



SHRI
DHARMASTHALA
MANJUNATHESHWARA
UNIVERSITY

ORDINANCE GOVERNING
B.SC. IN ALLIED HEALTH SCIENCES
EMERGENCY AND TRAUMA CARE TECHNOLOGY
CURRICULUM 2023-24

SHRI DHARMASTHALA MANJUNATHESHWARA UNIVERSITY

(A State Private University established under the Shri Dharmasthala Manjunatheshwara University
Act No 19 of 2018 of Government of Karnataka and Notification No. ED 261 URC 2018 dated 19th December 2018)

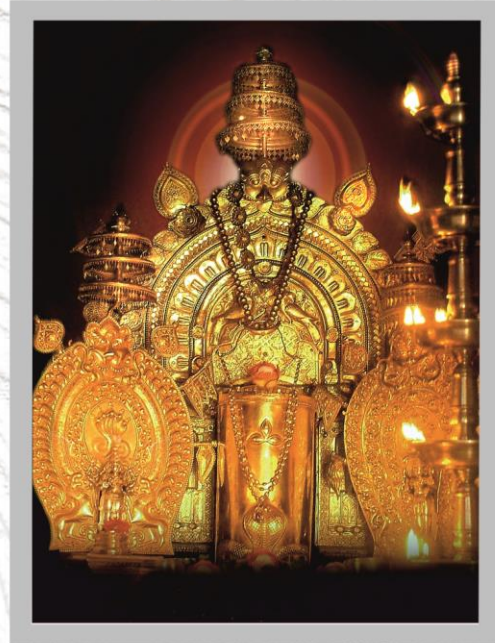
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|| Om Shri Manjunathaya Namaha ||




Shree Kshethra Dharmasthala


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Registrar**

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THE LOGO

Poojya Dr D. Veerendra Heggade, Hon'ble Chancellor of the University, while searching for an appropriate Logo for the University, saw a photograph picked from Temple Architecture showing Wings of a Bird, sculpted in Indian style and wanted it to be incorporated in the logo for the University, as the Wings symbolize 'Spreading of Knowledge beyond Boundaries'. Further it was felt that the Central theme of the logo should be 'Rudra' (The Linga) with wings on each side. In this way, the logo of the University was conceptualized.

Hence:

1. The central part represents **Rudra** who Demolishes Darkness.
2. The Three **horizontal lines on The Linga** stand for Samyak Darshan (Right Belief), Samyak Gyan (Right Knowledge) and Samyak Charitra (Right Conduct).
3. The **Wings** symbolize spreading of Knowledge across the boundaries.
4. Base line "**Truth Liberates**" highlights the Purpose of Education: to liberate oneself unconditionally. It shows that it is not discipline, nor knowledge nor the efforts to freedom that liberate but Truth is what liberates you from all your conditioning and ignorance.

The overall significance of Shri Dharmasthala Manjunatheshwara University's Logo is:

Darkness of ignorance is destroyed by the flow of knowledge to bring Liberty to everyone, by realizing the truth. And, it should spread globally without the



SHRI
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VISION

Shri Dharmasthala Manjunatheshwara University will set the highest standards of teaching and learning by awakening the intelligence of the students and nurturing the creativity hidden in them by creating an environment where the ancient wisdom blends with modern science, to transform them into whole human beings to face the challenges.

MISSION

- ▶ To ensure that the journey of education is inspiring, pleasant and enjoyable.
- ▶ Attract the best of teachers and students.
- ▶ Achieve high principles of trust, love and spirituality in the students.
- ▶ Create a collaborative, diverse and exclusive community.
- ▶ Transform the student of today to be a leader of tomorrow and a better human being.
- ▶ Produce passionate teachers.
- ▶ Evolve innovative teaching techniques.
- ▶ Create a peaceful environment.
- ▶ Prepare the student to face the social challenges.
- ▶ Create a University of which the Nation is proud of.
- ▶ Be an effective partner in Nation Building.
- ▶ Create an Eco-friendly University.
- ▶ Create a University based on the principles of beauty, love and justice.

||Om Shanti! Om Shanti! Om Shanti||



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SDMU/ACD/ALLIED/Notfn-321(A1)/370/2023

Date: 26-06-2023

NOTIFICATION

Amendment in the Ordinance governing Curricula of Medical Allied Sciences

- Ref:
1. Notification on Ordinance governing Curricula of Medical Allied Sciences - 2019 (SDMU/ACD/DEN/CRM/369A/2019; Dated: 28-08-2019 & SDMU/Notif-123/2020/178 Date: 19.09.2020)
 2. Minutes of the 7th Meeting of Academic Council held on 16th June 2023 (Letter No: SDMU/AC/M_c-7/F-28/354/2023 Dated: 19-06-2023)
 3. Minutes of the 9th Meeting of Board of Studies (Allied Health Sciences) held on 1st April 2023 (Letter dated:19-04-2023)

In exercise of the powers conferred under Statutes 1.4(Powers and functions - Para ix & x) & 1.8(Powers and functions - Para i) of Shri Dharmasthala Manjunatheshwara University, approval of the Academic Council of Shri Dharmasthala Manjunatheshwara University is hereby accorded for the **Amendment of the Ordinance governing Revised Curricula of Medical Allied Sciences** with effect from the date of notification.

1	BSc Medical lab Technology
2	BSc Medical Imaging Technology
3	BSc in Renal Dialysis Technology
4	BSc Optometry
5	BSc Anaesthesia Technology
6	BSc Emergency and Trauma care Technology
7	BSc Operation Theatre Technology

REGISTRAR
REGISTRAR

Shri Dharmasthala Manjunatheshwara
University, Dharwad

To: The Principal, SDM College of Medical Sciences & Hospital.

Copy for kind information to:

1. Hon'ble Vice Chancellor - Shri Dharmasthala Manjunatheshwara University.
2. Pro Vice Chancellor (Academics) - Shri Dharmasthala Manjunatheshwara University.
3. Controller of Examinations - Shri Dharmasthala Manjunatheshwara University.
4. Coordinator, Medical Allied Sciences
5. Office of the Registrar
6. University Office for Records File & Website



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B.Sc, Emergency And Trauma Care Technology

1. Eligibility for admission: A candidate seeking admission to the Bachelor of Science – Emergency and Trauma Care Technology Degree, shall have studied in English medium for the qualifying examination and shall have passed:

a) Two-year Pre-University examination or equivalent as recognized by SDM University with Physics, Chemistry and Biology as principal subjects of study.

OR

b) Pre-degree course from a recognized university considered as equivalent (two years after ten years of schooling) with Physics, Chemistry and Biology as principal subjects of study.

OR

c) Any equivalent examination recognized by SDMU for the above purpose, with Physics, Chemistry and Biology as principal subjects of study.

Or

d) **In case of B.Sc. – Emergency and Trauma Care Technology, a candidate who has completed a Diploma in General Nursing and Midwifery (GNM) program or equivalent course and has a valid registration with the respective State Nursing Council shall be eligible for lateral entry to the Second year of the course.**

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.**

5. Duration of the course:

Duration shall be for a period of four years which includes One year of internship.

2. Medium of instruction:

The medium of instruction and examination shall be in English.

3. 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 term 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.

4. Internal assessment (IA):

- i. Students must score **50% in theory and 50% practical separately** to be eligible to appear for the university examinations (average of two IAs).

I. Pass criteria:

- i. For pass in a subject student has to get **minimum 40% marks** in University Theory paper and 40% marks in university practical exam separately.
- ii. **Where the subject has only Theory component and NO practical component**, student has to get minimum 40% marks in University Theory paper and 50% marks in Theory total (**Theory marks in UE + IA**) to be declared PASS in university examination.
- iii. **Where the subject has BOTH Theory and Practical component**, A total of 50% marks in Theory (Theory marks in UE + Viva voce + IA) and 50% marks in Practical (Practical marks in UE + IA) separately is required for the candidate to be declared PASS in university examination.
- iv. **If the student fails in either Theory or practical component of a subject paper**, the he/she has to appear for both Theory and Practical exam in the next resit examination. If student fails in resit exam also, then he/she will be promoted to next year based on carry over guidelines.

5. Subject and hours of teaching for theory and practicals:

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. Main and subsidiary subjects are common in first year for all the courses in Allied Health Sciences.

TABLE I: 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	Computer Basics	20	-	-
2	English & Communication skill	20	-	-
3	Healthcare	20	-	-
4	Basic Science with skill development training and hospital procedure & records	40		

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

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	Indian constitution	20			
2	Sociology	20			
3	Environmental Science & Health	20			
4	Clinical psychology	20			

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 paediatric and special population	50	50	250	350
	Total	150	150	750	1050
B	Subsidiary subjects				
1	Research and Methodology	20			
2	Biostatistics	20			

6) Schedule of Examination:

- a) The University shall conduct two annual examinations, one at the end of each year, as notified by the university. 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 examinations.
- b) 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.

6. Scheme of Examination:

Distribution of subjects and marks for first year and second year theory and practical examinations are shown in the Table – III and IV.

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

		Written Paper		I A Theory	Total
		Duration	Marks	Marks	Marks
A	Main Subjects				
1	Basic Anatomy (Including Histology)	3 hours	70	30	100
2	Physiology	3 hours	70	30	100
3	Biochemistry	3 hours	70	30	100
4	Pathology	3 hours	70	30	100
5	Microbiology	3 hours	70	30	100

Note :

- a) 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.
- b) IA=Internal Assessment
- c) Main subjects shall have University examination.
- d) 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			Grand Total
		Uni Exam	IA	Sub Total	Uni Practical	IA	Sub Total	
A	Main Subjects							
1	Introduction to Emergency Medical Services	70	30	100	40	10	50	150
2	Emergency Department Equipment	70	30	100	40	10	50	150
3	Emergency Department Pharmacology	70	30	100	40	10	50	150

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	70	30	100	40	10	50	150
2	Trauma and surgical emergencies	70	30	100	40	10	50	150
3	Emergencies in pediatric and special population	70	30	100	40	10	50	150

Note: Examination for subsidiary subjects shall be conducted by respective colleges. There will be only internal assessment examination. The students should pass in all subsidiary examination to appear for the university examination every year. No university examination for subsidiary subjects

7. Question Paper pattern:

For 70 marks question paper

Type of Questions	No of Questions	Marks For Each Questions	Total
Long Essay	2 (3)	10	20
Short Notes	6 (8)	05	30
Short Answers	10	02	20

10. Practical Examination.

A) There shall be no university practical examination for the first year

B) Practical Examination (2nd year):

Paper I- Introduction to Emergency Medical Services

SI No	Tests	Marks
1	Preparation of an ambulance	10
2	Problems based on triage	10
3	Basic life support skills	20
	Total	40

Paper II-- Emergency Department Equipment

SI No	Tests	Marks
1	Application/ connection to patient, usage, calibration, changing settings, demonstrating maintenance of equipment (10	40
	Total	40

Paper III- Emergency Department Pharmacology

SI No	Tests	Marks
1	Problems based on drug dosage calculation	10
2	Demonstration of strategies to reduce medication error (Role-play)	10
3	Preparation of IV injection/ infusion	20
	Total	40

C) PRACTICAL EXAMINATION 3RD YEAR: ONE COMMON PRACTICAL FOR ALL THE THREE PAPERS WITH EQUAL WEIGHTAGE OF MARKS. 40 MARKS X 3 = 120 MARKS

Paper I- Medical Emergencies (Third year)

SI No	Tests	Marks
1	Preparing an ambulance for medical emergency	10
2	Responding to a call and scene management of medical emergency	10
3	Receiving and resuscitating a patient with a medical emergency in the emergency medicine department	20
	Total	40

Paper II-- Trauma and surgical emergencies (Third year)

SI No	Tests	Marks
1	Preparing an ambulance for trauma	10
2	Responding to a call and scene management of trauma	10
3	Receiving and resuscitating a patient with trauma in the emergency medicine department	20
	Total	40

Paper III- Emergencies in pediatric and special population (Third year)

SI No	Tests	Marks
1	Airway management and resuscitation of an infant	10
2	Airway management and resuscitation of a child	10
3	OSCE	20
	Total	40

11) Board of Examiners:

Practical examination will be conducted by two examiners out of which one will be external examiner recognized by the university.

11. Criteria for pass:

- a) **Main Subjects:** Candidates are declared to have passed in a subject, if they secure 50% of marks in university examination and internal assessment added together. Theory & practical shall be considered to be separate subjects. If a candidate passes in practical examination but fails in one or more theory papers, such candidate is exempted from reappearing for practical but shall have to appear in the subsequent examination for the theory paper in which the candidate has failed OR vice versa.
- b) **Subsidiary Subjects:** The minimum prescribed marks for a pass in subsidiary subject shall be 40% 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.

12. Declaration of class:

- a) A candidate, who passes all the main subjects in the first attempt, securing 75% marks or more (aggregate), shall be declared to have passed the examination with Distinction.
- b) A candidate who passes all the main subjects in the first attempt, securing 65% marks or more, but less than 75% (aggregate), shall be declared to have passed the examination with First Class.
- c) A candidate who passes all the main subjects in the first attempt, securing 60% marks or more, but less than 65% (aggregate), shall be declared to have passed the examination with Second Class.
- 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.
- e) A candidate passing university examination in more than one attempt shall be placed in Pass class irrespective of the percentage of marks secured.
- f) Marks obtained in the subsidiary subjects shall have no bearing on the class declaration.

13. Carry over criteria:

- i. **1st Year** – Student can **carryover 50% of subjects** after university exam (UE) and Resit exam (RE) results to next year. These students can be promoted to 2nd year as ATKT (Allowed to keep term) students.
- ii. **2nd year** – Student can appear for 1st year failed subjects and 2nd year subjects together during 2nd year university exam (UE) and also 2nd year Resit exam.
 - a. If student does not clear all 1st year subjects even after 2nd year resit exam, then he/she will not be promoted for 3rd year. Student has to clear all the 1st year subjects to be promoted to 3rd year.

- b. However, if student clears all 1st year subjects in university exam or after Resit exam, he/she can carryover 50% of 2nd year subjects to next year. These students can be promoted to 3rd year as ATKT students.

- iii. **3rd year** - Student can appear for 2nd year failed subjects ONLY during 3rd year university exam. He/she can appear for 3rd year subjects in subsequent university conducted exams only after he/she clears all the 2nd year subjects. Student has to PASS in all the 3rd year subjects to start his/her internship.

14. Award of degree

15. Maximum duration for completion of course

A candidate shall complete the course within six years from date of admission, failing which re-registration shall be mandatory.

16. Internship – 1 year

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.

c) Lymphatic System

4. Gastro-intestinal 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, broncho-pulmonary segments,

histology of trachea, lung, 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, Seminal Vesicle vas deferens, epididymis, prostate (gross & histology). Mammary gland: gross.

Female reproductive system – parts, ovary, fallopian tube, uterus, vagina

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) 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.

10. Organs of special senses

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.
7. Inderbir Singh's text of Human Histology

PHYSIOLOGY- Theory

1. 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

2. 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 haemoglobin.

White blood cells: production, function, count. Immunity – definition, classification, mechanism of cell mediated and Humoral immunity Platelets: origin, normal count, morphology functions. Plasma proteins: types, functions

Haemostasis: definition, normal haemostasis, 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.

3. Muscle nerve physiology

Classification of muscle, structure of skeletal muscle, Neuromuscular junction. Transmission across neuromuscular junction. Excitation contraction coupling. muscle tone, fatigue, properties of nerve fibre, rigor mortis

4. 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 of 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, movements defecation digestion and absorption of carbohydrates, proteins, fats, lipids. role of gastrointestinal hormones on digestion

5. 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⁻ aminoacids 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.

6. Respiratory system

Functions of respiratory system, 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 haemoglobin dissociation curve factors affecting it. Lung volumes and capacities – normal values Regulation of respiration: mechanisms of regulation, nervous and chemical regulation, respiratory centre, Applied physiology : hypoxia, cyanosis, dyspnoea, apnoea.

7. Cardiovascular system

Heart: physiological anatomy, nerve supply. Properties of cardiac muscle, cardiac cycle: Cardiac output (only definitions of stroke conducting tissues of heart, 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

8. 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.

9. Reproductive system – Puberty changes

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

10. 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

11. Special senses

Vision: structure of eye, function of different parts. Structure of retina. visual pathway, errors of refraction, colour vision, dark adaptation, accommodation Hearing: structure and functions of ear mechanism of hearing. Taste : taste buds and taste pathway. olfaction : receptors, pathway.

12. Skin

Structure and functions, regulation of body temperature

Practicals

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,
 - a. 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. A.K.Jain, text book of physiology for MLT - APC Publishers
2. P.R. Ashalatha: text book of Anatomy and Physiology for nurses – Jaypee Publishers
3. K. Sembulingam, Essentials of Physiology for Dental students – Jaypee Publishers

BIOCHEMISTRY- Theory:

Course - First year B. Sc OT & ETC

Teaching hours:
hours

Theory: 70 hours

Practical: 20

Sl No. Topic

1. Cell: Sub cellular organelles, structure and function. Transport across cell membrane
2. Carbohydrate Chemistry: Definition, classification with examples, Composition, sources, functions of Monosaccharides, Disaccharides, Polysaccharides and Glycosaminoglycans.
3. Lipid Chemistry: Definition, classification of lipids and Fatty acids. Essential fatty acids- Definition, example, functions, deficiency features & Significance. Functions of Cholesterol, Phospholipids and their importance.
4. Amino-acid Chemistry: Definition, Classification based on side chain properties, nutritional requirement, Peptide bonds, biologically important peptides. Protein chemistry: Definition, Classification based on chemical nature and solubility, Functions of proteins Structure and functions of Collagen, Elastin. Plasma proteins and Immunoglobulins – types and functions.
5. Nucleotide and Nucleic Acid Chemistry: Nucleosides and Nucleotide composition with examples. Nucleic acid: DNA and RNA - chemistry, types and functions
6. Vitamins: Definition, classification according to solubility, Individual vitamins (Water soluble & fat soluble) - Sources, Coenzyme forms, functions, RDA, digestion, absorption and transport, deficiency and toxicity of A, D, C in detail, function and deficiency features of E, K, B-complex vitamins.
7. Enzymes: Definition, Classification with examples. Factors effecting enzyme activity, Mechanism of enzyme action in brief. Active site, Coenzyme, Proenzyme and Isoenzyme with examples. Diagnostic enzymology (clinical significance of enzymes and isoenzymes - CK, CK-MB, LDH, AST, ALT, ALP)
8. Carbohydrate Metabolism: Digestion and absorption, Pathway and significance of Glycolysis – Aerobic, Anaerobic. Pathway and energetics of Citric acid cycle. Gluconeogenesis in brief. Glycogen metabolism – Pathway and glycogen storage disorders. HMP shunt pathway and significance. Regulation of blood glucose level. Diabetes mellitus: Definition, classification, signs and symptoms, diagnosis.

9. Lipid Metabolism: Digestion and absorption, Lipolysis, pathway and energetics of β -oxidation of fatty acids. Ketone body metabolism: Ketone body formation (ketogenesis), utilization (ketolysis), ketosis. Lipoproteins - Types and functions. Dyslipidaemia, Atherosclerosis, CAD, fatty liver.
10. Amino acid and Protein Metabolism: Digestion and absorption, Catabolism of amino acids - Transamination, deamination, Fate of ammonia, transport of ammonia, Urea cycle. Specialized products formed from amino acids - glycine, arginine, methionine, phenylalanine, tyrosine, tryptophan.
11. ATP formation: Fundamentals of Biological oxidative reactions.
12. Minerals: Micro and macro minerals, Sources, RDA, Digestion, absorption, transport, excretion, functions, disorders of Individual minerals - Calcium, Phosphorous, Iron in detail; Functions and deficiency features of Copper, Zinc, Selenium, Iodine, Na, K, Cl.
13. Nutrition: Calorific values of foodstuffs Respiratory quotient, Basal metabolic rate: Definition, Normal values, Factors affecting BMR. Special dynamic action of food. Balanced Diet: Definition, Components, Recommended dietary allowances. Role of carbohydrates in diet: Digestible carbohydrates and dietary fibres. Role of lipids in diet: Saturated and unsaturated fatty acids, PUFA, Essential fatty acids. Role of proteins in diet: Quality of proteins - Biological value, net protein utilization. Nutritional aspects of proteins- essential and non-essential amino acids. Nitrogen balance. Nutritional disorders – protein Energy Malnutrition.
14. Acid base balance: Definitions of acid, base, pH and pKa, Henderson Hasselbalch equation. Buffers - Buffer systems in the ECF/ ICF and urine. Bicarbonate and phosphate buffer systems (pKa value, normal ratio of base/acid in the plasma) Role of kidneys in acid base balance. Acidosis & Alkalosis: Types, causes and biochemical findings.
15. Radioactive Isotopes: Definition, clinical applications, biological effects of radiations.
16. Solutions: Definition, use, classification, preparation and storage of solutions/reagents.

Molar and Normal solutions of compounds and acids. Preparation of percent solutions: w/w, v/v w/v (solids, liquids and acids). Conversion of a percent solution into a molar solution. Saturated and supersaturated solutions. Standard solutions - Technique for preparation and Storage.

Dilutions- Diluting Normal, Molar and percent solutions.

Part dilutions: Specimen dilutions, Serial dilutions, Reagent dilution, Dilution factors. Stock and working solutions. Preparing working standard from stock standard.

Biophysical chemistry Valency, Molecular weight and Equivalent weight of elements and compounds. Definition of Normality, Molarity, Molality with formula.

17. Clinical Biochemistry:

Blood Chemistry - Biochemical components. Normal reference ranges.

Urine chemistry- Biochemical components. Normal reference ranges.

Specimen collection: Collection of blood, CSF, urine & other fluids.

Use of preservatives, Anticoagulants, Method of transport, packing and storing of specimens,

Renal Function Tests - Serum Urea, Creatinine, Clearance tests, plasma and urine osmolarity.

Liver Function Tests - Bilirubin, Total protein, albumin, Enzymes (AST, ALT, ALP, GGT)

Lipid Profile - Total Cholesterol, Triglycerides, LDL, HDL.

Thyroid profile - TSH, T3, T4, fT3, fT4.

Arterial blood gas analysis, Blood gas analyser (Principle & Applications).

Electrolyte analysis, electrolyte analyser (Principle & Applications).

Quality control: The concept of pre analytical, analytical and post analytical errors.

18 Biomedical waste disposal

RECOMMENDED TEXT BOOKS

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
5. Clinical chemistry – Michael L.Bishop
6. Clinical biochemistry metabolic and clinical aspects – William. J.marshall & stephen k. Bangert
7. Applied biochemistry of clinical disorders by Allan gornall

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**

i. Introduction, physiology of hemostasis

ii. Classification, Causes of Inherited and Acquired bleeding disorders, Thrombocytopenia, DIC. laboratory findings -

5. **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 hemogram- 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
 - v. Blood - Benzidine test
 - vi. 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 Books (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. Tejinder 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	John Bernard Henry	All India travellar Booksellar,
9	Histopathology techniques.	Culling	
10	Histopathology techniques	Bancroft	
11	Diagnostic cytopathology	Koss	
12	Diagnostic	Winifred grey	
13	Hand-Book of Medical Laboratory Technology	CMC Vellore.	
14	Basic Haematological Techniques	Manipal.	

MICROBIOLOGY - Theory

1. **Microbiology** 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. **Sterilisation 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:

1. Compound microscope
2. Demonstration of sterilization equipments: hot air oven, autoclave, bacterial filters.
3. 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, Mac with LF & NLF, NA with staph.
4. Antibiotic susceptibility test.
5. Demonstration of common serological tests: Widal, VDRL, ELISA.
6. Grams staining.
7. Acid fast staining.
8. Stool exam for helminthic ova & cysts.
9. Visit to hospital for demonstration of biomedical waste management.
10. Sample collection 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.
9. Anathanarayana: Introduction to Medical Microbiology, Orient Longman PVT Ltd.
10. Apurva Sastug – Applied Microbiology for nurses

SUBSIDIARY SUBJECTS FIRST YEAR

Sl No	Subject	Teaching hours
1	Computer basics	20
2	English and Communication Skills	20
3	Health care	20
4	Basic Science with Skill Development Training and Hospitals	40

COMPUTER BASICS Teaching Hours: 20

FIRST YEAR

1. Introduction to Computers
2. Definition: Input. Output & CPU
3. Input and output devices: types
4. Basis of computer system: Switching on & off, what is Bias? And computer generations
5. Keyboard practices
6. Definitions of terms: Desktop & Software
7. Computer systems: Hardware & software definitions
8. Windows operating system (win7, 8, 10 etc): Definition & Why, Calculator - Word pad - Short cuts - Start menu - Media player - Note pad - Win amp - Paint - Control panel
9. Microsoft word: Opening, saving, deleting, typing, print , Page border, spelling, table, grammar, margin, Clip art, BIU, word art, Colour text & background, Picture drawing using word
10. Excel: Formulas - Design charts- Format tables
11. PowerPoint: Designing a presentation - Inserting some animation with sound
12. Internet & its applications: Interconnection to HTML, E- mailing - Browsing - Chatting

II. ENGLISH AND COMMUNICATION SKILLS Teaching Hours: 20

ENGLISH

1. Functional English –Grammar: Components of a sentence – Verb - Transformation of sentences – Voice - Reported speech - Positive/ negative -Statement/ Interrogative - Subject verb agreement - Common errors – Exercises
2. Vocabulary: Synonyms and antonyms - Idioms and phrases – Similies - Words denoting assemblage
3. Writing skills: Note making – Summarizing - Report writing - Letter writing - Expansion of an idea – Comprehension
4. Reading: What is efficient and fast reading? - What is Awareness of existing reading habits - Tested techniques for improving speed - Improving concentration and comprehension through systematic study

COMMUNICATION

5. Introduction: Communication process - Elements of communication - Barriers of communication and how to overcome them.
6. Speaking: Importance of speaking efficiently - Voice culture - Preparation of speech - secrets of good delivery - Audience psychology handling - Presentation skills - Conference/Interview technique
7. Listening: Importance of listening - Self-awareness about listening -Action plan execution - Barriers in listening - Good and persuasive listening
8. Nonverbal Communication: Basics of nonverbal communication
9. Memory: What is memory, Brain- mind potential? - Systems for memorizing
- Summary page
- Building positive mental habits
10. Self-awareness: Self-image - Self talk – Relaxation - Personality development

III HEALTH CARE Teaching Hours: 20

1. Introduction to Health: Definition of Health, Determinants of Health, Health Indicators of India, Health Team Concept, National Health Policy, National Health Programmes (Briefly Objectives and scope) Population of India and Family welfare programme in India
2. Introduction to Nursing
 - Nursing principles. Inter-Personnel relationships. Bandaging: Basic turns; Bandaging extremities; Triangular Bandages and their application. Nursing Position, Bed making, prone, lateral, dorsal, dorsal recumbent, Fowler's positions, comfort measures, Aids and rest and sleep. Lifting and Transporting Patients: Lifting patients up in the bed. Transferring from bed to wheel chair. Transferring from bed to stretcher.
 - Bed Side Management: Giving and taking Bed pan, Urinal : Observation of stools, urine. Observation of sputum, Understand use and care of catheters, enema giving.
 - Methods of Giving Nourishment: Feeding, Tube feeding, drips, transfusion
 - Care of Rubber Good
 - Recording of body temperature, respiration and pulse, Simple aseptic technique, sterilization and disinfection. Surgical Dressing: Observation of dressing procedures
3. First Aid: Syllabus as for Certificate Course of Red Cross Society of St. John's Ambulance Brigade.

Reference Books:

1. Preventive and Social Medicine by J.Park
2. Text Book of P & SM by Park and Park
3. Counseling & Communicate skills for medical and health, Bayne- Orient Longman Pvt. Ltd.

IV. BASIC SCIENCE WITH SKILL DEVELOPMENT TRAINING AND HOSPITAL PROCEDURE AND RECORDS

Teaching Hours: 40

1. Basic science with skill development training

- Medical ethics & the relevant medico legal aspects
- Responsibilities & duties
- Ethical behaviour & conduct
- Medico-legal aspects and its relation to consumer protection act
- Biomedical waste & Its management
- Cardiopulmonary resuscitation- basic cardiac life support & advanced cardiac life support
- Critical care nephrology - management of renal failure in ICU
- Basic principles of blood transfusion & fluid therapy
- Sterilization - material & methods
- Biochemistry, Microbiology, Pathology & other related instrumentation: Basic principles of commonly used instruments, care & maintenance

2. Infection control

- The cycle of infection
- Infectious organisms
- The reservoir of infection
- The susceptible host Transmission of disease Practical asepsis
- Handling linen
- Disposal of contaminated waste
- Environmental asepsis
- Isolation technique
- The isolation patient in radiology dept.
- Precaution for the comprised patient Surgical asepsis

3. Medication and their administration (nursing classes)

- The role of the radiographer Medication information
- The topical route
- The oral route
- The parenteral route Preparation of injection
- The intravenous route Charting

4. Dealing with acute situations (emergency medicine classes)

- Accident victims: Head injury/ Fractures/ Burns
- Life threatening emergencies: Respiratory arrests, Heart attacks and cardiac arrests, Shocks
- Other emergencies - Epitaxis, Postural hypotension and vertigo
- Seizures, Diabetic coma and insulin reaction Asthma

5. CARDIOPULPONARY RESUSCITATION (C.P.R)

- Basics of CPR - How to give CPR? Precautions during CPR
- Basic cardiac life support & advanced cardiac life support

6. HOSPITAL PROCEDURE AND RECORDS

General idea about the role, importance and procedures of the following within the hospital set up -

- Medical records
- Medical photography
- Computer networking system
- Laboratory services
- Sample collection and transport
- Biomedical waste disposal

MAIN SUBJECTS

Second year B.Sc, Emergency and Trauma Care Technology

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. Anaesthesia 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 PRACTICALS 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

Text Books & Reference Books

1. Handbook of Emergency Care – Suresh David
2. Introduction to Clinical Emergency Medicine
- *. Guide for practitioners in ED
- *. Medicine Preparation Manual- George Mathew, KBI Churchil
3. Fundamentals of Respiratory Care- Egan's – Craig I. Scanlon
4. Emergency Medicine: equipments, procedures and drugs – by Dr. Shakunthala Moorthy
5. COONEY'S EMS Medicine

SUBSIDIARY SUBJECTS

SECOND YEAR Subsidiary subjects

Sl No	Subject	Teaching hours
1	Indian constitution	20
2	Sociology	20
3	Environment science and health	20
4	Clinical psychology	20

I. INDIAN CONSTITUTION Teaching Hours: 20

- a. Meaning of the term 'Constitution' Making of the Indian Constitution 1946-
2. 1950
3. The democratic institutions created by the constitution Bicameral system of
4. Legislature at the Centre and in the States.
5. Fundamental Rights and Duties their content and significance
6. Directive Principles of States Policies the need to balance Fundamental
7. Rights with Directive Principles.
8. Special Rights created in the Constitution for: Dalits, Backwards, Women and
9. Children and the Religious and Linguistic Minorities.
10. Doctrine of Separation of Powers legislative, Executive and Judicial and their functioning in India
11. The Election Commission and State Public Service commissions
12. Method of amending the Constitution
13. Enforcing rights through Writs:
14. Constitution and Sustainable Development in India

Reference Books:

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

II. SOCIOLOGY Teaching Hours: 20

Course Description

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

1. Introduction:

Meaning – Definition and scope of sociology. Its relation to Anthropology, Psychology, Social Psychology

Methods of Sociological investigations – Case study, social survey, questionnaire, interview and opinion poll methods.

Importance of its study with special reference to health care professionals

2. Social Factors in Health and Disease:

Meaning of social factors, Role of social factors in health and disease

3. Socialization:

Meaning and nature of socialization, Primary, Secondary and Anticipatory socialization, Agencies of socialization

4. Social Groups:

Concepts of social groups influence of formal and informal groups on health and sickness. The role of peoples involved in the primary and secondary health care groups in the hospital and rehabilitation setup.

5. 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 and psychosomatic disease and their importance to physiotherapy

6. Community:

Rural community: Meaning and features – Health hazards to rural communities, health hazards to tribal community. Urban community: Meaning and features – Health hazards of urbanities Culture and Health: Concept of Health Concept of culture and Health, Culture and Health Disorders

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

Social Problems of disabled: Consequences of the following social problems in relation to sickness and disability remedies to prevent these problems, Population explosion Poverty and unemployment Beggary, Juvenile delinquency Prostitution Alcoholism, Problems of women in employment

7. Social Security: Social Security and social legislation in relation to the disabled

8. Social Work: Meaning of Social Work, 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

III. ENVIRONMENT SCIENCE AND HEALTH Teaching hours: 20

11. Introduction to Environment and Health
12. Sources, health hazards and control of environmental pollution
13. Water
14. The concept of safe and wholesome water.

15. The requirements of sanitary sources of water.
16. 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.
17. Domestic refuse, sullage, human excreta and sewage their effects on environment and health, methods and issues related to their disposal.
18. Awareness of standards of housing and the effect of poor housing on health.
19. 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 under gradute courses By Erach Bharucha Reprinted in 2006, Orient Longman Private Limited /Universities Press India Pvt. Ltd.

IV. CLINICAL PSYCHOLOGY Total teaching hours: 20

1. Introduction to psychology
2. Intelligence, Learning, Memory, Personality, Motivation
3. Body integrity- one's body image
4. Patient in his Milan
5. Self-concept of the therapist, Therapist patient relationship-some guidelines
6. Illness and its impact on the patients
7. Maladies of the age and their impact on the patient's own and others concept of his body image
8. Adapting changes in vision
9. Why Medical Psychology needs / demands commitment?

MAIN SUBJECTS

Third Year B.Sc.- Emergency and Trauma Care Technology

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. Haematology 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 I. Scanlon

SYLLABUS FOR PRACTICALS III YEAR

Paper I: Medical Emergencies

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

Paper II: Trauma and surgical emergencies

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

Paper III: Emergencies in paediatric and special population

1. Airway management and resuscitation of an infant
2. Airway management and resuscitation of a child OSCE

SUBSIDIARY SUBJECTS

THIRD YEAR

1. Introduction: Research Methodology
 - Research process
 - Steps involved in research process
 - Research methods and methodology

2. Variables and scales of measurements
 - Definitions and examples of qualitative, quantitative, continuous discrete, dependent and independent variable
 - Definitions, properties and examples of nominal, ordinal, interval and ratio scales of measurements.
 3. Sampling
 - Population, sample, sampling, reasons for sampling, probability and non-probability sampling.
 - Methods of probability sampling – simple random, stratified, systematic- procedure
 - Merits and demerits.
 - Use of random number table.
 4. Organization of data
 - Frequency table, histogram, frequency polygon, frequency curve, bar diagram, pie chart
 5. Measures of location
 - Arithmetic mean, median, mode, quartiles and percentiles – definition
 - Computation (for raw data), merits, demerits and applications
 6. Measures of variation
 - Range, inter-quartile range, variance, standard deviation, coefficient of variation- definition
 - Computation (for raw data), merits, demerits and applications
- II. BIO-STATISTICS Teaching hours:20
1. Introduction I: Biostatistics
 - Definition
 - Role of statistics in health science and health care delivery system
 2. Normal distribution
 - Concept, graphical form, properties, examples
 - Concept of Skewnes and Kurtosis
 3. Correlation
 - Scatter diagram
 - Concept and properties of correlation coefficient, examples [No computation]

4. Health Information System

- Definition, requirement, component and uses of health information system.
- Sources of health information system- Census, Registration of vital events, Sample registration system (SRS), Notification of diseases, Hospital records, Disease registries, Record linkage, Epidemiological surveillance, Population survey

5. Vital statistics and hospital statistics

- Rate, ratio, proportion, Incidence, Prevalence. Common morbidity, mortality and

6. Fertility statistics – Definition and computation.

7. Hypothesis

- What is hypothesis
- Formulation of hypothesis
- Characteristics of good hypothesis.

8. Epidemiology

- Concept of health and disease
- Definition and aims of Epidemiology,
- Descriptive Epidemiology- methods and uses.

9. Concept of reliability & validity

RECOMMENDED BOOKS

1. Methods in Biostatistics for medical students & Research workers, Mahajan
1. B.K.- 6th edition
2. Research methodology – Methods & techniques, Kothari. C.R
3. Introduction to Biostatistics: A manual for students in health sciences, Sundar
4. Rao PSS, Richard. J
5. Text book of Preventive and social medicine, Park. E. Park



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