judgmental sampling or Purposive sampling, Volunteer sampling, Probability (Random) Sampling methods; Simple random sampling, Systematic Sampling, Stratified Sampling, Cluster sampling, Multi-stage sampling, Sampling error, Non-sampling error.

Unit V-

Inferential statistics

Parameter and statistic, Estimation of parameters; Point estimation, Interval Estimation, Testing of hypothesis; Null and alternative hypotheses, Type-I and Type-II Errors.

Research Methodology

Unit I -

Introduction to research methodology

Types of research; Descriptive vs. Analytical, Applied vs. Fundamental, Quantitative vs. Qualitative, Conceptual vs. Empirical.

Unit II -
Study Designs-Observational Studies
Epidemiological study designs; Observational studies, Descriptive studies; Case reports, Case series, Analytical studies; Case control studies, Cohort studies, Cross sectional

Unit III-
Experimental Studies
Experimental studies (Interventional studies); Randomized control Trials (Clinical trials), Field trials, Community trials, Nm-Randomized Trials

Unit IV-
Uses of Epidemiology

Unit V-
Application of study Designs in Medical Research

References

1. K.R.Sundaram, S.N.Dwivedi and V Sreenivas (2010), Medical statistics, Principles and Methods, BI Publications Pvt Ltd, New Delhi
2. NSN Rao and NS Murthy (2008), Applied Statistics in Health Sciences, Second Edition, Jaypee Brothers Medical Publishers (P) Ltd.
3. J.V.Dixit and L.B.Suryavanshi (1996), Principles and Practice of Biostatistics, First Edition, M/S Banarsidas Bhanot Publishers.
4. GetuDegu and Fasil Tessema (2005), Biostatistics, Ethiopia Public Health Training Initiative.
5. Essentials of Community Medicine for Allied Health Sciences, JSS University Publications, 20.
6. Park K. Park's Textbook of Preventive and Social Medicine. 23rd ed. Jabalpur: Banarsidas Bhanot Publishers, 2015. p.135-141.
7. Suryakantha. Textbook of Community medicine with recent advances. 4th edition.
8. Bhalwar R. Textbook of Public Health and Community Medicine. 2nd Edition. Pune, Department of Community Medicine AFMC, 2012.
9. Leon Gordis. Epidemiology Fourth Edition - Elsevier Saunders Publication.

IV Semester
Allied-4
Constitution of India

Unit - I:
Meaning of the term 'Constitution'. Making of the Indian Constitution 1946-1950.

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 - IV:
Directive principles of States, policies the need to balance fundamental rights with directive principles.

Unit - V:
Special rights created in the Constitution for dalits, backwards, women and children and the religious and linguistic minorities.

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.

Recommended Books:

1. J.C. Johari. The Constitution of India. A Politico-Legal Study. Sterling Publication, Pvt. Ltd. New Delhi.
2. J.N . Pandey. Constitution Law of India, Allahbad, Central Law Agency, 1998.
3. Granville Austin. The Indian Constitution. Corner Stone of a Nation-Oxford, New Delhi, 2000.

V Semester

Core-13- Hemodialysis part 1

Unit I: **15hrs**

Treatment options of RRT, decision to start dialysis and withdrawal of dialysis, predialysis patient education, choosing the RRT option , home hemodialysis

Unit II: **10hrs**

Basics of hemodialysis and urea kinetic modelling. Mechanisms of solute transport, dialyser clearance, kt/v and urea reduction ratio, adequacy in hemodialysis

Unit III **15hrs**

Vascular access for hemodialysis- venous catheters (type, design, location of insertion and methods used, complications of CVC, maintenance of dialysis catheters)

Arteriovenous access AVF/AVG (presurgical evaluation, advantages, complications and their management, cannulation techniques, measuring access flow, general measures to reduce infection)

Unit IV: **10hrs**

HD apparatus- blood circuit, dialysate circuit, monitors and alarms, pumps. Dialysers -types /structure/membrane/clearance/ high flux &low flux

Unit V: **10 hrs**

Product water and hemodialysis solution preparation- Contaminants in raw water, water and dailysis solution quality standards , dialysis solution composition, Preparation of RO water and distribution.

Practicals Examination

1. Demonstrate priming of dialysis apparatus-10 M
2. Demonstrate reuse of dialysers- 10 M
3. Spotters- HD catheters, dialysers, AV needle, tubings, dialysis machine, PD set, perm catheters, dialysis solutions, chemicals used in hemodialysis. 20 marks

Recommended Books Recent edition

1. Dialysis therapy- Nissenson & Fine
2. Handbook of dialysis- Daugirdas ,Blake & Todd
3. Principles and practice of dialysis- Heinrich
4. Primer to kidney disease
5. CKD, Dialysis and transplant- A companion to Brenner & Rectors- The Kidney
6. Comprehensive Clinical nephrology -John Feehaly
7. Handbook of nutrition and kidney- Lippincott Williams & Wilkins

V Semester

Core-14- Hemodialysis part 2

Unit I: **10 hrs**

Disinfection of HD machines and maintenance of RO plant- chemicals used and technique of disinfection, advantages

Unit II:

10hrs

Dialyser reuse- definition, methods, advantages and disadvantages of reuse

Unit III: **15hrs**

Hemodialysis for acute renal failure- indications, vascular access, HD prescription, common problems encountered, dialysis for critically ill patients.

Unit IV: **15hrs**

Chronic hemodialysis- indications, residual renal function, clearance targets and adequacy, chronic HD prescription, dry weight, complications, access recirculation, dialysis disequillibrium.

Unit V: **10hrs**

Anticoagulation- factors influencing clotting of extracorporeal circuit, signs of circuit clotting, drugs used for anticoagulation, various protocols, monitoring of anticoagulation, regional anticoagulation

Practicals Examination:

1. Demonstrate priming of dialysis apparatus-10 marks
2. Demonstrate reuse of dialysers- 10 marks
3. Spotters- HD catheters, dialysers, AV needle, tubings, dialysis machine, PD set, perm catheters, dialysis solutions, chemicals used in hemodialysis. 20 marks

Recommended Books Recent edition

1. Dialysis therapy- Nissenson & Fine
2. Handbook of dialysis- Daugirdas, Blake & Todd
3. Principles and practice of dialysis- Heinrich
4. Primer to kidney disease
5. CKD, Dialysis and transplant- A companion to Brenner & Rectors- The Kidney
6. Comprehensive Clinical nephrology -John Feehaly
7. Handbook of nutrition and kidney- Lippincott Williams & Wilkins

V Semester

Core-15- Hemodialysis part 3

Unit I: **10hrs**

Complications of HD- Hypotension(causes and management) , Headaches, Chest pain and back pain, Leg cramps, Dialyser reactions , itching, nausea, Dialysis Disequillibrium(etiology and management) , seizures, cardiac arrythmias, air embolism.

Unit II: **10hrs**

Renal anemia and its management- etiology, symptoms, treatment, indications for ESA and target Hb levels, dosing of erythropoietin and its side effects.

Unit III: **10hrs**

Hemofilteration/ Hemodiafilteration/ SCUF

Unit IV: **15 hrs**

SLED/SLED-f: advantages of SLED, protocols, anticoagulation.

CRRT- about CRRT machine and tubings, schematic desription of circuit, advantages and disadvantages, indications for CRRT, anticoagulation, replacement fluid(dose, pre Vs post filter)

Unit V: **15hrs**

Plasmapheresis- rationale, methods of plasma separation, indications, common diseases for which used, protocols, complications, anticoagulation for PP.

Practicals Examination: 10 Marks x 4 Exercises

1. Setting up dialysis machine for dialysis
2. AVF/ AVG cannulation
3. Packing and sterilisation of dialysis trays
4. Preparation of concentrates
5. First assistant in central line insertions, PD catheter insertion and renal biopsy
6. Performance of PD exchanges
7. Setting up of APD machine
8. Performing isolated ultrafilteration
9. Priming of dialysis apparatus
10. Reuse of dialyser

Recommended Books Recent edition

1. Dialysis therapy- Nissenson & Fine
2. Handbook of dialysis- Daugirdas ,Blake & Todd
3. Principles and practice of dialysis- Heinrich
4. Primer to kidney disease
5. CKD, Dialysis and transplant- A companion to Brenner & Rectors- The Kidney
6. Comprehensive Clinical nephrology -John Feehaly
7. Handbook of nutrition and kidney- Lippincott Williams & Wilkins

V Semester
Elective-1 Hands on training in Continuous ambulatory peritoneal dialysis

1. Setting up Acute PD- catheter insertion, connections , performing and monitoring of PD
2. Setting up CAPD, performing and monitoring of CAPD, seeing CAPD catheter insertion.
3. Technical aspects of APD machine and performing and monitoring of APD
4. Introduction to PD solutions
5. Performing PET test

V Semester

Allied-5-Medical Ethics

General considerations of Medical Ethics

1. Medical Ethics - Introduction
2. Three cor contents in Medical Ethics - Best interest, autonomy unrights
3. Doctors, patient & Profession

Special considerations of Medical Ethics

1. Consent
2. Confidentiality
3. Genetics
4. Reproductive Medicine
5. Mental Health
6. End of life and organ transporentation
7. Research & clinical Trials

Reference Books

Medical Ethics & Law, The Cor Curriculum, Author- Tony Hope Atla
Reference book No:- 16715 Center Library

VI Semester

Core 16 - Peritoneal dialysis

Unit I: 12hrs

Functional anatomy of peritoneum, models of peritoneal transport, physiology of peritoneal transport, PET test, peritoneal clearance and clearance targets.

Unit II: 12hrs

Apparatus for PD, peritoneal Dialysis solutions, PD catheter designs and placement, catheter break in procedures, complications of PD catheters(leaks, outflow failure, catheter infections, hernias)

Unit III: 12hrs

Common APD and CAPD prescriptions, advantages of cyclers, hybrid forms of PD, how to improve peritoneal kt/v, nutrition in CAPD.

Unit IV: 12hrs

Causes of fluid overload in CAPD, ultrafilteration failure, preserving residual renal function, Peritonitis and exit site infections -potential routes of infection,diagnosis, common organisms, drugs used and drug delivery methods.

Unit V: 12hrs

Mechanical complications (hernias, abdominal wall edema,hydrothorax,) metabolic complications (glucotoxicity, lipid abnormalities, electrolyte abnormalities, protein loss)

Practical Examination: 40 marks

1. Case discussion (a patient on peritoneal dialysis) 20 marks
2. Spotters- cycler device, transfer sets, adaptor, minicaps, drain bags, PD solutions, catheters. 20 marks

Text books and reference books: Recent edition

1. Dialysis therapy- Nissenson & Fine
2. Handbook of dialysis- Daugirdas ,Blake & Todd
3. Principles and practice of dialysis- Heinrich
4. Primer to kidney disease
5. CKD, Dialysis and transplant- A companion to Brenner & Rectors- The Kidney
6. Comprehensive Clinical nephrology -John Feehaly
7. Handbook of nutrition and kidney- Lippincott Williams & Wilkins

VI Semester
Core-17-Dialysis in Special Situations

Unit I: **12hrs**
Use of hemoperfusion and dialysis for poisoning cases- common indications for HP/HD, drugs which can be removed (acetaminophen, salicylates, digoxin, barbiturates, toxic alcohols, lithium, anticonvulsants)

Unit II: **12hrs**
Dialysis in children - choice between Peritoneal dialysis and Hemodialysis, problems with vascular access, HD prescription in children ,nutrition and growth related issues.

Unit III: **12hrs**
Dilaysis in pregnancy-causes for AKI in pregnancy, dialysis regimen during pregnancy, indications for dialysis in pregnancy

Unit IV: **12hrs**
Dialysis in HIV/ HBsAg/ HCV positive patients - Guidelines, infection control practices in HD units, dedicated machines, vaccination for dialysis patients.

Unit V: **12hrs**
Dialysis in patients with congestive cardiac failure- special precautions

Practical Examination: (4 Exercises x 10 marks)

1. Starting / Termination of dialysis
2. AV cannulation
3. Initiating dialysis through central lines
4. Packing of dialysis trays
5. Preparation of concentrayes for dialysis purpose
6. Performing PD exchanges manually/cycler
7. CPR demonstration
8. Assisting minor procedures like central line insertions, renal biopsies
9. Performing isolated ultrafilteration
10. Priming and dialyser reuse

Recommended Books Recent edition

1. Dialysis therapy- Nissenson & Fine
2. Handbook of dialysis- Daugirdas, Blake & Todd
3. Principles and practice of dialysis- Heinrich
4. Primer to kidney disease
5. CKD, Dialysis and transplant- A companion to Brenner & Rectors- The Kidney
6. Comprehensive Clinical nephrology -John Feehaly
7. Handbook of nutrition and kidney- Lippincott Williams & Wilkins

VI Semester
Core-18 - Recent Advances in Dialysis Technology

Unit I **12hrs**

MARS dialysis/dialysis in advanced liver disease- indication, technique, anticoagulation.

Unit II **12hrs**

Nocturnal hemodialysis/ short daily dialysis -advantages

Unit III **12hrs**

Newer peritoneal dialysis solutions- advantages and disadvantages

Unit IV **12hrs**

Online dialysis

Unit V **12hrs**

Home Hemodialysis

Practical Examination: (4 x 10 marks)

1. Starting and Termination of dialysis
2. AVF/AVG cannulation
3. Initiating dialysis through central lines
4. Packing of dialysis trays
5. Preparation of concentrayes for dialysis purpose
6. Performing PD exchanges manually/cycler device
7. CPR demonstration
8. Assisting minor procedures like central line insertions, renal biopsies, PD catheter insertion
9. Performing isolated ultrafilteration
10. Priming and dialyser reuse

Recommended Books Recent edition

1. Dialysis Therapy- Nissenson & Fine
2. Handbook of Dialysis- Daugirdas, Blake & Todd
3. Principles and Practice of Dialysis- Heinrich
4. Primer to Kidney Disease
5. CKD, Dialysis and Transplant- A companion to Brenner & Rectors- The Kidney
6. Comprehensive Clinical Nephrology -John Feehaly
7. Handbook of Nutrition and Kidney- Lippincott Williams & Wilkins

VI Semester
Elective-2 Renal Transplantation

1. Options for patient with ESRD, basics in transplant immunology, donor selection, recipient evaluation

2. Science of deceased donor and living donor renal transplant- ischemia times and its impact on kidney function, brief introduction to immunosuppression used in transplant.

3. Problems encountered in transplant recipient- rejection, infection, drug toxicity, dyslipidemias, diabetes, cosmetic changes, impaired graft function.

4. Monitoring of patient on the waiting list for transplant.

5. Watching transplant inside the operation theatre

Books recommended

1 Dialysis therapy- Nissenson & Fine
2 Handbook of dialysis- Daugirdas ,Blake & Todd
3 Principles and practice of dialysis- Heinrich
4 Primer to kidney disease
5 CKD, Dialysis and transplant- A companion to Brenner & Rectors- The Kidney
6 Comprehensive Clinical nephrology -John Feehaly
7 Handbook of nutrition and kidney- Lippincott Williams & Wilkins
8 Handbook of kidney transplantation- Gabriel Danovitch

VI Semester
Allied-6-Hospital Management

1. **Quality Concepts:** Definition of Quality, Dimensions of Quality, Basic concepts of Total Quality Management, Quality Awards. Accreditations for hospitals: Understanding the process of getting started on the road to accreditation, National and International Accreditation bodies, overview of standards- ISO (9000 & 14000 environmental standards), NABH, NABL, JCI, JACHO.

2. **Hospital Information System:** Hospital Information System Management and software applications in registration, billing, investigations, reporting, ward management and bed distribution, medical records management, materials management and inventory control, pharmacy management, dietary services, management, information processing. Security and ethical challenges.

3. **Inventory Control:** Concept, various costs of inventory, Inventory techniques-ABC, SDE / VED Analysis, EOQ models. Storage: Importance and functions of storage. Location and layout of stores. Management of receipts and issue of materials from stores, Warehousing costs, Stock verification.

4. **Equipment Operations management:** Hospital equipment repair and maintenance, types of maintenance, job orders, equipment maintenance log books, AMCS, outsourcing of maintenance services, quality and reliability, concept of failure, equipment history and documents, replacement policy, calibration tests, spare parts stocking techniques and polices

5. **Biomedical Waste Management:** Meaning, Categories of Biomedical Wastes, Colour code practices, Segregation, Treatment of biomedical waste-Incineration and its importance. Standards for waste autoclaving, microwaving. Packaging, Transportation & Disposal of biomedical wastes.