

ER-2020_ Curriculum
DIPLOMA IN PHARMACY
I YEAR



OFFERED BY
STATE BOARD OF TECHNICAL EDUCATION & TRAINING,
TELANGANA: HYDERABAD

S. No.	Subject Code	SUBJECT NAME
1.	ER20-11T	Pharmaceutics – Theory
2.	ER20-12T	Pharmaceutical Chemistry – Theory
3.	ER20-13T	Pharmacognosy – Theory
4.	ER20-14T	Human Anatomy & Physiology – Theory
5.	ER20-15T	Social Pharmacy – Theory
6.	ER20-11P	Pharmaceutics – Practical
7.	ER20-12P	Pharmaceutical Chemistry – Practical
8.	ER20-13P	Pharmacognosy – Practical
9.	ER20-14P	Human Anatomy & Physiology – Practical
10.	ER20-15P	Social Pharmacy – Practical

ER20-11T- PHARMACEUTICS

UNIT-I

Introduction of different dosage forms. Pharmacopoeias; Packaging of pharmaceuticals; Pharmaceutical Aids; Size Reduction; Size Separation

- 1.1 PHARMACEUTICAL DOSAGE FORMS
- 1.2 NEW DRUG DELIVERY SYSTEMS
- 1.3 PHARMACOPOEIAS AND FORMULARIES
- 1.4 PACKAGING OF PHARMACEUTICALS
- 1.5 AEROSOL PACKAGING
- 1.6 DEFINITION AND PHARMACEUTICAL APPLICATIONS OF SIZE REDUCTION
- 1.7 FACTORS AFFECTING SIZE REDUCTION
- 1.8 METHODS OF SIZE REDUCTION
- 1.9 MECHANISMS OF SIZE REDUCTION
- 1.10 BALL MILL
- 1.11 HAMMER MILL
- 1.12 EDGE RUNNER MILL, END RUNNER MILL, COLLOID MILL DISINTEGRATOR
- 1.13 FLUID ENERGY MILL
- 1.14 DEFINITION OF SIZE SEPARATION; GRADING OF POWDERS; CYCLONE SEPARATOR

UNIT-II

Mixing; Filtration; Drying; Extraction; Novel drug delivery systems

- 2.1 DEFINITION OF MIXING & HOMOGENIZATION; OBJECTIVES OF MIXING, TYPES OF MIXERS
- 2.2 HAND HOMOGENIZERS, SILVERSON MIXER, TYPES OF POWDER MIXERS, TRIPLE ROLLER MILL
- 2.3 DEFINITION OF FILTRATION & CLARIFICATION, FACTORS AFFECTING RATE OF FILTRATION

- 2.4 FILTER MEDIA, FILTER AID, FILTER PRESS, META FILTERS, FILTRATION UNDER REDUCED PRESSURE
- 2.5 DEFINITION OF DRYING, TYPES OF DRYERS, SPRAY DRYER, TRAY DYER, FLUIDISED BED DRYER,
- 2.6 VACUUM DRYER, FREEZE DRYING
- 2.7 DEFINITION OF EXTRACTION, SOLVENTS USED IN EXTRACTION, TYPES OF EXTRACTION PROCESSES, FACTORS AFFECTING EXTRACTION PROCESS
- 2.8 PERCOLATION, RESERVE PERCOLATION, SOXHLET EXTRACTION, AYURVEDIC DOSAGE FORMS
- 2.9 DEFINITION OF EVAPORATION, FACTORS AFFECTING EVAPORATION PROCESS, EVAPORATING PANS, EVAPORATING STILLs, OTHER HEAT PROCESSES
- 2.10 DEFINITION OF NOVEL DRUG DELIVERY SYSTEMS, CLASSIFICATION, ADVANTAGES AND CHALLENGES

UNIT-III

Tablets; Capsules

- 3.1 DEFINITION OF TABT, ADVANTAGES & ESSENTIAL QUALITIES OF TABLET TYPES OF TABLET, FORMULATION OF TABLETS
- 3.2 PREPARATION OF TABLETS, TABLET COMPRESSION, SINGLE PUNCH ROTARY TABLET MACHINE, MANUFACTURING DEFECTS OF TABLET
- 3.3 EVALUATION OF TABLETS
- 3.4 TABLET COATING, MICROENCAPSULATION
- 3.5 DEFINITION OF CAPSULE, ADVANTAGES & DISADVANTAGES OF CAPSULE, HARD CAPSULES, SIZES OF CAPSULES
- 3.6 HAND OPERATED HARD GELATIN CAPSULE FILLING MACHINE, PREPARATION OF SOFT CAPSULES, SPECIAL TYPES OF CAPSULE

UNIT-IV

Liquid oral preparations; Powders & Granules

- 4.1 DEFINITION & FORMULATION OF SOLUTIONS, COMMONLY USED VEHICLES AND ADJUVANTS
- 4.2 DEFINITION & FORMULATION OF SYRUPS

- 4.3 DEFINITION & FORMULATION OF ELIXIRS
- 4.4 DEFINITION OF SUSPENSIONS, FLOCCULATED /NON-FLOCCULATED SUSPENSION SYSTEM, FORMULATION OF SUSPENSIONS PREPARATION OF SUSPENSIONS
- 4.5 STABILITY DETERMINATION OF SUSPENSIONS
- 4.6 SUSPENSIONS CONTAINING DIFFUSIBLE SOLIDS & LIQUIDS AND THEIR PREPARATION, SUSPENSIONS OF PRECIPITATE FORMING LIQUIDS, SUSPENSIONS PRODUCED BY CHEMICAL REACTIONS
- 4.7 DEFINITION OF EMULSION, TYPES OF EMULSIONS, IDENTIFICATION OF EMULSION SYSTEM
- 4.8 FORMULATION OF EMULSIONS, PRIMARY EMULSION, METHODS FOR PREPARATION OF EMULSION CLASSIFICATION AND SELECTION OF EMULSIFYING AGENTS
- 4.9 INSTABILITIES IN EMULSION PRESERVATION OF EMULSIONS
- 4.10 DEFINITION OF POWDERS, ADVANTAGES AND DISADVANTAGES OF POWDER, PREPARATION OF DIFFERENT TYPES OF POWDERS, POSSIBLE ERRORS IN WEIGHING OF POWDERS
- 4.11 DEFINITION & PREPARATION OF GRANULES, CACHETS, TABLET TRITURATES

UNIT- V

Topical preparations, Nasal preparations, Ear preparations

- 5.1 INTRODUCTION AND CLASSIFICATION OF SEMISOLID DOSAGE FORMS, MERITS AND DEMERITS OF SEMISOLID DOSAGE FORMS, TYPES OF OINTMENTS
- 5.2 CLASSIFICATION AND SELECTION OF DERMATOLOGICAL VEHICLES (OINTMENT BASE)
- 5.3 METHODS FOR PREPARATION OF OINTMENT, TRITURATION METHOD, FUSION METHOD AND CHEMICAL REACTION METHOD, EMULSIFICATION METHOD
- 5.4 STABILITY OF OINTMENTS

- 5.5 DEFINITION & FORMULATION OF CREAMS
- 5.6 DEFINITION OF PASTES, BASES OF PASTES, PREPARATION OF PASTES AND THEIR PRESERVATION, DIFFERENCES BETWEEN OINTMENTS AND PASTES
- 5.7 DEFINITION & FORMULATION OF GELS
- 5.8 DEFINITION & FORMULATION OF DIFFERENT TYPES OF JELLIES
- 5.9 DEFINITION & FORMULATION OF LOTIONS AND LINIMENTS
- 5.10 DEFINITION OF SUPPOSITORIES AND PESSARIES, MERITS AND DEMERITS OF SUPPOSITORIES, TYPES OF SUPPOSITORIES
- 5.11 CLASSIFICATION AND PROPERTIES OF SUPPOSITORIES BASE
- 5.12 PREPARATION AND PACKING OF SUPPOSITORIES
- 5.13 DEFINITION & FORMULATION OF EAR DROPS, NASAL DROPS

UNIT-VI

Sterile Preparations; Immunological products; Basic structure, layout, sections and activities of pharmaceutical manufacturing plants Quality control and quality assurance

- 6.1 DEFINITION, GENERAL REQUIREMENTS FOR PARENTERAL DOSAGE FORMS, TYPES OF PARENTERAL FORMULATIONS VEHICLES, ADJUVANT, PROCESSING AND PERSONNEL, FACILITIES
- 6.2 PREPARATION OF IV FLUIDS, ADMIXTURES, TOTAL PARENTERAL NUTRITION, DIALYSIS FLUIDS
- 6.3 EVALUATION OF PARENTERAL PRODUCTS, LEAKER TEST, CLARITY TEST,
- 6.4 PRINCIPLE AND PROCEDURE OF STERILITY TEST
- 6.5 PRINCIPLE AND PROCEDURE OF PYROGEN TEST
- 6.6 IMMUNOLOGICAL PREPARATIONS , MANUFACTURING METHODS OF SERA, VACCINES, TOXOIDS
- 6.7 DEFINITION AND CONCEPTS OF QUALITY CONTROL & QUALITY ASSURANCE
- 6.8 CURRENT GOOD MANUFACTURING PRACTICE (CGMP)
- 6.9 INTRODUCTION TO CONCEPT OF CALIBRATION AND VALIDATION

ER20-12T -PHARMACEUTICAL CHEMISTRY

Unit – I:

- **Introduction to Pharmaceutical chemistry:**

- 1.1 Scope and objectives of pharmaceutical chemistry
- 1.2 Sources and types of errors in pharmaceutical chemistry
- 1.3 Accuracy, precision, Significant figures
- 1.4 Sources of impurities
- 1.5 Effects of impurities in pharmacopoeial substances
- 1.6 Limit test for chlorides
- 1.7 Limit test for sulphates
- 1.8 Limit test for heavy metals
- 1.9 Limit test for iron
- 1.10 Limit test for arsenic

- **Volumetric analysis**

- 1.11 Fundamentals of volumetric analysis
- 1.12 Acid-base titration
- 1.13 Non-aqueous titration
- 1.14 Precipitation titration
- 1.15 Complexometric titration
- 1.16 Redox titration
- 1.17 Gravimetric analysis
- 1.18 Principle and method for gravimetric analysis

Unit – II:

Pharmaceutical formulations, market preparations, storage conditions and uses:

- 2.1 Haematinics
- 2.2 Gastro-intestinal Agents:
- 2.3 Topical agents:
- 2.4 Dental products
- 2.5 Medicinal gases

Unit – III:

Drugs Acting on Central Nervous System-Definition, classification, chemical name, chemical structure (compounds marked with*) uses, stability and storage conditions, different types of formulations and their popular brand names:

- 3.1 Anaesthetics
- 3.2 Sedatives and Hypnotics
- 3.3 Antipsychotics
- 3.4 Anticonvulsants
- 3.5 Anti-Depressants

Unit – IV:

Drugs Acting on Autonomic Nervous System-Definition, classification, chemical name, chemical structure (compounds marked with*) uses, stability and storage conditions, different types of formulations and their popular brand names:

- 4.1 Sympathomimetic Agents
- 4.2 Adrenergic Antagonists
- 4.3 Cholinergic Drugs and Related Agents
- 4.4 Cholinergic Blocking Agents
- 4.5 Synthetic Cholinergic Blocking Agents
- 4.6 Anti-Arrhythmic Drugs
- 4.7 Anti-Hypertensive Agents
- 4.8 Antianginal Agents

Unit – V:

Diuretics-Definition, classification, chemical name, chemical structure (compounds marked with*) uses, stability and storage conditions, different types of formulations and their popular brand names:

- 5.1 Diuretics
- 5.2 Hypoglycemic Agents
- 5.3 Analgesic And Anti-Inflammatory Agents
- 5.4 Nonsteroidal Anti-Inflammatory agents
- 5.5 Anti-Neoplastic Agents

Unit – VI:

Anti-Infective Agents-Definition, classification, chemical name, chemical structure (compounds marked with*) uses, stability and storage conditions, different types of formulations and their popular brand names:

- 6.1 Antifungal Agents
- 6.2 Urinary Tract Anti-Infective Agents
- 6.3 Anti-Tubercular Agents
- 6.4 Antiviral Agents
- 6.5 Antimalarials
- 6.6 Sulfonamides
- 6.7 Antibiotics, Macrolides
- 6.8 Tetracyclines and Miscellaneous

ER20-13T -PHARMACOGNOSY

UNIT – I:

Definition, history, Present status and scope of Pharmacognosy, Classification of Crude drugs;

Adulteration and Evaluation of Crude Drugs

- 1.1 Definition, history, scope of Pharmacognosy
- 1.2 Classification of Crude drugs
- 1.3 Adulteration of Crude drugs
- 1.4 Evaluation of Crude drugs

UNIT – II:

Occurrence, distribution, outline of isolation, identification tests, therapeutic activity and pharmaceutical application of alkaloids, terpenoids, glycosides, volatile oils, tannins and Resins;

Astringents- Myrobalan, Black Catechu, Pale Catechu; **Anti-tumor-** Vinca, Podophyllum.

- 2.1 Chemical nature of crude drugs – Alkaloids
- 2.2 Chemical nature of crude drugs – Glycosides
- 2.3 Chemical nature of crude drugs – Terpenoids
- 2.4 Chemical nature of crude drugs - Volatile oils
- 2.5 Chemical nature of crude drugs - Tannins
- 2.6 Chemical nature of crude drugs – Resins
- 2.7 Myrobalan
- 2.8 Black Catechu
- 2.9 Vinca
- 2.10 Podophyllum

UNIT – III:

Occurrence, distribution Organoleptic, evaluation of Crude Drugs-**Laxatives-** Aloes, Castor oil, Ispaghula, Senna. **Cardiotonics-** Digitalis, Arjuna. Cinnamon. **Drugs acting on CNS:** Hyoscyamus, Belladonna, Ephedra, Opium, Tea leaves, Coffee seeds, Coca. **Anti-tussives-** Vasaka, Tolu Balsam. **Anti-Rheumatics-** Colchicum seeds.

- 3.1 Aloe
- 3.2 Senna
- 3.3 Ispaghula
- 3.4 Castor Oil
- 3.5 Digitalis
- 3.6 Arjuna
- 3.7 Hyoscyamus
- 3.8 Belladonna
- 3.9 Ephedra
- 3.10 Opium
- 3.11 Tea Leaves
- 3.12 Coffee Seeds
- 3.13 Coca
- 3.14 Vasaka
- 3.15 Tolu Balsam
- 3.16 Colchicum seed

UNIT – IV:

Occurrence, distribution Organoleptic, evaluation of Crude Drugs **Carminatives & G.I. regulators**- Coriander, Fennel, Cardamom, Ginger, Clove, Black pepper , Asafoetida, Nutmeg, **Anti-hypertensives**- Rauwolfia. **Anti-diabetics**: Pterocarpus, Gymnema. **Diuretics**: Gokhru, Punernava. **Anti-dysentrics**: Ipecac **Antiseptics and disinfectants**: Benzoin, myrrh, neem, turmeric.

- 4.1 Coriander
- 4.2 Fennel
- 4.3 Cardamom
- 4.4 Ginger
- 4.5 Black pepper
- 4.6 Asafoetida
- 4.7 Nutmeg
- 4.8 Clove

- 4.9 Cinnamon
- 4.10 Rauwolfia
- 4.11 Pterocarpus
- 4.12 Gymnema
- 4.13 Gokhru
- 4.14 Punarnava
- 4.15 Ipecacuanha
- 4.16 Benzoin
- 4.17 Myrrh
- 4.18 Neem
- 4.19 Turmeric

UNIT – V:

Occurrence, distribution Organoleptic, evaluation of Crude Drugs **Antimalarials-** Cinchona, Artemisia, **Oxytocics-**Ergot. **Vitamins-** Shark liver oil and Cod liver oil. Enzymes- Papaya, Diastase, Yeast, pancreatin. **Pharmaceutical aids-**Kaolin, Lanolin, Bees Wax, Acacia, Tregacanth, Sodium Alginate, Agar, Guar Gum, Gelatine. **Miscellaneous Drugs:** Squill, Galls, Ashwagandha, Vasaka, Pale Catechu, Tulsi, Guggul. **Plant Fibers used as Surgical dressings:** Cotton, Silk, Wool, Regenerated Fiber. Sutures: Surgical Catgut and Ligatures.

- 5.1 Cinchona
- 5.2 Artemisia
- 5.3 Ergot
- 5.4 Shark liver oil
- 5.5 Cod liver oil
- 5.6 Papaya
- 5.7 Diastase
- 5.8 Yeast
- 5.9 Pancreatin
- 5.10 Kaolin
- 5.11 Lanolin

- 5.12 Beeswax
- 5.13 Acacia
- 5.14 Tregacanth
- 5.15 Sodium Alginate
- 5.16 Agar
- 5.17 Guargum
- 5.18 Gelatin
- 5.19 Squill
- 5.20 Galls
- 5.21 Ashwagandha
- 5.22 Tulsi
- 5.23 Guggul
- 5.24 Vasaka
- 5.25 Pale Catechu
- 5.26 Cotton
- 5.27 Wool
- 5.28 Silk
- 5.29 Regenerated fibers
- 5.30 Surgical Catgut
- 5.31 Ligatures

UNIT – VI:

Basic principles involved in the traditional systems of medicine like: Ayurveda, Siddha, Unani and Homeopathy. **Method of preparation of Ayurvedic formulations** like: Arista, Asava, Gutika, Taila, Churna, Lehya and Bhasmal. **Role of medicinal and aromatic plants in national economy and their export potential; Herbs as Health Food:** Nutraceuticals, Anti-oxidants, Probiotics, Prebiotics, Dietary Fibers, Omega-3-Fatty acids, Spirulina, Carotenoids, Soya and Garlic. **Introduction to herbal formulations.** Herbal cosmetics: Sources, chemical constituents, commercial preparations, therapeutic and cosmetic uses of: Aloe vera gel, Almond oil, Lavender oil, Olive oil, Rosemary oil, Sandal Wood oil. Phytochemical investigation of drugs

- 6.1 Ayurveda
- 6.2 Siddha
- 6.3 Unani
- 6.4 Homeopathy
- 6.5 Arista
- 6.6 Asava
- 6.7 Gutika
- 6.8 Taila
- 6.9 Churna
- 6.10 Lehya
- 6.11 Bhasmal
- 6.12 Role of medicinal and aromatic plants in national economy and their export potential
- 6.13 Nutraceuticals
- 6.14 Anti-oxidants
- 6.15 Probiotics
- 6.16 Prebiotics
- 6.17 Dietary fibers
- 6.18 Omega 3 fatty acids
- 6.19 Spirulina
- 6.20 Carotenoids
- 6.21 Soya
- 6.22 Garlic
- 6.23 Introduction to herbal formulations
- 6.24 Aloevera gel
- 6.25 Almond oil
- 6.26 Lavender Oil
- 6.27 Olive Oil
- 6.28 Rosemary oil
- 6.29 Sandal wood oil
- 6.30 Phytochemical investigation of drugs

ER20-14T-HUMAN ANATOMY & PHYSIOLOGY

Unit-I:

Scope of Anatomy and Physiology - Definition of various terminologies - **Structure of Cell:** Components and its functions.

Tissues of the human body:

- Epithelial, Connective, Muscular and Nervous tissues – their sub-types and characteristics

Osseous System:

- Structure and functions of bones of axial and appendicular skeleton
- Classification, types and movements of joints, disorders of joints

Learning Outcomes:

- 1.1 Definition of Anatomy and Physiology, various basic terminologies used in HAP, directional terms, anatomical planes, body cavities.
- 1.2 Fundamental knowledge on the structure and functions of various systems of the human body.
- 1.3 Structure of cell, function of cell components.
- 1.4 Process by which substances are transferred across cell membrane
- 1.5 Explain the anatomy, physiology and functions of various Tissues and cell, organization of cellular system.
- 1.6 Introduction of tissues, classification
- 1.7 Anatomy, sub-types, characteristics and function of Epithelial tissue
- 1.8 Anatomy, sub-types, characteristics and function of Muscular tissue
- 1.9 Anatomy, sub-types, characteristics and function of Nervous tissue
- 1.10 Anatomy, sub-types, characteristics and function of Connective tissue
- 1.11 Introduction to skeleton and bones, classification, structure of long, short, flat irregular bone and functions
- 1.12 Axial skeleton – skull includes face, auditory ossicles and hyoid bone, thorax- rib cage and sternum, vertebral column(different vertebra),
- 1.13 Appendicular skeleton - Pectoral girdle and pelvic girdle
- 1.14 Introduction to joints, Classification, types of joints, movement of joints and their function
- 1.15 Joint disorders – Ankylosing spondylitis, Degenerative disc disease, Fibromyalgia acute and chronic arthritis

Unit-II:

Haemopoietic System

- Composition and functions of blood
- Process of Hemopoiesis
- Characteristics and functions of RBCs, WBCs and platelets
- Mechanism of Blood Clotting
- Importance of Blood groups

Lymphatic System

- Lymph and lymphatic system, composition, function and its formation.
- Structure and functions of spleen and lymph node.

Urinary system

- Anatomy and physiology of urinary system
- Physiology of urine formation
- Renin - angiotensin system
- Clearance tests and micturition

Learning Outcomes:

- 2.1 Blood - Definition and functions
- 2.2 Composition of blood
- 2.3 Characteristics and functions of blood elements - RBCs, WBCs and platelets.
- 2.4 Process of Haemopoiesis
- 2.5 Mechanism of blood clotting
- 2.6 Importance of blood groups
- 2.7 Brief information regarding disorders of blood – anaemia, bleeding disorders, blood cancers
- 2.8 Definition of lymph and composition
- 2.9 Formation and functions of lymph
- 2.10 Composition of the lymphatic system.
- 2.11 Principal functions of the lymphatic system.
- 2.12 Structure and functions of lymph node.
- 2.13 Name and functions of lymph glands
- 2.14 Structure and function of spleen

- 2.15 Physical characteristics and Composition of normal urine
- 2.16 Anatomy of urinary system
- 2.17 Physiology of urinary system
- 2.18 Structure of nephron and functions of nephron
- 2.19 Physiology of urine formation
- 2.20 Renin angiotensin aldosterone system
- 2.21 Structure and functions of kidney
- 2.22 Clearance tests- Blood creatinine level, creatinine clearance test, Blood urea nitrogen-to creatinine ratio (BUN:creatinine)
- 2.23 Micturition reflex

Unit-III:

Cardiovascular System:

- Anatomy and Physiology of heart
- Blood vessels and circulation (Pulmonary, coronary and systemic circulation)
- Cardiac cycle and Heart sounds, Basics of ECG
- Blood pressure and its regulation

Skeletal muscles

- Histology
- Physiology of muscle contraction
- Disorder of skeletal muscles

Learning Outcomes:

- 3.1 Internal and external anatomy of the heart
- 3.2 Functions of the heart
- 3.3 Types and comparison of blood vessels
- 3.4 Arterial and venous system with special reference to the names and positions of main arteries and veins
- 3.5 Circulatory system pathways - systemic, pulmonary, coronary and portal circulation
- 3.6 Events of cardiac cycle, heart sounds
- 3.7 Basics of ECG, significance of ECG
- 3.8 Blood pressure definition, Factors maintaining and affecting Blood pressure

- 3.9 Blood pressure measurement and its recording
- 3.10 Histology and physiology of skeletal muscle
- 3.11 Names, positions, attachments and functions of various skeletal muscles
- 3.12 Physiology of muscle contraction
- 3.13 Disorders related to skeletal muscle - arthritis, osteoporosis, dislocation, sprain, rickets, muscular dystrophy, tetany.

Unit-IV:

Respiratory System

- Anatomy of respiratory organs and their functions
- Regulation Mechanism of respiration
- Respiratory volumes and capacities – definitions

Digestive System

- Anatomy and Physiology of GIT
- Anatomy and functions of accessory glands
- Physiology of digestion and absorption

Learning Outcomes:

- 4.1 Respiration process definition
- 4.2 Anatomy of respiratory organs and functions
- 4.3 Mechanism of respiration
- 4.4 Muscles assisting in respiration
- 4.5 Regulation of respiration
- 4.6 Definition of Lung volumes and capacities
- 4.7 Anatomy and physiology of GIT
- 4.8 Digestive enzymes and their functions
- 4.9 Anatomy and functions of accessory glands salivary glands, liver, gallbladder, and pancreas
- 4.10 Definition of the process digestion and absorption
- 4.11 Physiology of digestion
- 4.12 Physiology of absorption

Unit-V:

Nervous system

- Classification of nervous system
- Anatomy and physiology of cerebrum, cerebellum, mid brain
- Function of hypothalamus, medulla oblongata and basal ganglia
- Spinal cord-structure and reflexes
- Names and functions of cranial nerves
- Anatomy and physiology of sympathetic and parasympathetic nervous system (ANS)

Sense organs - Anatomy and physiology of

- Eye
- Ear
- Skin
- Tongue
- Nose

Learning Outcomes:

- 5.1 Introduction to Nervous system, classification and functions
- 5.2 Structure and function of neuron
- 5.3 Brain – composition, membrane coverings, ventricles
- 5.4 Anatomy and Physiology of cerebrum
- 5.5 Anatomy and physiology of cerebellum
- 5.6 Anatomy and physiology of midbrain
- 5.7 Functions of hypothalamus, medulla oblongata and basal ganglia.
- 5.8 Neuromuscular junction, reflex arc
- 5.9 Structure and functions of spinal cord
- 5.10 Spinal nerves and reflexes
- 5.11 Names and functions of cranial nerves
- 5.12 Introduction to Autonomous nervous system
- 5.13 Anatomy and physiology of sympathetic and parasympathetic nervous system
- 5.13 Anatomy and Physiology of sense organs Eye, Ear, Skin, Tongue and Nose

Unit-VI:

Endocrine system (Hormones and their functions)

- Pituitary gland
- Adrenal gland
- Thyroid and parathyroid gland
- Pancreas and gonads

Reproductive system

- Anatomy of male and female reproductive system
- Physiology of menstruation
- Spermatogenesis and Oogenesis
- Pregnancy and parturition

Learning Outcomes:

- 6.1 Endocrine system introduction
- 6.2 Endocrine glands location, structure and Hormones
- 6.3 Functions of pituitary gland, adrenal gland
- 6.4 Functions of thyroid , parathyroid gland
- 6.5 Functions of Pancreatic hormones
- 6.6 Functions of Gonadal hormones- Testosterone, Estrogen and Progesterone
- 6.7 Definition of terms Reproductive system, Puberty, menopause
- 6.8 Anatomy of male and female reproductive system
- 6.9 Physiology of menstruation, events of menstrual cycle
- 6.10 Process of spermatogenesis and oogenesis
- 6.11 Mechanism of Pregnancy and parturition

ER20-15T -SOCIAL PHARMACY

UNIT-I

Introduction to Social Pharmacy

- 1.1 Definition and Scope. Social Pharmacy as a discipline and its scope in improving the public health.
- 1.2 Role of Pharmacists in Public Health. (2)
- 1.3 Concept of Health - WHO Definition, various dimensions, determinants, and health indicators.
- 1.4 National Health Policy – Indian perspective (1)
- 1.5 Introduction to Millennium Development Goals, Sustainable Development Goals, FIP Development Goals (1)
- 1.6 Introduction to health systems and all ongoing National health programs in India, their objectives, functioning, outcome and the role of pharmacists.
- 1.7 Role of Pharmacists in disaster management.
- 1.8 Pharmacoeconomics - basics, Health Insurance, Health Maintenance Organizations (HMOs),
- 1.9 Health spending, Out- of-pocket expenses

UNIT-II

Preventive healthcare – Role of Pharmacists in the following

- 2.1 Demography and Family Planning (3)
- 2.2 Mother and child health, importance of breastfeeding, ill effects of infant milk substitutes and bottle feeding (2)
- 2.3 Overview of Vaccines, types of immunity and immunization (5)

UNIT-III

Environment and Health

- 3.1 Effect of Environment on Health – Water pollution, importance of safe drinking water,
- 3.2 Waterborne diseases,
- 3.3 Air pollution,
- 3.4 Noise pollution,
- 3.5 Sewage and solid waste disposal,
- 3.6 Occupational illnesses,
- 3.7 Environmental pollution due to pharmaceuticals (6)
- 3.8 Psychosocial Pharmacy: Drugs of misuse and abuse – psychotropics, narcotics, alcohol, tobacco products.

- 3.9 Social Impact of these habits on social health and productivity and suicidal behaviours (2)

UNIT-IV

Nutrition and Health:

- 4.1 Basics of nutrition – Macronutrients and Micronutrients (2)
- 4.2 Importance of water and fibres in diet (1)
- 4.3 Balanced diet, nutrition deficiency diseases,
- 4.4 Ill effects of junk foods, calorific and nutritive values of various foods, fortification of food (3)
- 4.5 Introduction to food safety, adulteration of foods,
- 4.6 Effects of artificial ripening, use of pesticides, genetically modified foods (1)
- 4.7 Dietary supplements, nutraceuticals, food supplements – indications, benefits, 4.8 Drug-Food Interactions (2)

UNIT-V

Epidemiology

- 5.1 Introduction to Microbiology and common microorganisms (3)
- 5.2 Epidemiology: Introduction to the terms Epidemiology, its applications, terms such as epidemic, pandemic, endemic, mode of transmission, quarantine, isolation, incubation period, contact tracing. (2)
- 5.3 Causative agents, epidemiology and clinical presentations and
- 5.4 Role of Pharmacists in educating the public in prevention of the following communicable diseases: Respiratory infections – chickenpox, measles,
- 5.5 Rubella, mumps
- 5.6 Influenza (including Avian-Flu, H1N1, SARS, MERS, COVID-19),
- 5.7 Diphtheria, whooping cough,
- 5.8 Meningococcal meningitis,
- 5.9 Acute respiratory infections, tuberculosis, Ebola (10)

UNIT-VI

Causative agents, epidemiology and clinical presentations and Role of Pharmacists in educating the public in prevention of the following communicable diseases: Intestinal infections – poliomyelitis, viral hepatitis, cholera, acute diarrheal diseases, typhoid, amebiasis, worm infestations, food poisoning (8)

- Arthropod-borne infections - dengue, malaria, filariasis and, chikungunya (4)
- Surface infections – trachoma, tetanus, leprosy (3)
- STDs, HIV/AIDS (3)

Nutrition and Health:

- Basics of nutrition – Macronutrients and Micronutrients (2)
- Importance of water and fibres in diet (1)
- Balanced diet, nutrition deficiency diseases, ill effects of junk foods, calorific and nutritive values of various foods, fortification of food (3)
- Introduction to food safety, adulteration of foods, effects of artificial ripening, use of pesticides, genetically modified foods (1)
- Dietary supplements, nutraceuticals, food supplements – indications, benefits, Drug-Food Interactions (2)

6.1 Causative agents, epidemiology and clinical presentations and Role of Pharmacists in educating the public in prevention of the following communicable diseases:
Intestinal infections – poliomyelitis, viral hepatitis

6.2 Cholera, acute diarrheal diseases,

6.3 Typhoid, amebiasis,

6.4 Worm infestations, food poisoning (8)

6.5 Arthropod-borne infections - dengue, malaria,

6.6 Filariasis, chikungunya (4)

6.7 Surface infections – trachoma, tetanus,

6.8 Leprosy, STDs, HIV/AIDS (3)