

**Regulations and Curriculum
Of
B.Sc. Emergency Medicine Technology**

Rajiv Gandhi University of Health Sciences, Karnataka

4th 'T' Block, Jayanagar, Bangalore 560 041

NOTIFICATION

Sub: Ordinance pertaining to the Regulation and Curriculum of B.Sc. Emergency Medicine Technology course

Ref:

- 1] Proceedings of the meeting of committee to start new courses held on 13.12.2018
- 2) Minutes of 140th Syndicate meeting held on 27.02.2019

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In exercise of the powers conferred under section 35 (1) of RGUHS Act 1994, and as per approval of the Syndicate in its 140th meeting held on 27.02.2019, University is pleased to notify the Regulation and Curriculum pertaining to B.Sc. Emergency Medicine Technology course as shown in the Annexure appended here with.

The above Regulation shall come into force with effect from the academic year 2019-20 and onwards.

**Sd/-
REGISTRAR**

To

The Principals of all affiliated colleges conducting Allied Health Sciences Courses

Copy to:-

1. The Secretary to Governor, Governor's Secretariat, Raj Bhavan, Bangalore- 560 001
2. Secretary to Government, Health & Family Welfare Department (Medical Education] Vikasa Soudha, Bangalore- 560 001
3. The Director, Department of Medical Education, Anand Rao Circle, Bangalore- 560 009
4. Director, Curriculum Development Cell, RGUHS
5. PA to Vice-Chancellor/Registrar/Registrar (Evaluation], RGUHS
6. Public Information Officer, RGUHS
7. The Home page of RGUHS website -<http://www.rguhs.ac.in> Authority Section/Fellowship.html
8. Guard file/Office Copy.

REGULATIONS AND CURRICULUM

**B.Sc. - Emergency Medicine Technology
(B.Sc. EMT)**

REGULATIONS

1. **Eligibility for admission:** A candidate seeking admission to the Bachelor of Science - Emergency Medicine Technology Degree course, shall have studied in English medium for the qualifying examination and:

1.a. Shall have passed two years Pre University examination conducted by Department of Pre-University Education, Karnataka state, with English as one of the subject, and physics, Chemistry and Biology as principal/optional subjects. The candidate shall have passed subjects of English, Physics, Chemistry and Biology individually also.

OR

1.b. Shall have passed any other examination conducted by Boards/Councils/Intermediate Education established by State Governments/Central Government and recognized as equivalent to two year Pre- University examination by the Rajiv Gandhi University of Health Sciences/Association of Indian University (AIU), with English as one of the subjects and Physics, Chemistry and Biology as optional/principal subjects and the candidate shall have passed subjects of English, Physics, Chemistry and Biology individually.

OR

1.c. Shall have passed intermediate examination in Science of an Indian University/Board/Council of other recognized examining bodies with Physics, Chemistry and Biology, which shall include a practical test in these subjects and also English as compulsory subject. The candidate shall have passed subjects of English, Physics, Chemistry and Biology individually.

OR

1.d. Shall have passed first year if the three year degree course of a recognized University with physics, Chemistry and Biology including a practical test in these subjects provided the examination in an 'University Examination' provided that the candidate shall have passed subjects of English, Physics, Chemistry and Biology individually in the pre university or other examinations mentioned in the clauses above.

OR

1.e. Shall have passed B.Sc. Examination of an Indian University, provided that he/she has passed the B.Sc. Examination with not less than two of the following subjects: Physics, Chemistry, Biology (Botany, Zoology) provided the candidate has passed subjects of English, Physics, Chemistry and Biology individually in the qualifying examinations mentioned in clauses 1.a., 1.b., 1.c., and 1.e.,

Note:

- i. The candidate shall have, passed individually in each of the principal subjects.
- ii. Candidates who have completed diploma or vocational course through correspondence shall not be eligible for any of the courses mentioned above.
- iii. Candidates who have Passed "Physical Sciences" instead of Physics and Chemistry as two separate subjects are not eligible for admission to this course.

2. **Duration of course:** Duration shall be for a period of three years excluding twelve months of internship, which is mandatory after three years duration.
3. **Medium of instruction:** The medium of instruction and examination shall be in English.
4. **Attendance:** Candidates should have attended at least 75% of the total number of classes conducted in an academic year, from the date of commencement of the academic session to the last working day, as notified by the University, in each of the subjects' prescribed for that year, separately in theory and practical, to be eligible to appear for the university examinations. Candidates lacking in prescribed percentage of attendance in any subject, either in theory or practical; in the first appearance, will not be eligible to appear for the university examination in that subject, unless they put in the required attendance, to appear in the subsequent examinations. The university shall obtain the attendance data from the colleges duly authenticated with signatures by the principal/ Head of the Institution at the end of the academic year as per the notification issued by the Registrar – Evaluation office
5. **Internal assessment (IA):**
 - 5.a. For First, Second and Third Year: Theory – 20 Marks; Practical – 20 Marks (Lab work- 15 Marks and Record – 5 Marks)
 - 5.b. There shall be a minimum of three periodical tests in theory and practical of each subject spread over evenly in an academic year. The average marks of the best two tests shall be calculated and after reducing the marks suitably as specified under IA in table IV, V & VI, taken as IA in that subject. The marks of IA shall be communicated to the university within the specified dates as per the examination notification issued by the office of the Registrar - Evaluation. The university shall have access to the records of such periodical tests. The marks of the internal assessment must be displayed on the notice board of the respective colleges within a fortnight from the date the test is held
6. **Subject and hours of teaching for theory and practical:**
The number of hours of teaching theory and practical, subject wise in first year, second year and third year are shown in table I, table II and table III.

TABLE 1: Distribution of subjects and number of hours of teaching in first year.

SI No	Subject	Theory No. of hours	Practical No. of hours	Total no. of hours
A	Main subjects			
1	Human anatomy	50	20	70
2	Physiology	50	20	70
3	Biochemistry-I	50	20	70
4	Pathology-I	50	20	70
5	Microbiology-I	50	20	70
	Total	250	100	350
B	Subsidiary subjects			
1	English	25	Not applicable	Not applicable
2	Kannada	25	Not applicable	Not applicable
3	Health-care.	40	Not applicable	Not applicable

Sl.No.	Subject	Theory No. of Hours	Practical No. of Hours	Clinical posting	Total No. of Hours
A	Main Subjects				
1	Introduction to Emergency Medical Services	50	50	250	350
2	Emergency Department Equipment	50	50	250	350
3	Emergency Department Pharmacology	50	50	250	350
	Total	150	150	750	1050
B	Subsidiary subjects				
1	Sociology	20	Not	Not	Not applicable
2	Constitution of India	10	Not	Not applicable	
3	Environmental Science & Health	10	Not	Not	Not applicable

TABLE II: Distribution of subjects and number of hours of teaching in second year.

Table III: Distribution of Teaching Hours in Third Year Subjects.

Sl. No.	Subjects	Theory No. of Hours	Practical No. of Hours	Clinical posting	Total No. of Hours
A	Main Subjects				
1	Medical emergencies	50	50	250	350
2	Trauma and surgical emergencies	50	50	250	350
3	Emergencies in pediatric and special population	50	50	250	350
	Total	150	150	750	1050
B	Subsidiary subjects				
1	Ethics	20	Not applicable	Not applicable	Not applicable
2	Research and Biostatistics	10			
3	Computer application	10			

7. Schedule of Examination:

7.a. There shall be only two university examination in an academic year. The University shall conduct two examinations annually at an interval of not less than 4 to 6 months as notified by the university from time to time. A candidate who satisfies the requirement of attendance, internal assessment and conduct as stipulated by the university shall be eligible to appear for the university examination. Certificate to that effect shall be produced from the Head of the Institution along with the application for examination and the prescribed fee. Supplementary examination shall be conducted by the university between 4-6 months from the date of the annual examination.

7.b. A candidate has to register for all the subjects of a year when he/she appears for the examination of that year for the first time.

7.c. Examination for subsidiary subjects shall be conducted by respective colleges and the results and marks obtained shall be submitted to the University along with the IA marks of main subjects.

8. Scheme of Examination:

There shall be three examinations, one each at the end of I, II and III Year. The examination for both main and subsidiary subjects for all courses in allied Health Sciences shall be common in the first year. Distribution of Subjects and Marks for theory and practical examinations of 1st, 2nd and 3rd year are shown in the table – IV, V and VI

Table IV: Distribution of Subjects and marks for First Year theory Examination

		Written Paper		IA Theory	Total
		Duration	Marks	Marks	Marks
A	Main Subjects				
1	Basic Anatomy (Including Histology)	3 hours	80	20	100
2	Physiology	3 hours	80	20	100
3	Biochemistry-I	3 hours	80	20	100
4	Pathology-I	3 hours	80	20	100
5	Microbiology-I	3 hours	80	20	100
B	Subsidiary Subjects				
1	English	3 hours	80	20	100
2	Kannada	3 hours	80	20	100
3	Health Care	3 hours.	80	20	100

Note:

- The examination for both main and subsidiary subjects for all courses in Allied Health Sciences shall be common in the first year. The university examination for first year shall consist of only theory examination and there shall be no university practical examination.
- IA=Internal Assessment
- Main subjects shall have University examination.
- Examination for subsidiary subjects shall be conducted by respective colleges.

TABLE V: Distribution of subjects and marks for Second year examination.

Paper	Subjects	Theory			Practical			GrandTotal
		UniExam	IA	SubTotal	UniPractical	IA	SubTotal	
A	Main Subjects							
1	Introduction to Emergency Medical Services	80	20	100	80	20	100	200
2	Emergency Department Equipment	80	20	100	80	20	100	200
3	Emergency Department Pharmacology	80	20	100	80	20	100	200

B	Subsidiary Subjects	Duration	Marks	IA Theory Marks	Total Marks
1	Sociology	3 hours	80	20	100
2	Constitution of India	3 hours	80	20	100
3	Environmental Science & Health	3 hours	80	20	100

Note: Examination for subsidiary subjects shall be conducted by respective colleges.

TABLE VI: Distribution of subjects and marks for Third year examination.

Paper	Subjects	Theory			Practical			Grand Total
		Uni Exam	IA	Sub Total	Uni Practical	IA	Sub Total	
A	Main Subjects							
1	Medical Emergencies	80	20	100	80	20	100	200
2	Trauma and surgical emergencies	80	20	100	80	20	100	200
3	Emergencies in pediatric and special population	80	20	100	80	20	100	200
B	Subsidiary Subjects	Duration			Marks	IA Theory Marks		Total Marks
1	Ethics	3 hours			80	20		100
2	Research & Biostatistics	3 hours			80	20		100
3	Computer application	3 hours			80	20		100

Note: Examination for subsidiary subjects shall be conducted by respective colleges

9. Theory Question Paper pattern:

Type of Questions	No of Questions	Marks For Each Questions	Total
Long Essay	3 (2x10)	10	20
Short Essay	15(12x5)	05	60

For 80 marks question paper

10. Practical Examination:

10.a. THERE SHALL BE NO UNIVERSITY PRACTICAL EXAMINATION IN THE FIRST YEAR.

10.b. PRACTICAL EXAMINATION (2ND YEAR):

Paper I- Introduction to Emergency Medical Services		
SI No	Tests	Marks
1	Preparation of an ambulance	20
2	Problems based on triage	20
3	Basic life support skills	40

	Total	80
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10.c. PRACTICAL EXAMINATION 3RD YEAR: ONE COMMON PRACTICAL FOR ALL THE THREE PAPERS WITH EQUAL WEIGHT AGE OF MARKS I.E. 80 MARKS X 3 = 240 MARKS

Paper II— Emergency Department Equipment		
SI No	Tests	Marks
1	Application/ connection to patient, usage, calibration, changing settings, demonstrating maintenance of equipment (10 marks x 8 equipment)	80
	Total	80

Paper III- Emergency Department Pharmacology		
SI No	Tests	Marks
1	Problems based on drug dosage calculation	20
2	Demonstration of strategies to reduce medication error (Role-play)	20
3	Preparation of IV injection/ infusion	40
	Total	80

Paper I- Medical Emergencies (Third year)		
SI No	Tests	Marks
1	Preparing an ambulance for medical emergency	20
2	Responding to a call and scene management of medical emergency	20
3	Receiving and resuscitating a patient with a medical emergency in the emergency medicine department •	40
	Total	80

Paper II- Trauma and surgical emergencies (Third year)		
SI No	Tests	Marks
1	Preparing an ambulance for trauma	20
2	Responding to a call and scene management of trauma	20
3	Receiving and resuscitating a patient with trauma in the emergency medicine department	40
	Total	80

Paper III- Emergencies in pediatric and special population (Third year)		
SI No	Tests	Marks
1	Airway management and resuscitation of an infant	20
2	Airway management and resuscitation of a child	20
3	OSCE	40
	Total	80

11. Examiners:

Practical examination will be conducted by two examiners out of which one will be external examiner recognized by the university. External means, any eligible examiner from a different institution affiliated to RGUHS.

12. Criteria for Pass:

12.a. First year examination:

(i): **Main subjects:** A candidate is declared to have passed in a subject, if he/she secures 50% of the marks in university theory exam and internal assessment added together.

(ii): **subsidiary subjects:** The minimum prescribed marks for pass in subsidiary subject shall be 35% of the maximum marks prescribed for a subject. The marks obtained in the subsidiary subjects shall be communicated to the university before the commencement of the university examinations and as per the notifications/circulars issued by the university.

12.b. Second Year and Third year examination:

(i) **Main Subjects:** A Candidate is declared to have passed in a subject, if he / she secures 50% marks in theory and 50% in practical separately. For a pass in theory a candidate has to secure minimum of 40% marks in the university conducted written examination and 50% aggregate in the university conducted written examination, internal assessment and viva voce added together and for pass in practical, a candidate has to secure a minimum of 40% marks in the university conducted practical/clinical examination and 50% in aggregate i.e. university conducted practical/clinical and internal assessment.

(ii) When a candidate fails in one or more theory papers and or practical examination he or she will have to re appear for both theory and practical examination of the respective subject in the subsequent attempt.

(iii) **Subsidiary Subjects:** The minimum prescribed marks for a pass in subsidiary subject shall be 35% of the maximum marks prescribed for a subject. The marks obtained in the subsidiary subjects shall be communicated to the university before the commencement of the university examination.

13. Declaration of Class:

13.a. A candidate, having appeared in all the subjects in the same examination and passed that examination in the first attempt and secures 75% of marks or more (aggregate) of the grand total marks prescribed shall be declared to have passed the examination with Distinction.

13.b. A candidate, having appeared in all the subjects in the same examination and passed that examination in the first attempt and secures 65% of marks or more (aggregate)but less than 75% of the grand total marks prescribed shall be declared to have passed the examination with First class.

13.c. A candidate, having appeared in all the subjects in the same examination and passed that examination in the first attempt and secures 60% of marks or more(aggregate) but less than 65% of the grand total marks prescribed shall be declared to have passed the examination with Second class.

13.d. A candidate who passes all the main subjects in the first attempt, securing 50% marks or more, but less than 60% (aggregate), shall be declared to have passed the examination with Pass Class.

13.e. A candidate passing university examination in more than one attempt shall be placed in Pass class irrespective of the percentage of marks secured.

13.f. Marks obtained in the subsidiary subjects shall have no bearing on the class declaration.

14. Carry Over Benefit:

14.a. A candidate shall appear for all the subjects of that particular year in the university examination to avail this benefit.

14.b. A candidate who fails in any two of the five main subjects and English in the first year shall be permitted to carry over these subjects to the second year, however he /she must pass the carry over subjects including English before appearing for second year examination.

14.c. A candidate is permitted to carry over any one subject of the second year to the third year but shall pass this subject before appearing for the third examination.

14.d. A candidate is permitted to join third year provided he/ she has appeared for all the subjects of second year and availed carry over benefit for one subject in the second year.

15. Award of degree:

A candidate who has passed in all the main and subsidiary subjects of first, second and third year and has successfully completed the internship shall be eligible for award of degree.

SYLLABUS

MAIN SUBJECTS

First Year B.Sc. Emergency Medicine Technology

ANATOMY

1. **Introduction: Human body as a whole**
 - a) **Theory:**
 - Definition of anatomy and its divisions.
 - Terms of location, positions and planes.
 - Cell and its organelles.
 - Epithelium; definition, classification, describe with examples, function.
 - Glands: classification, describe serous, mucous and mixed glands with examples. Basic tissues: classification with examples
 - b) **Practical:**
 - Histology of types of epithelium.
 - Histology of serous, mucous & mixed salivary gland
2. **Locomotion and support**
 - a) **Theory:**
 - Cartilage: types with example & histology.
 - Bone: classification, names of bone cells, parts of long bone, microscopy of compact bone, names of all bones, vertebral column, inter-vertebral disc, fontanelles of fetal skull. Joints: classification of joints with examples, synovial joint (in detail for radiology). Muscular system: classification of muscular tissue & histology, names of muscles of the body.
 - b) **Practical:**
 - Histology of the 3 types of cartilage.
 - Demo of all bones showing parts, radiographs of normal bones & joints.
 - Histology of compact bone (TS & LS).
 - Demonstration of all muscles of the body.
 - Histology of skeletal, smooth & cardiac muscle (TS & LS).
3. **Cardiovascular system**
 - a) **Theory:**
 - Heart: size, location, chambers, exterior & interior blood supply of heart. Systemic & pulmonary circulation, branches of aorta.
 - b) **Practical:**
 - Demonstration of heart and vessels in the body.
 - Histology of large artery, medium sized artery & vein, large vein.. Histology of lymph node & tonsil.
 - Normal chest radiograph showing heart shadows.
 - Normal angiograms.
4. **Gastrointestinal system**
 - a) **Theory:** Parts of GIT, oral cavity, tongue (with histology), tonsil, dentition pharynx, salivary glands, esophagus, stomach, small and large intestine, liver, gall bladder, pancreas, radiographs of abdomen.
 - b) **Practical:** Demonstration of parts of gastro intestinal system. Normal radiographs of gastro intestinal system.
5. **Respiratory system**

- a) **Theory:**
Parts of RS, nose, nasal cavity, larynx, trachea, lungs, and Broncho-pulmonary segments, histology of trachea, lung, and names of paranasal air sinuses.
 - b) **Practical: Demonstration of parts of respiratory system. Normal radiographs of chest.**
Histology of lung and trachea
6. **Urinary system**
- a) **Theory:**
Kidney, ureter, urinary bladder, male and female urethra.
 - b) **Practical:**
Demonstration of parts of urinary system. Histology of kidney, ureter, urinary bladder.
Radiographs of abdomen-IVP.
7. **Reproductive system**
- a) **Theory:**
Parts of male reproductive, system, testis, vas deferens, epididymis, prostate (gross & histology).
Mammary gland: gross.
 - b) **Practical:**
Demonstration of section of male and female pelvis with organs in situ. Histology of testis, ovary.
Radiographs of pelvis, hystero-salpingogram.
8. **Endocrine glands**
- a) **Theory:**
Endocrine glands: pituitary gland, thyroid gland, parathyroid gland, suprarenal gland (gross & histology).
 - b) **Practical:**
Demonstration of the glands.
9. **Nervous system**
- a) **Theory:**
Neuron, classification of nervous system, cerebrum, cerebellum, midbrain, pons, medulla oblongata, spinal cord with spinal nerve (gross & histology), meninges, ventricles & cerebrospinal fluid, names of basal nuclei, blood supply of brain, cranial nerves.
 - b) **Practical: Demonstration of all parts of brain.**
 - a) **Sensory organs: Theory: Skin: histology, appendages of skin. Eye: parts of eye & lacrimal apparatus. Parts of ear: external, middle and inner ear and contents.**
 - b) **Practical:**
Histology of thin and thick skin.
Demonstration and histology of eyeball.
- 11, **Embryology:**
- a) **Theory:**
Spermatogenesis & oogenesis. Ovulation, fertilization. Placenta.
 - b) **Practical:**
Demonstration of models.

REFERENCE BOOKS

1. William Davis (P): Understanding Human Anatomy and Physiology MC Graw Hill
2. Chaurasia: A Text book of Anatomy
3. T.S. Ranganathan: A text book of Human Anatomy
4. Fattana: Human anatomy(Description and applied) Saunder's & C P Prism Publishers, Bangalore - 1991
5. Ester M Grishcimer: Physiology & Anatomy with Practical Considerations, J.P. Lippin Cott. Philadelphia.
6. Bhatnagar: Essentials of Human embryology. Revised Edition Orient Blackswan Pvt. Ltd.

PHYSIOLOGY

Theory

a. GENERAL PHYSIOLOGY

ORGANIZATION OF THE CELL AND ITS FUNCTIONS TRANSPORT ACROSS CELL MEMBRANE
MEMBRANE POTENTIALS - RESTING MEMBRANE POTENTIAL & ACTION POTENTIAL
BODY FLUID COMPARTMENTS - NORMAL VALUES HOMEOSTASIS.

b. Blood

Introduction: composition and function of blood.

Red blood cells: erythropoiesis, stages of differentiation, function, count, physiological variation.

Structure, function, concentration, physiological variation, methods of estimation of hemoglobin.

White blood cells: production, function, count. **Platelets:** origin, normal count, morphology functions.

Plasma proteins: types, functions. **Haemostasis:** definition, normal hemostasis, clotting factors, mechanism of clotting, disorders of clotting **Blood groups:** ABO system, Rh system. **Blood grouping & typing, cross matching.** Rh system: Rh factor, Rh incompatibility. **Blood transfusion:** indication, transfusion reactions. **Anticoagulants:** classification, examples and uses.

Anaemias: morphological and etiological classification, **Blood indices:** CI, MCH, MCV, MCHC.

Erythrocyte sedimentation rate (ESR) and packed cell volume, normal values.

Blood volume: normal value, determination of blood volume and regulation.

Body fluid: pH, normal value. **Lymph:** composition and function of lymph.

c. Muscle nerve physiology

Classification of muscle, structure of skeletal muscle,

Neuromuscular junction. Transmission across neuromuscular junction. Excitation contraction coupling, muscle tone, fatigue, rigor mortis

d. Digestive System

Physiological anatomy of gastro intestinal tract, functions of digestive system.

Salivary glands: structure and functions, **deglutition:** stages and regulation.

Stomach: structure and functions.

Gastric secretion: composition function regulation of gastric juice secretion.

Pancreas: structure, function, composition of pancreatic juice **Functions of liver, Bile secretion, composition, function, jaundice:** types.

Functions of gall bladder.

Small intestine: functions, digestion, absorption, movements.

Large intestine: functions, movement's defecation digestion and absorption of carbohydrates, proteins, fats, lipids. Role of gastrointestinal hormones on digestion

e. Excretory System

Functions of kidneys, nephron, vasa recta, cortical and juxtamedullary nephrons, comparison, juxta glomerular apparatus: structure and function. Mechanism of urine formation: ultrafiltration gfr, Determination of GFR. Selective reabsorption -sites, mechanism and substance reabsorption, (glucose, urea, H⁺, Cl⁻ amino acids sodium, potassium, etc.)

Counter-current mechanisms: micturition, innervation of bladder, cystometrogram. Artificial kidney, renal function tests: plasma clearance, actions of ADH, aldosterone and PTH on kidneys.

f. Respiratory system

Functions of respiratory *s y s t e m* , physiological anatomy of respiratory system, respiratory tract, respiratory muscles.

Mechanism of normal and rigorous respiration, forces opposing and favoring expansion of the lungs. Intra pulmonary & intrapleural pressure, surface tension, recoil tendency of the thoracic cage and lungs. Transport of respiratory gases: transport of oxygen & carbon dioxide, oxy hemoglobin dissociation curve factors affecting it.

Lung volumes and capacities -normal values

Regulation of respiration: mechanisms of regulation, nervous and chemical regulation, respiratory center

Applied physiology: hypoxia, cyanosis, dyspnoea, apnoea.

g. Cardiovascular system

Heart: physiological anatomy, nerve supply. Properties of cardiac muscle, cardiac cycle:

Cardiac output (only definitions of struck volume, cardiac index) normal heart sounds, areas of auscultation.

Blood pressure: definition, normal value, clinical measurement of blood pressure, hypotension, hypertension.

Physiological variations & regulation of heart rate,

Pulse: jugular, radial pulse,

Electrocardiogram (ECG) waves and normal duration

h. Endocrine System

Classification of endocrine glands & Definition of hormone.

Pituitary hormones: anterior and posterior pituitary hormones, secretion, functions Thyroid gland: physiological anatomy, hormone secreted, physiological function, regulation, secretion, disorders (hypo and hyper secretion of hormone).

Adrenal cortex: physiological anatomy, cortical hormones, functions and regulation. Adrenal medulla: hormones, regulation and secretion. Functions of adrenaline and nor adrenaline.

Hormones of pancreas. Insulin: secretion, regulation, function and action. Diabetes mellitus: regulation of blood glucose level.

Parathyroid gland: function, action, regulation of secretion of parathyroid hormone. Calcitonin: functions and action.

i. Reproductive system

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

j. Nervous system

Functions of nervous system, structure, classification and properties of neuron and neuroglia classification of nerve fibers Synapse: structure, types, properties. Receptors: definition, classification, properties. Reflex: definition reflex arc, clinical classification of reflexes: Babinski's sign. Organization Spinal cord. Ascending tracts, descending tracts. Pyramidal tracts – functions. Extrapyramidal tracts – functions. Hypothalamus-functions. Cerebral cortex lobes-functions, cerebellum-functions Basal ganglion: functions. EEG. Cerebro Spinal Fluid (CSF) : formation, circulation & reabsorption . Composition and functions. Lumbar puncture. Autonomic Nervous System: Sympathetic and parasympathetic distribution

k. Special senses

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

1. Skin

Structure and functions, regulation of body temperature

Practical

- 1. Haemoglobinometry.**
- 2. Total leucocyte count.**
- 3. Total Red blood cell count.**
- 4. Determination of blood groups.**
- 5. Differential WBC count.**
- 6. Erythrocyte sedimentation rate (ESR). Determination of packed cell Volume, Calculation of blood indices**
- 7. Determination of clotting time, bleeding time.**
- 8. Blood pressure recording.**
- 9. Auscultation for heart sounds.**
- 10. spirometry, artificial respiration**

REFERENCE BOOKS

- 1. Guyton (Arthur): Text Book of Physiology. Latest Ed. Prism publishers.**
- 2. Chatterjee CC: Human Physiology Latest Ed.Vol-1, Medical Allied Agency.**
- 3. Choudhari Sujith K: Concise Medical Physiology Latest Ed. New. Central Book.**
- 4. Ganong William K: Review of Medical Physiology. Latest Ed. Tata McGraw.**

BIOCHEMISTRY

Theory:

a. Introduction to Biochemistry

- b. **Blood chemistry-Biochemical components. Normal reference ranges. Diseased states.**
- c. **Urine chemistry- Biochemical components. Normal reference ranges. Diseased states.**
- d. **Specimen collection:**
 Collection of blood, CSF, urine & other fluids. Use of preservatives, Anticoagulants
 Method of transport, packing and storing of specimens. The concept of pre analytical, analytical and post analytical, errors. Importance of labeling and identification. Barcoding of samples.
- e. **Instruments (Theory and demonstration)**
 Water Distillation plant and water de-ionisers - Use, care and maintenance .Evaluation of water purity.
 Refrigerators, cold box, deep freezers Use, care and maintenance. Laboratory balances: Use care and maintenance. Guideline to be followed and precautions to be taken while Weighing.
 Weighing different types of chemicals, liquids. Hygroscopic compounds etc.
- f. **Viscosity, surface tension, properties of colloids, emulsions, adsorption, partition coefficient and its application to biological Systems. Osmosis, dialysis and Donnan membrane equilibrium**
- g. **Concepts of Molecular Weight, Atomic weight, Normality, Molarity, Standards; Atomic structure, Valency.**
- h. **Introduction to the Chemistry of cell**
 Cell structure, Subcellular organelles and bio membrane -structure and function, cell fractionation
- i. **Introduction to the Chemistry of cell**
 Cell structure, Subcellular organelles and bio membrane -structure and function, cell fractionation
- j. **Chemistry of Carbohydrates**
 Definition, Classification and biological importance.
 Monosaccharides, Oligosaccharides, Disaccharides & Polysaccharides
- k. **Chemistry of Lipids.**
 Definition, Classification and biological importance.
 Simple lipids: Triacylglycerol's and waxes-composition and functions.
 Compound lipids: Phospholipids, Sphingolipids & Glycolipids: composition and functions. Derived lipids: Fatty acids — saturated & unsaturated. Steroids and their properties
- l. **Chemistry of Nucleic acids—' DNA Structure and function, RNA Types: Structure and function**
- m. **Acids and Bases:**
 Definition, classification & properties with examples. Concepts of acid base reaction, hydrogen ion concentration Ionization of water, buffer, and pH value of a solution Acid - base indicators:
 Definition, concept, colour change of an indicator in acidic and basic conditions Use of standard buffer solution and indicators for pH determinations, preparation and its application, list of commonly used indicators and their pH range.
 Regulation of Acid Base status:
 Buffers of the fluid & pH Regulation Disturbance in acid Base Balance, Anion Gap, Metabolic acidosis, metabolic acidosis, metabolic alkalosis, Respiratory acidosis, Respiratory alkalosis Basic Principles and estimation of Blood Gases and pH Basic principles and estimation of Electrolytes and Water Balance Sodium regulation.

n. Nutrition

Nutritional support with special emphasis on parenteral nutrition.

Calorific Value, Nitrogen Balance, Respiratory Quotient, Basal metabolic rate, Dietary Fibers.

Nutritional importance of lipids, carbohydrates and proteins Vitamins - definition, classification, source, functions, deficiency & disorders.

o. Enzymes:

Definition and nature of enzymes, classification, coenzymes. Diagnostic enzymology Bio Safety Measures in laboratory

p. Biomedical waste management

q. Conventional and SI units Practicals- 1st Year

**i. Simple color reaction of carbohydrates and proteins,
Identification of substances of Biochemical importance.**

ii. Preparation of solutions, calculation of Molecular Weights and Equivalent Weights, Preparation of Normal solutions, Molar solutions, percent solution and reagents, Dilution techniques

iii. Titration of simple acid-base and calculation of Normality

iv. Demonstration of colorimeter, spectrophotometer, pH meter

RECOMMENDED TEXTBOOKS

1. **Text book of Biochemistry- D M Vasudevan**
2. **Text book of clinical chemistry - Nobert. W. Teitz**
3. **Practical clinical biochemistry - Harold . Varley-vol, 1 & Vol. II**
4. **Clinical Biochemistry-Principles & Practice- Praful B. Godkar**
5. **Textbook of Biochemistry by Chatterjea and shinde**

REFERENCE BOOKS

1. **Biochemistry a care oriented approach- Montgomery**
2. **Biochemistry in clinical practice - William's.and Marks**
3. **Clinical chemistry - Kaplan**
4. **Methods in Biostatistics - B.K. Mahajan V**
5. **Clinical chemistry-Michael L.Bishop**
6. **Clinical biochemistry metabolic and clinical aspects ^ William. Lmarshall & Stephen k Bangert**
7. **Applied biochemistry of clinical disorders by Allan gomall.**

PATHOLOGY

Theory

I. GENERAL PATHOLOGY Introduction - scope of pathology

1. **Cell Injury and Cellular Adaptations.**
 - a) **Normal Cell**

- b) Cell Injury-types, etiology, morphology.
- c) Cell death - autolysis, necrosis, apoptosis.
Cellular adaptations - atrophy, hypertrophy, hyperplasia, metaplasia

2. Inflammation

- a) Introduction
 - b) Acute inflammation - vascular events, cellular events, chemical mediators.
Chronic Inflammation - general features, granulomatous inflammation, tuberculosis
- ## 3. Healing and Repair
- a) Definition, different phases of healing, factors influencing wound healing, fracture healing.
- ## 4. Haemodynamic Disorders
- Edema, Hyperemia, Congestion, Hemorrhage, Embolism, Thrombosis, Infarction.
- ## 5. Neoplasia
- a) Definition, Nomenclature
 - b) Features of benign and malignant tumours
 - c) Spread of tumours
 - d) Dysplasia, Carcinoma in situ, Precancerous lesions.
- ## 6. Environmental and nutritional pathology
- a) Smoking, Radiation injury
Malnutrition, Obesity, Vitamin deficiencies

II. HEMATOLOGICAL DISORDERS

- ### 1. Introduction and Hematopoiesis
- ### 2. Anemia- Introduction & Classification (Morphological & etiological)-
- a) Iron Deficiency Anemia: Distribution of body Iron, Iron Absorption, causes of iron deficiency, lab findings.
 - b) Megaloblastic Anemia: Causes, Lab findings.
Hemolytic Anemia: Definition, causes, classification & lab findings.
- ### 3. WBC Disorders
- a) Quantitative disorders.
 - b) Leukemia- Introduction & classification, acute leukemias, Chronic leukemias.
- ### 4. Bleeding disorders
- c) Introduction, physiology of hemostasis
 - d) Classification, Causes of Inherited and Acquired bleeding disorders, Thrombocytopenia, DIC. laboratory findings -

1. Pancytopenia

III. BASIC HEMATOLOGICAL TECHNIQUES

- 1) Characteristics of good technician
- 2) Blood collection - methods (capillary blood, venipuncture, arterial puncture) complications, patient after care.
- 3) Anticoagulants.

- 4) Transport of the specimen.
- 5) Preservation.
- 6) Effects of storage.
- 7) Separation of serum and plasma
- 8) Universal precautions
- 9) Complete hemiogram- CBC, Peripheral smear, BT, CT, PT, APTT, ESR.
- 10) Disposal of the waste in the laboratory.

IV. TRANSFUSION MEDICINE

- 1) Selection of blood donor
- 2) Blood grouping, Rh typing
- 3) Cross matching
- 4) Storage
- 5) Transfusion transmitted diseases
- 6) Transfusion reactions
- 7) Components-types, indications

V. CLINICAL PATHOLOGY-

Introduction to Clinical Pathology- Collection, Transport, Preservation, and Processing of various clinical specimens -1 hour

1. Urinalysis (4 hours)
 - a) Collection, preservatives, physical, chemical examination and microscopy.
 - b) Physical examination: volume, color, odor, appearance, specific gravity and PH.
 - c) Chemical examination: (strip method)
 - i. Protein: - Heat and acetic acid test, Sulfosalicylic acid method
 - ii. Reducing Sugar-Benedict test
 - iii. Ketone bodies - Rothera test
 - iv. Bile pigment - Fouchet method
 - v. Bile salt - Hays test
 - vi. Blood - Benzidine test
 - vii. Urobilinogen & Porphobilinogen - Ehrlich aldehyde and schwartz test
 - viii. Bence Jones Protein
 - d) Microscopy
2. Examination of cerebrospinal fluid (CSF)-1 hour
 - a) Physical examination
 - b) Chemical examination
 - c) Microscopic examination
3. Examination of body fluids (pleural, pericardial and peritoneal)-
 - a) Physical examination
 - b) Chemical examination
 - c) Microscopic examination
4. Sputum Examination-

PRACTICALS:

Laboratory Organization (2 hours)

1. Reception of specimen, dispatch of reports, 'Records keeping', coding of cases.
2. Laboratory safety guidelines
3. SI units and conventional units in hospital laboratory

Hematology techniques (18 hours)

- 1) Basic requirements for hematology laboratory.

- 2) Glasswares for Hematology.
- 3) Equipments for Hematology.
- 4) Anticoagulant vials.
- 5) Complete Blood Counts.
- 6) Determination of Hemoglobin.
- 7) RBC Count & TLC by Hemocytometer.
- 8) Differential Leukocyte count.
- 9) Determination of Platelet Count.
- 10) Determination of ESR and PCV.
- 11) Erythrocyte Indices- MCV, MCH, MCHC.
- 12) Reticulocyte Count.
- 13) Absolute Eosinophil Count.
- 14) Morphology of Blood Cells.
- 15) Urinalysis.
- 16) Examination of cerebrospinal fluid (CSF).
- 17) Examination of body fluids (pleural, pericardial and peritoneal).
- 18) Sputum Examination.

Reference Book(Latest Edition)

Sl.No	Name of Book & title	Author	Publisher Name, place of publication
1	Basic Pathology	Robbins	Saunders, an imprint of Elsevier Inc., Philadelphia* USA
2	Text book of Pathology	Harsha Mohan	Jaypee Brothers, New Delhi
3	Practical Pathology	P. Chakraborty, Gargi Chakraborty	New Central Book Agency, Kolkata
4	Text Book of Haematology	Dr. Tejincler Singh	Arya Publications, Sirmour (H.P)
5	Text Book of Medical Laboratory Technology	Praful Godkar	Bhalani Publication House, Mumbai
6	Text Book of Medical Laboratory Technology	Ramanik Sood	
7	Practical Haematology	Sir John Dacie	Churchill Livingstone,London.
8	Todd & Sanford, Clinical Diagnosis & Management by Laboratory Methods	John Bernard Henry	All India travellar Booksellar,
9	Histopathology techniques.	Culling	
10	Histopathology techniques	Bancroft	
11	Diagnostic cytopathology.	Koss .	
12	Diagnostic cytopathology	Winifred grey	
13	Hand-Book of Medical Laboratory Technology	CMC Vellore.	
14	Basic Haematological Techniques	Manipai.	

MICROBIOLOGY

Theory

- 1. Morphology**
Classification of microorganisms, size, shape and structure of bacteria. Use of microscope in the study of bacteria.
- 2. Growth and nutrition**
Nutrition, growth and multiplications of bacteria, use of Culture media in diagnostic bacteriology.
- 3. Culture media**
Use of culture media in diagnostic bacteriology, anti-microbial sensitivity test
- 4. Sterilization and Disinfection**
Principles and use of equipments of sterilization namely hot air oven, autoclave and serum inspissator, pasteurization, antiseptic and disinfectants
- 5. Immunology**
Immunity, vaccines, types of vaccine and immunization schedule, principles and interpretation of common serological tests namely Widal, VDRL, ASLO, CRP, RF & ELISA. Rapid tests for HIV and HBsAg (excluding technical details)
- 6. Bacteriology- Classification of bacteria and common bacterial infections**
- 7. Parasitology- classification and common infections**
- 8. Mycology**
Morphology, diseases caused and lab diagnosis of following fungi. Candida, Cryptococcus, Dermatophytes, opportunistic fungi.
- 9. Virology**
General properties of viruses, diseases caused lab diagnosis and prevention of following viruses, Herpes, Hepatitis, HIV* Rabies and Poliomyelitis
- 10. Hospital infection**
Causative agents, transmission methods, investigation, prevention and control of hospital infection.
- 11. Principles and practice Biomedical waste management Practicals:**
Compound microscope.
Demonstration of sterilization equipment's: hot air oven, autoclave, bacterial filters. Demonstration of commonly used culture media, nutrient broth, nutrient agar, blood agar, chocolate agar,- Mac conkey medium, L J media, Robertson ,cooked meat media, Potassium tellurite media with growth, Mao with LF & NLF, NA with staph. Antibiotic susceptibility test. Demonstration of common serological tests; Widal, VDRL, ELISA. Grams staining, Acid fast staining. Stool exam for helminthic ova & cysts.
Visit to hospital for demonstration of biomedical waste management. Anaerobic culture methods.

REFERENCE BOOKS

1. Anathanarayana & Panikar: Medical Microbiology - Revised 8th Edition University Press.
2. Robert Cruickshank: Medical Microbiology - The Practice of Medical Microbiology.
3. Chatterjee: Parasitology - Interpretation to Clinical medicine.
4. Rippon; Medical Mycology.
5. Emmons: Medical Mycology.
6. Basic Laboratory methods in Parasitology: 1st Ed, J P Bros, New Delhi. .
7. Basic laboratory procedures in clinical bacteriology, 1st Ed, J P Brothers, New Delhi.

8. **Ajit Damle: Medical Parasitology. Ananthanarayana:**
9. **Introduction to Medical Microbiology, Orient Longman PVT Ltd.**

SUBSIDIARY SUBJECTS

ENGLISH

Teaching Hours: 20Hours

1. Course Description

This course is designed to help the student acquire a good command and comprehension of the English language through individual papers and conferences.

2. Behavioral objectives

The student at the end of training shall be able to:

- a) **Read and comprehend English language.**
- b) **Speak and write grammatically correct English.**
- c) **Appreciate the value of English literature in personal and professional life.**

3. Contents

Unit -1: Introduction:

- a) **Study techniques.**
- b) **Organization of effective note taking and logical processes of analysis and synthesis.**
- c) **Use of the dictionary.**
- d) **Enlargement of vocabulary.**
- e) **Effective diction.**

Unit - II: Applied grammar:

- a) **Correct usage.**
- b) **The structure of sentences.**
- c) **The structure of paragraphs.**
- d) **Enlargements of vocabulary.**

Unit - III: Written composition:

- a) **Precis writing and summarizing.**
- b) **Writing of bibliography.**
- c) **Enlargement of vocabulary.**

Unit - IV: Reading and comprehension:

- a) **Review of selected materials and express oneself in one's words.**
- b) **Enlargement of vocabulary.**

Unit - V: The Study of the various forms of composition:

- a) **Paragraph.**
- b) **Essay.**
- c) **Letter.**

- d) Summary.
- e) Practice in writing.

Unit - VI: Verbal communication:

- a) Discussions and summarization.
- b) Debates.
- c) Oral reports.
- d) Use in teaching.

REFERENCE

1. English Grammar; Collins, Birmingham University, International Language Data Base, Rupa & Co. 1993.
2. Wren and Martin; Grammar and Composition, 1989, Chand & Co, Delhi.
3. Letters for all Occasions: A S Myers. Pub - Harper Perennial.
4. Spoken English: V. Shasikumar and P V Dhanija. Pub. By: Tata Mcgraw Hill, New Delhi
5. Journalism Made Simple: D Wainwright.
6. Writers Basic Book self Series: Writers Digest series.
7. Interviewing by Joan Clayton Platkon.
8. Penguin Book of Interviews.

HEALTH CARE

Teaching Hours: 40Hours

1. Introduction to Health

- a) Definition of health, determinants of health, health indicators of India, health team concept.
- b) National health policy
- c) National health programmes (Briefly objectives and scope)
- d) Population of India and family welfare programme in India

2. Introduction to Nursing

- a) What is nursing? Nursing principles, inter-personnel relationships.
- b) Bandaging: basic turns, bandaging .extremities, triangular bandages and their application.
- c) Nursing position, prone, lateral, dorsal, dorsal recumbent, Fowler's positions, comfort measures, bed making, rest and sleep.
- d) Lifting and transporting patients: lifting patients up in the. bed, transferring from bed to wheel chair, transferring from bed to stretcher,
- e) Bed side management: giving and taking bed pan, urinal.
- f) Observation of stools, urine, sputum
- g) Use and care of catheters, enema giving.
- h) Methods of giving nourishment: feeding, tube feeding, drips, transfusion.
- i) Care of rubber goods.
- j) Recording of body temperature, respiration and pulse.
- k) Simple aseptic techniques, sterilization and disinfection.
- l) Surgical dressing: observation of dressing procedures.

3. First Aid:

REFERENCE BOOKS:

Preventive and Social Medicine by J.Park

MAIN SUBJECTS

Second Year B.Sc. - Emergency Medicine Technician

Paper I

Introduction to Emergency Medicine

- 1. Structure and organization of a hospital and its departments**
- 2. Functioning of an ideal emergency medicine department**
- 3. Ambulance services**
- 4. Pre hospital care**
- 5. Concept of triage**
- 6. Principles of resuscitation**
- 7. The emergency response team**
- 8. Documentation**
- 9. Multiple and mass casualties**
- 10. Medico legal aspects**

Paper II

Emergency Department Equipment

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

- 1. Pulse oximeter**
- 2. Electrocardiograph**
- 3. Multiparameter monitors**
- 4. Capillary blood glucose**
- 5. Defibrillator, AED**
- 6. Ventilator**
- 7. Non-invasive ventilator**
- 8. Crash cart**
- 9. Airway adjuncts, supra-glottic airway devices**
- 10. Splints and immobilization devices**
- 11. Dressing and procedure packs and materials**
- 12. Trolleys and stretchers**
- 13. Medical gas, cylinders and pipelines**
- 14. Anesthesia work-station**
- 15. Point of care investigations, ultrasound, X ray, blood and urine investigations**

Paper III

Emergency Department Pharmacology

- 1. Indications for use, dosage, route and method of administration and adverse effects of drugs commonly used in the Emergency Department**
- 2. Routes of administration of medications**
- 3. Preparation of injections and infusions**

4. Review of prescription writing and interpretation
5. Medication errors
6. Strategies to reduce error

SYLLABUS FOR PRACTICAL II YEAR

Paper I; Introduction to Emergency Medical Services

- Preparation of an ambulance
- Problems based on triage
- Basic life support skills

Paper II Emergency Department Equipment

- Application/ connection to patient, usage, calibration, changing settings, demonstrating maintenance of equipment (10 marks x 8 equipment)

Paper III: Emergency Department Pharmacology

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

Textbooks & Reference Books

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

SUBSIDIARY SUBJECTS

SOCIOLOGY

Teaching Hours: 20Hours

1. Course description

This course will introduce student to the basic concepts of sociology, principles, social processes and. Social institutions in relation to the individual, family and community. The various social factors affecting the family in rural and urban communities in India will be studied.

2. Introduction

- a) Meaning, definition and scope of sociology.
- b) Its relation to anthropology, psychology, social psychology.
- c) Methods of sociological investigations: case study, social survey, questionnaire, interview and

- opinion poll methods.
- d) **Importance of its study with special reference to health care professionals.**
3. **Social factors in health and disease**
- Meaning of social factors.**
 - Role of social factors in health and disease.**
4. **Socialization**
- Meaning and nature of socialization.**
 - Primary, secondary and anticipatory socialization.**
 - Agencies of socialization,**
5. **Social groups**
- Concepts of social groups, influence of formal and informal groups on health and sickness.**
 - The role of primary groups and secondary groups in the hospital and rehabilitation setup.**
6. **Family**
- The family, meaning and definitions.**
 - Functions of types of family.**
 - Changing family patterns.**
 - Influence of family on individual's health, family and nutrition.**
 - The effects of sickness in the family**
 - Psychosomatic diseases and their importance**
7. **Community**
- Rural community: meaning and features.**
 - Health hazards of rural communities.**
 - Health hazards of tribal communities.**
 - Urban community: meaning and features.**
 - Health hazards of urban communities.**
8. **Culture and health**
- Concept of culture.**
 - Concept of health.**
 - Culture and health.**
 - Culture and health disorders.**
9. **Social change**
- Meaning of social changes.**
 - Factors of social changes.**
 - Human adaptation and social change.**
 - Social change and stress.**
 - Social change and deviance,**
 - Social change and health programme.**
 - The role of social planning in the improvement of health and rehabilitation.**
10. **Social problems of disabled**
- (Consequences of the following social problems in relation to sickness and disability and remedies to prevent these problems):
- Population explosion.**
 - Poverty and unemployment.**
 - Beggary.**
 - Juvenile delinquency.**

- e) Prostitution.
- f) Alcoholism.
- g) Problems of women in employment.

11. Social security

- a) Social Security and social legislation in relation to the disabled.

12. Social work

- a) Meaning of social work.
- b) The role of a medical social worker.

Reference books

1. Sachdeva & Vidyabhushan, Introduction to the study of sociology.
2. Indrani T.K., Text book of sociology for graduates nurses and Physiotherapy students, JP Brothers, New Delhi 10.

CONSTITUTION OF INDIA

1. **Unit-I: Meaning of the term ‘Constitution*. Making of the Indian Constitution 1946- 1950.**
2. **Unit-II: The democratic institutions created by the constitution, Bicameral system of Legislature at the Centre and in the States.**
3. **Unit-III: Fundamental rights and duties their content and significance.**
4. **Unit - IV: Directive principles of States, policies the need to balance fundamental rights with directive principles.**
5. **Unit - V: Special rights created in the Constitution for dalits, backwards, women and children and the religious and linguistic minorities.**
6. **Unit-VI; Doctrine of Separation of Powers, legislative, executive and judicial and their functioning in India.**
7. **Unit - VII: The Election Commission and State Public Service commissions.**
8. **Unit - VIII: Method of amending the Constitution.**
9. **Unit - IX: Enforcing rights through writs.**
10. **Unit-X: Constitution and sustainable development in India.**

Books:

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

ENVIRONMENTAL SCIENCE AND HEALTH

Introduction to environment and health

1. Sources, health hazards and control of environmental pollution.
2. The concept of safe and wholesome water, the requirements of sanitary sources of water, understanding the methods of purification of water on small scale and large scale, Various biological standards, including WHO guidelines for third world countries, concept and methods for assessing quality of water.
3. Domestic refuse, sullage, human excreta and sewage, their effects on environment and health, methods and issues related to their disposal.
4. Awareness of standards of housing and the effect of poor housing on health.
5. Role of arthropods in the causation of diseases, mode of transmission of arthropods borne diseases, methods of control.

Recommended Books.

1. Text Book of Environmental Studies for undergraduate courses By Erach Bharucha Reprinted in 2006, Orient Longman Private Limited /Universities Press India Pvt. Ltd.

various biological standards, including WHO guidelines for third world countries, concept and methods for assessing quality of water.

6. Domestic refuse, sullage, human excreta and sewage, their effects on environment and health, methods and issues related to their disposal.
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MAIN SUBJECTS

Third Year B.Sc.- Emergency Medicine Technician Paper 1 Medical Emergencies

1. Cardiovascular Emergencies
2. Pulmonary Emergencies
3. Fluid and Electrolyte Disturbances
4. Infectious Diseases and Sepsis
5. Neurological Emergencies
6. Endocrine and Metabolic Emergencies
7. Dermatological Emergencies
8. Gastrointestinal Emergencies
9. Hematology and Oncology Emergencies

10. Renal Emergencies
11. Immunological Emergencies

Paper 2:

Trauma and Surgical Emergencies

1. Trauma in Adults
2. Burns
3. Electrocution
4. Hanging
5. Drowning/near-drowning
6. Abdominal Emergencies
7. Skin and soft tissue infections
8. Emergencies of the Ear, Nose, and Throat
9. Oral and Neck Emergencies
10. Ophthalmic Emergencies

Paper 3:

Emergencies in Pediatric and Special Population |

1. Emergencies in pediatric population
2. Obstetric emergencies
3. Gynecological emergencies
4. Emergencies in the elderly
5. Emergencies in Psychiatry and Behavior. Disorders

Text Books &Reference Books:

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

SYLLABUS FOR PRACTICALS III YEAR

Paper I: Medical Emergencies

Preparing an ambulance for medical emergency

Responding to a call and scene management of medical emergency

Receiving and resuscitating a patient with a medical emergency in the emergency department

Paper II: Trauma and surgical emergencies

Preparing an ambulance for trauma

Responding to a call and scene management of trauma

Receiving and resuscitating a patient with trauma in the emergency department

Paper III; Emergencies in pediatric and special population

Airway management and resuscitation of an infant.

Airway management and resuscitation of a child

SUBSIDIARY SUBJECTS
BIOSTATISTICS AND RESEARCH METHODOLOGY

Teaching hours : 20Hours

1. course description

Introduction to basic statistical concepts

Methods of statistical analysis and interpretation of data

Introduction to research methodology

2. Objectives

Understand statistical terms

Possesses knowledge and skills in the use of basic statistical and research methodology

3. Contents

a. Unit-I: Introduction

i. Meaning definition and type of statistics

ii. statistics as a singular and plural noun

iii. Branches of statistics

iv. Application of statistics in Medicine

b. Unit-II: Presentation of Data

i. Definition and types of Data

ii. Raw data, the array, frequency distribution

iii. Basic definitions and principles of tabular presentation

iv. Basic principles of graphical representation

v. Types of diagrams: Bar, pie, line, histograms and pictogram

- c) **Unit - III: Measure of central tendency**
 - i. Need for measures of central tendency .^v
 - ii. Definition and calculation of mean: ungrouped and grouped.
 - iii. Meaning, interpretation and calculation of median ungrouped and grouped.
 - iv. Meaning and calculation of mode ungrouped and grouped.
 - v. Selection of an appropriate measure of central tendency.

- d) **Unit - IV: Measure of variability**
 - i. Need for measure of variation.
 - ii. Range and mean deviation.
 - iii. Variance and standard deviation.
 - iv. Calculation of variance and standard deviation ungrouped and grouped.
 - v. Properties and uses of variance and SD.

- e) **Unit -V: Probability and standard distributions.**
 - i. Meaning of probability and standard distributions.
 - ii. Priori and posteriori probabilities
 - iii. The Binominal and Poisson distributions.
 - iv. The normal distribution.
 - v. Divergence from normality: skewness, kurtosis.

- I) **Unit - VI: Sampling techniques**
 - i. Population, sample and sampling.
 - ii. Methods and types of sampling.
 - iii. Random and non-random sampling
 - iv. Parameter and statistic.
 - v. Basic concepts and terms related to test of significance.

- g) **Unit - VII: Introduction to research methodology**
 - i. Definition and characteristics of research.
 - ii. Levels and types of research.
 - iii. Experimental and non-experimental study designs.
 - iv. Definitions of case report, case series, case-control and cohort studies.

RECOMMENDED BOOKS;

- 1) **KR Sundaram, SN Dwivedi and V Sreenivas (2010): Medical Statistics, Principles and Methods, BI Publications Pvt Ltd, New Delhi, India.**
- 2) **A Indrayan (2008): Basic Methods of Medical Research, Second edition, AITBS Publishers, India.**
- 3) **NSN Rao and NS Murthy (2008): Applied Statistics in Health Sciences, First Edition, JAYPEE brothers medical publishers (P) Ltd, India.**
- 4) **A. Mustafa (2010): Research Methodology, First edition, AITBS Publishers, India.**

BASICS IN COMPUTER APPLICATIONS

1. Introduction to data processing

Features of computers, advantages of using computers, getting data into / out of computers, role of computers, data processing, application areas of computers involved in data processing, common activities in processing, types. of data processing, characteristics of information, hardware and software.

2. Hardware Concepts

Architecture of computers, classification of computers, concept of damage, types of Storage devices, characteristics of discs, tapes, terminals, printers, network, applications of networking, concept of PC system care'; floppy care, data care.

3. Concept of Software

Classification of software, system software, application of software, operating system, computer system, computer virus, precautions against viruses, dealing with viruses, computers in medical electronics, basic anatomy of computers.

4. Principles of programming

Computer application, principles in scientific research, work processing, medicine, libraries, museum, education, information system.

5. Data processing

Computers in physical therapy: principles in EMG, exercise testing equipment, laser.

ETHICS

1. Introduction

2. Medical ethics is a systematic effort to work within the ethos of medicine, which has i v traditionally been service to sick.

3. Objectives

Identify underlying ethical issues and problems.in medical practice.

4. Course contents (Syllabus)

a. Introduction to medical ethics :

What is ethics, what are values and norms, freedom and personal responsibility?

b. Definition of medical ethics Major principles of medical ethics.

c. Perspective of medical ethics.

The Hippocratic Oath. The: Declaration of Helsinki, The .WHO Declaration of. Geneva, International code of Medical Ethics. (1993), Medical Council of India Code; of Ethics (2002).

d. Ethics of the individual

Truth and confidentiality, the concept of disease, health and healing. The Right to health.

e. The ethics of human life

Prenatal sex determination.

f. . The family and. society in medical ethics.

Euthanasia, cancer and terminal care.

g. Death and dying: Use of life-support systems, the right to die with dignity, suicide - the ethical outlook.

h. Professional Ethics

Contract and confidentiality, malpractice and negligence.

5. **Teaching/Learning Experience :**
 - a. **Increasing the awareness and .knowledge of students of the, value dimensions of interactions with the patients, colleagues, relations and public.**
 - b. **Fostering the development of skills of analysis, decision making and judgment.**
 - c. **Making the students aware of the need to respect the rights of the patient.**
 - d. **Duties and responsibilities of the technologists.**