Dr. M. G. R.

EDUCATIONAL AND RESEARCH INSTITUTE

(Deemed to be University)

MADURAVOYAL, CHENNAI – 600 095

Regulations for B.Sc. (Allied Health Science) Courses

Introduction:

B.Sc. (Allied Health Science), a (3-year course work + 1-year internship) program under the **Faculty of Allied Health Sciences**, is aimed at training students who will be able to meticulously assist the doctors for providing quality patient care in selected areas of clinical specialty. This program is a taught course that covers relevant topics and specialized areas of knowledge as opted. The aim of this B.Sc. program is to provide a thorough training to the candidates through formal lectures and/or seminars and practical programs which culminate in a one year internship that finally prepares the student for the rigors of the medical world.

1. Short Title and Commencement:

These Regulations shall be called the "Regulations for B.Sc. (Allied Health Science) Course" of Dr. M.G.R Educational and Research Institute. These regulations shall come into force from the academic year 2018-2019. These regulations are subject to modifications as may be approved by the Academic Council from time to time.

2. Eligibility for Admission:

a) A candidate desiring to join the (3-year course work + 1-year internship) program, leading to the degree B.Sc. (Allied Health Science) should have passed the HSC/CBSE/ISC or equivalent examination with one of the following subject combinations:

i) Physics, Chemistry and Biology

ii) Physics, Chemistry, Botany and Zoology

iii)Physics, Chemistry, Biology and Biochemistry

b) A candidate shall, at the time of admission submit to the Head of the Institution, a certificate of medical fitness from an authorized Medical Officer certifying that the candidate is physically fit to undergo the academic course and does not suffer from any disability or contagious disease.

3. Age limit for admission

A candidate should have completed the age of 17 years or would complete the age as on 31st December of the year of admission to the B.Sc .Allied Health Science Course.

4. Eligibility Certificate

Candidates, who have passed any qualifying examination other than the Higher Secondary Course examination conducted by the Government of Tamil Nadu, shall obtain an Eligibility Certificate from Dr. M.G.R Educational and Research Institute and produce the same at the time of admission.

5. Registration

A candidate admitted to the course shall register his/her name with the University by submitting the application form for registration, duly filled in along with the prescribed fee, through the Head of the Institution within the stipulated date.

6. Duration of the course

The duration of the B.Sc. (Allied Health Science) Degree Course shall be 3-year course work comprising of 6(six) semesters and one year (semesters 7 & 8) of compulsory internship. The candidate is required to pursue the course on a full time basis, and must complete the course within seven years from the date of provisional registration.

7. Commencement of the Course:

The course shall ordinarily commence by the month of August of the academic year.

8. Curriculum:

The Curriculum and syllabus for the course shall be as specified in the annexure to these regulations which are subject to modifications by the standing Academic Board from time to time.

(i) The first three years of the course will be utilized as follows:

- The first two semesters will be spent on Pre and Para clinical subjects including Anatomy, Physiology, Biochemistry, Microbiology, Pathology, Physics, English and Communication skills, Introduction to Computers, and Pharmacology.
- At the beginning of the third semester, students will be assigned to one of the following branches of specialization as per the admission policy, and they will be offered specialized training in that specialty during the third, fourth, fifth and sixth semesters.

(ii) The fourth year of the course shall be compulsory internship in the respective specialty.

9. Medium of Instruction:

English shall be the medium of instruction for all the subjects of study and for the examination.

10. Working Days:

Each semester shall consist of not less than 100 working days and each academic year shall have a total of 200 working days or above in the first to Sixth Semesters. In the Seventh and Eighth semesters, each semester shall have a minimum of 120working days.

11. Attendance:

The candidate shall have not less than 80 % attendance in Theory and Practical separately. The candidate lacking attendance in a subject shall be denied permission to appear for the University Examination in that subject.

12. Condonation of Lack of Attendance:

The discretionary power of condonation of shortage of attendance to appear for University Examination rests with the University.

Lack of attendance can be condoned up to a maximum of 10% of the minimum attendance required in the following exceptional circumstances:

a) Any illness/ accident (for which Medical certificate from a registered medical practitioner must be produced)
b) Any unforeseen tragedy in the family (should produce the letter from the parent/guardian)
c) Participation in NCC/NSS and other co-curricular activities representing the Institution / University. (Certificate from competent authority is required)

For any of the above reasons, request shall be made by the candidate with prescribed fees to the Controller of Examination through proper channel, ten days prior to the commencement of the theory examination.

13. Commencement of the examinations

There shall be two sessions of University examinations in an academic year, viz., February and August.

14. Continuous (Internal) Assessment:

Continuous (Internal) Assessment for Theory shall be the average of the best two out of three.

Continuous (Internal) Assessment for Practical shall be the average of the best two out of three.

15. Semester - End Examination (University/Department):

a. The examination in B.Sc. (Allied Health Science) shall consist of Written Theory examinations and Practical examinations. The Semester - End Examination (University/Department) shall be conducted at the end of each semester.

b. Papers for which Internal Examination is recommended by the Board of Studies and approved by the Academic Council, thedate of Semester - End Examinations (Internal examinations) shall be as per the University guidelines.

16. Pattern of Semester - End Examination (University/Department):

EXAMINATION PATTERN

SEMESTER-I AND SEMESTER-II (FOR ALL SPECIALITIES)

THEORY **Max.Marks**- 60 Marks

Duration -$2^{1}/2$ Hours

PART –A (Answer any one from Two)

1. Essay (1x15=15 Marks)

PART-B (Answer all questions)

1. Short Notes (5x5=25 Marks)

PART-C (Answer all questions)

1. Short answers (10x2=20 Marks)

PRACTICAL & VIVA VOCE

1. Practical (including Orals) 15 Marks

CONTINUOUS (INTERNAL) ASSESSMENT

I. Theory 20 Marks

II. Practical 5 Marks

TOTAL **100 Marks**

SEMESTER III – SEMESTER VI (FOR ALL SPECIALITIES)

THEORY **Max.Marks**- 80 Marks

Duration -3 Hours

Section –A (Answer any TWO from THREE)

1. Essay (2x15=30)

Section-B (Answer any EIGHT from TEN)

1. Short notes (8x5=40)

Section-C

1.Very short notes (5x2=10)

Internal assessment **20 marks**

- Based on CAT Exams(I,II,III)

TOTAL **100 Marks**

PRACTICAL

Max marks: 80

1. Spotters 20 marks
2. Viva (Theory & Practical) 20 marks
3. Charts/stations 20 marks
4. Record 20 marks

Internal assessment **Max marks: 20**

- Based on CAT Exams
- Attendance
- Log book

TOTAL **100 Marks**

17. Marks Qualifying for a Pass:

For passing the University/End-Semester Examination from Semester I to Semester VI, the candidate shall secure the marks as stated below,

I. 40% minimum in the University End-Semester Theory examination
II. 40% minimum in the University End-Semester Practical examination
III. 40% of marks in the subject where internal evaluation alone is conducted
IV. 40% of aggregate of theory, practical and internal assessment taken together

18. Classification of successful candidates:

a) Successful candidates who secure 75% marks and above as a course aggregate in the first appearance taking University theory, practical, and project/dissertation evaluation shall alone be awarded Distinction. This will also apply for award of University rank.

b) Successful candidates who secure 60% marks and above as a course aggregate in the University theory, practical, project/dissertation evaluation and viva shall be awarded First Class.

c) All others who secure 40-59% in gross percentage will be classified to have passed in Second Class.

19. Revaluation of answer papers

There shall be revaluation and re-totaling of answer papers of failed candidates. Failed candidates are however, permitted to apply to the University within fifteen days of publication of the results for revaluation and re-totaling.

20. Carry- over of failed subjects

a) A candidate has to pass in theory and practical examinations separately in each of the paper.
b) If the candidate fails either in theory or practical examinations, he/she has to reappear for both (theory and practical)
c) The student shall start the Internship training (VII & VIII semester) only after he/she clears all the papers from Semester I to Semester VI.

21. Temporary break of study

a) A candidate is not normally permitted to temporarily break the study.
b) If a candidate is continuously absent from the institute for four or more weeks,

i) Having notified the Dean/Director/Principal within this period, this absence shall be treated as "Temporary Break of Study".

ii) Without notifying the Dean/Director/Principal, his/her name will be removed from the institute rolls.

c) If a candidate is compelled to temporarily break the study for valid reasons (such as accident or hospitalization due to prolonged ill health), he/she shall apply for condonation of the break to the Dean/Director/Principal through the Head of the Department.

d) For condonable break of study:

i) If the lack of attendance is within condonable limits as per Clause No. 12, the candidate shall be permitted to write the examination for the current semester.

ii) If there is non-condonable lack of attendance, the candidate shall rejoin the program at the respective semester as and when it is offered after the break and shall be governed by the rules and regulations in force at the time of rejoining.

e) The total period for completion of the program reckoned from the commencement of the semester to which the candidate was first admitted shall not exceed the maximum period specified in Clause No.6 irrespective of the period of break of study in order that he/she may be qualified for the award of the degree.

f) In any case, a candidate shall be permitted to temporarily break the study only once during the entire duration of the program. The candidate shall forfeit the registration in case of a second break or in case of a non-condonable break of study.

g) Without prejudice to the above rules, the candidate who has completed the attendance requirement for a semester, but has proceeded on a condonable break of study without appearing for the University Examination, shall be permitted to appear for the examinations without repeating the semester and thereafter continue the subsequent semester.

Dr. M.G.R.EDUCATIONAL AND RESEARCH INSTITUTE
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FACULTY OF ALLIED HEALTH SCIENCES
SCHEME OF EXAMINATION
SEMESTER – I
(B.Sc., Emergency and Trauma Care Technology) **TOTAL HOURS: 330 Hrs**

S. No	Paper	Hours / Semester		Evaluation (Marks)				Total
				Continuous Assessment (Internals)		End Semester Examination (University/ Department Exams)		
		Theory	Practical	Theory	Practical	Theory	Practical	
1.	**Anatomy-I (UE)**	40 hours	20 hours	20	5	60	15	100
2.	**Physiology-I (UE)**	40 hours	20 hours	20	5	60	15	100
3.	**Biochemistry-I (UE)**	40 hours	20 hours	20	5	60	15	100
4.	**Microbiology-I (UE)**	40 hours	20 hours	20	5	60	15	100
5.	**Pathology-I (UE)**	40 hours	20 hours	20	5	60	15	100
6.	**English (IE)**	30 hours	-	-	-	50	-	50

UE **University Exams**

IE **Internal Exam**

SCHEME OF EXAMINATION

SEMESTER – II

(B.Sc., Emergency and Trauma Care Technology) **Total Hours – 420 Hrs**

S.No	Paper	Hours / Semester		Evaluation (Marks)				Total
				Continuous Assessment (Internals)		End Semester Examination (University/ Department Exams)		
		Theory	Practical	Theory	Practical	Theory	Practical	
1.	**Anatomy-II (UE)**	40 hours	20 hours	20	5	60	15	100
2.	**Physiology-II (UE)**	40 hours	20 hours	20	5	60	15	100
3.	**Biochemistry-II (UE)**	40 hours	20 hours	20	5	60	15	100
4.	**Microbiology-II(UE)**	40 hours	20 hours	20	5	60	15	100
5.	**Pathology-II(UE)**	40 hours	20 hours	20	5	60	15	100
6.	**Pharmacology(UE)**	40 hours	20 hours	20	5	60	15	100
7.	**Physics (IE)**	30 hours	-	-	-	50	-	50
8	**Computer Science(IE)**	30 hours	-	-	-	50	-	50

UE University Exams
IE Internal Exam

SCHEME OF EXAMINATION

SEMESTER – III

(B.Sc., Emergency and Trauma Care Technology)

Total Hours – 420Hrs

S.No	Paper	Hours / Semester		Evaluation (Marks)				Total
				Continuous Assessment (Internals)		End Semester Examination (University/ Department Exams)		
		Theory	Practical	Theory	Practical	Theory	Practical	
1.	**Anatomy, Physiology and Pharmacology related to Emergency Medicine -Theory (UE)**	60 hours	-	20	-	80	-	100
2.	**Anatomy, Physiology and pharmacology related to Emergency Medicine - Practical (UE)**	-	120 hours	-	20	-	80	100
3.	**Clinical Microbiology, Pathology and Biochemistry related to Emergency Medicine - Theory (UE)**	60 hours	-	20	-	80	-	100
4.	**Clinical Microbiology, Pathology and Biochemistry related to Emergency Medicine - Practical (UE)**	-	120 hours	-	20	-	80	100
5.	**Medical Ethics and Biosafety (IE)**	30 hours	-		-	50	-	50
6.	**Psychology (IE)**	30 hours	-		-	50	-	50

UE University Exams

IE Internal Exam

SCHEME OF EXAMINATION

SEMESTER – IV

(B.Sc., Emergency and Trauma Care Technology)

Total Hours – 420Hrs

S.No	Paper	Hours / Semester		Evaluation (Marks)				Total
		Theory	Practical	Continuous assessment (Internals)		End Semester Examination (University/ Department Exams)		
				Theory	Practical	Theory	Practical	
1.	**Trauma Care - First Aid, Triage, Life Support, and Resuscitation - Theory (UE)**	60 hours	-	20	-	80	-	100
2.	**Trauma Care - First Aid, Triage, Life Support, and Resuscitation - Practical (UE)**	-	120 hours	-	20	-	80	100
3.	**Emergency Medical Equipment, Cardiopulmonary Emergencies and Poisoning - Theory (UE)**	60 hours	-	20	-	80	-	100
4.	**Emergency Medical Equipment, Cardiopulmonary Emergencies and Poisoning - Practical (UE)**	-	120 hours	-	20	-	80	100
5.	**Prehospital Care Record Documentation (IE)**	30 hours	-		-	50	-	50
6.	**Sociology (IE)**	30 hours	-		-	50	-	50

UE University Exams

IE Internal Exam

SCHEME OF EXAMINATION

SEMESTER – V

(B.Sc., Emergency and Trauma Care Technology) **Total Hours – 390Hrs**

S.No	Paper	Hours / Semester		Evaluation (Marks)				Total
		Theory	Practical	Continuous Assessment (Internals)		End Semester Examination (University/ Department Exams)		
				Theory	Practical	Theory	Practical	
1.	**Orthopaedic Emergencies, burns and Surgical Emergencies– Theory (UE)**	60 hours	-	20	-	80	-	100
2.	**Orthopaedic Emergencies, burns and Surgical Emergencies– Practical (UE)**	-	120 hours	-	20	-	80	100
3.	**Obstetrics, Gynaecological and Paediatric Emergencies - Theory (UE)**	60 hours	-	20	-	80	-	100
4.	**Obstetrics, Gynaecological and Paediatric Emergencies - Practical (UE)**	-	120 hours	-	20	-	80	100
5.	**Environmental science and Community medicine (IE)**	30 hours	-		-	50	-	50

UE University Exams

IE Internal Exam

SCHEME OF EXAMINATION

SEMESTER – VI

(B.Sc., Emergency and Trauma Care Technology) **TOTAL HOURS 390hrs**

S.No	Paper	Hours / Semester		Evaluation (Marks)				TOTAL
				Continuous assessment (Internals)		End Semester Examination (University/ Department*Exams)		
		Theory	Practical	Theory	Practical	Theory	Practical	
1.	Clinical procedures and instruments in emergency services - Theory (UE)	60 hours	-	20	-	80	-	100
2.	Clinical procedures and instruments in emergency services - Practical (UE)	-	120 hours	-	20	-	80	100
3.	Critical Care and Disaster Management - Theory (UE)	60 hours	-	20	-	80	-	100
4.	Critical Care and Disaster Management - Practical (UE)	-	120 hours	-	20	-	80	100
5.	Healthcare and basic Principles	30 hours	-	50	-	50	-	50

UE University Exams

IE Internal Exam

SCHEME OF EXAMINATION

SEMESTER – VII (FOR ALL SPECIALITIES)

Project/Dissertation

S.No	Paper	Hours / Semester		Evaluation (Marks)				Total
				Continuous assessment (Internals)		End Semester Examination		
		Theory	Practical	Project	Viva	Project	Viva	
1.	Project/ Dissertation(UE)	-	-	100	-	100	-	200
2.	Biostatistics and research methodology(IE)	30 hours	-	-	-	Theory 50		50

UE University Exams

IE Internal Exam

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FACULTY OF ALLIED HEALTH SCIENCES

SCHEME OF EXAMINATION

SEMESTER – VII & VIII (FOR ALL SPECIALITIES)

Internship -1 YEAR

SEMESTER - I

S.No	Subject
1.	Anatomy – I(UE)
2.	Physiology –I (UE)
3.	Biochemistry - I(UE)
4	Microbiology - I(UE)
5.	Pathology – I(UE)
6.	English (IE)

SEMESTER - I

ANATOMY – I (UE)

Course description:

- A study of the anatomical structure of the human body.
- Body structure will be studied by organ systems.
- Form-function relationships with emphasis on clinically relevant anatomy.
- The laboratory study will involve observing and learning from human skeletal collections and dissected cadavers and preserved specimens.

Objectives:

- At the end of the course the student should be able to:
- Describe the structure and functions of the organ systems of the human body.
- Describe how the organ systems function and interrelate.
- Learn basic technical terminology and language associated with anatomy.
- Develop a self-identity of what it means to be "human".

Learning Objectives: Skills

- Identify the anatomical structure in the dissected specimen.
- Learn to correlate anatomical structures with relevant clinical conditions.

CONTENTS

Unit I

Organization of the Human Body

- Introduction to the human body
- Definition and subdivisions of anatomy
- Anatomical position and terminology
- Regions and Systems of the body
- Cavities of the body and their contents
- Levels of organization of the body

Cell

- Definition of a cell, shapes and sizes of cells
- Parts of a cell – cell membranes cytoplasm, subcellular organelles and their main function
- Cell Division – Definition and main events that occur in different stages of mitosis and meiosis.

Tissues

- Tissues of the body
- Definition and types of basic tissues
- Characteristics, functions and locations of different types of tissues

Unit II

Systems of Support and Movement

1. **Skeletal system**
   - Skeleton – Definition, axial and appendicular skeleton with names and number of bones, Types of bones. Parts of bones. Functions of bones. Name location and general features of the bones of the body.
   - Joints – Definition and types of joints with examples. Axes and kind of movements possible. Name, location, type, bones forming, movements possible.

2. **Muscular system**
    - Parts of the skeletal muscle. Definition of origin and insertion. Name and location of the skeletal muscles of the body.Origin, insertion, nerve supply and action of large muscles like sternocleidomastoid, pectoralis major, deltoid, Biceps brachii, Triceps brachii, gluteus, gastronemius and diaphragm.

Unit III

Control Systems of the Body

1. **Nervous system**
    - Sub-divisions of the nervous system
    - **Spinal cord** – Location, extent, spinal segments, external features and internal structure.
    - **Brain** – Sub-divisions, location external features of medulla oblongata, pons, mid-brain, cerebellum and cerebrum. Meninges and spaces around them. Name and location of ventricles of brain and circulation of cerebrospinal fluid. Blood supply of the brain and spinal cord.
    - **Cranial nerves** - Name, number, location and general distribution.
    - **Spinal nerves** - Typical spinal nerve groups and number of spinal nerves. Name and location of cervical plexus and brachial plexus. Location and general distribution of the branches.
    - **Autonomic Nervous system** –definition and functions

2. **Sense organs**
    - Location and features of the nose, tongue, eye, ear and skin

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

PRACTICAL & VIVA VOCE SYLLABUS

1. **Histology** – Epithelium
2. **Axial & Appendicular Skeleton** With Names & Number Of Bones
3. **Muscles**
    a. Trapezius
    b. Lattisimusdorsi
    c. Biceps
    d. Triceps
    e. Deltoid
4. **Nervous System**
    a. Cerebrum
    b. Cerebellum
    c. Brain Stem
    d. Spinal Cord
5. **Special Senses**
    a. Tongue
    b. Ear
    c. Skin
    d. Eye ballSS

6. **Viva Voce**
    a. Radiology – Xrays
    b. Osteology
    c. Charts
    d. Models
    e. Gluteus Muscles

Recommended books:

1. Manipal manual of Anatomy for Allied Health Sciences, Sampathmadhyastha
2. B D Chaurasia: General human anatomy

References:

1. B D Chaurasia: Regional Anatomy. Vol I, II,III
2. Richard S. Snell: Clinical Anatomy

PHYSIOLOGY-I

Objectives of the course:

At the end of this course the students should be able to:
Comprehend basic terminologies used in the field of Human Physiology
Define and describe basic Physiological processes governing the normal functioning of the human body.
Apply this knowledge in their Allied Health Science practice.

Contents

Unit 1 **Ia. General Physiology**

- Concept of Homeostasis
- Cell structure and functions
- Transport across membranes

Ib. Nerve and muscle

- Nerve structure,classification of nerve fibres,
- Muscles- classification , structure ,Neuro-Muscular junction(NMJ).
- Muscle contraction-mechanism,types.

Ic.Blood and body fluids

- Body fluid volumes,compartments,and composition
- Blood composition and functions
- Plasma proteins
- Erythrocytes -Morphologyand functions
- Leucocytes-Morphology and functions
- Platelets-Morphology and functions
- Blood groups.

Unit II **IIa. Digestive system**

- Salivary glands -Nerve supply , functions of saliva**.**
- Gastric juice-composition &functions of gastric juice.
- Pancreatic juice-composition , functions and regulation of pancreatic juice.
- Bile- composition , functions of bile and bile salts.
- Succus entericus and small intestinal movements.
- Deglutition, vomiting, functions of large intestine.

IIb.Excretory system

- Structure of Nephron and its blood supply, Juxtaglomerular Apparatus(JGA).
- Formation of urine-Filtration,Reabsorption and secretion.
- Counter-Current mechanism
- Micturition.

PRACTICAL & VIVA VOCE SYLLABUS

I. Microscope

II.Estimation of Hemoglobulin
III.RBC
IV.WBC
V.Spotters

BIOCHEMISTRY-I (UE)

Objectives:

- To have a knowledge about the chemistry and metabolism of various macromolecules- carbohydrate, protein and lipids
- To learn about enzymes, vitamins, minerals and nutrition
- To know the structure and function of Hemoglobins, Nucleic acids.
- To learn about the organ function tests like Liver Function Tests and Renal Function Tests.

CONTENTS

Unit I - CARBOHYDRATES

Carbohydrates:

- Classification of carbohydrates and their biological importance,
- Reducing property of sugars.

Metabolism of Carbohydrates :

- Digestion and Absorption of carbohydrates,

- Steps of Glycolysis and energetics,
- Steps of TCA cycle and energetics,
- Steps of Glycogen synthesis and breakdown,
- Significance of HMP shunt pathway,
- Definition and steps of Gluconeogenesis,Galactose metabolism
- Galactosemia.
- Diabetes mellitus ,

Bioenergetics :

- Importance of ATP, Outline of respiratory chain.

Unit II - LIPIDS

Lipids:

- Classification of lipids,
- Essential fatty acids,
- Functions of cholesterol,
- Triglycerides,
- Phospholipids

Metabolism of Lipids :

- Digestion and Absorption of lipids,
- Fatty acid synthesis & Steps of β oxidation of fatty acids,
- Types and functions of lipoprotein,
- Lipid profile, hyper cholesterolemia

Unit III - VITAMINS

Vitamins:

- Vitamins, its classification
- Vitamin A
- Vitamin D
- Vitamin E & K
- Vitamin B complex
- Vitamin C

Unit IV - ENZYMES

Enzymes:

- Definition,
- Classification,
- Coenzymes,

Factors affecting enzyme activity, Types and examples of enzyme inhibition

PRACTICAL & VIVA VOCE

1 Reactions of Glucose

2 Reactions of Fructose

3 Reactions of Maltose

4 Reactions of Lactose

5 Tests for Sucrose
6 Tests for Starch
7 Identification of unknown Carbohydrates
8 Spotters

Spotters:
The student must identify the spotter and write some important uses of the spotter.

- **CRYSTALS**

  - Maltosazone
  - Lactosazone
  - Glucosazone/Fructosazone

- **REAGENTS**

  - Benedict's reagent
  - Barfoeds reagent
  - Foulgers reagent
  - Seliwanoff reagent
  - Fouchets reagent

- **CHEMICALS**

  - Sodium Acetate
  - Phenylhydrazine
  - αNaphthol

- **STRUCTURES.**

  - Structure of Cholesterol
  - Structure of Glucose
  - Structure of Fructose

- **VITAMINS**
  - Carrots
  - Rickets
  - Scurvy
  - Egg

MICROBIOLOGY – I (UE)

OBJECTIVE:

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

- Know the concepts of sterilization and disinfection procedures and their applications.
- Understand the basic principles of immunology.
- Understand the basic fundamental aspect of bacteria and study the common disease caused by them.

Contents

Unit I:

General Microbiology-History and Introduction of Microbiology, Microscopy and Morphology of bacterial cell and their function, Growth and nutrition of Bacteria, Sterilization and Disinfection , Culture media, Culture methods and Identification of bacteria.

Unit II:

Immunology-Basic concept about Infection (Source, Portal of entry and Spread), Immunity, Antigen, Antibody, Antigen-Antibody reaction, Hypersensitivity.

Unit III

Systemic bacteriology- Disease caused and lab diagnosis of medically important bacteria (Staphylococcus, Streptococcus, Neisseria, Echerichia coli, Salmonella, Shigella, Vibrio, Mycobacteria, Spirochetes)

PRACTICAL & VIVA VOCE

1. **Gram staining**

2. **Spotters:**

   - Disposable syringe
   - Sterile cotton swab
   - Bacteriological loop
   - Sterile tube
   - McIntosh fildes Jar
   - Autoclave

- Nutrient Agar plate
- Mac Conkey agar plate
- Mac conkey with LF
- Mac conkey with NLF
- Blood agar plate
- L J Media
- RCM
- BHI broth
- Antibiotic susceptibility test
- Gram Positive Cocci in Clusters
- Gram negative bacilli
- AFB
- VDRL Slide
- Microtitre plate

PATHOLOGY-I (UE)

1.Introduction to cell

- Normal Cell Structure Function

2.Cell injury and Adaptation

- Types of cell injury
- Adaptation
- Necrosis
- Apoptosis
- Pathological calcification

3.Inflammation and Repair

- Acute Inflammation
- Chronic Inflammation
- Wound Healing and Repair

4.Infectious Disease

- TB
- Leprosy

5.Hemodynamic Disorder

- Edema
- Thrombosis and Embolism
- Shock

6.Neoplasia

- Classification
- Nomenclature
- Characteristics of Benign & Malignant neoplasm
- Pathogenesis of cancer
- Spread of Cancer

7.Genetic Disorders

- Down syndrome
- Klinfelter Syndrome
- Turner Syndrome

8.Radiation

- Biological Effect of Radiation

PRACTICAL & VIVA VOCE

- **DIFFERENTIAL COUNT**
  - Spotter

- **GROSS (SPOTTER)**
  - Fatty liver
  - Lipoma
  - Dry gangrene foot
  - Wet gangrene bowel
  - CVC Spleen
  - Hydatid cyst
  - TB – Lung

- **INSTRUMENTS**
  - Westergrens ESR tube
  - Sahlihemocytometer
  - Neaubaur's chamber
  - Bone Marrow Needle

SEMESTER-II

S.No:	Subject
1.	Anatomy – II
2.	Physiology –II
3.	Biochemistry – II
4	Microbiology – II
5.	Pathology – II
6.	Pharmacology
7.	Physics
8.	Computer science

SEMESTER II

ANATOMY – II (UE)

Objectives:

- At the end of the course the student should be able to:
- Describe the structure and functions of the organ systems of the human body.
- Describe how the organ systems function and interrelate.
- Learn basic technical terminology and language associated with anatomy.
- Develop a self-identity of what it means to be "human".

Unit I

Maintenance of the Human Body

1. Cardio-vascular system

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

2. Lymphatic system

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

3. Respiratory system

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

Unit II

4. Digestive system

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

5. Urinary system

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

Unit III

6. Reproductive system

- Names of male and female organs of reproduction. Location and features of scrotum, testis, epididymis, vas deferens, seminal vesicle, ejaculatory duct, prostate gland, penis and spermatic cord. Location and features of uterus and its supports, uterine tube, ovary vagina vulva and breast.

Anatomical Regions

- Simple ideas about scalp, triangles of neck, axilla, cubital fossa, mediastinum, inguinal canal, femoral triangle, popliteal fossa.

PRACTICAL & VIVA VOCE SYLLABUS

- **Endocrine System**
  - Pituitary gland
  - Pineal body
  - Thyroid & parathyroid gland
  - Adrenal
  - Pancreas
  - Gonads – Ovary & Testis
- **Cardio-Vascular System**
  - Heart
- **Lymphatic system**
  - Spleen
- **Respiratory System**
  - Lungs
  - Larynx
  - Trachea

- **Digestive System**
  - Salivary glands
  - Esophagus
  - Pharynx
  - Stomach
  - Liver, Gall bladder
  - Duodenum
  - Small intestine
  - Large intestine

- **Urinary system**
  - Kidneys
  - Ureter
  - Urinary bladder

- **Reproductive System**
  - Saggital section – Male & Female pelvis
  - Uterus & ligaments
  - Ovary
  - Prostate
  - Seminal vesicals
  - Vas deferens
  - Testis
- **Viva Voce**
  - Radiology – Xrays
  - Osteology
  - Charts
  - Models

Recommended books:

1. Manipal manual of Anatomy for Allied Health Sciences, Sampathmadhyastha.
2. B D Chaurasia: General human anatomy.

References:

1. B D Chaurasia: Regional Anatomy. Vol I, II,III.
2. Richard S. Snell: Clinical Anatomy.

PHYSIOLOGY-II (UE)

Unit III Cardiovascular System

- Cardiac muscle, action potential and conductingsystem of the heart.
- Cardiac cycle.
- ECG, heart sounds, Heart Rate.
- Cardiac output-Definition ,factors regulating cardiac output and measurement of cardiac output.
- Blood pressure-Definition, measurement, factors maintaining BP.
- Regional circulation-Coronary and cerebral.

Unit -IV Nervous system

- Structure& Properties of Neuron.
- Nerve- Classification,injury.
- Types and properties of Receptors

- Synapse and synaptic transmission.
- Reflex and its properties.
- Spinal cord-Ascending & Descending tracts.
- Thalamus , Basal ganglia , Cerebellum, Cerebral cortex, Hypothalamus &Cerebrospinal fluid.
- Autonomic nervous system.
- Ascending and desending tracts.

Unit -V Respiratory system

- Structure of upper and lower respiratory tract. Muscles of respiration and Mechanism of respiration.
- Lung volumes and capacities-definition,normal values,intrapulmonary and intra pleural pressures,surfactant.
- Oxygen transport,carbon-dioxide transport.
- Neural and chemical regulation of respiration.
- Hypoxia ,cyanosis,Artifical Respiration.

Unit – VI Special sense and skin

- Vision,
- Audition,
- Olfaction,
- Gustation.

Unit – VIIReproductive system

- Malereproductive organs-Spermatogensis and testosterone actions.
- Female reproductive organs.
- Contraception Methods.

Unit – VIII Endocrine system

- Hypothalamus hypophyseal inter relationship.
- Anterior pituitary hormones and their functions.
- Posterior pituitary hormones and their actions.
- Thyroid hormones, biosynthesis and functions.
- Parathyroid hormones ,functions.
- Insulin, glucagons, actions and Diabetes mellitus.
- Adrenal cortex hormones and their functions.
- Adrenal medullary hormones and their actions.

PRACTICAL & VIVA VOCE SYLLABUS

1. WBC.
2. Blood pressure.
3. Bleeding time
4. Clotting time.
5. Charts and spotters.

BIOCHEMISTRY – II (UE)

Objectives:

- To have a knowledge about the chemistry and metabolism of various macromolecules- carbohydrate, protein and lipids
- To learn about enzymes, vitamins, minerals and nutrition
- To know the structure and function of Hemoglobins, Nucleic acids.
- To learn about the organ function tests like Liver Function Tests and Renal Function Tests.

Unit I - PROTEINS

Proteins :

- Classification of amino acids,
- Structure of proteins,
- Plasma proteins,
- Immunoglobulins.

Metabolism of Proteins :

- Digestion and absorption of proteins,
- Ttransamination,
- Deamination,
- Steps of urea cycle,
- Phenylketonuria,
- Alkaptonuria,
- Transmethylation,
- Products derived from Glycine and tyrosine

Unit II -- NUCLEIC ACIDS

Nucleic acids:

- Structure & Function of DNA,
- Structure, Its types & Functions of RNA
- Nucleic Acid Metabolism

Unit III - HAEMOGLOBIN

Haemoglobin:

- Structure & Function of Haemoglobin
- Haemoglobin Metabolism

Unit IV-- MINERALS

Minerals:

- Macro & Minor Minerals & Metabolism

Unit V -- NUTRITION

Nutrition:

- BMR, SDA & Glycemic Index
- Dietary Fibers & Balanced Diet
- Protein Energy Malnutrition

Unit VI -- ORGAN FUNCTION TEST

- RFT

Unit XI - ACID BASE BALANCE

Acid Base Balance:

- pH Homeostasis
- Buffers
- Buffers
- Acidosis
- Alkalosis

PRACTICAL & VIVA VOCE

- Non- Protein Nitrogenous Substances
- Analysis Constituents of normal urine
- Analysis Constituents of abnormal urine
- Identification of abnormal constituents in urine
- Estimation of Glucose in blood
- Estimation of Urea in blood.

Spotters

Spotters: The student must identify the spotter and write some important uses of the spotter.

1. Urinometer
2. Lactometer
3. Centrifuge
4. Spectroscope
5. Colorimeter
6. pH meter
7. Ryles's Tube
8. Chromatography apparatus
9. Electrophoresis apparatus
10. Micropipette
11. Fluorosis
12. Inborn Errors of Metabolism
13. Protein Energy Malnutrition
14. Benzidine powder

15. Sulphur powder

16. Fouchet's Reagent

17. Structure of t RNA

18. Egg White

19. Jaundice

20. Gout

21.

MICROBIOLOGY – II (UE)

OBJECTIVE:

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

- Know the concepts of sterilization and disinfection procedures and their applications.
- Understand the basic principles of immunology.
- Understand the basic fundamental aspect of bacteria and study the common disease caused by them.

Unit- I

Virology: Introduction to virology, List of medically important viruses and diseases (AIDS, Hepatitis, Rabies, Polio) and Lab diagnosis of viral infections

Unit - II

Mycology: Introduction to Mycology, List of medically important fungi and diseases (Candidiasis, Cryptococcosis, Dermatophytes, Aspergillosis and Mucor mycosis) and Lab diagnosis of fungal infections.

Unit - III

Parasitology: Introduction to Parasitology, List of medically important parasites and diseases (E.histolytica, Plasmodium, W.bancrofti, Ascaris,Ancylostoma) and Lab diagnosis of parasitic infections

Unit - IV

Applied Microbiology-Collection and transport of clinical specimen, Sexually transmitted disease, Hospital acquired infection, Urinary tract infection, Skin and Soft tissue infection, Anaerobic infection, Respiratory tract infection and Bloodstream infection, Immunoprophylaxis, Biomedical Waste Management and standard precautions.

PRACTICAL & VIVA VOCE

I.SPOTTERS

1. Ascarislumbricoides
2. Taenia
3. Gram stained smears showing Candida
4. Universal container
5. Vaccine-OPV
6. BCG
7. Hepatitis
8. DPT
9. TT
10. MMR
11. Virology –Embryonated egg
12. Tissue culture
13. Rhabdovirus
14. Polio virus
15. HIV

II.Clinical case discussion with charts

1. Skin and soft tissue infections
2. Ring worm/ Tinea infections
3. Food poisoning
4. Gastroenteritis

RECOMMENDED BOOK:

1. Dr.C.P.Baveja- Microbiology in Nutshell (Arya Publications).

REFERENCE BOOKS:

1. Ananthanaryanan and Paniker's - Textbook of Microbiology.
2. Dr.C.P.Baveja – Textbook of Microbiology.

PRACTICAL BOOK:

1. Patwardhan,Bhat,SatishPatwardhan – Handbook of Practical examination in Microbiology.

PATHOLOGY- II (UE)

1. CVS

-Atherosclerosis
-Ischemic heart diease
-Congenital heart diseae
-Valvular heart disease

2. RESPIRATORY SYSTEM

-Bronchial Asthma
-Emphysema
-Bronchiectasis

3. GIT

-Gastric ulcer
-Tumors of GIT

4. HEPATOBILIARY

-Hepatitis
-Liver Abscess
-Cirrhosis

-Cholecystits

5. KIDNEY AND URINARY TRACT
-Renal stones
-UTI and Pyelonephritis
-Renal cell carcinoma(RCC)
-Renal Failure

6. REPRODUCTIVE SYSTEM
-Diseases of testis, uterus, cervix and ovary

7. CNS
-Infections

8. BONES and JOINTS
-Septic Arthritis
-Osteomyelitis
-Rhematoid Arthritis

9. ANEMIA

10. AUTOIMMUNE DISEASES

PRACTICAL & VIVA VOCE

INSTRUMENT TEST

- RBC Pipette
- WBC Pipette
- Sahli's Pipette
- Wintrobe's PCV tube
- Hb Estimation
- Blood grouping

SPECIMEN

- Chronic Pyelonephritis
- RCC
- SCC – Foot

- Leiomyoma – Fibroid uterus
- Gall stones
- Appendicitis
- Liver abscess

PHARMACOLOGY (UE)

COURSE OBJECTIVES:

To understand the terminologies and basic principles of pharmacokinetic and pharmacodynamic involved in the use of drugs.
To understand the pharmacological action and mechanism of action of common drugs used for different disease conditions.
To know the therapeutic uses and adverse effects of common drugs used for different disease conditions
Introduction
General pharmacological principles-Definition-Routes of drug administration-Pharmacokinetics-

Unit I:

- Pharmacodynamics-Adverse drug effects
- Drugs acting on Autonomic Nervous System, Peripheral Nervous System and Drugs acting on Central Nervous system

Unit II

- General considerations-Cholinergic system & drugs-Anticholinergic drugs-Adrenergic drugs-antiadrenergic drugs-Drugs acting on autonomic ganglia.

Unit III:

- Skeletal muscle relaxants-Local anaesthetics,General anaesthetics-Ethyl & Methyl alcohol-Sedatives-Hypnotics-Antiepileptics-Antiparkinsonian drugs-Drugs used in mental illness-Opioid analgesics and Non opioid Analgesics-Nonsteroidal Antiinflammatory drugs

Unit IV

- Cardiovascular drugs , Drugs affecting Blood & Blood formation and Drugs on Respiratory system
- Cardiac glycosides,Antiarrhythmic drugs, Antianginal drugs,Antihypertensives and Diuretics,Haematinics,Erythropoietin,,Drugs affecting-coagulation,Fibrinolytic and Antiplatelet drugs,Treatment of cough and antiasthmatic drugs.

Unit V

- Antimicrobial drugs
- General consideration-Antibiotics-Antibacterial agents-Antitubercular drugs-Antifungal-Antileprotic-Antiviral-Antimalarial-Antiamoebic-Antiprotozoal drugs-Cancer Chemotherapy,Antiseptic-Disinfectant-others.

Unit VI

- Hormones & related Drugs, Drugs used in Gastrointestinal diseases & Miscellaneous drugs
- Corticosteroids,Antithyroid drugs and Drugs for Diabetes Mellitus, Treatment of Vomiting,Constipation,Diarrhoea and Treatment of peptic ulcer
- Vitamins, Vaccines, Sera and chelating agents.

Recommended books:
Prep Manual for Undergraduates in Pharmacology by Tara V Shanbag, 2nd edition
Pharmacology for Dental and Allied Health Sciences by Padmaja Udaykumar, 3rd edition
Reference books:
Essentials of Medical Pharmacology by KD Tripathi, 7th edition
Basic and Clinical Pharmacology by Bertram G Katzung, 12th edition

PRACTICAL & VIVA VOCE

Learning Objective
This module is intended to discuss the various modalities of drug delivery and instruments relevant to it.
Instruments

Needles	Intravenous
	Intrathecal

Spinal
Intra arterial
Students Discussion Syringes: Tuberculin
Insulin
I.V cannula
Scalp. Vein set
Students Discussion Enema can
Inhalers
Spacers
Nebulizers
Students Discussion Tablets – Enteric coated, Sustained release, Sub-lingual
Students Discussion Capsules, Spansules, Pessary, Suppository
Students Discussion Topical Preparation, Ointment, Lotion, Powder,
Drops – eye / ear
Charts: Mechanism of action of drugs, adverse effects, toxicology
Spotters: drugs

Text books suggested for reading:

- Text book of pharmacology for Dental &Allied Health Science 2rd edition Padmaja Udaykumar
- Pharmacology for dental students Tara V shanbhag, Smita Shenoy, Veena Nayak
- Principles of pharmacology 2rd edition H.L.Sharma & KK Sharma

PHYSICS

Unit 1: Basic concepts

Basic Units, Heat, Acoustics etc. Basic concepts of power, work, force, energy Einstein's formula Electronics, Electricity & Magnetism, electromagnetic waves Units and measurements temperature and heat SI units of above parameters Atomic structure Nucleus Atomic Number, Mass Number electron orbit and energy levels Periodic table Isotopes Isobars Ionization and excitation Radioactivity, Natural and artificial radioactivity alpha decay beta decay.

Unit 2: Electromagnetic induction

Electric charges electric induction electric potential capacitance and capacitors. Electrical energy and power unit of current resistance and Ohm's law circuit laws heating effect of current sources of electrical energy E.M.F. Magnetism, Magnetic effect of an electric current application of magnetic field. Electromagnetic induction, laws of mutual induction and self-induction. Alternating current transformers theory and losses practical aspects reactance – resonance impedance and power factors.

Unit 3: Laser

Nature of light-Reflection-Refraction-Total internal reflection- Optical fibers- Applications in Medicine - Laser-Principles-Action-Types of laser, Basic principles of laser in Medical application - Argon-Iron laser photo coagulator-Photo thermal-Photochemical application - Applications of laser in Medicine- Laser hazards and safety measures.

Unit 4: Radiation Physics

Introduction to nuclear physics and radioactivity, Radioactive radiations - X-ray, production of x-ray, Properties of x-ray radiations - Biological effects of radiation, Radiation damage in matter, Radiation protection principles, radiation detection and measurement - Ultrasound and generation of ultrasound.

Unit 5: Introduction to Imaging Technique

Principles of Microscope: Simple microscope and compound microscope - Radiography**:** Making an X-ray image –Fluoroscopy-. CT Scans, MRI - Ultrasonography: Ultrasound picture of Body-A-Scan-B-Scan-M-Scan-Ultrasound diathermy-Phonocardiography - Radio isotopes: Uses of radio isotopes -99mTc Generator- Scintillation detectors - Application of scintillation detectors - Gamma Camera - Positron Camera.

Unit 6: Semiconductor devices

Principles of diodes and Transistors – Integrated circuits – Amplifiers – Basic configuration and types – differential and operational amplifiers– Waveform generators – Timer – A/D and D/A converters – Active filters – Transducers – Basic configuration and types.

Unit 7: Biopotential Recording Systems

Introduction to bioelectric potential – Electrodes and surfaces – Biopotential amplifier – Frequency ranges of various Biopotential signals – Working principles of bio potential recording systems – Electrocardiography – Electroencephalography – Electromyography.

Computer Science

1. History of computers,

- Definition of computers,
- Input devices,
- Output devices,
- Storage devices,
- Types of memory,
- And units of measurement,
- Range of computers,
- Generations of computers,
- Characteristics of computers

2. System:

- Hardware,
- Software,
- system definition,
- Fundamentals of Networking,
- Internet,
- Performing searches and working with search engines,
- types of software and its applications

3. Office application suite –

- Word processor,
- spreadsheet,
- presentations,
- other utility tools,

- Fundamentals of Linux / Windows operating system, functions, interfaces, basic commands, working with the shell and other standard utilities.

4. Language

- Comparison chart of conventional language,
- programming languages,
- generations of programming languages,
- Compilers and interpreters,
- Universal programming constructs based on SDLC,
- Variable, constant, identifiers, functions, procedures, if while, do – while,
- For and other Structures.

5. Programming in C language,

- Data types, identifiers, functions and its types, arrays, union, structures and pointers
- Introduction to object oriented programming with C++: classes, objects, inheritance
- Polymorphism and encapsulation. Introduction to databases, and query languages,
- Introduction to Bioinformatics

Practicals:

1. Various browsers, search engines, email
2. Text document with mages with multiple formatting options using a specified office package
3. Spreadsheet using a specified office package
4. Presentation on a specified topic using the specified locations
5. Shell programming-parameters
6. Shell program- regular expressions
7. C program- functions
8. C program – file handling
9. C program demonstrating the usage of user defined variables
10. Databases
11. Applications in Optometry

SEMESTER – III

S.No:	Subject
1.	Anatomy, Physiology and Pharmacology related to Emergency Medicine– Theory (UE)
2.	Anatomy, Physiology and pharmacology related to Emergency Medicine – Practical (UE)
3.	Clinical Microbiology, Pathology and Biochemistry related to Emergency Medicine - Theory (UE)
4.	Clinical Microbiology, Pathology and Biochemistry related to Emergency Medicine - Practical (UE)
5.	Medical Ethics And Biosafety (IE)
6.	Psychology(IE)

SEMESTER-III

ANATOMY, PHYSIOLOGY AND PHARMACOLOGY RELATED TO EMERGENCY MEDICINE – THEORY (UE)

Objectives:

- To develop in depth knowledge on anatomy and physiology of various organs and structures
- To develop exhaustive ideology of various Pharmacological aspects in relation to emergency medicine.

Specific Learning Outcome (SLO):

- Will be able to explain anatomy of various organs with better knowledge on terminologies.
- Will be able to explain to physiological processes with understanding during an emergency and trauma
- Will be able to provide better support during a emergency and trauma with knowledge of pharmacological aspects.

Unit-I INTRODUCTION AND RESPIRATORY SYSTEM

- Anatomical positions, planes and terms, cell, tissue ,and organization of the body.
- Oral cavity, upper respiratory tract, nose, pharynx, larynx, vocal cord ,trachea, bronchi, lung, bronchopulmonary segments, pleura, diaphragm, thoracic cage with boundaries, intercostal space , and applied anatomy.
- Cell physiology, water and electrolyte balance-components of body fluid compartments, sodium, potassium, magnesium-function, homeostasis.
- Functions of the respiratory system, dead space, compliance, surfactant, control of ventilation, work of breathing, pulmonary circulation, lung volume and capacities, ventilation perfusion relationship, lung function test, causes of arterial hypoxia, pulse oximetry, types of respiratory failure.
- Pharmacology- common terminologies, basic principles, bioavailability, routes of drug administration and absorption, pharmacokinetics, pharmacodynamics, adverse effects. Oxygen, drugs used in asthma and COPD.

Unit-II CARDIOVASCULAR SYSTEM

- Pericardium clinical and applied anatomy, heart-anatomy, coronary circulation, blood and nerve supply, conducting system.
- Blood vessel structure, classification, arterial supply of body (aorta, common carotid).

- Arterial supply of upper limb ,hand ,abdomen, thorax, pelvis, lower limb.
- Venous drainage of body, SVC, IVC, upper limb, lower limb, thorax, abdomen and pelvis.
- Distribution of blood volume ,effect of blood loss, blood pressure and regulation of blood pressure, measurement of blood pressure, valsalva manoevure, cardiac output and its determinants, determinants of venous return, central venous pressure, pulmonary capillary wedge pressure, jugular venous pressure, cardiac cycle, heart sounds and auscultation, myocardial oxygen consumption, conduction system, ECG.
- Components of blood, functions of blood and plasma protein, function of iron, red blood cells, white blood cell, platelets, blood groups, blood transfusion indications and hazards, coagulation cascade, antihypertensives.
- Drugs used in ischemic heart disease.
- Anticoagulants, antiplatelets.
- Drugs used in cardiac failure, antiarrythmic drugs, diuretics.
- Fluids and electrolytes-crystalloids, colloids, potassium, treatment of hypo and hyperkalemia, sodium, treatment of hypo and hypernatremia, calcium, magnesium. Inotropes, vasopressors, vasodilators, chronotropic agents.

Unit-III MUSCULO SKELETAL SYSTEM

- Bones- axial skeleton, appendicular skeleton, gross anatomy, cellular component, classification of bones, microscopic structure, blood supply.
- Cartilage-structure and type of cartilage.
- Joints- classification and type of joints.
- Muscular system.-types and classification of muscles.muscle relaxants, acetaminophen, NSAID.

Unit-IV GASTRO INTESTINAL AND GENITO URINARY SYSTEM

- Digestive system- oral cavity, oesophagus stomach, small and large intestines, liver, pancreas, spleen.
- Applied anatomy. Genitourinary system.-kidney, ureter, bladder, urethra, testis, ovary, uterus applied anatomy.
- Acid base balance-ph,factors affecting body ph,buffers,acid base disorders.
- Renal physiology-nephron, functions of the kidney, glomerular filtration, juxta glomerular apparatus, Bowmans capsule, loop of Henle, tubular function, counter current mechanism, tests of glomerular function, test of tubular function, renin angiotensin mechanism.
- Gastro oesophageal sphincter competence, mendelsons syndrome, vomiting, stomach - functions, liver - functions, liver function test, bilurubin metabolism, bile -production and function.
- Antacids, antiemetics, prokinetic agents, laxatives, antidiarrhoeals.

Unit-V CENTRAL NERVOUS SYSTEM AND ENDOCRINE SYSTEM

- Nervous system-parts of the nervous system, neuron, types of nerve and function, neuromuscular junction, cerebrospinal fluid, parts of the brain, cerebellum, spinal cord, autonomic nervous system.
- Thyroid, parathyroid, adrenal, pituitary.
- Thermoregulatory mechanism, body response to cold and heat, hypothermia, hyperthermia. - membrane potential, action potential, synapses, cerebral blood flow and regulation, blood brain barrier, intracranial pressure,
- Hyper and hypothyroidism, adrenal glands, insulin synthesis, action, deficiency, hypoglycemia, hyperglycemia, diabetic ketoacidosis.
- Atropine, glycopyrrolate, sedatives, antiepileptic, benzodiazepines, opioids, insulin, corticosteroids.

Text Books:

1. Human Anatomy , B.D.Chaurasia, Vol 1, 2, 3, Sixth edition, CBS Publishers & Distributors, 2013 Textbook of physiology, A.K.Jain, Fifth edition, Avichal Publishing Company , 2014
2. Pharmacology for Dental and Allied Health Sciences, Padmaja Udaykumar, Third Edition, Jaypee Brothers Medical Publishers , 2013

Reference Books:

1. Human Anatomy , B.D.Chaurasia, Vol 1, 2, 3, Sixth edition, CBS Publishers & Distributors, 2013
2. Textbook of physiology, A.K.Jain, Fifth edition, Avichal Publishing Company , 2014
3. Essentials of medical pharmacology, Tripathi, 7th edition, Jaypee Brothers Medical Publishers, 2013

ANATOMY, PHYSIOLOGY AND PHARMACOLOGY RELATED TO EMERGENCY MEDICINE – PRACTICAL (UE)

OBJECTIVES

- To inculcate thorough knowledge on the anatomy and physiology of various organs and structures.
- To elaborate on various pharmacological aspects in relation to emergency medicine.

Specific Learning outcomes (SLO):

- Will be able to expresses anatomical terminologies with clarity.
- Will be able to recognize improper physiological functions.
- Will gain competency in handling emergency and trauma patients with knowledge on Pharmacological aspects

CONTENTS

- Charts related to Anatomical positions and Terminologies
- Spotters - Histology of skin slide , Radiographic Surface Anatomy
- Charts, Specimens and X-rays – Radiological and Anatomical Surface markings related to the following:
  - **a)** Head and Neck
  - **b)** Skeletal system of upper and Lower Limbs,
  - **c)** Thorax and Abdomen
  - **d)** Cardiovascular system
  - **e)** Respiratory system
  - **f)** Reproductive system
  - **g)** Alimentary System
  - **h)** Excretory system
- Identification of emergency drugs, Crystalloids and colloids

CLINICAL MICROBIOLOGY, PATHOLOGYAND BIOCHEMISTRY RELATED TO EMERGENCY MEDICINE – THEORY (UE)

OBJECTIVES

- To develop understanding of various pathological conditions in relation to emergency and trauma care.
- To introduce the importance of microbiology and biochemistry in emergency and trauma care. To elaborate on various pharmacological aspects in relation to emergency medicine.

Specific Learning Outcome (SLO):

- Will be able to explain various pathological conditions.
- Will be able to recognize variations in normal biochemical environment during an emergency or trauma.
- Will be able to identify changes occurring due to microbes with competency.

CONTENTS

Unit-I GENERAL MICROBIOLOGY

- Bacterial Genetics, Antibiotic action and Mechanisms of drug resistance (MRSA, ESBL, MBL),
- Bacterial food poisoning, bacterial diarrhea and dysentery, skin and soft tissue infections (aerobic and anaerobic),
- Respiratory tract infection, Urinary Tract infection, Sexually transmitted diseases, Congenital infections

Unit-II APPLIED MICROBIOLOGY

- Hospital Acquired infections, universal Precautions – Standard Infection control precautions, Biomedical Waste Management, Role of Infection Control Committee, Central Nervous system infections (Meningitis and encephalitis), Septicemia and Bacteremia, Blood borne viral infections – Hepatitis virus and HIV.

Unit-III BASIC PATHOLOGY

- Basic pathological processes.
- Degeneration, Necrosis, Cellular adaptation, Cell injury & cell death.

- Cellular response to stress and noxious stimuli. Causes of cell injury. Mechanisms of cell injury. Reversible and irreversible cell injuryExamples of cell injury and necrosis Inflammation, Chemical mediators of inflammation,
- Chronic inflammation,Circulatory disturbances, Metabolic disorders.
- Physiology and Pathology of Immune system.
- Complement function, Hypersensitivity reaction, Immune complex diseases, Autoimmune disease. Genetic disorders.

Unit-IV PATHOLOGICAL TECHNIQUES TO ARRIVE AT DIAGNOSIS AND LABORATORY FOLLOW UP

- Malabsorption syndrome, Endocrine function tests.
- Tumor Markers: Diagnostic and prognostic values Collection, Transport and Examination of Body fluids Physical chemical and microscopic examination of Urine, Cerebrospinal fluid, Pleural, Peritoneal and Synovial fluids.
- Examination of Sputum, Technique and applications Some diagnostic techniques for Anatomic pathology, FNAC technique, Papanecoulau and Giemsa stain Technique of grossing, different histopathological staining techniques,
- Exposure to technique of electron microscopy Learning the Essence of histopathological reporting,
- Cytology to distinguish benign from malignant lesions.

Unit-IV CLINICAL BIOCHEMISTRY

- Biochemical Analytes in blood, biochemical analytes in urine, Biochemical analytes in cerebrospinal fluid, Biochemical analytes in ascetic fluid,
- Liver function tests, Kidney function tests, Gastric function tests,
- Acid Base Balance (Normal & abnormal) and interpretation of ABG parameters,
- Tumor markers, Point of care instruments and their role in ambulance.

Text Books:

1. Text book of pathology, Harsh Mohan, Second Edition, Jaypee Brothers Publishers, 2013
2. Textbook of Microbiology, Ananthanarayan and Paniker, Eight Edition, Universities Press, 2009.
3. Text book of biochemistry, Vasudevan, Seventh Edition, JP Medical Ltd, 2013

Reference Books:

1. Principles and practice of medicine, Davidson, Twenty Second edition, Elsevier Health Sciences, 2014

2. Lipponcott's Illustrated Reviews: Microbiology, Harvey, Third Edition, Lippincott Williams & Wilkins 2011
3. Text book of biochemistry, Vasudevan, Seventh Edition, JP Medical Ltd, 2013

CLINICAL MICROBIOLOGY, PATHOLOGYAND BIOCHEMISTRY RELATED TO EMERGENCY MEDICINE – PRACTICAL (UE)

OBJECTIVES

- To develop knowledge on various staining techniques on microorganism s.
- To develop knowledge on laboratory safety and infection control methodologies and effect of biochemical changes in humans

Specific Learning Outcome (SLO):

- Will be able to perform various staining techniques for interpretation of microorganisms.
- Will be able to demonstrate competency in interpretation of applied pathological aspects.
- Will be able to recognize variations in normal biochemical environment during an emergency or trauma

CONTENTS

- Basic Staining Techniques
- Interpretation of Gram Stain and Acid Fast Stain
- Charts related to Applied Microbiology
- Vaccines Spotters
- Color coded waste disposal
- Chemical Disinfectants spotters (Gluteraldehyde, formaldehyde, antiseptic solutions)
- Invasive Devices and their sterilization methods (IV sets, Endotracheal tubes, suction apparatus)
- Management of Blood Spillages
- Method of sample collection
- Charts Related to Basic pathological processes, immunopathology
- Charts related to procedures related to chemical and microscopic examination of body fluids
- Demonstration of point of care instruments
  a) Glucometer (Includes both blood glucose & ketones estimation)
  b) Triage (Trop I, BNP, CKMB)
  c) ABG
  d) Electrolyte analyser
- Charts on interpretation of emergency cases & relevant investigations to be analysed

MEDICAL ETHICS AND BIO SAFETY (IE)

UNIT-I

Definition and key Concepts; philosophical considerations; epistemology of science; ethical terms; principles and theories; relevance to health care; ethics and the law issues: genetic engineering, stem cells, cloning, medical techniques, trans-humanism, bio-weapons.

UNIT-II

Define negligence, malpractice & liability; iatrogenic harm; Influence of ethics in general practice; Describe primary and secondary ethical principles; Hippocrates' oath; Professional codes of ethics; Describe the moral basis of informed consent and advance directives; research ethics – animal rights, ethics of human cloning, and stem cell research; ICMR guidelines.

UNIT-III

Genetic testing, genetic screening, Fertility and birth control, sex determination and sex selection, Reproductive control: assisted reproduction and ethics, pre-natal genetic counseling, pre-implantation genetic diagnosis, Ethical issues in applied medicine; Workers compensation.

UNIT-IV

Euthanasia and physician-assisted dying; end-of-life care; Physicians, patients and other: autonomy, truth telling & confidentiality; emerging issues: impact of medical advances on society; Use of genetic evidence in civil and criminal court cases; Challenges to public policy – to regulate or not to regulate; improving public understanding to correct misconceptions.

UNIT-V

Introduction to Biosafety; biological safety cabinets; containment of biohazard; precautions for medical workers; precautions in patient care; Biosafety levels of microorganisms; mitigation of antibiotic resistance; radiological safety; measurement of radiation; guidelines for limiting radiation exposure; maximum reasonable dose; precautions against contamination; Institutional Biosafety committee.

TEXT BOOKS:

1. Medical Ethics - CM Francis 2e, Jaypee publishers, India (2004)

2. Medical Law, ethics, and bioethics - M Lewis and C Tamparo, 4e. FA Davis publishers (1998)

3. Biomedical ethics - Terry O' Neill, Greenhaven Press (1999)

REFERENCE BOOKS:

1. Human factor, a bridge between care and cure, eds. R Tartaglia, S Bagnaro et al. Taylor and Francis(2005)

2. Medical Ethics - Robert Snedden, Steck-Vaughn Publishers, Texas, USA (2000)

PSYCHOLOGY (IE)

UNIT 1: Basic Concepts of Psychology

Definition of Psychology, Origin of Psychology - Philosophical roots of psychology, Schools of Psychology –Structuralism – Gestalt – Functionalism – Behaviorism - Psychoanalysis – Humanistic. Fields of Psychology - Work of a psychologist – Applications of psychology.

UNIT 2: Learning principles and methods

Definition of learning, Factors In The Process of Learning Classical conditioning - Operant Conditioning – The principle of reinforcement and Punishment. Theory of learning. Cognitive learning- Latent learning, Insight learning, and Imitation.

UNIT 3: Motivation, Emotion, Memory and forgetting

Motivation - Definition of motivation – Theories of motivation - Physiological basis of motivation – Motivational factors in aggression – Self-actualization motivation. Emotion – Emotional expression –Theories of emotions. Kinds of remembering – Retrieval processes – The nature of forgetting – Two process theories of memory – Improving memory –Language and thought – Symbols and concepts – Structure – Forms of thought - Thinking and reasoning – Concept formation.

UNIT 4: Development, Sensory Processes and Perception.

Erikson's stages of psychosocial development Lawrence Kohlberg's stages of moral development Freud's Stages of Psychosexual Development Physiological basis of behavior – The brain and nervous system –The sensory process , Some general characteristic of senses – Five senses ,Perception: Organization – The role of learning in perception – Perception and attention – Perceptual process.

UNIT 5: Intelligence & Personality

Theories of intelligence – Measuring Intelligence – Kinds of intelligence tests – Ability – Formation of aptitude and attitude – Aptitude tests –Creativity and its tests. Personality – Definition of Personality – Theories of Personality – Assessment of Personality. Social Factors Influencing Personality.

UNIT 6: Social Psychology

Definition, Nature, Subject Matter and Scope Of Social Psychology-Applications and Importance of Social Psychology, Groups: Definition and Type- Primary And Secondary Groups Social Interaction, Social and Inter-Personal Relations. Inter-personal attraction – Love and Companionship. Prosocial-behavior. Modes of empathy: self – other differentiation and development of empathy. Social influence: attitude and conformity. Definition - Characteristics and

Classification of Crowd. Leadership: Definition and characteristics, Defense Mechanisms, frustration and conflict, sources of frustration and conflict, types of conflicts. Aggression and Types of aggression.

UNIT 7: Health Psychology

Definition of Health Psychology -Relating Health Psychology to other fields Clinical Health Psychology, Public Health Psychology, Community Health Psychology, Critical Health Psychology

Abnormal Psychology: Concepts of normality and abnormality, causation of mental illness, neuroses, psychoses, psychosomatic disorders, measures to promote mental health.

Stress - Definitions- Models of Stress – Theories of Stress - Stress reactions – Coping and Stress Management techniques, Pain and its management - Psychological reactions of a patient to loss – Stages of Acceptance by Kubler-Ross.

REFERENCES:

1. Clifford T. Morgan, Richard a. King, John R. Weis and John Schopler,"**Introduction to Psychology" – 7th Edition**. Tata McGraw Hill Book Co. New Delhi, 1993.

2. Baron, R. A., & Byrne, D (2006), "**Social psychology"**, New Delhi: Prentice hall of India private limited.

3.Elliot Aronson, Timothy D. Wilson, Robin M. Akert, Samuel R. Sommers, **"Social psychology" 9th edition** published by Pearson education, Inc.,2006

4. Shelley E. Taylor. "**Health Psychology" Third Edition**. McGraw Hill International Editions, 1995.

5. Swaminathan, V.D, Latha Sathish, "**Psychology for Effective Living"**, Department of Psychology, University of Madras.

6. Coleman, James. 1980. "**Abnormal Psychology and modern life"**. New Delhi: Tata McGraw Hill Ltd.

SEMESTER IV

S.No	SUBJECT
1	Trauma Care - First Aid, Triage, Life Support, and Resuscitation - Theory (UE)
2	Trauma Care - First Aid, Triage, Life Support, and Resuscitation - Practical (UE)
3	Emergency Medical Equipment, Cardiopulmonary Emergencies and Poisoning - Theory (UE)
4	Emergency Medical Equipment, Cardiopulmonary Emergencies and Poisoning - Practical (UE)
5	Pre Hospital Care Record Documentation(IE)
6	Sociology(IE)

SEMESTER-IV

TRAUMA CARE - FIRST AID, TRIAGE, LIFE SUPPORT, AND RESUSCITATION - THEORY (UE)

OBJECTIVES

- To develop in depth knowledge on First aid techniques and Triage
- To develop exhaustive ideology of various life support methods and resuscitation

Specific Learning Outcome (SLO):

- Will be able to explain first aid techniques for various emergency conditions.
- Will be able to explain triage during an emergency outcome.
- Will be able to provide better support during a lifesaving condition with knowledge on life support and resuscitation.

Unit-I PRINCIPLES OF FIRST AID

- Airway-list the signs of adequate breathing, list the signs of inadequate breathing. Describe the steps in performing the head-tilt chin-lift, relate mechanism of injury to opening the airway.
- Describe the steps in performing the jaw thrust, state the importance of having a suction unit ready for immediate use when providing emergency care.
- Describe the techniques of suctioning. Describe the steps in performing the skill of artificially ventilating a patient with abag-valve-mask while using the jaw thrust.
- List the parts of a bag-valve-mask system. Describe the steps in performing the skill of artificially ventilating a patient with a bag-valve-mask for one and two rescuers.
- Describe the signs of adequate artificial ventilation using the bag-valve-mask.
- Describe the signs of inadequate artificial ventilation using the bag-valvemask, list the steps in performing the actions taken when providing mouth-to-mouth and mouth-to-stoma artificial ventilation.
- Describe how to measure and insert an oropharyngeal (oral) airway. Describe how to measure and insert a nasopharyngeal (nasal) airway.
- Define the components of an oxygen delivery system.
- Identify a nonrebreather face mask and state the oxygen flow requirements needed for its use.
- Describe the indications for using a nasal cannula versus a nonrebreather facemask. Identify a nasal cannula and state the flow requirements needed for its use.

- Wounds-basic principles of wound dressing,, haemorrhage, shock ,fracture, dislocations, muscle injuries ,splinting.
- Unconsciousness basic nursing care of unconscious patient.
- Burns, scalds, foreign bodies in the skin, eye, ear, nose, throat, stomach ,frost bite, effects of heat cramps, .lifting and transporting injured persons ,bandaging -figure of eight, spiral, spiral reverse, circular, recurrent, practical guidelines for applying a roller bandage physical assessment

Unit-II TRIAGE, BASIC AMBULANCE SERVICES

- Types of triage, prehospital care, basic life support, transportation to hospital, basic ambulance service.
- Shifting of patient define body mechanics discuss the guidelines and safety precautions that need to be followed when lifting a patient.
- Describe the safe lifting of cots and stretchers.
- Describe the guidelines and safety precautions for carrying patients and/or equipment,describe correct and safe carrying procedures on stairs.
- Emergency move, urgent move, non-urgent move.

Unit-III TRAUMA CARE

- Initial assessment and management - primary survey/secondary survey –who six phases of trauma care management.
- Chest injuries –indication for chest decompression, open chest wounds, tension pneumothorax, and chest drains-under water seal, hypovolemic shock –assess circulation, signs of hypoperfusion, monitoring, bleeding control of external haemorrhage, fluid resuscitation. Intravenous access, oxygen supplementation, venous cut down.
- Head injuries –glascow coma scale.
- Pupil size-method to asses pupil size, normal and abnormal pupil size, differentiate between dilated and constricted pupil, differentiate between reacting and nonreacting pupil.
- Maxillofacial injuries –basic nursing care.
- Spine and spinal cord –rule out unstable cervical spine, spine immobilization, log rolling,
- Abdomen –peritoneal lavage, ryles tube insertion.
- The urinary tract-bladder catheterization, Limb injuries –basic nursing care.
- Trauma in pregnancy –basic nursing care.
- Paediatric trauma – basic nursing care.
- Trauma in elderly –basic nursing care.

- Management of severe burns –assess percentage of burns, degree of burns, Decontamination, dressing.

UNIT-IV VITAL SIGNS

- Temperature -definition and normal body temperature, factors affecting normal body temperature, assessment of normal body temperature.
- Pulse - definition and normal pulse rate, characteristics of normal pulse, factors influencing pulse, alterations in pulse, assessment of pulse.
- Respiration - definition and normal respiratory rate, characteristics of normal respiration, factors influencing respiratory rate, alterations in respiration, assessment of respiration.
- Blood pressure –define systolic and diastolic blood pressure - Definition and normal blood pressure, factors influencing normal blood pressure ,assessment of blood pressure ,alterations in blood pressure

UNIT-V LIFE SUPPORT

- Basic life support in perspective, cardiopulmonary function and actions for survival,
- adult basic life support,
- special resuscitation situations ,
- pediatric basic life support ,
- safety during cpr training and actual rescue.

Text Books:

1. First Aid For Nurses, Karesh Prasad, First edition, Jaypee Brothers Medical Publishers Ltd, 2012
2. Text book on first aid and emergency nursing, I.Clement, first edition, Jaypee Brothers Medical Publishers Ltd, 2013
3. American College of Emergency Physicians First Aid Manual, Jon R. Krohmer, second edition, DK publishers, 2004

Reference Books:

1. Emergency and Trauma Care for Nurses and Paramedics, Kate Curtis, revised edition, Elsevier Health Sciences, 2011
2. Oxford Handbook of Accident and Emergency Medicine, Jonathan P. Wyatt, illustrated edition, Oxford University Press, 2005
3. Oxford Handbook of Critical Care, Andrew Webb, illustrated edition, Oxford University Press, 2009

TRAUMA CARE - FIRST AID, TRIAGE, LIFE SUPPORT, AND RESUSCITATION - PRACTICAL (UE)

OBJECTIVES

- To inculcate thorough knowledge on life support skills
- To elaborate on various first aid techniques and triage

Specific Learning outcomes (SLO):

- Will be able to gain hands on training on life support techniques.
- Will be able to recognize Triage levels during an emergency outcome.
- Will be able to show competency in handling emergency and trauma patients with knowledge on first aid and resuscitation methods.

CONTENTS

- Basic Life Support
- Advanced Cardiac Life Support
- Skill Of Artificial Ventilation
- Triage
- Vital Signs Measurement Using Monitors And Normal Values
- Blood pressure using sphygmomanometer
- Setting up of iv infusion
- Hypovolemic shock and management
- Application of bandage
- Application of splint
- Cervical spine immobilisation.

EMERGENCY MEDICAL EQUIPMENT, CARDIOPULMONARY EMERGENCIES AND POISONING – THEORY (UE)

OBJECTIVES:

- To develop understanding of medical equipment related to emergency and trauma care.
- To introduce the importance of cardiopulmonary emergencies and poisoning

Specific Learning outcomes (SLO):

- Will be able to work with medical equipment related to emergency medicine.
- Will be able to show competency in working with poisoned patients extending support to the emergency physician.
- Will be able to identify pathological and biochemical changes with competency in cardiopulmonary emergencies

CONTENTS

Unit-I EMERGENCY MEDICAL EQUIPMENT

- ECG , DC defibrillator ,
- intravenous pumps laryngoscope,
- ambubag, suction machine ,
- SPO2 monitoring,
- temperature monitoring ,
- BP apparatus,
- BP monitoring-NIBP, IBP ,ventilators-intensive care, portable ,
- manual resuscitator ,
- radiology equipment &radiation hazards ,
- suction machine ,
- nebuliser ,
- medical gases,
- infant warmer & incubator ,
- glucometer.

Unit-II GENERAL PRINCIPLES FOR THE TREATMENT OF POISONING

- General principles of assessment and management of poison and overdose ,gastric lavage, forced alkaline diuresis, -opiates toxicity, organophosphates, carbon monoxide, cyanide,

caustics, copper sulphate, digoxin toxicity, hydrocarbons, tricyclic toxicity, metals, acetaminophen overdose, poisonous alcohols, poisonous plants

Unit-III EMERGENCIES DUE TO VENOMOUS BITES AND STINGS

- Snake bite anti-venom administration,
- scorpion stings,
- bee and wasp stings-anaphylaxis management,
- dog bite

Unit-IV CARDIAC EMERGENCIES

- Acute coronary syndromes including angina and myocardial infarction, heart failure, arrhythmias, hypertensive emergencies

Unit-IV RESPIRATORY EMERGENCIES

- Asthma, COPD, Tension Pneumothorax, Pneumonia ,Respiratory failure.

Text Books:

1. Oxford Handbook of Accident and Emergency Medicine, Jonathan P. Wyatt, illustrated edition, Oxford University Press, 2005
2. Oxford Handbook of Critical Care, Andrew Webb, illustrated edition, Oxford University Press, 2009
3. Drugs and Equipment in Anaesthetic Practice, Arun Kumar, sixth edition, Elsevier India, 2004

Reference Books:

1. Principles and practice of medicine, Davidson, Twenty Second edition, Elsevier Health Sciences, 2014

EMERGENCY MEDICAL EQUIPMENT, CARDIOPULMONARY EMERGENCIES AND POISONING – PRACTICAL (UE)

OBJECTIVES

- To develop understanding of medical equipment related to emergency and trauma care.
- To introduce the importance of cardiopulmonary emergencies and poisoning.

Specific Learning outcomes (SLO):

- Will be able to identify and utilize medical equipment during an emergency or trauma.
- Will be able to demonstrate competency in anaphylaxis management in support to a physician.

Will be able to gain knowledge on drugs used for various cardiopulmonary emergencies

CONTENTS

- Identify the different emergency equipment
- Functions of Emergency Medical Equipment
- Parts of laryngoscope
- Ambu
- Defibrillator
- Clinical features of poisoning and first aid
- Antidotes for common poisoning
- Anaphylaxis management
- Drugs used in acute MI
- Drug used in heart failure
- Drug used in asthma
- Drug used in COPD.

PRE HOSPITAL CARE RECORD DOCUMENTION (IE)

Learning Objective:

- Able to understand the Documentation and its importance with current emphasis on monitoring the quality of health care as evidenced by patient outcome.
- Emphasize on accurate and adequate documentation Minimization of errors

Unit I

- Understand the importance of written documentation of patient care rendered
- Components of the prehospital care report

Unit II

- Continuity of care often depends on documentation from the previous heath care provider.
- The Prehospital care report is a legal document
- General guiding principles for documentation

Unit-III

- Procedure – Subjective, objective, assessment and pain
- Prehospital care report for billing and statistical information

Unit-IV

- Evaluation and continuous quality improvement
- Errors made while documenting

Text Books:

1. Mosby's Paramedic book ,Mick J Sanders ,Lawrence M Lewis, Gary quick Fourth edition 2014
2. Caroline emergency care in streets essentials eighth edition, American Academy of Orthopaedic Surgeons , Nancy L. Caroline .

SOCIOLOGY (IE)

Unit 1: NATURE AND SCOPE OF SOCIOLOGY

- Definition, Historical background, subject matter of sociology, Nature and scope, Importance, Sociology of India, Relationship of sociology with other social sciences

Unit 2: FUNDAMENTAL CONCEPTS OF SOCIOLOGY

- Society and Individual, Community, Social structure and functions of Institutions, Association, Organization, Social system, social order, Social control, social groups, Social Process, Social change,

Unit 3:CLASSICAL THINKERS AND THEIR CONTRIBUTIONS

- Auguste comte, Emile Durkheim, Karl Marx, Max Weber, Herbert Spencer

Unit 4: SOCIOLOGY OF INDIA

- Characteristics of Indian society, Racial linguistic, Religious and demographic, Hindu social organization-ashramas, varnas, dharma and karma, purushartha, Caste system, Problems of SC&ST, Sanskritisation, Westernization and Modernization,

Unit 5: ANTHROPOLOGY AND CULTURAL ANTHROPOLOGY

- Definition of anthropology, Subfield of anthropology, Cultural Anthropology yesterday and today, Anthropological Perspectives, Early Anthropologist
- Environment and culture, Kinship, Clan Ethno methodology, Gender, Subsistence and Exchange, Social Organization and evolution of political system

Reference:

1. Bottomore.T.B., Sociology: A guide to problems and Literature,1971,Random House

2. Gisbert P. Fundamentals of sociology,3rd Edition,2004,Orient Longman publications

3. Neil J.Smelser,Handbook of sociology,1988.sage publication

4. Johnson R.M,Systematic Introduction to Sociology,1960,Allied Publishers
5. Cultural Anthropology,Barbara D.Miller,2006 Pearson/Allyn and Bacon Co
6. C.N.ShankarRao., Introduction to Sociology, 2008, S.CHAND & Company Publications.

SEMESTER V

S.No	Subject
1.	Orthopaedic Emergencies, burns and Surgical Emergencies– Theory (UE)
2.	Orthopaedic Emergencies, burns and Surgical Emergencies– Practical (UE)
3.	Obstetrics, Gynaecological and Paediatric Emergencies - Theory (UE)
4.	Obstetrics, Gynaecological and Paediatric Emergencies - Practical (UE)
5.	Environmental science and community medicine(IE)

V SEMESTER

ORTHOPAEDIC EMERGENCIES, BURNS AND SURGICAL EMERGENCIES– THEORY (UE)

Objectives:

- The student should gain knowledge and recognition of major abdominal illness and trauma, ask for relevant investigations, so as to avoid any delay in resuscitation.
- Able to understand the surgical procedures which are commonly categorized by urgency, type of procedure, body system involved degree of invasiveness, and special instrumentation.

Specific Learning Outcomes:

- Be able to gain knowledge and recognition of major abdominal illness and trauma, ask for relevant investigations, so as to avoid any delay in resuscitation.
- Be able to understand the surgical procedures which are commonly categorized by urgency, type of procedure, body system involved degree of invasiveness, and special instrumentation.

CONTENTS

UNIT I

- **Principles of Anaesthesia:**
    - General Anaesthesia
    - Local Anaesthesia
    - Regional Anaesthesia

- **Wounds and Suturing:**
    - Types of common wounds
    - Treatment
    - Cleansing the wound
    - Wound healing
    - Principles of incision and closure (including suturing)

- **Burns**
    - Skin Anatomy
    - Classification of Burn
    - Special Burn considerations

UNIT II

- **Acute Abdominal Pain**

- **Esophageal Obstruction and Foreign Bodies**
    - Site
    - Radiographic consideration
    - Esophageal pharmacologic Maneuvers
    - Foley catheter manipulation of Esophageal Foreign Bodies
    - Special situations: Fish Bones in the Throat
        - Button Battery ingestion
        - Childhood coin ingestion

- **Gastrointestinal Bleeding**
    - Upper GI Bleed
    - Lower GI Bleed

- **Stomach**
    - Anatomy and physiology
    - Peptic ulcer: Aetio pathogenesis
        - Clinical features
        - Difference between duodenal and gastric ulcer
        - Investigations and Treatment

UNIT III

- **Cholecystitis**
    - Definition
    - Pathophysiology
    - Causes
    - Signs and symptoms
    - Investigations
    - Treatment

- **Pancreas:**
    - Histology

- Acute Pancreatitis:
  - Definition
  - Pathophysiology
  - Causes
  - Signs and symptoms
  - Investigations
  - Treatment
- Chronic Pancreatitis:
  - Aetiology
  - Clinical features
  - Investigations
  - Treatment

UNIT IV

- **Appendix**
  - Acute Appendicitis: Pathology
    - Clinical features
    - Physical Examination
    - Investigations
    - Treatment

- **Intestinal obstruction**
- **Abdominal Trauma:**
- Solid viscus injuries (Liver, Spleen, Kidney)
  - Hollow viscus injuries (Intestines, Urinary bladder)
  - Vascular injuries in the abdomen
  - Diaphragmatic rupture
  - Evisceration
  - Mesenteric avulsion, Hematoma

UNIT V

- **Anorectal Disorders**
- **Renal Colic:**
  - History

- Causes
- Presentation
- Examination of the Kidney
- Investigations
- Management

UNIT VI

- Torsion Testis
- Special emergency surgical procedures

Text Books

1. A manual on clinical surgery,7th edition S Das-Dr.S.Das
2. Manipal manual of Surgery, 2ndedition, K.RajgopalShenoy-CBS Publishers

Reference Books

1. Bailey and Love's short practice of surgery – 24th edition
2. Handbook of surgery – Sudhirkumar Jain , VivekManchandra Raman Tanwar

Online Resources

1. www. emedicine - Medscape reference
2. WWW. WebMD reference

ORTHOPAEDIC EMERGENCIES, BURNS AND SURGICAL EMERGENCIES– PRACTICALS (UE)

Objectives:

- Be able to gain knowledge and recognition of major abdominal illness and trauma, ask for relevant investigations, so as to avoid any delay in resuscitation.
- Be able to understand the surgical procedures which are commonly categorized by urgency, type of procedure, body system involved degree of invasiveness, and special instrumentation.

  - Assisting in various procedures like:
  - Central Venous Access
    - Suturing of Wounds
  - Tracheostomy
    - Intercostal Drainage
    - Needle Thoracocentesis
    - Cricothyrotomy

SPOTTERS

- Thermometer
- BP apparatus
- Stethoscope
- Glucometer
- Intraosseous infusion
- LMA
- Combitube
- ET intubation
- Nebuliser
- Ventilator
- Capnography
- Pulse oximeter

OBSTETRICS, GYNAECOLOGICAL AND PAEDIATRIC EMERGENCIES - THEORY (UE)

Objectives:

- The student is able to assess the physical changes that take place in a child bearing woman.
- The students gain knowledge on the specific injuries that can occur in pregnancy.

Specific Learning Outcomes:

- Be able to assess the physical changes that take place in a child bearing woman.
- Be able to gain knowledge on the specific injuries that can occur in pregnancy.

UNIT I

- Anatomy of female reproductive system
- Menstrual cycle
- Physiological changes during pregnancy
- **Diagnosis of pregnancy**
    - First trimester
    - Second trimester
    - Last trimester
    - Differential diagnosis of pregnancy
- Antenatal Assessment
- Antenatal Assessment of fetal well being

UNIT II

- **Vomiting in Pregnancy**
    - Hyperemesis Gravidarum
    - Clinical Courses
    - Management
- **Haemorrhage in Early Pregnancy**
    - Abortion
    - Ectopic pregnancy

- **Hypertensive Disorders in Pregnancy**
    - Pre Eclampsia
    - Eclampsia
    - Essential Hypertension in Pregnancy
- **Antepartum Haemorrhage**
    - Placenta Praevia
    - Abruptio Placenta

UNIT III

- **Medical and Surgical Illness in Pregnancy**
    - Anaemia in pregnancy
    - Glycosuria in pregnancy
- **Normal Labour**
    - Causes of Onset
    - Physiology
    - Mechanism
    - Management

UNIT IV

- **Preterm Labour**
    - Etiology
    - Clinical Courses
    - Management
- **Premature Rupture of the Membranes**
- **Intrauterine Foetal Death**

UNIT V

- **Malposition, Malpresentation, Cord Prolapse**
    - Occipito posterior position
    - Breech presentation
    - Face presentation
    - Brow presentation
    - Cord prolapse
    - Transverse lie
- **Prolonged labour and obstructed labour**
    - Causes
    - Diagnosis
    - Treatment

- **Complication of Third Stage of Labour**
    - Post Partum Hemorrhage
    - Retained Placenta
    - Inversion of Uterus

UNIT VI

- **Injuries to Birth Canal**
    - Medical
    - Surgical
    - Combined
- **Pharmacotherapeutics in Obstetric**
    - Oxytocin
    - Analgesia and Anaesthesia
- **Trauma in Pregnancy**
    - Mechanism
    - Assessment and Management.
- **Emergency Department Cesarean Section**

UNIT VII

- **Comparative anatomy:**
    - Comparative anatomy between adult & pediatric
    - History taking and pediatric assessment
    - Developmental milestones
    - Anthropometry
    - Neonatal resuscitation
    - Pediatric resuscitation
    - Assessment of newborn and pediatric

UNIT VIII

- **Pediatric fluid and metabolic derangements**
    - Hypoglycemia,
    - DKA
    - Dehydration
    - Fluid therapy
- **Management of Injured child**
    - Primary survey
    - Resuscitation

- Secondary survey
- Emergency treatment

- **Gastrointestinal emergencies**
  - Diarrhea
  - Abdominal pain

UNIT IX

- **Cardiovascular emergencies:**
  - Shock
  - Arrhythmias
- **Respiratory emergencies:**
  - Foreign body obstruction
  - Asphyxia neonatorum
  - Bronchiolitis
  - Pneumonia
  - Asthma
  - Croup
  - Epiglottitis
- **Neurological emergencies**
  - Neonatal Seizure
  - Febrile convulsion
  - Meningitis

Text Books

1. Textbook of Obstetrics 6th edition, Dutta-New central book Agency
2. Mudaliar and Menon Clinical Obstetrics-10thedition,SaralaGobalan&Vanitha Jain-Orient Longman
3. Essentials of Obstetrics,1st edition, SabarathnumArulkumaran, V.Sivanesarathnum-Jaypee

Reference Books

1. Textbook of obstetrics , Sheik Balakrishnan – 1st edition , Hawkins and Bourne
2. Shaw's textbook of gynecology – 18th edition, V.G. Padubidri , S.N Daffary
3. Manual of Obstetrics – 3rd edition , Shirish N Daffray , SudipChakravarti

Online Resources

1. www. emedicine - Medscape reference
2. WWW. WebMD reference

OBSTETRICS, GYNAECOLOGICAL AND PAEDIATRIC EMERGENCIES - PRACTICAL (UE)

Objectives:

- Be able to remember the basic outline on how to diagnose and administer care or to recognize, prevent and treat various emergencies that commonly occur in children.
- Be able to demonstrate the special considerations and skills while handling pediatric patients.

PRACTICALS

- History Taking, examination & Presentation of Pregnant women
- History taking, examination and presentation of paediatric case.
- Assessment of newborn and pediatric
- Pediatric resuscitation/ Neonatal Resuscitation

Text Books

1. Nelson Textbook of paedeatrics 18th edition ,Kliegman ,Behrman,Jenson-Saunders Elsevier
2. Care of new born –6thedition,Meharban Singh-Sagar
3. Essential Pediatrics-7th edition O.P. Ghai, VinodK.Paul-CBS publisher
4. IAP book of pediatrics,3rd edition, A.Parthasarathy, Nair-Jaypee

Reference Books

1. Textbook of pediatrics Emergency medicine Fleischer – Ludwig Bachur, Goelik ruddy show.
2. P.E.M concepts and clinical practice – 2nd edition - Roger M. Barkin , Grace L. CapatoDavid M. Jaffe, Jane F. Knapp, Robert W. Schafermayer, James S. Reidel.

ENVIRONMENTAL SCIENCE AND

COMMUNITY MEDICINE (IE)

UNIT-I

- **Natural Resources**: Introduction, Multi-disciplinary nature of environmental studies, Earth Resources and Man, Renewable And Non-Renewable Resources, Water Resources, Mineral Resources: Food Resources: Effects of modern agriculture, Fertilizer/ pesticide problems, Water logging, and salinity, Energy Resources.

UNIT-II

- **Ecosystems:** Concept of an Ecosystem, Structure And Functions of an Ecosystem, Producers, Consumers and Decomposers, Cycles in The Ecosystem

UNIT-III

- **Biodiversity:** Introduction, Definition: Genetic, Species, Ecosystem Diversity, India as a Mega Diversity Nation, Hotspots of Biodiversity Threats to Biodiversity. Poaching of Wildlife, Man-Wildlife Conflicts, Endangered and Endemic

UNIT-IV

- **Pollution:** Definition, Causes, Effects and Control Measures of Air Pollution, Water Pollution, Pollution, Marine Pollution, Noise Pollution, Thermal Pollution, Nuclear hazards, Solid Waste Management role of Individuals in Pollution Prevention.

UNIT-V

- **Social Issues Human, Population and Environment:** From Unsustainable To Sustainable Development, Urban Problems Related To Energy, Water Conservation, Rain Water Harvesting, global warming, acid rain, ozone layer depletion, nuclear accidents and nuclear holocaust.

UNIT-VI

- **Concept of health &disease**:Concept of health, Definition of health, Philosophy of health- Dimension of health - Concept of well being, Spectrum of health,

Responsibility of health - Determinates of health & Indicators of health - Concepts of disease & Concepts of cessation - Determinates of health & Indicators of health - Concepts of disease & Concepts of cessation - Determinates of health & Indicators of health - Concepts of disease & Concepts of cessation - Modes of Intervention, Changing pattern of disease.

UNIT-VII

- **Epidemiology**: Definition & Explanation, Aims, Epidemiologic approach, Basic measurement in epidemiology & tools of measurement – of Mortality , Epidemiologic methods – Descripitive epidemiology – Analytical epidemiology -Cohort study – Expiremental epidemiology – RCT- Association & Caution Uses of epidemiology (Criteria for judging causality) – Infection disease epidemiology Definitions Dynamic of disease transmission & Mode of Transmission – Disinfection – Definitions Types Agents used Recommended disinfection procedures – Investigation of an epidemic.

UNIT-VIII

- **Environmental & health:** Definition & Components (environment sanitation environmental sanitation) Water : Safe & Whole some water Requirements Uses source of water supply (sanitary well) – Purification (1).Large scale purification, (2). Small scale purification – Water quality – Special treatment of water Air: Composition the air of occupied room discomfort.

  Air pollution & its effects. Prevention & Control of air pollution

  Ventilation : Definition Standards of ventilation Types of Ventilation. Light, Noise & Radiation, Meterological environment, Housing, Disposal of waste Excreta disposal

RECOMMENDED TEXT BOOKS:

1. Textbook of Preventive and Social medicine by k. Park, 21st edition, published by Banarsidas Bhanot

Reference:

1. Textbook of Preventive and Social medicine by k. Park, 21st edition, published by Banarsidas Bhanot

SEMESTER VI

S.No:	Subject
1.	Clinical procedures and instruments emergency services course description - Theory (UE)
2.	Clinical procedures and instruments emergency services course description - Practical (UE)
3.	Critical Care and Disaster Management - Theory (UE)
4.	Critical Care and Disaster Management - Practical (UE)
5.	Healthcare and basic principles (IE)

SEMESTER VI

CLINICAL PROCEDURES AND INSTRUMENTS IN EMERGENCY SERVICES -THEORY (UE)

- This course is designed to help the students to develop an understanding of the philosophy, objectives, theories and process of accident and emergency care technology in various Supervised Clinical settings.
- It is aimed at helping the students to acquire knowledge, understanding and skills in techniques of practice them in Supervised Clinical settings

INSTRUMENTATION IN EMERGENCY SERVICES

- **Introduction to Biomedical engineering (Man – machine relationship**)
    - ECG
    - DC Defibrillator
    - Intravenous pumps
    - Laryngoscope, ambubag, suction machine
    - SPO2 monitoring, Temperaure monitoring
    - BP apparatus, BP monitoring-NIBP, IBP
    - Ventilators-Intensive care, portable
    - Power generation, transmission & distribution
    - Manual resuscitator
    - Radiology equipment &radiation hazards
    - Suction machine
    - Nebulizer
    - Medical gases
    - Ambulance and its power supply
    - Dialysis machine
    - Infant warmer & incubator

CLINICAL PROCEDURES IN EMERGENCY ROOM

- Vital Sign Measurement
    - Pulse assessment
    - Respiratory assessment
    - Temperature assessment
    - Blood pressure assessment

- Respiratory procedures
    - Endotracheal intubation and extubation
    - Drugs through ET tube
    - Tracheostomy insertion and management
- Suctioning an artificial airway
    - Naso tracheal suctioning
    - Insertion of nasopharyngeal and oropharyngeal airway
    - Mechanical ventilation
    - Intercostal drain
    - Age
    - Thoracocentesis
- Intermediate Airways
    - Laryngeal Mask Airway
    - Esophageal – Tracheal Combitube
- Non invasive Assessment and Support of Oxygenation and Ventilation
    - Pulse oximetry
    - Carbon dioxide Monitoring --> Capnometry
    - Oxygen therapy
    - Delivery systems for Inhaled Medication ¬ Nebulizers ¬ Metered Dose Inhaler
- Cardiovascular procedures
    - Cardiac Monitoring
    - Central venous pressure monitoring
- Insertion of Arterial line
    - Central venous cannulation
    - Transcutaneous cardiac pacing
    - Transvenous cardiac pacing
    - Pericardiocentesis
    - Cardioversion
    - Defibrillation
- Cannulating Umbilical Vein
    - Indication
    - Procedure
    - Drugs through umbilical vein
    - Complication
- Intraosseous Infusion
    - Indication
    - Procedure
    - Drugs through intraosseous line
    - Complication
- Gastrointestinal procedures

- Insertion of nasogastric tube
- Insertion of enteral feeding tube and initiation of feedings
- Gastric lavage
- Upper gastrointestinal endoscopy
- Insertion of rectal tube
- Paracentesis
- Peritoneal lavage

- Poison decontamination
  - Activated charcoal
  - Whole bowl irrigation
- Genitourinary procedures
  - Urethral catheterization
  - Peritoneal dialysis
  - Placement and Management of external Arteriovenous shunt.
  - Continuous Arteriovenous hemofiltration
- Intravenous Therapy
  - Insertion of intravenous catheter
  - Administration of parenteral nutrition
  - Blood administration
- Neurologic Procedures o Lumbar Puncture

Text book:

1. Emergency care in the streets- Nancy Caroline
2. Selva Rose. 1997, Career English for Nurses. Published by: Orient Blackswan Ltd
3. Oxford advanced Leaners Dictionary, 1996
4. Quirk Randolph and Greenbaum Sidney, 1987. A University Grammar of English, Hong Kong: Longman group (FE) Ltd/ Pearson.
5. Fundamentals of computers- V. Rajaraman-2004
6. Absolute beginners guide to computer basics-Michael Miller. Que Publisher, September 1, 2009.
7. Networking concepts and technology – by Deepak Kalkadia, Francesco DiMambro, Prentice hall publisher, May 25, 2007
8. Operation system concepts (8th edition) by Abraham Silberschatz, Peter Baer Galvin, Greg Gangne, Wiley Publisher, Feb 13, 2009.

CLINICAL PROCEDURES AND INSTRUMENTS IN EMERGENCY SERVICES - PRACTICALS (UE)

OBJECTIVES:

- To know the latest equipment, devices drug therapies and techniques used in emergency room
- Explains not only how to perform each procedure but also why, when and what other procedures you should consider.
- Able to demonstrate when to perform every type of emergency procedure and implement the best possible approach for every patient

PRACTICALS

- ECG
  - Power supply testing
  - Fuses testing

Spot identification

  - Thermometer
  - BP apparatus
  - Stethoscope
  - Glucometer
  - Intraosseous infusion
  - LMA
  - Combitube
  - ET intubation
  - Nebuliser
  - Ventilator
  - Capnography
  - Pulse oximeter

CRITICAL CARE AND DISASTER MANAGEMENT -THEORY (UE)

Learning Objectives:

- To know about inclusion of clinical decision making in medical curricula is needed to improve decision making in critical care.
- To demonstrate the most common techniques applied by emergency physicians in critically ill patients
- To understand the common emergencies encountered in emergency department.
- Identify the critical need to establish healthcare preparedness for disaster.
- Define "all Hazards" and list possible etiologies.
- Define disaster and Mass casualty incident
- Able to select, justify and interpret clinical tests and imaging.

Critical concepts and decision making

UNIT I

- Basic life support:
- Advanced cardiac life support
- Trauma life support

UNIT II

- **Decision making in**
    - Fatigue
    - Edema
    - Diaphoresis
    - Chronic pain
    - Red eye
    - Rhinitis
    - Tinnitus
    - Bradycardia
    - Tachycardia
    - Angina
    - Murmur

UNIT III

- Hypertension
- Hypotension
- Palpitations
- Syncope
- Congestive cardiac failure
- Acute pulmonary edema
- Corpulmonale
- Dyspnoea
- Myocardial infarction

UNIT IV

- Hypoglycemia
- Hyperglycemia
- Hypothermia
- Hyperthermia
- Acute abdominal pain
- Nausea
- Vomiting
- Anorexia
- Dysphagia
- Heart burn

UNIT V

- Non cardiac chest pain
- Dyspepsia
- Jaundice
- Ascites
- GI bleeding
- Rectal bleeding
- Diarrhea
- Constipation
- Obstipation
- Flatulence
- Irritable bowel syndrome

UNIT VI

- Electrolyte imbalance

- Acid base imbalance
- Normal laboratory values
- Metabolic disturbance

Disaster management

UNIT VII

- Basic perspective on disaster
- Triage
- Principles of Hospitals disaster planning
- Emergency medical services in disaster

UNIT VIII

- Natural disasters
    - Earthquakes
    - Tornadoes
    - Hurricanes
    - Winter storm
    - Floods
    - Firestorm and Wild fires
    - Tsunamis
    - Volcanic eruptions
    - Heat related disaster

UNIT IX

- Manmade disasters
    - Hazardous material emergencies
    - Radiation injuries
    - Air crash disaster
    - Maritime disasters
    - Derailing
    - Terrorist bombing
    - Fire and burn care
    - Chemical disasters

- Biologic Weapons

- Mass shooting

- Research in disaster management

UNIT X

- Industrial Hazards
    - Electrocution
    - Amputation
    - Crush injury
    - Fall from height
    - Assaults

UNIT XI

- Occupational hazards and injuries

Text Books

1. Nancy Caroline's emergency care in streets 6th edition, Editor Andrew N. PollakJones and Bartlett publishers
2. Decision making in medicine –3rd edition HarryL.Greene,StuartB.Muslin-Elsevier
3. Critical care medicine – 3rdedition,Joseph.E.Parrillo& R. Philip Dellinger-Elsevier
4. Disaster medicine -2nd edition David E.Hogan,jonathan-lippincott Williams and Wilkins
5. Rosense emergency medicine 7th edition Marx,HockbergerWalls,Adams-Mosby Elsevier

Reference Books

1. Ambulance Operation – Emergency Care – Emergency care , 12th edition Limmer and O'Keefe

CRITICAL CARE DISASTER MANAGEMENT -PRACTICAL (UE)

Objectives:

- Be able to understand the common emergencies encountered in emergency department.
- Be able to engage and communicate with patient.
- Be able to diagnose clinical problems
- Be able to identify need to establish health care preparedness for disaster.

PRACTICALS

1. Basic Life Support
2. Use of the Defibrillator, arrrythmia recognition and management
3. Removal Of Crash Helmet
4. Wireless communication
5. Triage evaluation & Examination (Triage Tags)
6. KED

HEALTH CARE AND BASIC PRINCIPLES (IE)

UNIT-I Concept of Health Care and Health Policy

- Health in Medical Care
- Indigenous systems of Health Care & their relevance
- Framework for Health Policy Development

UNIT-II Health Organization

- Historical development of Health Care System in the third world &India
- Organization & Structure of Health Administration in India
- Type of Health Organization including International Organizations
- Private & Voluntary Health care provider
- Distribution of Health Care Services
- Health Care System in Public Sector Organization
- Health systems of Various Countries

UNIT-III Health Policy and National Health Programme

- National Health Policy
- Drug Policy
- National Health Programs (Malaria, T.B., Blindness, AIDS etc.)
- Evaluation of Health Programs (Developing indicators for evaluation)
- Medical Education & Health Manpower Development

UNIT-IV Health Economics

Fundamentals of Economics

- Scope & Coverage
- Demand for Health Services
- Health as an Investment
- Population, health of Economic Development

UNIT-V Methods & Techniques of Economic Evaluation of Health Program

- Cost Benefit & Cost Effective Methods

UNIT-VI Household & Health

Health Expenditure & Outcome

- Rationale for Government action
- Household capacity, income and schooling

UNIT-VII Economics of Health

- Population based health services
- Economics of Communicable and Non Communicable diseases

UNIT-VIII Health Insurance

REFERENCE BOOKS:

1. Principles of Hospital Administration and Planning, BM Sakharkar, 2nd edition, Jaypee Brothers,Medical Publishers Pvt. Limited, 2008
2. Hospital Administration And Management : Theory And Practice, R. Kumar S.L. Goel, Deep and Deep Publications, 2007
3. Principles of Management, Mason Andrew Carpenter, Talya Bauer, 3rd edition, Flat World Knowledge, L.L.C., 2010

SEMESTER-VII

S.NO	SUBJECT
1	Project/ Dissertation
2	Biostatistics and research methodology

SEMESTER-VII

BIOSTATISTICS AND RESEARCH METHODOLOGY

UNIT-I StatisticsDefinition and Terms

- What is statistics – Importance of statistics in behavioural sciences – Descriptive statistics and inferential statistics – Usefulness of quantification in behaviouralsciences.

UNIT-II Measurements:

- Scales of measurements – Nominal, Ordinal, Interval and Ratio scales.

UNIT-III Data collection:

- Classification of data – Class intervals – Continuous and discrete measurements – Drawing frequency polygon – types of frequency polygon – Histogram.

UNIT-IV Cumulative frequency curve:

- Cumulative frequency curve – O gives – Drawing inference from graph.

UNIT-V Measures of central tendency

- Need – types: Mean, Median, Mode – Working out these measures with illustrations.

UNIT-VI Measures of variability :

- Need – Types: Range, Quartile deviation, Average deviation, Standard deviation, Variance – Interpretation.

UNIT-VII Normal distribution

- General properties of normal distribution – Theory of probability – Illustration of normal distribution – area under the normal probability curve.

UNIT-VIII Variants from the normal distribution :

- Skewness – Quantitative measurement of skewness – kurtosis – measurement of kurtosis – factors contributing for non-normal distribution.

UNIT-IX Correlation :

- Historical contribution – meaning of correlation – types: Product, moment, content correlation, variation of product, movement correlation, rank correlation, Regression analysis.

UNIT-X Tests of significance:

- Need for – significance of the mean – sampling error – significance of differences between means – interpretation of probability levels – small samples – large samples.

REFERENCE BOOKS:

1. Methods In Biostatistics BK Mahajan Jaypee, brothers Publication pvt ltd, sixth edition, 2002
2. Introduction to Biostatistics and research methods P.S.S Sundar Rao, J Richard, Prentice-Hall of India pvt ltd, fourth edition, 2006
3. MS Excel 2007 Made Simple, Prof. Satish Jain, BPB Publicatons pvt ltd, 2008
4. Introductory Statistics. Prem S.Mann, John Wiley and sons (Asia) pvt ltd, Fifth edition (2004)
5. Biostatistics A methodology for the health sciences,Gerald Van Belle, Lloyd Fisher, John Wiley and Sons, second edition, 2004.
6. Biostatistics D.Rajalakshmi, G.N. Prabhakaran, Jaypee, brothers Publication pvt ltd, Second edition, 2008