CENTURION UNIVERSITY OF TECHNOLOGY AND MANAGEMENT,ODISHA

SCHOOL OF PARAMEDICS & ALLIED HEALTH SCIENCES

Centurion
UNIVERSITY
Shaping Lives...
Empowering Communities...

BACHELORE OF SCIENCE IN EMERGENCY MEDICINE TECHNOLOGY

2021

SYLLABUS

BACHELOREOFSCIENCEINEMERGENCYMEDICINETECHNOLOGY

Program structure

BASKET 1	**BASKET 2**	**BASKET 3**	**BASKET 4**	**TOTAL CREDITS**
School Core Courses	**Discipline Core Courses**	**Ability Enhancement Compulsory Course (AECC)** To be selected from University Basket	**Skill Courses** (To be selected from University Basket)	
SC-1 SC-2 SC-3 SC-4	DC-1 DC-2 DC-3 DC-4 DC-5 DC-6 DC-7 DC-8 DC-9 DC-10 DC-11 DC-12 DC-13 DC-14 DC-15 DC-16 DC-17 DC-18 DC-19 DC-20 DC-21 DC-22	AECC-I AECC-II	SFS-1 SFS-2 SFS-3 SFS-4 SFS-5	
18 Credits	**96 Credits**	**6 Credits**	**20 Credits**	**140 Credits (Minimum Credits required)**

BACHELORE OF SCIENCE IN EMERGENCY MEDICINE TECHNOLOGY
Basket 1

Sl. No.	CODE	SUBJECT	SUBJECT TYPE (T+P+Pj)	CREDITS
SC-1	CUTM1757	General Anatomy	3+2+0	5
SC-2	CUTM1758	General Physiology	3+2+0	5
SC-3	CUTM1732	Biochemistry	3+1+0	4
SC-4	CUTM1729	Cell Biology	3+0+1	4

Basket II

CODE	SUBJECT	SUBJECT TYPE (T+P+Pj)	CREDITS
CUTM1733	Microbiology	3-2-0	5
CUTM1839	Medical Terminology & Record keeping	2-0-1	3
CUTM1818	Basic principles of Hospital management	3-0-1	4
CUTM1862	Hospital and clinical pharmacy	3-2-0	5
CUTM1851	Introduction to emergency services- Part I	2-2-0	4
CUTM1852	Emergency DepartmentEquipment Part - I	2-2-0	4
CUTM1853	Emergency Department Pharmacology Part-I	2-2-0	4
CUTM1742	Basic Computer and Information Science	0-2-0	2
CUTM1813	Pharmacology	3-0-1	4
CUTM1854	Introduction to emergency services - Part II	2-2-0	4
CUTM1855	Emergency department equipment -Part II	2-2-0	4
CUTM1856	Emergency Department Pharmacology-Part II	2-2-0	4
CUTM1807	Medical Psychology	2-0-1	3

CUTM1857	Psychiatric, Geriatric & Obstetric Emergencies	2-0-0	2
CUTM1858	Medical emergencies - Part I	3-1-0	4
CUTM1859	Medical emergencies- Part II	3-1-0	4
CUTM1751	Medical Laboratory Management	3-0-2	5
CUTM1753	Introduction to Quality and Patient Safety	3-0-2	5
CUTM1734	Medical Law and Ethics	2-0-1	3
CUTM1715	Clinical Pathology	3-1-0	4
CUTM1860	Project	12	12
CUTM1861	Internship	12	12

Basket-1

CUTM1757-GENERAL ANATOMY

Subject Name	Code	Type of course	LTP	Credits
GENERAL ANATOMY	CUTM1757	Theory	**3+2+0**	5

Description:

General anatomy deals with the entire human anatomy with emphasis on different tissues, blood vessels, glands, nerves and the entire central nervous system in particular.

Course outcome

- To obtain Knowledge about the general anatomy – the structure of different organs and position of the organ.
- To familiarize the student with the different anatomical terminology and positions of the body.
- To develop the students to identify the structural reinforcement of the anatomical structures of human body, which would help the student to develop 3D images of the organs

Course Objective

At the end of the semester, the student should be able to:

- Comprehend the normal disposition, inter-relationships, gross, functional and applied anatomy of various structures in the human body.
- Identify the microscopic structures of various tissues, and organs in the human body and correlate the structure with the functions.
- Comprehend the basic structure and connections between the various parts of the central nervous system so as to analyze the integrative and regulative functions on the organs and systems.

Module -1 INTRODUCTION TO ANATOMY AND SKELETON

Introduction to Anatomy: Sub division of anatomy, terms and terminology, systems of the Body. Skeleton: Bones: function of bones, classification of bones, parts of young bone, development of bone,classification of bones, blood supply bone, cartilage, clinical anatomy

Module –2 MUSCLES & JOINTS

Muscle: types of muscles, structure of striated muscle, naming of muscle, fascicular architecture ofmuscle, actions of muscle, nerve supply. Joints: Classification, structures of joints, movements, mechanism of lubrication, biomechanics, levers, blood supply, nerve supply, and applied anatomy.

Practice: - Identification of different joints and bones from Charts and Human Skeleton.

Module -3 CIRCULATOTY SYSTEM, LYMPHATIC SYSTEM & SKIN

Circulatory system: Types of circulation of blood, arteries, veins, capillaries, end arteries, applied aspect. Lymphatic system: components, lymph nodes, clinical anatomy Skin: structure of skin, superficial facia, deep facia, clinical aspects

Module -4 UPPER LIMB & LOWER LIMB

(A) Upper extremity: Bony architecture Joints – structure, range of movement Muscles – origin insertion, actions, nerve supply Major nerves – course, branches and implications of nerve injuries Development of limb bones, muscles and anomalies Radiographic identification of bone

and joints Applied anatomy

(B) Lower extremity: Bony architecture Joints – structure, range of movement Muscles – origin, insertion, actions, nerve supply Major nerves – course, branches and implications of nerve injuries Development of limb bones, muscles and anomalies Radiographic identification of bone and joints Applied anatomy

Module -5 THORAX, ABDOMEN & BACK MUSCLES

Thorax: skeleton of thorax, intercostal spaces, pleura, lung, mediastinum, heart: morphology, blood supply, interior of heart, general information about upper respiratory tract (trachea, esophagus,pharynx and larynx) clinical anatomy.

Abdomen: Anterior and posterior abdominal wall, general information about viscera: stomach, liver, pancreas, duodenum, kidney, ureter, urinary bladder, uterus and its adnexa.

Practice: -identification of structure, position, and different parts of Lungs, Heart, Kidney from charts, Models.

Back muscles: Superficial layer, Deep muscles of back, their origin, insertion, action and nerve supply. Vertebral column – Structure & Development, Structure & Joints of vertebra Thoracic cage. Radiographic identification of bone and joints Applied anatomy

Practice: - Radiography identification of different architecture joins, structure and position of Bonesfrom Skeleton, Model or PPT.

Module -6 NERVOUS SYSTEM & SPECIAL SENSE ORGANS

Nervous system: parts of nervous system, neurons, peripheral nerves, spinal nerves, summary of cranial nerves, parasympathetic nervous system. Special sense organs: Structure and function of Visualsystem, auditory system, gustatory system, olfactory system.

Module -7 HEAD AND NECK & CENTRAL NERVOUS SYSTEM

Head and neck: scalp, facial muscles, cranial skeleton, triangles of neck, parotid region, temporomandibular joint, muscles of mastication, applied. Central nervous system: General idea about spinal cord, brainstem, cerebrum, cerebellum, ventricular system, diencephalon, blood supply of brain and its applied, meninges and cerebrospinal fluid.

Practice: -Identification of structure and different parts of Central nervous system from chart.

Identification of different blood supply in brain from PPT.

Demonstration of dissected parts (upper extremity, lower extremity, thoracic & abdominal

viscera, face and brain).

REFERENCE BOOKS

1. Text book Anatomy & Physiology for nurses by Evelyn Pearce, Publisher Faber amp; Faber.
2. Text book Anatomy and Physiology for nurses by Sears, Publisher Edward Arnold.
3. Anatomy & Physiology- by Ross and Wilson, Publisher Elsevier.
4. Anatomy amp; Physiology: Understanding the human body by Clark, Publisher Jones & Bartlett.
5. Anatomy and Physiology for nurses by Pearson, Publisher Marieb& Hoehn.
6. Anatomy and Physiology by N Murgesh, Publisher satya.

CUTM1758-General Physiology

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
General Physiology	CUTM1758	Theory+ Practice	3-2-0	Fundamental Science

Course Objective

- To obtain Knowledge about the general physiological systems and physiological terminology.
- To familiarize the student with the functionality of different physiological systems.
- To develop the technical skills in identifying the Bio potential and their recording and advanced systems

Course Outcome:

- Students acquire knowledge about the general physiological systems and physiological terminology.
- Student get familiarize with the functionality of different physiological systems
- Students can technically identify the Bio potential signals, their recording and advanced systems.

Course Outline

Module -I

Scope of physiology. Definition of various terms used in physiology. Structure of cell, the function of its components with special reference to mitochondria and microsomes. Elementary tissues: Elementary tissues of the body, i.e. epithelial tissue, muscular tissue, connective tissue, and nervous tissue.

Module -II

Cardiovascular System: Composition of the blood, functions of blood elements. Blood group and coagulation of blood. Brief information regarding disorders of the blood. Heart: myocardium– innervations– transmission of cardiac impulse- Events during the cardiac cycle–cardiac output. Structure and functions of various parts of the heart.

Module-III

Circulation: General principles, Peripheral circulation: peripheral resistances–arterial blood

pressure– measurements–factors, Regulation variations–capillary circulation–venous circulation. Special circulation: coronary cerebral–miscellaneous, Arterial and venous system with special reference to the names and positions of main arteries and veins. Brief information about cardiovascular disorders.

Module -IV

Respiratory system: Various parts of the respiratory system and their functions, physiology of respiration. Mechanics of respiration–pulmonary function tests–transport of respiratory gases-neural and chemical regulation of respiration–hypoxia, cyanosis, dyspnoea–asphyxia.

Module-V

Urinary System: Various parts of the urinary system and their functions, structure, and functions of the kidney, the structure of nephron– mechanism of urine formation, composition of the urine and abnormal constituents, urinary bladder & micturition. Pathophysiology of renal diseases and edema.

Module-VI

Digestive System: names of various parts of the digestive system and their functions. structure and functions of the liver, physiology of digestion- functions, and regulations of Salivary digestion, Gastric pancreatic digestion, Intestinal digestion, and absorption.

Lymphatic system: Name and functions of lymph glands, Reticulo endothelial system: Spleen, lymphatic tissue, Thymus

Module-VII

Nervous System: Neuron–Conduction of impulse– synapse–receptor. Sensory organization–pathways and perception, Reflexes–the cerebral cortex– functions. Thalamus–Basal ganglia Cerebellum, the hypothalamus. Autonomic nervous system– motor control of movements

Reproductive system. Structure and function of Male reproductive system–control & regulation, Female reproductive system– uterus–ovaries–menstrual cycle–regulation–pregnancy & delivery–breast–family planning

Practice:

1. Identification of different organs and systems from charts
2. Identification of different blood cells, their normal and abnormal morphology from slides.
3. Examination of pulse, B.P., Respiratory rate.
4. Reflexes
5. Spirometry to measure various lung capacities & volumes, Respiratory rate, Tidal volume, IRV, IC
6. ERV, EC, residual volume on Spirometry.
7. An estimate of Hemoglobin, R.B.C., W.B.C., TLC, DLC, ESR count.
8. Blood indices, Blood grouping, Bleeding & Clotting time

Textbooks

1. Textbook Anatomy & Physiology for nurses by Evelyn Pearce, Publisher Faber& Faber.
2. Text book Anatomy and Physiology for nurses by Sears, Publisher Edward Arnold.
3. Anatomy & Physiology- by Ross and Wilson, Publisher Elsevier.
4. Anatomy& Physiology: Understanding the human body by Clark, Publisher Jones & Bartlett.
5. Anatomy and Physiology for nurses by Pearson, Publisher Marieb & Hoehn.
6. Anatomy and Physiology by N Murgesh, Publisher Satya.

CUTM1729- Cell Biology

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Cell Biology	CUTM1729	Theory+ Project	3-0-1	Fundamental Science

Course Objective

- Determine the parts of the cell membrane and the cell wall
- Distinguish the types and mechanism of mutation
- Compare and contrast the events of cell cycle and its regulation
- Understand the dynamic character of cellular organelles

Course outcome

- Describe the fundamental principals cellular biology
- Develop a deeper understanding of cell structure and how it relates to cellfunctions.
- Understand how cells grow, divide, and die and how these important processes are regulated.
- Understand cell signaling and how it regulates cellular functions. Also how its dis-regulation leads to cancer and other diseases

Course Outline Module –I (12 Hr)

An Overview of Cells: History, Cell theory, Structure and Function of Cell and its Organelles: Biological membranes - Nucleus - Nuclear envelope, Nucleolus, Mitochondria, Chloroplasts, Lysosomes, Gloxysomes and Peroxisomes, endoplasmic reticulum, ribosomes, Golgi complex (Structural organization, function, marker enzymes of the above organelles), Cell types: prokaryotes vs. eukaryotes; from single cell to multi-cellular organism; Different molecules of cell- water, salt and mineral ions etc.

Module- II (14 Hr)

Cell cycle and its regulation, Cellular communication and cell mobility: Cell cycle: G0/G1, S, G2 and M phages (Cell Division: Mitosis, meiosis and cytokinesis); regulation of cell cycle; cell adhesion and roles of different adhesion molecules, gap junctions, Extra- Cellular Matrix (ECM), Cell-cell interaction and cell- ECM interaction, The cytoskeleton, Microtubule- based

movement and microfilament -based movement.

Module-III (14 Hr)

Cell signaling, Programmed Cell Death (Apoptosis) and Cancer: Hormones and their receptors, cell surface receptor, signaling through G-protein coupled receptors (G-PCR), Tyrosine Kinase, signal transduction pathways, second messengers, regulation of signaling pathways, bacterial and plant two- component systems, bacterial chemotaxis, Intrinsic and Extrinsic apoptotic pathway, Caspase enzyme, Biology and elementary knowledge of development and causes of cancer; Tumor viruses, Oncogenes and tumor suppressor genes.

Suggested Readings:

1. The Cell a Molecular Approach (4th Edition) by Cooper & Hausman https://www.thebiomics.com/books/cell-biology/cell-molecular-approach-cooper-and-hausmn- 4th-ed.html
2. Molecular Biology by Friefelder David, Publisher Narosa www.alibris.com/Molecular-Biology-David..
3. Introduction to Cell biology by John K Young, World Scientific publishing company www.overdrive.com/.../introduction-to-cell-biology
4. Introduction to biology,3rd tropic edition by D G Maackean www.amazon.com/Introduction-Biology-D-G-Mackean/.

CUTM1732- Biochemistry

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Biochemistry	CUTM1732	Theory+ Practice	3-1-0	Fundamental Science

Course Objective

- To understand the concept of metabolism of carbohydrates
- To understand the significance of amino acids, proteins
- Use of enzymes in enhancing metabolic reactions
- Role of lipids

Course outcome

- After completion of the course the student will be developed a very good understanding of various biomolecules which are required for development and functioning of cells.
- Would have understood the significance of carbohydrates in energy generation and as storage food molecules for cells.
- They would have understood the significance of proteins and enzymes in accelerating various metabolic activities.
- The conceptual understanding of the subject provides opportunities for skill enhancement and scopes for higher education.

Course Outline
Module- I

Structure of enzyme: Apoenzyme and cofactors, prosthetic group-TPP, coenzyme NAD, metal cofactors, Classification of enzymes.

Mechanism of action of enzymes: active site, transition state complex and activation energy. Lockand key hypothesis, and Induced Fit hypothesis.

Enzyme inhibition, enzyme kinetics.

Diagnostic value of serum enzymes: Creatinine kinase, Alkaline phosphatase, Acid phosphatase,LDH, SGOT, SGPT, Amylase, Lipase, Carbonic anhydrase etc.

Practice: Study of effect of temperature on enzyme activity Study of effect of pH on enzyme activity

Module- II

Carbohydrates: Biomedical importance & properties of Carbohydrates, Classification,

Families of monosaccharides: aldoses and ketoses, trioses, tetroses, pentoses, and hexoses. Stereo isomerism of monosaccharides, epimers, Haworth projection formulae for glucose; chair and boat forms of glucose.

Metabolism: Glycogenesis & glycogenolysis, Glycolysis, citric acid cycle & its significance, Components of respiratory chain, energy relationships during cell respiration, types of respiration. HMP shunt & Gluconeogenesis, regulation of blood glucose level.

Practice: Estimation of Glucose in urine Estimation of Glucose in blood

Module- III

Amino acids: Classification, essential & non-essential amino acids. Chemistry of Proteins & their related metabolism, Classification, biomedical importance.

Metabolism: Ammonia formation & transport, Transamination, Decarboxylation, Urea cycle, metabolic disorders in urea cycle, catabolism of amino acids.

Practice: Estimation of Protein in urine Estimation of Protein in blood

Module- IV

Chemistry of Lipids & their related metabolism: Classification, biomedical importance, essential fatty acids. Brief out line of metabolism: Beta oxidation of fatty acids, fatty liver, Ketogenesis, Cholesterol & it's clinical significance, Lipoproteins in the blood composition & their functions in brief, Atherosclerosis.

Diabetes mellitus: its types, features, gestation diabetes mellitus, glucose tolerance test, glycosuria,Hypoglycaemia& its causes.

Practice: Estimation of Bile pigment in urineEstimation of Bile salts in urine

Suggested Readings:

1. Victor W. Rodwell, David A. Bender, Kathleen M. Botham, Peter J. Kennelly, P. Anthony Weil(2018) Harper's Illustrated Biochemistry. Mc Graw Hill.
2. (e-Book link: https://www.pdfdrive.com/harpers-illustrated-biochemistry-d176838999.html)
3. Nelson DL and Cox MM. (2008). Lehninger Principles of Biochemistry, 5th Ed., W.H. Freeman and Company. (e-Book link: https://www.pdfdrive.com/lehninger-principles-of-biochemistry-5th-edition-d164892141.html)

4. Donald Voet, Judith G. Voet (2011) Biochemistry 4th Edition. Wiley Publishers. (e-Book link: https://www.pdfdrive.com/biochemistry-4th-edition-e165192126.html)
5. Jeremy M. Berg, John L. Tymoczko, LubertStryer. Biochemistry 7th Edition. W.H. Freeman and Company, New York. (e-Book link: https://www.pdfdrive.com/biochemistry-seventh-edition-e167675390.html)

Basket-2

CUTM1742- Basic Computer and Information Science

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Basic Computer and Information Science	CUTM1742	Practice	0-2-0	Fundamentals of Computer

Objective

- Identify the function of computer hardware components.
- Identify the factors that go into an individual or organizational decision on how to purchase computer equipment.
- Identify how to maintain computer equipment and solve common problems relatingto computer hardware.
- Identify how software and hardware work together to perform computing tasks and how software is developed and upgraded
- Identify different types of software, general concepts relating to software categories, and the tasks to which each type of software is most suited or not suited.

Course outcome

- Understand the fundamental hardware components that make up a computer's hardware and the role of each of these components.
- Understand the difference between an operating system and an application program, and what each is used for in a computer.
- Describe some examples of computers and state the effect that the use of computer technology has had on some common products

Course Outline

Module- I Introduction to computer: introduction, characteristics of computer, block diagram of computer, generations of computer. Types of Input output devices. Processor and memory: The Central Processing Unit (CPU), main memory. Storage Devices.

Module- II

Introduction to MS-Word: introduction, components of a word window, creating, opening and insertingfiles, editing a document file, page setting and formatting the text, saving the document, spell checking,printing the document file, creating and editing of table, mail merge. Introduction to Excel: introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs. Introduction to power-point: introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.

Module- III

Introduction to MS-DOS: History of DOS, features of MS-DOS, MS-DOS Commands (internal and external). Introduction of windows: History, features, desktop, taskbar, icons on the desktop, operation with folder, creating shortcuts, operation with windows (opening, closing, moving, resizing, minimizing and maximizing, etc.). Computer networks: introduction, types of network (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid). Internet and its Applications: definition, brief history, basic services (E-Mail, File Transfer Protocol, telnet, the World Wide Web (WWW)), www browsers, use of the internet.

Suggested readings:

1. Objective Computer Awareness
2. Computer Networking (Global Edition)

CUTM1862-Hospital & Clinical Pharmacy

Subject Code	Name of the Subject	Subject Type (T - Pr -Pj)	No. OfCredits
CUTM1862	Hospital & Clinical Pharmacy	3-2-0	5

Course Objective

To be recognized nationally and internationally as a leader in improving medication outcomes and pharmacy practice research and education. To establish relationships with key individuals and organizations to improve the quality use of medicines and health outcomes.

Course outcome

Hospital Pharmacy

1. Know various drug distribution methods
2. Know the professional practice management skills in hospital pharmacies.
3. Provide unbiased drug information to the doctors.

Clinical Pharmacy

1. Interpret evidence and patient data.
2. Implement and/or recommend patient care plans.
3. Monitor the patient and adjust the care plan as needed.

Course Outline:

Module I

Hospital and it's organization Definition, Classification of hospital- Primary, Secondary and Tertiary hospitals. Classification based on clinical and non- clinical basis, Organization Structure of a Hospital, and Medical staffs involved in the hospital and their functions. Hospital pharmacy and its organization Definition, functions of hospital pharmacy Organization structure Location, Layout and staff requirements, and Responsibilities and functions of hospital pharmacists. Adverse drug reaction Classifications - Excessive pharmacological effects, secondary pharmacological effects, idiosyncrasy Allergic drug reactions, genetically determined toxicity, toxicity following sudden withdrawal of drugs Drug interaction- beneficial interactions, adverse

interactions, and pharmacokinetic drug interactions Methods for detecting 149 drug interactions spontaneous case reports and record linkage studies Adverse drug reaction reporting and management. Community Pharmacy Organization and structure of retail and wholesale drug store, types and design Legal requirements for establishment and maintenance of a drug store, Dispensing of proprietary products Maintenance of records of retail and wholesale drug store.

Module II

Drug distribution system in a hospital Dispensing of drugs to inpatients, types of drug distribution systems Charging policy and labelling, Dispensing of drugs to ambulatory patients, and Dispensing of controlled drugs. Hospital formulary Definition, contents of hospital formulary Differentiation of hospital formulary and Drug list Preparation and revision, and addition and deletion of drug from hospital formulary. Therapeutic drug monitoring Need for Therapeutic Drug Monitoring, Factors to be considered during the Therapeutic Drug Monitoring Indian scenario for Therapeutic Drug Monitoring. Medication adherence Causes of medication non-adherence, pharmacist role in the medication adherence, and monitoring of patient medication adherence. Patient medication history interview Need for the patient medication history interview, medication interview forms. Community pharmacy management Financial, materials, staff, and infrastructure requirements.

Module III

Pharmacy and therapeutic committee Organization, functions, Policies of the pharmacy Therapeutic committee in including drugs into formulary, inpatient and outpatient prescription, automatic stop order, and emergency drug list preparation. Drug information services 150 Drug and Poison information Centre, Sources of drug information, Computerized services, and storage and retrieval of information. Patient counseling Definition of patient counseling; steps involved in patient counseling, and Special cases that require the pharmacist Education and training program in the hospital Role of pharmacist in the education and training program Internal and external training program, Services to the nursing homes/clinics Code of ethics for community pharmacy Role of pharmacist in the interdepartmental communication and community health education. Prescribed medication order and communication skills Prescribed

medication order- interpretation and legal requirements Communication skills- communication with prescribers and patients.

Module IV

Budget preparation and implementation Budget preparation and implementation Clinical Pharmacy Introduction to Clinical Pharmacy, Concept of clinical pharmacy. Functions and responsibilities of clinical pharmacist, Drug therapy monitoring - medication chart review Clinical review, pharmacist intervention, Ward round participation Medication history and Pharmaceutical care. Dosing pattern and drug therapy based on Pharmacokinetic & disease pattern. Over the counter (OTC) sales Introduction and sale of over the counter, and Rational use of common over the counter medications.

Module V

Drug store management and inventory control Organisation of drug store, types of materials stocked and storage conditions Purchase and inventory control: principles, purchase procedure, purchase order, procurement and stocking, Economic order quantity Reorder quantity level, and Methods used for the analysis of the drug expenditure Investigational use of drugs 151 Description, principals involved, classification Investigational use of drugs control, identification, Role of hospital pharmacist, advisory committee. Interpretation of Clinical Laboratory Tests Blood chemistry, hematology, and urinalysis

Books Recommended

1. Remington's pharmaceutical sciences.
2. Testing of raw materials used in (1)
3. Evaluation of surgical dressings.
4. Sterilization of surgical instruments, glassware and other hospital supplies.
5. Handling and use of data processing equipments.

CUTM1818-Basic Principles of Hospital Management

Subject Code	Name of the Subject	Subject Type(T - Pr -Pj)	No. OfCredits
CUTM1818	**Basic Principles of Hospital Management**	**3+0+1**	**4**

Course Objects:

- To impart knowledge about the Principles of Hospital Management and Organization
- To familiarize the student with the importance and different functions of Management.
- To learn about the concepts of inventory control and get awareness regarding the National Programmes of Health and disease eradication/control.

Course Outcome:

- The student acquires knowledge about the Principles of Hospital Management and Organization.
- The student understands the importance and different functions of the Management.
- The student gets familiarize thoroughly with the concepts of inventory control and gets awareness regarding the National Programmes of Health and disease eradication/control

Course Outline

Module I:

Introduction to management & Organization:

The evolution of Management, Definition and importance of Management. Planning – Organizing –staffing – Motivating – Leading – Controlling. Management of health care units (in brief).

Module II:

Individual behaviour in organization; organizational functioning (Group/Individual); Perception; Motivation MBO; Organizational Development.

Module III:

Planning and Management of Hospitals & Clinical Services: Building and physical layout – space required for separate function – Planning of infrastructure facilities, clinical services, equipment & Human resources – Types of Hospitals.

Module IV:

Organization and administration of various clinical services; outpatient services . In-patient services, emergency services, operation theatres, ICU's and super specialty services.

Module V:

Organizing of support clinical services & Hospital management: Imaging – CSSD – Laboratory – Blood Bank – diet – Medical Records – Mortuary. Housekeeping – Maintenance (Water, Electricity, Civil, air Conditioning, Lift)-Pest Control-transport-Security. Forecasting-Purchasing & procurement (Sourcing, methods and procedures)

Module VI: Storing & issuing, Concept of inventory control, Maintenance of equipment and contracts (with special reference to major biomedical equipment). Trends in financing of Health and Hospital Services – Classification of Hospitals depending on source of financing – roles of financial institutions.

Module VII: National Programmes of Health and disease eradication / control

- Health Programmes:
- Family Welfare Programme
- National Programme for water supply and sanitation.
- Nutritional Programmes.
- Immunization and universal immunization programme.
- Disease Eradication programme: Leprosy & Guinea worm, polimyclitis.
- Disease control programmes: Tuberculosis, Malaria, Filaria, S.T.D, Goitre, Cholera and other diarrhoeal diseases and National Programme for prevention of blindness including trachoma, vector bone disease.

CUTM1715 -Clinical Pathology

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Clinical pathology	CUTM1715	Theory+ Practice	3-1-0	Fundamental Science

Course Objective

- Analyze body fluid for diagnosis of disease
- Analyze waste product for diagnosis of disease
- Understanding DOT Policy
- Understand Physiological disorder and infectious disease
- Analysis of pregnancy

Course outcome

- Able to collect pathological specimen
- Able to detect diabetes, ketosis, nephritis, jaundice and other physiological disorder
- Able to detect infectious disease (UTI, Hematuria, Filaria, Dysentery, Ulcer, TB, etc.)
- Preservation and processing of pathological sample.
- Identification of Parasites
- Analysis of Infertility disorder

Course Outline

Module-I (16 Hrs)

Introduction of clinical pathology, Composition, collection and preservation of urine, Physical examination of Urine, Chemical Examination of Urine - Sugar and Ketone bodies, Diabetes and Ketosis, Nephritis and UTI, Albumin, Phosphate, BJP, Bile Salt and Bile pigment, Chemical Examination of Urine - Multistix reagent strip, Jaundice, Microscopical Examination of Urine, Operation of Urine Analyzer, Pregnancy test, Report writing and report analysis of Urine

Practice: Operation of Urine analyzer, Benedict Test, Heat and Acid Test, Rothera's Test, Benzidine Test, Fouchet's Test

Lab: Urine Analysis: Collection and Physical Examination, specific gravity, Benedict's Qualitative test, Acetone Rothera's Test, Protein and BJP test, Hay's test and Fouchet's test, Benzidine test, Microscopical Examination, Pregnancy test, Auto-mentation by Urine analyzer

Module-II (14 Hrs)

Respiratory Tract Infection: Gram Staining and ZN Staining, Basic of DOT Centre, Report writing and report analysis of sputum, Sputum for the diagnosis of Mycobacterium tuberculosis, Clinical significance and Report writing of Stool, Difference between Amoebic, Dysentery and Bacillary Dysentery, Microscopical Examination of Stool, Physical and Chemical examination of Stool, Composition, collection and preservation of stool

Practice: Microscopic finding of stool, Morphology of stool parasite

Lab:-Stool Analysis: Collection and physical examination, Chemical Examination, Occult test and reducing sugar, Microscopical Examination: Protozoa, Microscopical Examination: Helminthes Sputum Analysis: Collection and physical examination, Tuberculosis (ZN Stain), Respiratory infection(Gram Stain)

Module-III (15 Hrs)

Routine laboratory investigation of Pleural Fluid, Routine laboratory investigation of Pericardial Fluid, Routine laboratory investigation of Synovial Fluid, Synovial fluid: Collection and preservation, Examination of CSF related to Meningitis, Brain Tumour and other disorder, CSF: Composition, collection, Preservation and physical examination, Report analysis and report writing of Semen, Semen examination for male infertility disorder, Semen: Composition, function, collection and physical examination

Practice: Gram stain, ZN Stain, General consideration on specimen collection

Lab:- Semen Analysis: Collection and physical examination, Chemical Examination, Microscopical examination CSF Analysis: Collection and Routine Examination Synovial Fluid: Collection and Routine examination Pleural Fluid: Collection and routine examination Pericardial Fluid: Collection and routine examinationBacteriological Examination of throat swab

Suggested Readings:

1. Textbook of Clinical laboratory methods and diagnosis by Gradwohls, Publisher Mosby
2. Medical laboratory technology Vol.1 by K. L. Mukherjee, 2007, Publisher Tata McGrawHill
3. Textbook of medical laboratory technology by Praful B Godkar, Publisher Bhalan
4. Medical laboratory science theory and practice by J Ochei and Kolhatkar, 2002

CUTM1753- Introduction to Quality and Patient Safety

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Introduction to Quality and Patient Safety	CUTM1753	Theory+ Project	3-0-2	Fundamental Science

Course Objective

- Knowing patient safety
- Report Distribution system
- Laboratory infection control Policy
- Bio-Medical waste management
- Understanding Patient rights
- ISO Policy for medical laboratory

Course outcome

- Know about rights and duties of patient
- Know about right and duties of lab technician
- Understand various policy to manage lab
- Understand infection control procedure

Course Outline

Module-I (11 Hrs)

Human factor Engineering, Patient safety, Health literacy, Report distribution system,

Error in reporting system, responding to adverse events, Investigation of error/ Root cause analysis,Medical Error, The science of safety

Practice: Safety precaution in laboratory, Report distribution, Prescription reading

Module-II (11 Hrs)

Team work and communication, Leadership, Quality control policy, Major development and evaluationin diagnostic division, Clinical establishment act policy, National accreditation board of laboratory, ISO Policy for medical laboratory, Fire and safety policy for medical laboratory

Practice: Fire Safety in lab, Documentation for Lab establishment

Module-III (13 Hrs)

Personal protective equipment in the laboratory, AIDS and laboratory safety, Safety protection in

lab inSTD and other infectious disease., Biomedical waste management, Patient care in medical laboratory, Patient rights., Counselling of patient during phlebotomy, First aid in medical laboratory service.

Practice: PPE, Bio-Medical waste management, First-Aid, Patient Counseling

Suggested Readings:

1. Understanding the patient safety (LANGE clinical medicine)
2. Textbook of Clinical laboratory methods and diagnosis by Gradwohls, Publisher Mosby
3. Medical laboratory technology Vol.1 by K. L. Mukherjee, 2007, Publisher Tata McGrawHill
4. Textbook of medical laboratory technology by Praful B Godkar, Publisher Bhalan
5. Medical laboratory science theory and practice by J Ochei and Kolhatkar, 2002, Tata McGraw-Hill, Publisher TBS

CUTM1733- Microbiology

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Microbiology	CUTM1733	Theory+ Practice	3-2-0	Fundamental Science

Course Objective

- To know various Culture media and their applications and also understand various physical and chemical means of sterilization
- To know General bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and virus
- To master aseptic techniques and be able to perform routine culture handling tasks safely and effectively

Course outcome

- This study demonstrates the theory and practical skills in microscopy and their handling techniques and staining procedures.
- Understanding the details of microbial cell organelles.
- Provides knowledge on growth of microorganism.
- Provides knowledge Culturing microorganism.

Course Outline

Module -1(14 Hours)

Microbiology: Definition, history, host- microbe relationship, and safety measures in a microbiology laboratory. Morphology of bacterial cell wall, Bacterial anatomy (Bacterial cell structure: including spores, flagella, pili and capsules). Sporulation. Classification of bacteria according to cell wall and shape (arrangement), Classification of micro-organisms. Growth and Nutrition of Microbes**:** General nutritional requirements of bacteria, Bacterial growth curve Practice:

1. Handling of Microscope
2. To learn techniques for Inoculation of bacteria on culture media.
3. To isolate specific bacteria from a mixture of organisms.

Module-2 (11 Hours)

Sterilization: Definition, sterilization by dry heat, moist heat (below, at & above 100º C),

Autoclave, Hot air oven, Radiation and Filtration, preventive measures, controls and sterilization indicators. Use of laminar flow in sterilization.

Antiseptics and Disinfectants: Definition, types, properties, mode of action and use of disinfectants and antiseptics, efficiency testing of disinfectants.

Practice:

1. To demonstrate simple staining (Methylene blue)
2. Bacterial identification: To demonstrate reagent preparation and procedure for Gram stain, Z-N staining, Capsule staining, Demonstration of flagella by staining methods, Spore staining
3. To demonstrate spirochetes by Fontana staining procedure

Module-3 (15 Hours)

Staining techniques: Methods of smear preparation, Gram stain, AFB stain, Albert's stain and special staining for spore, capsule and flagella, Culture Media, Liquid and solid media, defined and synthetic media, routine laboratory media (basal, enriched, selective, enrichment, indicator, and transport media).Different Culture, media their preparation and uses in microbial growth.

Practice:

1. Biochemical tests for identification of bacteria
2. Preservation of stock cultures of bacteria
3. Antibiotic susceptibility test

Suggested Reading:

1. Medical Laboratory Technology by Kanai Lal Mukherjee; Tata McGraw Hill, New Delhi
2. Microbiology by Prescott
3. An Introduction to Medical Laboratory Technology by FJ Baker; Butterworth – Heinemann;Oxford
4. Practical Book of Medical Microbiology by Satish Gupta; JP Brothers, New Delhi
5. Medical Laboratory Manual for Tropical Countries Vol. I and II by Monica Cheesbrough; Cambridge University Press; UK
6. Textbook of Medical Laboratory Technology by Praful B Godkar; Bhalani Publishing House,Mumbai
7. Text book of Medical Microbiology by Gruckshiank

CUTM1751- Medical Laboratory Management

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Medical Laboratory Management	CUTM1751	Theory+ Project	3-0-2	Fundamental Science

Course Objective

- Explain and apply principle of effective test utilization
- Interpret, implement and complying law, regulation, accrediting standards and guidelines of Govt. and NG organizations.
- Design, implement and evaluate resources in lab
- Communicate effectively with laboratory personnel and health care professional.
- Explain and apply the major principle and tactics of laboratory administration.

Course outcome

- Become professional competent in medical laboratory
- Exhibit a sense of commitment to the ethical and human aspect of patient care
- Recognize the role of clinical laboratory scientist in the assurance of quality health care
- Application of safety and governmental regulation and standards as applied to medical laboratory practice.

Course Outline

Module-I (16 Hrs)

Ethics of pathological clinics, Code of conduct for medical laboratory personal, Safety measure in the laboratory, Organization of Pathology laboratory under board of quality control, Clinical laboratory science, Functional components of the clinical laboratory, A Standardized clinical laboratory set up, Various types of laboratories, PPE in labs, Important instruction to minimize infection in laboratory workers

Practice: PPE Practice, Lab Setup, Sample collection and preservation.

Module-2 (16 Hrs)

Release of laboratory reports, Clinical alerts , Reporting results: Basic format of pathology reports, Transportation and preservation of lab sample, Patient management for clinical sample

collection, National and international agency for clinical laboratory accreditation, Good laboratory practice, Medical legal problems,Laboratory regulation,Factors affecting productivity of laboratory, Responsibility of lab worker

Practice: Report writing, Lab record management

Module-3 (14 Hrs)

Quality management system, NABL Policy, Clinical establishment act policy, Annual maintenance contact for laboratory, General safety precautions in case of STD and drug resistant tuberculosis, Procurement and supply management, Different types of laboratory record management, Laboratory information management system (LIMS), Profit and loss analysis, WHO Policy for medical lab

Practice: Management information system, Procurement management, Profit and loss analysis

Suggested Readings:

1. Textbook of Clinical laboratory methods and diagnosis by Gradwohls, Publisher Mosby
2. Medical laboratory technology Vol.1 by K. L. Mukherjee, 2007, Publisher Tata McGrawHill
3. Textbook of medical laboratory technology by Praful B Godkar, Publisher Bhalan
4. Medical laboratory science theory and practice by J Ochei and Kolhatkar, 2002, Tata McGraw-Hill, Publisher TBS

CUTM1734 - Medical Law and Ethics

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Medical Law and Ethics	CUTM1734	Theory+ Project	2-0-1	Fundamental Science

Course Objective

The course provides an introduction to ethics generally and more specifically to medical ethics, examining in particular the principle of autonomy, which informs much of medical law. The course then considers the general part of medical law governing the legal relationship between medical practitioners and their patients. It considers the legal implications of the provision of medical advice, diagnosis and treatment. Selected medico-legal issues over a human life are also examined. These may include reproductive technologies, foetal rights, research on human subjects, organ donation, the rights of the dying and the legal definition of death

Course outcome

- The ethical underpinnings of the law as it relates to medicine
- The law of negligence in the context of the provision of healthcare, Legal and ethical issues surrounding end and beginning of life decisions
- The maintenance of professional standards in the healthcare profession, and The role of policy in the formation of law as it relates to medicine.

Course Outline

Module-1

1. The Indian medical council act, 2. Medical council of India (functions),3. Functions of state medicalcouncils, 4. The declaration of Geneva

Module-2

1. Duties of medical practioners 2. Regarding red cross emblem 3. Professional secrecy 4.Privileged communication.

Module-3

1. Professional negligence 2. Medical mal occurrence 3. Contributory negligence 4. Criminal negligence

Module-4

1. Corporate negligence 2. Ethical negligence 3. Precautions against negligence 4. difference between professional negligence and infamous conduct.

Module-5

1. Malpractice litigation involving various specialities 2. Prevention of medical negligence

3.supreme court of India guidelines on medical negligence 3. The therapeutic misadventure 4. Vicarious liability

Module-6

1. Products liability 2. medical indemnity insurance 3. Medical records 4. Consent in medical practice

Module-7

1. Euthenesia 2. Deaths due to medical care 3. Malingering

Text books

Medical Law and Ethics by Shaun D Pattinson, 5 th edition, 2017.

CUTM1813-Pharmacology

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Pharmacology	CUTM1813	Theory+ Project	3-0-1	Fundamental Science

Course objectives

To make the students learn about various drugs acting on different body systems

Course outcomes:

At the end of the course students will be be knowledgeable in the following areas:

1. Pharmacokinetics and pharmacodynamics of drugs
2. Drugs and their actions on different body systems
3. Detailed study about different anesthetic drugs

Course Outlines

Module -I: General Pharmacology Part I

Introduction, Routes of Drug Administration, Pharmacokinetics - membrane transport, absorption, bioavailability, metabolism, plasma half life, excretion and distribution of drugs, Routes of drug administration (local and systemic).

Module -II: General Pharmacology Part II

Pharmacodynamics – Mechanisms of drug actions, drug synergism and antagonism. Adverse Drug Reactions, Drug Interactions

Module -III: General Pharmacology Part II

Receptor pharmacology, Drug Nomenclature and Essential Drugs Concept

Module -IV: Drugs for ANS

Autonomic nerves system – sympathetic and parasympathetic nervous system. Basic Anatomy & functional organization. List of drugs acting an ANS including dose, route of administration, indications, contra indications and adverse effects.

Module -V: Cholinergic System

Cholinergic system – acetyl choline, cholinergic drugs, anticholinesterases, Irreversible Anticholinesterases. Anticholinergic drugs – classification, mechanism of action, uses, adverse effects

Module -VI: Skeletal Muscle Relaxants

Skeletal muscle relaxants – classification, mechanism of action, uses, adverse effects. Adrenergic system – adrenergic receptors, drug classification, mechanism of action, uses, adverse effects

Module VII: Chemotherapy agents and other antibiotics

Chemotherapy of infections, Definition - Classification and mechanism of action of antimicrobial agents. Combination of anti microbial agents. Chemo prophylaxis. Classification, spectrum of activity, dose, routes of administration and adverse effects of penicillin

TEXT BOOKS:

1. Essentials of Medical Pharmacology: K.D. Tripathi, 6th edition, Jaypee Publishers.

CUTM1807-Medical Psychology

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Medical Psychology	CUTM1807	Theory+ Project	2-0-1	General biology

Course Objective:

- Recognize and help with the psychological factors involved in disability, pain, disfigurement, unconscious patients, chronic illness, death, bereavement and medical-surgical patients/conditions.
- To understand the elementary principles of behavior for applying in the therapeutic environment.

Course Outcome:

- Understanding the elementary principles of behavior for applying in the therapeutic environment.
- Understanding specific psychological factors and effects in physical illness.
- Development of holistic approach in their dealing with patients during admission, treatment, rehabilitation and discharge.
- Appreciation of the role of therapist as a member of society and the interdependence of individuals and society.
- Demonstration of an understanding of the role of socio cultural factors as determinants of health and behaviors in health and sickness.

Module I:

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

Module II:

Identifying psychological disorders. Anxiety disorders (panic, phobia, OCD, PTSD Signs symptomsand management).

Module III.:

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

Module IV:

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

Module V:

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

Recommended Books:

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 andV.M. Durand (2004)Abnormal PsychologyWadsworth, Thompson Learning, 3rd edition USA.
5. R.J . Gerrig and 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.

CUTM1851-Introduction to emergency services- Part I

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Introduction toemergency services- Part I	CUTM1851	Theory+ Project	2-2-0	Fundamental Science

Course Objective:

- To understand the organization of a hospital set up
- To study about the emergency services available during causality conditions
- To study the aspects of communication in Hospital

Course outcome:

- The candidate will learn the preliminary assessment of patients in causalities and the nature of treatment required
- The student will get an understanding about the various ambulance services/ supplies to be facilitated during causalities
- Enhance the students knowledge on patient care in ambulance

Course Outcome:

Course Outline

Module I

1. Structure and organization of a hospital and its departments
2. Functioning of an ideal emergency medicine department
3. Concept of triage
    a. Components of triage
    b. Triage officer
    c. Triage procedure
4. Multiple and mass casualties
    a. Difference between multiple and mass casualties b. Triage
    b. Scenarios d. Equipment
    c. Disaster preparedness

Module II

Ambulance services(A)

1. Preparation of an ambulance Equipment: Medical
2. Basic supplies
3. Patient transfer equipment
4. Airways
5. Suction equipment
6. Artificial ventilation devices
7. Oxygen inhalation equipment

8. Cardiac compression equipment
9. Basic wound care supplies
10. Splinting supplies
11. Childbirth supplies
12. Medications
13. Automated external defibrillator: Non-Medical
14. Personal safety equipment as per local, state, and central standards
15. Pre-planned routes or comprehensive street maps: Personnel
16. Daily inspections
17. Inspection of vehicle systems
18. Equipment
19. Utilization of safety precautions and seat belts

Module III

1. Ambulance services (B)
2. Responding to a call
3. Emergency vehicle operations
4. Position andTransport of patient:
    a. Patient position, prone, lateral, dorsal, dorsal recumbent, Fowler's positions, comfortmeasures, bed making, rest and sleep.
    b. Lifting and transporting patients: lifting patients up in the bed, transferring from bed towheel chair, transferring from bed to stretcher.
5. Loading patients to an ambulance
6. Wheeled ambulance stretcher
7. Portable ambulance stretcher
8. Scoop stretcher
9. Long spine board
10. Transferring patients
11. The phases of an ambulance call
12. Disinfection of ambulance following ambulance usage
13. Air ambulances

Module IV

Prehospital care

1. Introduction
2. Vehicles
3. Communications
4. Patient record
5. Personal protective equipment
6. Multiple/ mass casualty - pre-hospital life support

Module V

Communication

1. Communication with doctors, colleagues and other staffs.

2. Non-verbal communication, Inter-personnel relationships.
3. Patient contact techniques, communication with patients and their relatives

Practical: Preparation of an ambulance Problems based on triageBasic life support skills

Reference Books

1. Handbook of Emergency Care - Suresh David
2. Introduction to Clinical Emergency Medicine
3. Guide for practitioners in ED
4. Medicine Preparation Manual- George Mathew, KBI Churchil Fundamentals of Respiratory Care- Egan's - Craig l. Scanlon

CUTM1852- Emergency Department Equipment Part - I

Subject Code	Name of the Subject	Subject Type (T - Pr -Pj)	No. Of Credits
CUTM1852	Emergency Department Equipment Part - I	2-2-0	4

Course Objective:

- To understand the utility of equipment's during emergency service
- To learn about the calibration of emergency equipment's
- To learn about the maintenance of emergency equipment's

Course outcome:

- The candidate will get to learn about the use of basic equipment's such as Ambu mask, laryngoscopes
- The candidate will learn the handling of airway equipment's like Oxygen mask, OPA, NPA, etc
- The student will be able to handle and calibrate other emergency service equipment's

Module I

Basic principle, description, types, usage, calibration and maintenance of:

1. Laryngoscopes
2. Endo-tracheal tubes (ETT), boogie
3. Ambu bag and mask

Module II

Basic principle, description, types, usage, calibration and maintenance of:

1. Airway adjuncts, supra-glottic airway devices including Laryngeal mask airway (LMA)
2. Types of oxygen masks, venturi etc.
3. Oropharyngeal and nasopharyngeal airways (OPA and NPA)

Module III

Basic principle, description, types, usage, calibration and maintenance of:

1. ICD tubes, bags, jars, instrument tray
2. Suction apparatus

Module IV

Basic principle, description, types, usage, calibration and maintenance of:

1. Pulse oximeter
2. EtCO2 monitor

Module V

Basic principle, description, types, usage, calibration and maintenance of:

1. Oxygen pipe-line and medical gas cylinders, pipelines and manifold
2. Ambulance (Cervical) Collar, Philadelphia Collar

Practicals:

Application/ connection to patient, usage, calibration, changing settings, demonstrating maintenance of equipment (5 marks x 8 equipment)

Reference Books

1. Handbook of Emergency Care - Suresh David
2. Introduction to Clinical Emergency Medicine
3. Guide for practitioners in ED
4. Medicine Preparation Manual- George Mathew, KBI Churchil
5. Fundamentals of Respiratory Care- Egan's - Craig l. Scanlon

CUTM1853-Emergency Department Pharmacology Part - I

Subject Code	Name of the Subject	Subject Type (T - Pr -Pj)	No. Of Credits
CUTM1853	Emergency Department Pharmacology Part - I	2-2-0	4

Course Objective:

- To understand the use of injection, infusion
- To understand the concept of administration of drugs into the patient
- To know the usage of drugs in emergency conditions

Course outcome:

- The student will learn the technique of drug administration into the patient
- The student will learn regarding the various dosage and route of administration of drugs
- The student will get an understanding of choice of drugs in emergency conditions

Module I

1. Preparation of injections and infusions
2. Dilution, reconstitution, infusion, bolus, setting rate of infusion, apparatus for infusion

Module II

Routes of administration of medications, advantages, disadvantages, few common medications and routes: Ointments, Creams, Drops: Eye and ear, Subcutaneous, Intra muscular, Intra venous, Intra arterial, Intra nasal, Per oral, Intra thecal, Sublingual, Epidural, Intra dermal, Rectal suppository, Trans dermal, Vaginal pessary.

Module III

Indications for use, dosage, route and method of administration and adverse effects of drugs commonly used in the Emergency Department: INJ 25% and 50% Dextrose, IVF DNS, IVF NS IVF, RL, IVF 5% Dextrose, Anti-Tetanus immunization, Anti snake venom, Anti-Rabies immunization, Lidocaine, Lidocaine +Adrenaline

Module IV

Indications for use, dosage, route and method of administration and adverse effects of drugs commonly used in the Emergency Department: Diclofenac, Paracetamol, Fentanyl, Pethidine, Morphine, Pentazocine (Fortwin), Tramadol, Dicyclomine, Hyoscine, Ketamine, Propofol,

Thiopentone, Etomidate, Succinyl Choline, Vecuronium, Atracurium, Neostigmine, Glycopyrolate

Module V

Indications for use, dosage, route and method of administration and adverse effects of drugs commonly used in the Emergency Department: Atropine, Adrenaline, Chlorpheniramine (Avil), Frusemide (Lasix), Adenosine, Noradrenaline, Vasopressin, Dopamine, Dobutamine, Labetalol, Nitroglycerine, Diltiazem, Amiodarone

Practicals:

- Problems based on drug dosage calculation
- Demonstration of strategies to reduce medication error (Role-play)
- Preparation of IV injection/ infusion

Reference Books

1. Handbook of Emergency Care - Suresh David
2. Introduction to Clinical Emergency Medicine
3. Guide for practitioners in ED
4. Medicine Preparation Manual- George Mathew, KBI Churchil
5. Fundamentals of Respiratory Care- Egan's - Craig l. Scanlon

CUTM1855-Emergency department equipment -Part II

Subject Code	Name of the Subject	Subject Type (T - Pr -Pj)	No. Of Credits
CUTM1855	Emergency department equipment -Part II	2-2-0	4

Course Objective:

- To understand the utility of specialized equipment's during emergency service
- To learn about the calibration of emergency equipment's
- To learn about the maintenance of emergency equipment's

Course outcome:

- The candidate will get to learn about the use of specialized equipment's such as defibrillator, ECG, etc
- The candidate will learn the maintenance of a crash cart, drug trolley, etc
- The student will be able to handle an Anaesthesia work station

Module I

Basic principle, description, types, usage, calibration and maintenance of:

1. Electrocardiograph
2. Multi-parameter monitors

Module II

Basic principle, description, types, usage, calibration and maintenance of:

1. Defibrillator, AED
2. Ventilator

Module III

Basic principle, description, types, usage, calibration and maintenance of:

1. Crash cart
2. Trolleys and stretchers
3. Anesthesia work-station

Module IV

Basic principle, description, types, usage, calibration and maintenance of:

1. Splints, Plaster Of Paris and immobilization devices
2. Dressing and procedure packs and materials
3. Foleys catheter
4. Nasogastric tube

Module V

Basic principle, description, types, usage, calibration and maintenance of: Point of care (POC) investigations including POC ultrasound, Bedside X ray, POC blood and urine investigations

Practicals:

Emergency DepartmentEquipment Application/ connection to patient, usage, calibration, changingsettings, demonstrating maintenance of equipment

Reference Books

1. Handbook of Emergency Care - Suresh David
2. Introduction to Clinical Emergency Medicine
3. Guide for practitioners in ED
4. Medicine Preparation Manual- George Mathew, KBI Churchil
5. Fundamentals of Respiratory Care- Egan's - Craig l. Scanlon

CUTM1856-Emergency Department Pharmacology Part - II

Subject Code	Name of the Subject	Subject Type(T - Pr -Pj)	No. OfCredits
CUTM1856	Emergency Department Pharmacology Part - II	2-2-0	4

Course Objective:

- To be able to understand a prescription and abbreviations in it
- To understand the concept of administration of drugs into the patient
- To know the usage of drugs in emergency conditions

Course outcome:

- The student will be able to review a prescription
- The student will learn regarding the various dosage and route of administration of drugs
- The student will get an understanding of choice of drugs in emergency conditions

Module I

Review of prescription writing, parts of a prescription, abbreviations used and their interpretation

Module II

Medication errors look alike and sound alike drugs, strategies to reduce error

Module III

Indications for use, dosage, route and method of administration and adverse effects of drugs commonly used in the Emergency Department: Glyceryl Trinitrate, Sorbitrate, Aspirin, Clopidogrel, Atorvastatin, Pottasium Chloride, Sodium Bicorbonate, Calcium Gluconate, ORS Sachets

Module IV

Indications for use, dosage, route and method of administration and adverse effects of drugs commonly used in the Emergency Department: Pralidoxime, Tranexamic Acid, Thiamine, Human Actrapid, Vit K Octreotide, Protamine Sulphate, Heparin, Activated Charcoal, Deriphyllin, sulbutamol, Ipratropium, Budesonide, Hydrocortisone, Dexamethasone, Methylprednisolone

Practicals: Emergency Department Pharmacology Problems based on drug dosage calculation, Demonstration of strategies to reduce medication error (Role-play), Preparation of IV injection/ infusion 20 marks

Reference Books

1. Handbook of Emergency Care - Suresh David
2. Introduction to Clinical Emergency Medicine
3. Guide for practitioners in ED
4. Medicine Preparation Manual- George Mathew, KBI Churchil
5. Fundamentals of Respiratory Care- Egan's - Craig l. Scanlon

CUTM1839-Medical Terminology and Record keeping

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Medical Terminologyand Record keeping	CUTM1839	Theory+Project	2-0-1	Fundamentals of Computer

This course introduces the elements of medical terminology. Emphasis is placed on building familiarity with medical words through knowledge of roots, prefixes, and suffixes. Topics include: origin, word building, abbreviations and symbols, terminology related to the human anatomy, reading medical orders and reports, and terminology specific to the student's field of study. Spelling is critical and will be counted when grading tests

Course Objective:

- To learn the commonly used terms used in medical field
- To learn the technique of record maintenance in medical field

Course Outcome:

- The student will be able to understand the terminologies used in medical field
- The candidate will be able to maintain medical records
- The candidate will develop the potential for electronic data entry and maintenance

Course Outline

1. Derivation of medical terms.
2. Define word roots, prefixes, and suffixes.
3. Conventions for combined morphemes and the formation of plurals.
4. Basic medical terms.
5. Form medical terms utilizing roots, suffixes, prefixes, and combining roots.
6. Interpret basic medical abbreviations/symbols.
7. Utilize diagnostic, surgical, and procedural terms and abbreviations related to the integumentary system, musculoskeletal system, respiratory system, cardiovascular system, nervous system, and endocrine system.
8. Interpret medicalorders/reports.
9. Data entry and management on electronic health record system.

CUTM1858-Medical emergencies - part I

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Medical emergencies - partI	CUTM1858	Theory+ Practice	3-1-0	General biology

Course Objective:

- To learn and manage medical emergency conditions
- To understand concept of cardiovascular, pulmonary, neurological emergencies
- To understand about the occurrence of sepsis

Course outcome:

- The candidate will be able to understand the point of care investigation in cardiovascular, pulmonary, neurological emergencies
- The candidate will be able to handle emergencies caused due to electrolyte disturbance in patients
- The candidate will be able to handle condition of anaphylactic shocks in patients

Module I:

Cardiovascular Emergencies

1. Approach to Chest pain-possible differential diagnosis, clinical assessment and point of careinvestigations in the emergency department
2. Acute coronary syndrome-presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, emergency management, ACLS protocols
3. Acute decompensated heart failure - presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management
4. Bradyarrythmia-presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, ACLS protocols
5. Tachyarrhytmia-presenting symptoms, clinical assessment and point of care investigationsin the field and emergency department, ACLS protocols
6. Aorticdissection-presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management
7. Deep vein thrombosis-presenting symptoms, clinical assessment and point of care investigations in the emergency department, basic initial management
8. Pulmonary thromboembolism-presenting symptoms,clinical assessment and point of care

investigations in the field and emergency department, basic initial management

Module II:

Pulmonary Emergencies : Approach to the patient with breathlessness and possible differential diagnosis;presenting symptoms, clinical assessment and point of care investigations in the emergency department of

1. Respiratory failure
2. Upper airway obstruction
3. Pneumothorax
4. Acute asthma
5. Acute exacerbation of COPD
6. Hemoptysis
7. Pleural effusion and empyema
8. Pneumonia

Module III

Fluid and Electrolyte Disturbances: Fluid compartments; possible causes, presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management of

1. Hypovolemia
2. Fluid overload states
3. Hyperkalemia
4. Hypokalemia
5. Hypernatremia
6. Hyponatremia
7. Hypocalcemia

Module IV:

1. Neurological Emergencies
2. Approach to the unconscious patient
3. Seizure disorder and Status epilepticus - possible causes, presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management
4. Ischemicstroke -presenting symptoms, clinical assessment and point of care investigations in

the field and emergency department, ACLS protocol

5. Intracerebral hemorrhage-presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, ACLS protocol
6. Meningoencephalitis-presentingsymptoms,clinicalassessmentandpointofcare investigationsinthefieldandemergencydepartment,basicinitialmanagement

Module V:

Shock and sepsis

1. Definition and types of shock
2. Cardiogenic shock - possible causes, investigations and emergency management
3. Anaphylaxis and anaphylactic shock - possible causes, investigations andemergency management
4. Sepsis - presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management

Practicals

1. Medical Emergencies
2. Preparing an ambulance for medical emergency
3. Responding to a call and scene management of medical emergency Receiving and resuscitating a patient with a medical emergency in the emergency department

Reference Books

1. Handbook of Emergency Care - Suresh David
2. Introduction to Clinical Emergency Medicine
3. Guide for practitioners in ED
4. Medicine Preparation Manual- George Mathew, KBI Churchil
5. Fundamentals of Respiratory Care- Egan's - Craig l. Scanlon

CUTM1859-Medical Emergencies Part – II

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Medical emergencies - part II	CUTM1859	Theory+ Practice	3-1-0	Fundamental Science

Course Objective:

- To learn and manage medical emergency conditions
- To understand concept of gastrointestinal, metabolic, renal emergencies
- To understand about the emergencies due to stings/ bites by animals

Course outcome:

- The candidate will be able to understand the point of care investigation in gastrointestinal, metabolic, renal emergencies
- The candidate will be able to handle emergencies caused due to animal/ insect bites in patients
- The candidate will be able to handle condition of poisoning and overdosing in patients

Module I:

Gastrointestinal Emergencies: Presenting symptoms, clinical assessment and point of care investigations in the field andemergency department, basic initial management of

1. Acute gastroenteritis
2. Upper GI bleed
3. Lower GI Bleed
4. Acute pancreatitis

Module II:

Endocrine and Metabolic Emergencies: Presenting symptoms, clinical assessment and point of care investigations in the field andemergency department, basic initial management of

1. Hypoglycemia
2. Hyperosmolar hyperglycemic state
3. Diabetic ketoacidosis
4. Adrenal crisis
5. Myxedema coma
6. Thyroid storm

Module III:

Renal Emergencies: Presenting symptoms, clinical assessment and point of care investigations in the field andemergency department, basic initial management of

1. Urinary tract infections
2. Acute renal failure

3. Acute pulmonary edema in renal failure

Module IV:

Bites and Stings

1. Snake bites- common Indian venomous snakes, presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management
2. Animal bites - dog bites, wild animal bites, early management and rabies prophylaxis
3. Bee, wasp, spider, scorpion and other stings - initial management

Module V:

Other Medical Emergencies

1. Fever - assessment of the patient, early identification of warning signs of sepsis, earlymanagement
2. Poisoning and drug overdose - Decontamination, common poisons encountered, basic initial management
3. Purpura, Urticaria, Fixed drug eruptions,Toxic epidermo necrolysis, Steven Johnson's syndrome

Practicals:

1. Preparing an ambulance for medical emergency
2. Responding to a call and scene management of medical emergency
3. Receiving and resuscitating a patient with a medical emergency in the emergency department

***Reference Books**:*

1. Handbook of Emergency Care - Suresh David
2. Introduction to Clinical Emergency Medicine
3. Guide for practitioners in ED
4. Medicine Preparation Manual- George Mathew, KBI Churchil
5. Fundamentals of Respiratory Care- Egan's - Craig l. Scanlon

CUTM1857-Psychiatric, Geriatric & Obstetric Emergencies

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Psychiatric,Geriatric &Obstetric Emergencies	CUTM1857	Theory	2-0-0	Basic Medicalscience

Course Objective:

- To understand the need of Geriatric patient
- To understand the handling of Psychiatric patient
- To understand the handling of pregnancy

Course outcome:

- The candidate will be able to understand the point of care investigation in Geriatric patient
- The candidate will be able to handle emergencies caused in Psychiatric patients
- The candidate will be able to handle pregnancy and baby birth

Module I:

1. Approach to the geriatric patient
2. Fall in elderly - presenting symptoms, clinical assessment, basic initial management

Module II:

1. Acute mania,Anxiety and panic attacks - presenting symptoms, clinical assessment, basic initialmanagement
2. Depression - presenting symptoms, clinical assessment, basic initial management
3. Restraints, pharmacological restraint and medico-legal issues of restraint

Module III:

1. Assessment of a pregnant patient
2. Conducting normal delivery
3. Emergency Caesarean section

Module IV:

Possible causes, presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management of

1. Antepartum hemorrhage
2. Post partum hemorrhage

Module IV:

Possible causes, presenting symptoms, clinical assessment and point of care investigations in the fieldand emergency department, basic initial management of

1. Preeclampsia
2. Eclampsia
3. Ectopic pregnancy

Practicals:
Airway management and resuscitation of a pregnant woman, Responding to a frail elderly patient withfall at home, OSCE

Reference Books

1. Handbook of Emergency Care - Suresh David
2. Introduction to Clinical Emergency Medicine
3. Guide for practitioners in ED
4. Medicine Preparation Manual- George Mathew, KBI Churchil
5. Fundamentals of Respiratory Care- Egan's - Craig l. Scanlon

CUTM1854-Introduction to emergency services- Part II

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Introduction to emergency services- Part II	CUTM1854	Theory+ Project	2-2-0	Fundamental Science

Course Objective:

- To understand the concept of resuscitation
- To learn the techniques to handle an emergency case in a group dynamic
- To learn the medical legal issues prevailing an emergency condition

Course outcome:

- The candidate will learn about implementation of resuscitation during critical care
- The student will learn to demonstrate an emergency team building
- The student will learn about emergency record maintenance

Course outline

Module I

1. Principles of resuscitation
2. Sudden cardiac death
3. Cardiac, respiratory arrest
4. Basic cardiopulmonary resuscitation in adults
5. Advanced cardiac life support
6. Resuscitation in neonates
7. Resuscitation in paediatrics
8. Resuscitation in pregnancy
9. Ethical issues

Module II

Specific resuscitative procedures

1. Airway management
2. Breathing and ventilation management
3. Venous and intraosseous access
4. Defibrillation and cardioversion

5. Fluid and blood resuscitation
6. Vasoactive agents in resuscitation
7. Arrhytmias
8. Emergency surgical procedures including crico-thyroidotomy, needle thoracocentesis, ICD tube insertion, pericardiocentesis, and tourniquet application

Module III

The emergency response team: Characteristics of team leader, roles of team members, closed loopcommunication, constructive criticism

Module IV

Universal Precautions and Infection Control:

1. Hand washing and hygiene.
2. Injuries and Personal protection, Insulation and safety procedures.
3. Aseptic techniques, sterilization and disinfection.
4. Disinfection and Sterilization of devices and equipment
5. Central sterilization and supply department
6. Biomedical Waste Management

Module V

Documentation: The patient's medical record, charting, electronic medical records, hand-offat shift change and when transferring the patient Medico legal aspects

Practicals:

1. Preparation of an ambulance 10 marks
2. Problems based on triage 10 marks
3. Basic life support skills 20 marks

Reference Books

4. Handbook of Emergency Care - Suresh David
5. Introduction to Clinical Emergency Medicine
6. Guide for practitioners in ED
7. Medicine Preparation Manual- George Mathew, KBI Churchil
8. Fundamentals of Respiratory Care- Egan's - Craig l. Scanlon

CUTM1860 - Internship

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Internship	**CUTM1860**	Project	0-0-12	Basic Medical science

Internship Thesis Guideline

This Guideline is designed to provide students the knowledge and practice of public health research activity, to enable them to carry out researches and solve research related problems and to help them in writing thesis and defend their work. Upon successful completion of the course, the students shall be able to:

1. Search relevant scientific literature
2. Develop a research proposal
3. Employ appropriate data collection techniques and tools
4. Manage collected data
5. Analyze data with appropriate statistical techniques
6. Write thesis
7. Defend the findings

Proposal Development: At the ending of third year (Sixth Semester), students individually consultation with designated faculties and extensive literature survey will develop research proposal during the initial 6 months period.

Data Collection/ Thesis Writing:

Students will carry out data collection, data management, data analysis, and thesis writing during theremaining period (Six Semester).

The Dissertation should have following format:

1. Title
2. Introduction
3. Materials and Methods
4. Results
5. Discussion
6. Conclusion
7. Recommendation
8. References
9. Appendix

Internship

1. Case record
2. Lab management and ethics
3. Evaluation -Guide(internal)
4. -Industries guide(external)
5. -University-project report/ Viva

CUTM1861 - Project

Subject Name	Code	Type of course	T-P-Pj	Prerequisite
Project	**CUTM1861**	Project	0-0-12	Basic Medical science