B.Voc (Dialysis Technology)

Year -1 Diploma

I Semester				
S.No.	**Course Code**	**Subject**	**Content Type**	**Credit**
1	BVDT-101	General Human Anatomy & Physiology-I	General	4
2	BVDT-102	General Biochemistry	Skill	4
3	BVDT-103	Introduction to kidney Disease and Renal replacement therapy	General	3
4	BVDT-104	Bio Medical Waste management	skill	4
5	BVDT-105	Fundamental of Computers	General	3
6	BVDT-106	General English and soft skill	General	2
7	BVDTP-101	General Human Anatomy & Physiology-I Lab	Skill	2
8	BVDTP-102	General Biochemistry Lab	Skill	2
9	BVDTP-103	Introduction to kidney Disease and Renal replacement therapy Lab	Skill	2
10	BVDTP-104	Bio Medical Waste management Lab	Skill	2
11	BVDTP-105	Fundamental of Computers Lab	Skill	2
			Total	**30**

II Semester				
S.No.	**Course Code**	**Subject**	**Content Type**	**Credit**
1	BVDT-201	General Human Anatomy & Physiology-II	General	4
2	BVDT-202	General Pathology & Microbiology	Skill	4
3	BVDT-203	Principle and types of Dialysis	General	3
4	BVDT-204	Introduction of patient safety	skill	3
5	BVDT-205	Medical terminology and record keeping	General	3
6	BVDT-206	Basics of Health Market & Economy	General	3
7	BVDTP-201	General Human Anatomy & Physiology-II Lab	Skill	2
8	BVDTP-202	General Pathology & Microbiology Lab	Skill	2
9	BVDTP-203	Principle and types of Dialysis Lab	Skill	2
10	BVDTP-204	Introduction of patient safety Lab	Skill	2
12	BVDTP-205	Medical terminology and record keeping Lab	Skill	2
		Internship in Hospital		
			Total	**30**

B.Voc (Dialysis Technology)

Year -2 Advance Diploma

III Semester				
S.No.	**Course Code**	**Subject**	**Content Type**	**Credit**
1	BVDT-301	Applied Human Anatomy & Physiology related to dialysis technology	General	4
2	BVDT-302	Applied pathology and microbiology related to dialysis department	Skill	4
3	BVDT-303	Equipment in dialysis	General	2
4	BVDT-304	Applied Dialysis Technology- I	skill	4
5	BVDT-305	Advance Computing skills	General	2
6	BVDT-306	Human Values & Professional Ethics	General	4
7	BVDTP-301	Applied Human Anatomy & Physiology related to dialysis technology Lab	Skill	2
8	BVDTP-302	Applied pathology and microbiology related to dialysis department Lab	Skill	2
9	BVDTP-303	Equipment in dialysis Lab	Skill	2
10	BVDTP-304	Applied Dialysis Technology- I Lab	Skill	2
11	BVDTP-305	Advance Computing skills Lab	Skill	2
			Total	**30**

IV Semester				
S.No.	**Course Code**	**Subject**	**Content Type**	**Credit**
1	BVDT-401	Patient care in dialysis department	General	4
2	BVDT-402	Pharmacology	Skill	3
3	BVDT-403	Applied Dialysis Technology- II	Skill	4
4	BVDT-404	Clinical dialysis-I	skill	3
5	BVDT-405	Medical law and ethics	General	4
6	BVDT-406	Advance communication and soft skill	General	2
7	BVDTP-401	Patient care in dialysis department Lab	Skill	2
8	BVDTP-402	Pharmacology Lab	Skill	2
9	BVDTP-403	Applied Dialysis Technology- II Lab	Skill	2
10	BVDTP-404	Clinical dialysis-I Lab	Skill	2
11	BVDTP-405	Medical law and ethics Lab	Skill	2
		Internship in Hospital		
			Total	**30**

B.Voc (Dialysis Technology)

Year -3 B.Voc (Degree)

V Semester				
S.No.	**Course Code**	**Subject**	**Content Type**	**Credit**
1	BVDT-501	Applied pharmacology related to dialysis	General	3
2	BVDT-502	Clinical dialysis-II	Skill	3
3	BVDT-503	Renal Nutrition	Skill	3
4	BVDT-504	General medicine and general surgery	skill	4
5	BVDT-505	Digital literacy and account literacy	General	4
6	BVDT-506	Introduction to national healthcare system	General	3
7	BVDTP-501	Applied pharmacology related to dialysis Lab	Skill	2
8	BVDTP-502	Clinical dialysis-II Lab	Skill	2
9	BVDTP-503	Renal Nutrition Lab	Skill	2
10	BVDTP-504	General medicine and general surgery Lab	Skill	2
11	BVDTP-505	Digital literacy and account literacy Lab	Skill	2
			Total	**30**

VI Semester				
S.No.	**Course Code**	**Subject**	**Content Type**	**Credit**
1	BVDT-601	Clinical Nephrology and dialysis management	General	4
2	BVDT-602	Advance dialysis technology	Skill	4
3	BVDTP-601	Clinical Nephrology and dialysis management Lab	Skill	2
4	BVDTP-602	Advance dialysis technology Lab	Skill	2
5	BVDTP-603	Internship in Hospital	Skill	8
6	BVDTP-604	Project in hospital	Skill	10
			Total	**30**

BVDT -101 General Human Anatomy & Physiology-I

[redacted]

Terminology and General Plan of the Body, Body Parts and Areas, Terms of Location and Position, Body Cavities and Their Membranes, Dorsal cavity, Ventral cavity, Planes and Sections, Cells: Structure, function and location, Prokaryotic and eukaryotic cells, Cell organelles, Cell division.

UNIT-2

Tissue, Types, Structure, Location and Function of Epithelial Tissue, Connective Tissue, Muscle Tissue, Nerve Tissue, Membranes, Glandular tissue The Integumentary System: structure and function of The Skin, Subcutaneous Tissue, Musculoskeletal System: Basic anatomy of important muscles and bones.

UNIT-3

Cell physiology: Structure, membrane, transport across cell membrane, Active, Passive, Organization of the Body, Body Composition, Body Fluid Volumes and its measurement, Diffusion, Osmosis, Tonicity, Homeostasis

UNIT-4

Blood-composition, function, cellular component & their function, haemoglobin & anaemia, blood groups and coagulation

BVDT-102-GENERAL BIOCHEMISTRY

UNIT 1

Carbohydrates- Glucose; fructose; galactose; lactose; sucrose; starch and glycogen (properties and tests, Structure and function), Metabolism of carbohydrate,

UNIT 2

Proteins -Amino acids, peptides, and proteins (general properties & tests with a few examples like glycine, tryptophan, glutathione, albumin, haemoglobin, collagen)

UNIT 3

Lipids- Fatty acids, saturated and unsaturated, cholesterol and triacylglycerol, phospholipids

and plasma membrane

UNIT 4

Vitamins -General with emphasis on A, B2, C, E and inositol (requirements, assimilation and properties)

Minerals--Na, K, Ca, P, Fe, Cu and Se (requirements, availability and properties)

Unit 5

Nucleotides and

nucleic acids DNA,

Replication

Organ function test: LFT, KFT, Gastric function test,

Cardiac function test

BVDT-103-Introduction to kidney Disease and Renal replacement therapy

UNIT-1

Kidney Function and effect of Kidney Disease. Classification of kidney diseases

Chronic Kidney Disease.

UNIT-2

Acute Kidney injury

Sign and symptoms of Kidney disease.

UNIT-3

General Laboratory assessment of Kidney Disease.

Types of Renal Replacement therapy

UNIT-4

Haemodialysis Basics

Peritoneal Dialysis Basics.

BVDT-104 Biomedical Waste Management

UNIT-1

Definition of Biomedical Waste

Waste minimization

UNIT-2

BMW – Segregation, collection, transportation, treatment and disposal (including color coding)

Liquid BMW, Radioactive waste, Metals / Chemicals / Drug waste

UNIT-3

BMW Management & methods of disinfection

Modern technology for handling BMW

UNIT-4

Use of Personal protective equipment (PPE)

Monitoring & controlling of cross infection (Protective devices)

BVDT-105-Fundamental of Computers

Unit-1

Introduction to Computers

History of Computer, Generations, Characteristics, Advantages and limitations of Computer, Classification of Computers, Functional Components of Computer, Input, Output and Processing, Concept of Hardware and Software, Data & Information. Concept of data storage. Number system. Decimal, Binary, Hexadecimal ASCII.

UNIT-2

Introduction to GUI Based Operating System Basics of Operating system, Basics of DOS & LINUX, The User interface, File and directory management, Windows setting, Control Panel, devices and Printer setting, Using various window commands for desktop.

UNIT-3

Word Processing

Word processing basics, Menu Bar, Opening and closing documents ,save & save as , Page setup ,print preview, and printing. Text creation and manipulation Editing, cut copy paste. Document creation ,editing, Formatting the text – Paragraph indenting, bullets and numbering, changing case, Table manipulation – creation of table ,insertion and deletion of cell, row and column.

UNIT-4

Network basics , Internet Basics of computer network LAN, WAN etc, Concept of Internet ,Basic of Internet Architecture, Services on Internet Architecture, World wide web and websites, Communication on Internet , Internet Services, Preparing Computer for Internet Access, ISPs and Examples ,Internet Access Technologies. Web Browsing , configuring web browser, Popular search engines Downloading and printing web pages. Internet application Basics of E-mail , E-mail addressing , forwarding and searching, Composing

BVDT-106-GENERAL ENGLISH AND SOFT SKILL

Unit-1 Introduction to English language

a) Role and significance of English language in the present scenario

b) English language: its relevance for the Indian industry.

c) Introduction to listening, speaking, reading, writing and bench marking of the class.

Unit 2: Grammar and usage

Verbs

Determiners

Active Voice and Passive Voice

Tenses

Unit 3:

Letter writing & Notice Writing

Unit 4:

Précis and Report writing

Practical Knowledge

English communication Concept :

a) About myself ,my family and my friends

b) Let's talk, making conversation, meeting and greeting

c) My opinions, my likes and dislikes

d) Life at collage, hostel and workplace: Conversation test

PRACTICALS:

BVDTP-101.PRACTICAL ANATOMY AND PHYSIOLOGY

Human anatomy (practical)

Demonstration of

- Study of Human Skeleton parts with skeletal models.
- Study with charts and models of all organ systems mentioned above.
- Microscopic slides examination of elementary human tissues, cells.
- Major organs through models and permanent slides.
- Parts of circulatory system from models.
- Parts of respiratory system from models.
- Digestive system from models.
- Excretory system from models.

Human Physiology (Practical)

- To measure pulse rate
- To measure blood pressure
- To measure temperature
- Measurement of the Vital capacity
- Determination of blood groups
- Transport of food through esophagus
- Calculation and evaluation of daily energy and nutrient intake.
- Measurement of basal metabolic rate
- Demonstration of ECG
- Bile juice secretion and execration 11. Urine formation and execration

BVDTP-102-PRACTICAL General Biochemistry

- Analysis of Normal Urine
- 2. Liver Function tests
- 3. Lipid Profile
- 4. Renal Function test

- 5. Blood gas and Electrolytes
- 6. Demonstration of Glucometer with strips

BVDTP-103-PRACTICAL-Introduction to kidney Disease and Renal Replacement Therapy

DEMOSTRATION OF:

effect of Kidney Disease

Chronic Kidney Disease.

Acute Kidney injury

Sign and symptoms of Kidney disease.

General Laboratory assessment of Kidney Disease.

Haemodialysis Basics

Peritoneal Dialysis Basics.

BVDTP-104-BIOMEDICAL WASTE MANAGMENT

Waste minimization

color coding

Liquid BMW, Radioactive waste, Metals / Chemicals / Drug waste

BMW Management & methods of disinfection

Modern technology for handling BMW

Use of Personal protective equipment (PPE)

BVDTP-105- PRACTICAL FUNDAMENTALS OF COMPUTER

- Starting MS WORD, Creating and formatting a document,
- Changing fonts and point size,
- Table Creation and operations, Autocorrect, Auto text, spell Check, Word Art, Inserting
- objects, Page setup, Page Preview, Printing a document, Mail Merge.
- Starting Excel, Work sheet, cell inserting Data into Rows/ Columns, Alignment, Text

- wrapping , Sorting data, Auto Sum, Use of functions, referencing formula cells in other
- formulae , Naming cells, Generating graphs, Worksheet data and charts with WORD, Creating
- Hyperlink to a WORD document , Page set up, Print Preview, Printing Worksheets.
- Starting MS–Power Point,, Creating a presentation using auto content Wizard, Blank
- Presentation, creating, saving and printing a presentation, Adding a slide to presentation,
- Navigating through a presentation, slide sorter, slide show, editing slides, Using Clipart, Word
- art gallery, Adding Transition and Animation effects, setting timings for slide show, preparing
- note pages, preparing audience handouts, printing presentation documents, MS-Access,
- Creating tables and database, Internet, Use of Internet (Mailing, Browsing, Surfing).

Semester -2

BVDT- 201 HUMAN ANATOMY AND PHYSIOLOGY II

UNIT-1

Cardiovascular system: Basic anatomy of heart and important blood vessels Brief introduction about Lymphatic System, The Nervous System: Basic anatomy of brain and spinal cord, meninges and cerebrospinal fluid, Cranial, Endocrine System: Brief anatomy of Pituitary, Thyroid, Parathyroid, Pancreas, Adrenal, Special Senses: Basic anatomy of eye, ear and nose

UNIT-2

Genitourinary system: Basic anatomy of kidney and associated organs, male reproductive organs, female reproductive organs, Respiratory system: Basic anatomy of nose, larynx, trachea, bronchi and lung, Digestive system: basic anatomy of esophagus, stomach, small intestine, large intestine, liver, gall bladder, pancreas

UNIT-3

Cardiovascular system-general arrange, heart, arteries, veins and capillaries, heart structure and function, cardiac cycle, heart sounds, heart rate, blood pressure, mechanism of circulation, definition of hypertension & shock ,Respiratory system: parts of respiratory system, mechanism of respiration, pulmonary function, pulmonary circulation, lungs volume, Gas transport between lungs and tissues, Definition of hypoxia, dyspnea, cyanosis, asphyxia and obstructive airways diseases Unit, Gastrointestinal physiology: Organs of GIT and their structure & function, secretion, digestion, absorption and assimilation, gastrointestinal hormones, physiology of digestion of carbohydrates, proteins & lipids, Structure & function of liver, spleen, gall bladder & pancreas, Jaundice, Cirrhosis & Pancreatitis.

UNIT-4

Excretory System: Kidneys, Nephron, Mechanism of Excretion, Urine formation (Glomerular filtration and Tubular reabsorption) , Electrolytes: their balances and imbalances Introduction of acidosis and alkalosis , Muscle nerve physiology, types of muscles, their gross structural and functional difference with reference to properties ,Nervous system- general organization of CNS, function of important structure and spinal cord, neuron, nerve impulse, type of nerves according to function, Autonomic nervous system organization & function Special senses-general organization & functions, Endocrine System: Brief introduction about endocrine glands and their secretion, common endocrinological disorder such as diabetes mellitus, hyper & hypothyroidism, dwarfism, gigantism, tetany. Reproductive System: male & female reproductive organs, sex hormones, secondary sexual characteristics, puberty, spermatogenesis, oogenesis, menstrual cycle, pregnancy, menopause, contraceptive measures.

BVDT- 202-General Pathology & Microbiology

UNIT-1

Pathology

General Definition of Pathology Cellular adaptation, Cell injury & cell death, Inflammation, Genetic disorders.

UNIT-2

Immunity disorders. Infectious diseases. Clinical relevance of Pathological test, various diagnostic tests. Collection and transportation of sample, commonly submitted samples, Types of specimens, Laboratory assessment of renal function

Renal Biopsy, Renal Biopsy in transplant

UNIT-3

Microbiology

Identification of common infections, Infection and transmission of disease,

UNIT-4

Types & principles of Disinfections

sterilization- steam Autoclave sterilization, ETO sterilization, Gamma rays sterilization, Chemical Disinfectants -formaldehyde, clinitest, per acetic acid, sterilant test. Laboratory test and method of collection of specimen for culture, Common pathogenic bacteria, General Principle of Infection control. Hospital waste management

BVDT- 203- Principles and types of Dialysis

UNIT-1

Physiology of Dialysis, Basics of Dialysis, Haemodialysis, Haemodialysis Procedure,

UNIT-2

Haemodialysis apparatus, Vascular Access for dialysis, Reuse of Dialyser.

UNIT-3

Peritoneal Dialysis, Basics of Peritoneal dialysis, Types of PD,

UNIT-4

CAPD, Indications and contraindication for CAPD.

Complication – infectious and non-infectious complications.

BVDT-204-Introduction of patient safety

UNIT-1

Concepts of Quality of Care

Quality Improvement Approaches

Standards and Norms

Quality Improvement Tools

Basic emergency care – first aid and triage

Ventilations including use of bag-valve-masks (BVMs)Choking, rescue breathing methods One- and Two-rescuer CPR

Using an AED (Automated external defibrillator).

UNIT-2

Managing an emergency including moving a patient Introduction to NABH guidelines

Evidence-based infection control principles and practices [such as sterilization,

disinfection, effective hand hygiene and use of Personal protective equipment

(PPE)],

Prevention & control of common healthcare associated infections,

Components of an effective infection control program, and

Guidelines (NABH and JCI) for Hospital Infection Control

History of Antibiotics

UNIT-3

Types of resistance- Intrinsic, Acquired, Passive

Trends in Drug Resistance

Actions to Fight Resistance

Bacterial persistence

Antibiotic sensitivity

Consequences of antibiotic resistance

Antimicrobial Stewardship- Barriers and opportunities, Tools and models in

Hospitals

UNIT-4

Fundamentals of emergency management,

Psychological impact management,

Resource management,

Preparedness and risk reduction,

Key response functions (including public health, logistics and governance, recovery, rehabilitation and reconstruction), information management, incident command and institutional mechanisms.

BVDT-205 Medical terminology and record keeping

UNIT-1

Derivation of medical terms.

Define word roots, prefixes, and suffixes.

Conventions for combined morphemes and the formation of plurals.

UNIT-2

Basic medical terms.

Form medical terms utilizing roots, suffixes, prefixes, and combining roots.

Interpret basic medical abbreviations/symbols.

UNIT-3

Utilize diagnostic, surgical, and procedural terms and abbreviations related to the integumentary system, musculoskeletal system, respiratory system, cardiovascular system, nervous system, and endocrine system.

Interpret medical orders/reports.

Data entry and management on electronic health record system.

BVDT-206-BASIC OF HEALTH MARKET AND ECONOMY

Unit I

Health Care Market An Introduction: Main Problems in the Market for Health Care, Health Care and

Economic Basics, Analyzing Health Care Markets. Demand-Side Considerations: Demand for Health

and Health Care, Market for Health Insurance

Unit II

Supply-Side Considerations: Managed Care, Health Care Professionals, Hospital Services,

Confounding Factors Public Policy in Medical Care: Policies to Enhance Access, Policies to Contain

Costs, Medical Care Systems Worldwide,

UNIT-III

Health Sector in India: An Overview Health Outcomes; Health Systems; Health Financing

Evaluation of Health Programs Costing, Cost Effectiveness and Cost-Benefit Analysis; Burden of

Diseases ,Role of WHO , Health Care Budget: purpose, types & practices in Indian context.

UNIT-IV

Health Economics: Fundamentals of Economics: Scope & coverage of Health Economics, demand for

Health Sciences; Health as an investment, population, Health &Economic Development.

Tools of Economics-Concepts of need, demand, supply & price in Health Services.

Methods & Techniques of Economic Evaluation of Health Programmes: Cost benefit

&cost effective methods-output & input analysis.

Market, monopoly, perfect & imperfect competition. Health Financing from various sources – Public ,

Private, TPA.

Economics of Health Programmes for Nutrition, diet &population control, economics of abuse of

tobacco & alcohol, environmental influences on health and feeding.

Economics of Communicable (STDs & Malaria) & non-communicable (IHD & Cancers) diseases

PRACTICALS:

BVDTP-201-PRACTICAL-General Human Anatomy & Physiology-II

Human Anatomy-II (Practical)

Demonstration of:

- Nervous system from models.
- Structure of eye and ear
- Structural differences between skeletal, smooth and cardiac muscles.
- Various bones
- Various joints
- Various parts of male & female reproductive system from models

Human Physiology- II (Practical)

- To perform total platelet count.
- To perform bleeding time.
- To perform clotting time.
- To study about CSF examination.
- To study about intrauterine contraceptive devices.
- To demonstrate microscopic structure of bones with permanent slides.

To demonstrate microscopic structure of muscles with permanent slides.

BVDTP-202-PRACTICAL-General Pathology & Microbiology

Collection and transportation of sample,

commonly submitted samples,

Types of specimens,

Laboratory assessment of renal function

Renal Biopsy,

Renal Biopsy in transplant

sterilization- steam Autoclave sterilization,

ETO sterilization,

Gamma rays sterilization,

Chemical Disinfectants -formaldehyde, clinitest, per acetic acid, sterilant test.

Laboratory test and method of collection of specimen for culture, Common pathogenic bacteria,

BVDTP- 203 PRACTICAL Principle and types of Dialysis

Haemodialysis, Haemodialysis Procedure,

Haemodialysis apparatus,

Vascular Access for dialysis,

Reuse of Dialyser.

Peritoneal Dialysis,

Basics of Peritoneal dialysis, Types of PD,

CAPD.

BVDTP-204 PRACTICAL Introduction of patient safety

DEMOSTRATION OF:

Basic emergency care – first aid and triage

Ventilations including use of bag-valve-masks (BVMs)Choking, Using an AED (Automated external defibrillator).

Managing an emergency including moving a patient Introduction to NABH guidelines

Prevention & control of common healthcare associated infections,

Actions to Fight Resistance

Bacterial persistence

Antibiotic sensitivity

Consequences of antibiotic resistance

Antimicrobial Stewardship- Barriers and opportunities, Tools and models in

Hospitals

BVDTP-205-PRACTICAL-Medical terminology and record keeping

DEMOSTRATION OF:

Basic medical terms.

Form medical terms utilizing roots, suffixes, prefixes, and combining roots.

Interpret basic medical abbreviations/symbols.

Utilize diagnostic, surgical, and procedural terms and abbreviations related to the

Interpret medical orders/reports.

Data entry and management on electronic health record system.

B. Voc. (Dialysis Technology)

Year-2 Advance Diploma

BVDT- 301-Applied Human Anatomy & Physiology related to dialysis technology

UNIT-1

Basic anatomy of urinary system: structural anatomy of kidney, bladder, ureter, urethra, prostate.

Histology of kidney.

Blood supply of kidney.

Development of kidney in brief.

Anatomy of peritoneum including concept of abdominal hernias.

UNIT-2

Anatomy of vascular system:

Upper limb vessels: course, distribution, branches, origin & abnormalities.

Neck vessels: course, distribution, branches, origin & abnormalities.

Femoral vessels: course, distribution, branches, origin & abnormalities.

UNIT-3

Mechanism of urine formation.

Glomerular filtration rate (GFR).

Clearance studies.

Physiological values of urea, creatinine, electrolytes, calcium, phosphorous, uric acid, magnesium, glucose; 24 hours urinary indices – urea, creatinine, electrolytes, calcium, magnesium.

UNIT-4

Physiology of renal circulation

a. Factors contributing & modifying renal circulation.

b. Auto regulation.

Hormones produced by kidney & physiologic alterations in pregnancy.

Haemostasis: coagulation cascade, coagulation factors, auto regulation, BT, CT, PT, PTT, thrombin time.

Acid base balance: basic principles & common abnormalities like hypokalaemia, hyponatremia, hyperkalaemia, hypernatremia, hypocalcaemia, hypercalcemia, pH, etc.

BVDT-302-Applied pathology and microbiology related to dialysis department

UNIT-1

Pathology

Congenital abnormalities of urinary system.

Classification of renal diseases.

Glomerular diseases: causes, types & pathology.

Tubulo-interstitial diseases.

UNIT-2

Renal vascular disorders.

End stage renal diseases: causes & pathology.

Pathology of kidney in hypertension, diabetes mellitus, pregnancy.

Pathology of peritoneum, peritonitis, bacterial, tubular & sclerosing peritonitis, dialysis induced changes.

Pathology of urinary tract infections

Pyelonephritis & tuberculous pyelonephritis

UNIT-3

Microbiology

Hepatotrophic viruses in detail: mode of transfusion, universal precautions vaccinations.

Human immunodeficiency virus (HIV), mode of transfusion, universal precautions.

Opportunistic infections.

UNIT-4

Microbiology of urinary tract infections.

Microbiology of vascular access infection (femoral, jugular, subclavian catheters).

Sampling methodologies for culture & sensitivity.

BVDT-303-Equipment in dialysis

UNIT-1

Introduction to equipment used in dialysis

Dialysis Machine

Water treatment system equipment

UNIT-2

Operation and routine Maintenance of dialysis machine

Operation and routine Maintenance of Water treatment system

CAPD machine, APD machine

UNIT-3

CRRT machine

Body composition monitor.

Use of dialysis machine in other extracorporeal therapy

UNIT-4

Emergency Equipment in Dialysis Pulse oximeter, Defibrillator, Patient monitor, ECG machine and suction

machine

Dialyser reprocessing machine.

BVDT 304-Applied Dialysis Technology I

Unit-1

History of Dialysis

Basics of Dialysis.

Unit-2

Dialysis System components.

Dialyser

Dialysate

Unit-3

Dialysis machine

Physiological Principle of Dialysis

Haemodialysis Equipment

Unit-4

Dialyser reuse

Water Treatment for Haemodialysis

BVDT-305-ADVANCE COMPUTING SKILL

Unit-1

Advance Word Processing Tools

Setting the layout of Table and documents, Mail merge techniques. Letter envelopes etc,

Using spell check and Thesaurus, Foot note and Endnotes, Using Charts , shapes and pictures in word .

Unit-2

Basics of Spreadsheet

Functions of Spreadsheet, Applications, Elements of Electronic Spread sheet, creating

document saving and printing the worksheet, manipulation of cells, Functions and charts, using

formulas, Functions and charts

UNIT-3

Advance Spreadsheet Tools

Manipulations with charts and its types, Sorting, Filtering of data ,Pivot table, data validation techniques. Grouping and subtotaling of data. Text to column option . Printing of customized worksheet.

UNIT-4

Presentation Software

Using PowerPoint, Opening an PowerPoint presentation, Saving a presentation, Entering and editing text, inserting and deleting slides in a presentations, preparation of slides , adding clip arts, charts etc., Providing Aesthetics, enhancing text presentation, working with color lines styles and movie and sound ,adding header and footer, presentation.

BVDT-306-HUMAN VALUE AND PROFESSIONAL ETHICS

UNIT-1

Need, Basic Guidelines, Content and Process for

Value Education

Understanding the need, basic guidelines, content and process for Value Education

Self-Exploration its content and process, Natural Acceptance' and Experiential Validation- as the mechanism for self-exploration

Continuous Happiness and Prosperity- A look at basic Human Aspirations

Right understanding, Relationship and Physical Facilities- the basic requirements for fulfilment of aspirations of every human being with their correct priority

Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario

Method to fulfil the above human aspirations: understanding and living in harmony at various

levels

UNIT 2:

Understanding Harmony in the Human Being Understanding human being

Understanding the Body as an instrument

Understanding the harmony of Body, correct appraisal of Physical needs, meaning of Prosperity in detail

UNIT 3:

Understanding Harmony in the Family and Society-

Harmony in Human Relationship

Understanding Harmony in the family – the basic unit of human interaction

Understanding values in human-human relationship

Trust and Respect as the foundational values of relationship

Understanding the meaning of trust

Difference between intention and competence. Understanding the meaning of respect

Understanding the harmony in the society (society being an extension of family)

UNIT-4

Natural acceptance of human values

Definitiveness of Ethical Human Conduct

Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order

Competence in professional ethics:

a) Ability to utilize the professional competence for augmenting universal human order

b) Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems,

c) Ability to identify and develop appropriate technologies and management patterns for above production systems.

Case studies of typical holistic technologies, management models and production systems

Strategy for transition from the present state to Universal Human Order:

a) At the level of individual: as socially and ecologically responsible engineers, technologists and managers

b) At the level of society: as mutually enriching institutions and organizations

PRACTICALS:

BVDTP-301-Practicals Applied Human Anatomy & Physiology related to dialysis technology

- Anatomy of urinary system:
- structural anatomy of kidney, bladder, ureter, urethra,
- prostate.
- Histology of kidney.
- Blood supply of kidney.
- urine formation.
- Glomerular filtration rate (GFR).
- Haemostasis: coagulation cascade, coagulation factors, auto regulation, BT, CT, PT, PTT, thrombin time.
-

BVDTP-302-Practicals Applied pathology and microbiology related to dialysis department

Demostration of:

- renal diseases.
- Glomerular diseases
- Pathology of kidney in hypertension,
- diabetes mellitus, pregnancy.
- Pathology of urinary tract infections
- Pyelonephritis & tuberculous pyelonephritis
- Hepatotrophic viruses in detail: mode of transfusion, universal precautions vaccinations.
- sampling methodologies for culture & sensitivity.

BVDTP-303 -Practical Equipment in dialysis

- Dialysis Machine
- Water treatment system equipment
- Operation and routine Maintenance of dialysis machine
- Operation and routine Maintenance of Water treatment system
- CAPD machine, APD machine
- CRRT machine
- Body composition monitor.
- ECG machine and suction machine
- Dialyser reprocessing machine.

BVDTP-304- Practical Applied Dialysis Technology I

Demostration of:

- Dialysis System components.
- Dialyser
- Dialysate
- Dialysis machine
- Haemodialysis Equipment
- Dialyser reuse
- Water Treatment for Haemodialysis

BVDTP- 305-Practical Advance Computing skills

- Word Processing
- Mail merge techniques
- Using Charts , shapes and pictures in word .
- Basics of Spreadsheet
- document saving and printing the worksheet
- formulas , Functions and charts

- Advance Spreadsheet Tools
- worksheet.
- Presentation Software
- Using PowerPoint working with color lines
- styles and movie and sound, presentations.

4th Semester

BVDT-401-Patient care in dialysis department

UNIT-1

Patient with Kidney failure

Patient Education

Machine and patient monitoring during haemodialysis

Patient Assessment – Pre, intra & post dialysis

UNIT-2

Care of Vascular Access

Lab data analysis

Acute and chronic dialysis prescription

UNIT-3

Medications in dialysis patients

Nutrition management in dialysis patients

UNIT-4

Renal Replacement Therapy and quality of life

Renal Transplant.

BVDT-402-Pharmacology

UNIT-1

Concepts of the interactions of chemical agents with living tissues, effect of drugs on the body, drugs and alteration of disease processes, toxicity effects. New drugs testing and development prior to use for patient care.

UNIT-2

Drug use in renal disease, drugs in special populations (the neonate and infant, the pregnant and elderly),

UNIT-3

pharmacokinetics, drug interactions, Definitions, routes of drug administration,

UNIT-4

Pharmacodynamics, adverse drug reactions, therapeutic drug

monitoring, pharmacogenomics and principles of individualization of drug therapy.

BVDT- 403-Applied Dialysis Technology- II

UNIT-1

Dialysis in special situations:

a. Patients with congestive cardiac failure.

b. Advanced liver disease.

c. Patients positive for HIV, HBsAg & HCV.

d. Failed transplant.

e. Poisoning cases.

f. Pregnancy.

UNIT-2

1. Dialysis in infants & children.

2. Special dialysis procedures:

a. Continuous therapies in hemodialysis.

b. Different modalities of peritoneal dialysis.

c. Haemodiafiltration.

d. Hemoperfusion.

e. SLED.

f. MARS.

UNIT-3

1. Special problems in dialysis patients:

a. Psychology & rehabilitation.

b. Diabetes

c. Hypertension.

d. Infections.

e. Bone diseases.

f. Aluminum toxicity.

UNIT-4

Plasmapheresis

Renal anemia management: chronic dialysis.

BVDT-404-Clinical dialysis-I

UNIT-1

Complication during Haemodialysis

Anticoagulation in Haemodialysis.

UNIT-2

Infection control in dialysis

Strategies to maintain blood pressure during dialysis.

UNIT-3

Fluid and electrolyte management in dialysis patient.

Dry weight in dialysis patient

UNIT-4

Water quality and dialysis outcome

BVDT-405-Medical law and ethics

UNIT 1

Medical ethics - Definition - Goal - Scope

Introduction to Code of conduct

UNIT 2

Basic principles of medical ethics –Confidentiality

Malpractice and negligence - Rational and irrational drug therapy

UNIT 3

Autonomy and informed consent - Right of patients

Care of the terminally ill- Euthanasia

UNIT 4

Organ transplantation, Medico legal aspects of medical records –Medico legal case and type- Records and document related to MLC - ownership of medical records - Confidentiality Privilege communication - Release of medical information - Unauthorized disclosure - retention of medical records - other various aspects, Professional Indemnity insurance policy**,** Development of standardized protocol to avoid near miss or sentinel events**,** Obtaining an informed consent.

BVDT-406-Advance communication and soft skill

UNIT-1

Functional Grammar-II

a) Application writing

b) Paragraph writing, essay writing and précis writing

c) Pre-testing of oral and writing skills

UNIT-2

Professional Skills

a) Biodata, CV and resume writing

b) Joining letter, cover letter and resignation letter

c) Inter- office memo, formal Business letter, informal notes

d) Minutes of the meeting, reporting events, summary writing

UNIT-3

Presentation skills

a) Power-point presentations and presenting techniques

b) Body language

c) Describing people, places and events

d) Extempore, speech and just- a minute sessions

UNIT-4

Interview skills

a) Developing skills to- debate, discussion, basics of GD and styles of GD

b) Discussion in groups and group discussion on current issues

c) Steps to prepare for an interview and mock interviews

Public speaking

a) Art of public speaking

b) Welcome speech

c) Farewell speech

d) Votes of thanks

Oral practice

a) Debate

b) Just-a-minute

c) Group discussion

d) Mock interviews

PRACTICALS:

BVDTP- 401-Practical Patient care in dialysis department

Demostration of:

Handling of Patient with Kidney failure

Patient Education

Machine and patient monitoring during haemodialysis

Patient Assessment – Pre, intra & post dialysis

Care of Vascular Access

Lab data analysis

Renal Replacement Therapy and quality of life

Renal Transplant.

BVDTP- 402- Practical Pharmacology

Drug use in renal disease,

drugs in special populations

adverse drug reactions

BVDTP- 403- Practical Applied Dialysis Technology- II

Demostartion of:

Dialysis in special situations:

Patients with congestive cardiac failure.

Dialysis in infants & children.

Special dialysis procedures:

Continuous therapies in hemodialysis.

Haemodiafiltration.

Hemoperfusion.

SLED.

MARS.

Plasmapheresis

Renal anemia management chronic dialysis.

BVDTP- 404-Practical Clinical dialysis-I

Handling of Complication during Haemodialysis

Anticoagulation in Haemodialysis.

Strategies to maintain blood pressure during dialysis.

Dry weight in dialysis patient

B.Voc (Dialysis Technology)

Year-3 B.Voc (Degree)

BVDT-501-Applied pharmacology related to dialysis

UNIT-1

IV fluid therapy with special emphasis in renal diseases.

Diuretics: classification, actions, dosage, side effects & contraindications.

Anti-hypertensives: classification, actions, dosage, side effects & contraindications, special reference during dialysis, vasopressors, drugs used in hypotension.

UNIT-2

Drugs & dialysis: dose & duration of administration of drugs.

Dialyzable drugs: phenobarbitone, lithium, methanol etc.

Vitamin D & its analogues, phosphate binders, iron, folic acid & other vitamins of therapeutic value.

UNIT-3

Erythropoietin in detail.

Heparin, low molecular weight heparin and heparin-induced thrombocytopenia

Protamine sulphate as antidote and indication.

UNIT-4

Alternative anticoagulants.

Formalin, citrate, sodium hypochlorite, hydrogen peroxide: role as disinfectants & adverse

effects of residual particles applicable to formalin.

Hemodialysis concentrates: composition & dilution (acetate & bicarbonates).

Peritoneal dialysis fluid in particular hypertonic solutions: composition.

Potassium exchange resins with special emphasis on mode of administration.

BVDT- 502-Clinical dialysis-II

UNIT-1

Chronic medical problems in dialysis patient

Anaemia in dialysis patient

UNIT-2

Management of Renal bone disease.

Endocrine dysfunction in dialysis patients.

UNIT-3

Hypertension in dialysis patient.

Dialysis amyloidosis

Cardiovascular disease in dialysis patient.

UNIT-4

Neurological problems in dialysis patient.

Blood borne disease in dialysis patients

BVDT-503-RENAL NUTRITION

UNIT-1

Influence of kidney disease on protein, amino acid, and Carbohydrate and lipid metabolism.

Ca, Phosphate, PTH, and Vit D in CKD.

UNIT-3

Management of fluid and electrolyte in CKD, HD, CAPD

Nutritional management of HD patient.

UNIT-3

Nutritional management of CAPD patient.

Nutritional management of renal transplant recipient.

Nutritional management of AKI

BVDT-504-General medicine and general surgery

UNIT-1

MEDICINE

Pericarditis

Valvular diseases

Rheumatic Heart Disease

Heart failure

Chronic Bronchitis

UNIT-2

Emphysema

Brochitis

Pneumonia

Tuberculosis

Pleura effusion

Empyema

Spontaneous Phenumothorax

UNIT-3

Surgery

Cholelithiasis

Peritonitis

Suprahrenic Abscess

UNIT-4

Appendicitis

Benign Hypertrophy prostate

Sinusitis

BVDT-505-Digital literacy and Account literacy

Unit 1:

Review of MS office

Advance options in MS excel

Excel

Power point

Unit 2

Introduction to internet learning platform

Using internet-based learning platform

Using google and you tube for learning

Using smart phone to become smart

Benefits of digital learning

Unit 3

Using internet for personal requirement

Online payments method

Use of social media for advisement

Unit 4

Digital security and privacy

Various cybercrime and their safety guideline

Best practice for securing online and network transaction

Managing privacy and security and social media accounts

BVDT-506-introduction to national healthcare system

UNIT-1

1. Introduction to healthcare delivery system

a. Healthcare delivery system in India at primary, secondary and tertiary care

b. Community participation in healthcare delivery system

c. Health system in developed countries.

d. Private Sector

e. National Health Mission

f. National Health Policy

g. Issues in Health Care Delivery System in India

UNIT-2

2. National Health Programme- Background objectives, action plan, targets, operations, achievements and constraints in various National Heath Programme.

UNIT-3

3. Introduction to AYUSH system of medicine

a. Introduction to Ayurveda.

b. Yoga and Naturopathy

c. Unani

d. Siddha

e. Homeopathy

f. Need for integration of various system of medicine

UNIT0-4

4. Health scenario of India- past, present and future

Demography & Vital Statistics-

a. Demography – its concept

b. Vital events of life & its impact on demography

c. Significance and recording of vital statistics

d. Census & its impact on health policy

6. Epidemiology

a. Principles of Epidemiology

b. Natural History of disease

c. Methods of Epidemiological studies

d. Epidemiology of communicable & non-communicable diseases, disease transmission, host defense immunizing agents, cold chain, immunization, disease monitoring and surveillance.

PRACTICALS:

BVDTP- 501-Practical Applied pharmacology related to dialysis

- Use of IV fluid therapy with special emphasis in renal diseases.
- Anti-hypertensives drug
- Drugs & dialysisDialyzable drugs.
- Peritoneal dialysis
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BVDTP-502-Clinical dialysis-II

Management of:

- Renal bone disease.
- Endocrine dysfunction in dialysis patients.
- Dialysis amyloidosis

BVDTP- 503-PRACTICAL RENAL NEUTRITION

- Management of fluid and electrolyte in CKD, HD, CAPD
- Nutritional management of HD patient.
- Nutritional management of CAPD patient.
- Nutritional management of renal transplant recipient.
- Nutritional management of AKI

BVDT- 504-Practical General medicine and general surgery

Demostration of:

- Heart failure
- Tuberculosis
- Pleura effusion
- Peritonitis
- prostate
- Sinusitis

BVDTP-505-Practical digital litracy and financial litracy

- Uses Advance options in MS excel
- Excel
- Power point
- Using internet-based learning platform
- Using google and you tube for learning
- Using smart phone to become smart
- Using internet for personal requirement
- Online payments method
- Use of social media for advisement

6th Semester

BVDT- 601-Clinical Nephrology and dialysis management

UNIT-1

Various diagnostic procedure of renal diseases

Manifestation of renal diseases.

Renal vascular disease.

Glomerular disease.

Tubulo-interstitial disease.

Congenital abnormalities of kidneys.

UNIT-2

Renal involvement in systemic diseases.

Infectious conditions of Kidney & urinary tract Obstruction of urinary tract Effects of the drugs on the kidney.

Tumors of Kidney & urinary tract.

Hard water syndrome.

Water, fluid & electrolyte imbalance.

Unit-2

DAILYSIS MANAGEMENT

Semi permeable membrane, types, Selective diffusion dialysis, Artificial kidney & its use, Type of Dialysis, Dialyzers, Substituted membrane HAEMODAILYSIS, function of semi permeable membrane in hemodialysis

Waste product removed by hemodialysis transport

Rate of mass transfer-Solute flux. Diffusive transport & its importance, Clearance, Ultra filtration & hydrostatic gradient, TMP Water for Dialysis procedure

Unit-3

Filtration Decantation Distillation Softener, Deionizer Reverse osmosis, Different impurities. Role of charcoal, RO Plant. Water used in Dialysis Compare RO with DI.

DIFFERENT TYPES OF DIALYZER – Description, reuse, indication, care, Factors improving performance, Choosing Dialyzer, Priming Sterility, Washing Formalin-Use, hemofiltration, hemoperfusion

BVDT-602-Advance dialysis technology

UNIT-1

CRRT

SLED

Plasmapheresis.

Hemoperfusion.

UNIT-2

Pediatric dialysis

Dialysis in elderly patient.

UNIT-3

Dialysis in critically ill patient.

Principle of rehabilitation, counselling and motivational strategies and role of dialysis technologist.

UNIT-4

Quality assurance and quality management in dialysis.

PRACTICALS:

BVDTP- 601-Practical Clinical Nephrology and dialysis management

demostration of:

diagnostic procedure of renal diseases

Water, fluid & electrolyte imbalance.

Waste product removed by hemodialysis transport

TMP Water for Dialysis procedure

Filtration Decantation Distillation Softener

BVDTP- 602-Practical Advance dialysis technology

demonstration of:

CRRT

SLED

Plasmapheresis.

Hemoperfusion.

Dialysis in critically ill patient.

Quality assurance and quality management in dialysis.