REGULATIONS AND CURRICULUM
B.Sc. Cardiac Care Technology

Jagadguru Sri Shivarathreeshwara University
(Deemed to be University)
Accredited "A" Grade by NAAC
Sri Shivarathreeshwara Nagara
Mysuru - 570 015, Karnataka

REGULATIONS

B.Sc. Cardiac Care Technology

1. Courses offered in Allied Health Sciences:

a) Bachelor of Science in Medical Laboratory Technology [B.Sc. (MLT)]
b) Bachelor of Science in Anesthesia & Operation Theatre Technology [B.Sc. (AOTT)]
c) Bachelor of Science in Renal Dialysis Technology [B.Sc. (RDT)]
d) Bachelor of Science in Respiratory Care Technology [B.Sc. (RCT)]
e) Bachelor of Science in Medical Imaging Technology [B.Sc. (MIT)]
f) Bachelor of Science in Cardiac Care Technology [B.Sc. (CCT)]
g) Bachelor of Science in Perfusion Technology [B.Sc. (PT)]
h) Bachelor of Science in Emergency Medicine Technology [B.Sc. (EMT)]
i) Bachelor of Science in Physician Assistant [B.Sc. (P A)]
j) Bachelor of Science in Optometry [B.Sc. (optometry)]

1. Eligibility for admission

A candidate seeking admission to the Bachelor of Science Degree in Allied Health Sciences [a) to j) above], shall have studied English as one of the principal subjects and shall have passed (except for B.Sc. Imaging Technology):

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

OR

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

OR

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

OR

d) Vocational higher secondary education course conducted by Vocational Higher Secondary Education, Government of Kerala with five subjects including Physics, Chemistry, Biology and English in addition to vocational subjects conducted, considered equivalent to 'plus - two' [10+2] examinations of Government of Karnataka Pre University Course.

OR

e) Two years diploma from a recognized Government Board in a subject for which the candidate desires to enroll in the respective Allied Health Sciences course and shall have passed 'plus two' [10+2] with Physics, Chemistry and Biology, as principle subjects.

OR

f) Three years diploma from a recognized Government Board in a subject for which the candidate desires to enroll in the respective Allied Health Sciences course, with Physics, Chemistry and Biology as principal subjects during the tenure of the course.

OR

g) Senior secondary course with Physics, Chemistry and Biology as principal subject of study equivalent to class XII, of open school education system of the central government and state government approved institutions.

h) In case of B.Sc. Imaging Technology the candidate shall have passed Pre-University or equivalent examination with Physics, Chemistry, Biology and Mathematics, as principal subjects of study.

1. Duration of the course

Duration shall be for a period of six semesters (three years) followed by 12 months (one year) of internship.

2. Medium of instruction

The medium of instruction and examination shall be 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 (theory, practicals, and clinical jointly) to be eligible to appear for the University examinations. Candidates lacking prescribed percentage of attendance in any subject shall not be eligible to appear for the University examination in that subject.

4. Internal assessment (IA)

There shall be a minimum of two Internal assessment examinations in theory and practical of each core subject spread over evenly in each semester. The average marks of the two IA examinations shall be submitted to the University at least 15 days before the commencement of the University examination. The University shall have access to the records of IA examinations. Candidates have to secure 35% marks in the IA theory and practical jointly in each subject to become eligible to appear for the University examination. The marks of the IA examinations must be displayed on the notice board of the respective departments within a fortnight from the date of IA examination. If a candidate is absent for any of the IA examinations due to genuine and satisfactory reasons, such a candidate may be given a re-examination, within a fortnight.

5. Subject and hours of teaching for theory and practicals

The number of hours of teaching theory and practical, course wise in each semester are shown in table I, II, III, IV, V and VI.

There are three compulsory core subjects in each semester. Language, Allied and Skill enhancement subjects are mandatory for all courses. Candidates shall select one elective subject each in fifth and sixth semester from the list mentioned in the table VII.

Table I: Distribution of teaching hours in First Semester subjects

Category	Subjects	Theory hours	Credits	Practical hours	Credits	Total hours	Total credits
Core - 1	Anatomy	60	4	20	2	80	6
Core - 2	Physiology	60	4	20	2	80	6
Core - 3	Basic Biochemistry	60	4	20	2	80	6
Language -1	English	30	2	-	-	30	2
Language - 2	Kannada	30	2	-	-	30	2
Total Credits	18 + 2 + 2						

Table II: Distribution of teaching hours in Second Semester subjects

Category	Subjects	Theory hours	Credits	Practical hours	Credits	Total hours	Total credits
Core - 4	Pathology	60	4	20	2	80	6
Core - 5	Microbiology	60	4	20	2	80	6
Core - 6	Pharmacology	60	4	20	2	80	6
Allied - 1	Health care	30	2	-	-	30	2
Allied - 2	Psychology	30	2	-	-	30	2
Total Credits	18 + 2 + 2						

Table III: Distribution of teaching hours in Third Semester subjects

Category	Subjects	Theory hours	Credits hours	Practical hours	Credits Credits	Total	Total
Core - 7	Applied pathology	60	4	20	2	80	6
Core - 8	Applied Microbiology	60	4	20	2	80	6
Core - 9	Basic Cardiac Care Technology	60	4	20	2	80	6
Skill Enhancement-1	Computer application	30	2	-	-	30	2
Allied-3	Environment science and Health	30	2	-	-	30	2
Total Credits	18 + 2 + 2						

Table IV: Distribution of teaching hours in Fourth Semester subjects

Category	Subjects	Theory hours	Credits	Modality Posting + Practicals	Credits	Total hours	Total Credits
Core - 10	Patient care and basic Nursing	60	4	200	2	260	6
Core - 11	Basics Cardiac evaluation and therapies	60	4	200	2	260	6
Core - 12	Basics of Medical Disorders	60	4	200	2	260	6
Skill Enhancement-2	Biostatistics and Research methodology	30	2	-	-	30	2
Allied-4	Constitution of India	30	2	-	-	30	2
Total Credits	18 + 2 + 2						

Table V: Distribution of teaching hours in Fifth Semester subjects

Category	Subjects	Theory hours	Credits	Modality Posting + Practicals	Credits	Total hours	Total Credits
Core - 13	Cardiac evaluation and therapies (part I)	60	4	200	2	260	6
Core - 14	Cardiac evaluation & therapies (part II)	60	4	200	2	260	6
Core - 15	Cardiac evaluation and therapies (part III)	60	4	200	2	260	6
Elective 1		30	2	-	-	30	2
Allied - 5	Medical Ethics						
Total Credits	18 + 2 + 2	30	2	-	-	30	2

Table VI: Distribution of teaching hours in Sixth Semester subjects

Category	Subjects	Theory hours	Credits	Modality Posting + Practicals	Credits	Total hours	Total Credits
Core - 16	Cardiac Care Technology - Applied (part I)	60	4	200	2	260	6
Core - 17	Cardiac Care Technology - Applied (part II)	60	4	200	2	260	6
Core - 18	Basic Intensive Care	60	4	200	2	260	6
Elective-2		30	2	-	-	30	2
Allied-6	Hospital Management	30	2	-	-	30	2
Total Credits	18 + 2 + 2						

Table VII: Elective Subjects

Elective Subjects	Offering Departments
Fifth Semester	
Immunotechniques in diagnosis of diseases	Pathology and Microbiology
Dental Radiography	Radio diagnosis
Pulmonary Function Testing	Pulmonary Medicine
Telemedicine	Dermatology (Dr Kantharaj)
Hands on training in Continuous ambulatory peritoneal dialysis	Nephrology
Echocardiography (Cardiology)	Cardiology
Echocardiography (CTVS)	Cardio Thoracic Vascular Surgery
Difficult airway intubation	Anesthesiology
Sixth Semester	
Molecular Techniques	Biochemistry
Digital Subtraction Angiography	Radio diagnosis
Polysomnography	Pulmonary Medicine
Practice Management	Health system management studies
Renal Transplant	Nephrology
Coronary angiography	Cardiology
Intra Aortic Balloon pump	Cardio Thoracic Vascular Surgery
Ventilator management	Anesthesiology

Extension Activity

The following extension activities shall be provided for the ability enhancement of the candidates, to provide better health care services. The certificate shall be provided by the offering departments. The Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS) shall be as per the American Heart Association guidelines and certification.

Extension Activity	Courses	Semester	Offering departments
Phlebotomy	All courses	III	Anaesthesiology
Basic life support *(Optional on payment basis)	All courses	IV	Emergency medicine
Small Project/data Analysis/Industrial visit	All courses	V	Concerned departments of the Course
Advanced cardiac life support *(Optional on payment basis)	Respiratory Care Technology, Emergence Medicine Technology, Anaesthesia and OT Technology, Cardiac Care	VI	Emergency medicine

7. End Semester Examination

a) University examinations (UE): The University shall conduct examination for the core subjects at the end of each semester. The candidates, who satisfy the requirement of attendance and internal assessment, shall be eligible to appear for the University examination. The head of the institution shall verify the same before forwarding the applications to the University within stipulated time along with the prescribed fee.

b) Non-University Examinations (NUE): Examination for Languages, Allied subjects, Skill enhancement and Elective subjects shall be conducted by the college and the marks obtained shall be submitted to the University along with the IA marks of the core subjects at least 15 days before the commencement of the University examination. The marks of non-core subjects shall be incorporated in the marks card issued by the University.

c) The candidate must have passed all the previous subjects (Core/Language/Skill enhancement/Allied/elective), to appear for the sixth semester University examination.

8. Scheme of Examination:

Distribution of subjects and marks for each semester theory and practical examinations are shown in the Table - VIII, IX, X, XI, XII and XIII.

Table VIII: Distribution of Subjects and marks for First Semester theory and practical examination

Category	Subjects	Theory				Practical			
		IA	UE	NUE	Total	IA	UE	NUE	Total
Core - 1	Anatomy	30	70	-	100	10	40	-	50
Core - 2	Physiology	30	70	-	100	10	40	-	50
Core - 3	Basic Biochemistry	30	70	-	100	10	40	-	50
Language-1	English		-	50	50	-	-	-	-
Language-2	Kannada	-	-	50	50	-	-	-	-

Table IX: Distribution of Subjects and marks for Second Semester theory and practical examination

Category	Subjects	Theory				Practical			
		IA	UE	NUE	Total	IA	UE	NUE	Total
Core - 4	Pathology	30	70	-	100	10	40	-	50
Core - 5	Microbiology	30	70	-	100	10	40	-	50
Core - 6	Pharmacology	30	70	-	100	10	40	-	50
Allied -1	Health care	-	-	50	50	-	-	-	-
Allied -2	Psychology	-	-	50	50	-	-	-	-

Table X: Distribution of Subjects and marks for Third Semester theory and practical examination

Category	Subjects	Theory				Practical			
		IA	UE	NUE	Total	IA	UE	NUE	Total
Core - 7	Applied pathology	30	70	-	100	10	40	-	50
Core - 8	Applied Microbiology	30	70	-	100	10	40	-	50
Core - 9	Basic Cardiac Care Technology	30	70	-	100	10	40	-	50
Skill Enhancemen-1	Computer application	-	-	50	50	-	-	-	-
Allied-3	Environment science and Health	-	-	50	50	-	-	-	-

Table XI: Distribution of Subjects and marks for Fourth Semester theory and practical examination

Category	Subjects	Theory				Practical			
		IA	UE	NUE	Total	IA	UE	NUE	Total
Core - 10	Patient care and basic nursing	30	70	-	100	10	40	-	50
Core - 11	Basics Cardiac evaluation and therapies	30	70	-	100	10	40	-	50
Core - 12	Basics of Medical Disorders	30	70	-	100	10	40	-	50
Skill Enhancemen-2	Biostatistics and Research methodology	-	-	50	50	-	-	-	-
Allied-4	Constitution of India	-	-	50	50	-	-	-	-

Table XII: Distribution of Subjects and marks for Fifth Semester theory and practical examination

Category	Subjects	Theory				Practical			
		IA	UE	NUE	Total	IA	UE	NUE	Total
Core - 13	Cardiac evaluation and therapies (part I)	30	70	-	100	10	40	-	50
Core - 14	Cardiac evaluation and therapies (part II)	30	70	-	100	10	40	-	50
Core - 15	Cardiac evaluation and therapies (part III)	30	70	-	100	10	40	-	50
Elective 1		-	-	50	50	-	-	-	-
Allied-5	Medical Ethics	-	-	50	50	-	-	-	-

Table XIII: Distribution of Subjects and marks for Sixth Semester theory and practical examination

Category	Subjects	Theory				Practical			
		IA	UE	NUE	Total	IA	UE	NUE	Total
Core - 16	Cardiac Care Technology - Applied (part I)	30	70	-	100	10	40	-	50
Core - 17	Cardiac Care Technology - Applied (part II)	30	70	-	100	10	40	-	50
Core - 18	Basic Intensive Care	30	70	-	100	10	40	-	50
Elective 2		-	-	50	50	-	-	-	-
Allied-6	Hospital Management	-	-	50	50	-	-	-	-

Question paper pattern for end semester University theory examinations (70 marks)

I	Long Answers	(Answer 2 out of 3)	2 x 10 = 20
II	Short Essay	(Answer 7 out of 9)	7 x 5 = 35
III	Answer	(Answer all 5)	5 x 3 = 15
		Total =	**70 marks**

Question paper pattern for end semester Non-University theory examinations (50 marks)

I	Long Answers	(Answer 1 out of 3)	1 x 10 = 10
II	Short Essay	(Answer 5 out of 7)	5 x 5 = 25
III	Answer	(Answer all 5)	5 x 3 = 15
		Total =	**50 marks**

9. Examiners

a) Appointment of Examiners

Examiners shall be appointed by the University to conduct the end semester University examinations, from the panel of examiners approved by the Board of Studies. For Practical examinations, there shall be one external examiner and one internal examiner. Theory paper shall be valued by both the examiners.

b) Qualification and Experience of Examiners

For question paper setting and external examiner: Post graduation in the respective field with five years of teaching experience.

For Internal examiners: Post graduation in the respective field with three years of teaching experience.

10. Criteria for pass

Core Subjects: Candidates are declared to have passed in a subject, if they secure 40% of marks in University examination and internal assessment added together.

Theory & practical shall be considered as separate subjects. If a candidate passes in practical examination but fails in theory paper, 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.

Language papers, allied papers, skill enhancement and elective papers:

The minimum prescribed marks for a pass shall be 35% of the maximum marks prescribed for a subject.

11. Grading of performances

a) Letter grades and grade points allocations

Based on the performances, each student shall be awarded a final letter grade at the end of the semester for each course. The letter grades and their corresponding grade points are given in Table - XIV.

Table - XIV: Letter grades and grade points equivalent to percentage of marks and performances

Percentage of Marks obtained	Letter Grade	Grade Point	Performance
90.00 – 100	O	10	Outstanding
80.00 – 89.99	A	9	Excellent
70.00 – 79.99	B	8	Good
60.00 – 69.99	C	7	Fair
50.00 – 59.99	D	6	Satisfactory
40.00 - 49.99	E	5	Average
Less than 40	F	0	Fail
Absent	AB	0	Fail

A candidate who remains absent for any end semester examination shall be assigned a letter grade of AB and a corresponding grade point of zero. He/she should reappear for the said evaluation/examination in due course.

b) The Semester Grade Point Average (SGPA)

The performance of a student in a semester is indicated by a number called 'Semester Grade Point Average' (SGPA). The SGPA is the weighted average of the grade points obtained in all the courses by the student during the semester. For example, if a student takes five courses (Theory/Practical) in a semester with credits C1, C2, C3, C4 and C5 and the student's grade points in these courses are G1, G2, G3, G4 and G5, respectively, and then students' SGPA is equal to:

$$SGPA = \frac{C_1G_1 + C_2G_2 + C_3G_3 + C_4G_4 + C_5G_5}{C_1 + C_2 + C_3 + C_4 + C_5}$$

The SGPA is calculated to two decimal points. It should be noted that, the SGPA for any semester shall take into consideration the F and ABS grade awarded in that semester. For example if a learner has a F or ABS grade in course 4, the SGPA shall then be computed as:

$$SGPA = \frac{C_1G_1 + C_2G_2 + C_3G_3 + C_4 * ZERO + C_5G_5}{C_1 + C_2 + C_3 + C_4 + C_5}$$

c) Cumulative Grade Point Average (CGPA)

The CGPA is calculated with the SGPA of all the VIII semesters to two decimal points and is indicated in final grade report card/final transcript showing the grades of all VIII semesters and their courses. The CGPA shall reflect the failed status in case of F grade(s), till the course(s) is/are passed. When the course(s) is/are passed by obtaining a pass grade on subsequent examination(s) the CGPA shall only reflect the new grade and not the fail grades earned earlier. The CGPA is calculated as:

$$CGPA = \frac{C_1S_1 + C_2S_2 + C_3S_3 + C_4S_4 + C_5S_5 + C_6S_6 + C_7S_7 + C_8S_8}{C_1 + C_2 + C_3 + C_4 + C_5 + C_6 + C_7 + C_8}$$

where C_1, C_2, C_3,…. is the total number of credits for semester I,II,III,…. and S_1, S_2, S_3,….is the SGPA of semester I,II,III,…. .

12. Declaration of class

The class shall be awarded on the basis of CGPA as follows:

First Class with Distinction	= CGPA of 7.50 and above
First Class	= CGPA of 6.00 to 7.49
Second Class	= CGPA of 5.00 to 5.99
Pass Class	= CGPA of 4.00 to 4.99

13. Carry over

A candidate should pass all the subjects (core/language/skill enhancement/ allied/elective) of first semester, to enter into the third semester. Similarly, second semester subjects should be cleared before entering fourth semester and third semester subjects should be cleared before entering fifth semester. However, the candidate must have passed all the previous subjects (core/language/skill enhancement/ allied/elective) to appear for the sixth semester University examination.

14. Internship

Twelve months (one year) internship shall be mandatory after successful completion of sixth semester examination. The 'Internship Completion Certificate' shall be issued by the college and copy of same is submitted to the University.

15. Award of Ranks/Medals

Ranks and Medals shall be awarded on the basis of final CGPA. However, candidates who fail in one or more subject during the course shall not be eligible for award of ranks.

16. Award of degree

A candidate who has passed in all the subjects (core/language/allied/skill enhancement/elective papers) of all the semesters and has successfully completed the internship shall be eligible for award of degree.

17. Revaluation and Re-totaling of answer papers

There is no provision for revaluation of the answer papers in any examination. However, the candidates can apply for re-totaling by paying prescribed fee.

18. Maximum duration for completion of course

A candidate shall complete the course within six years from date of admission, failing, which candidate shall re-register for the course. semester subjects should be cleared before entering fifth semester. However, the candidate must have passed all the previous subjects (core/language/skill enhancement/ allied/elective) to appear for the sixth semester University examination.

14. Internship

Twelve months (one year) internship shall be mandatory after successful completion of sixth semester examination. The 'Internship Completion Certificate' shall be issued by the college and copy of same is submitted to the University.

15. Award of Ranks/Medals

Ranks and Medals shall be awarded on the basis of final CGPA. However, candidates who fail in one or more subject during the course shall not be eligible for award of ranks.

16. Award of degree

A candidate who has passed in all the subjects (core/language/allied/skill enhancement/elective papers) of all the semesters and has successfully completed the internship shall be eligible for award of degree.

17. Revaluation and Re-totaling of answer papers

There is no provision for revaluation of the answer papers in any examination. However, the candidates can apply for re-totaling by paying prescribed fee.

18. Maximum duration for completion of course

A candidate shall complete the course within six years from date of admission, failing, which candidate shall re-register for the course.

I Semester
Core-1 Anatomy

Objectives:

At the end of the course the student Should be able to:

- Describe the structure, composition and functions of the organ systems of human body.
- Describe how the organ systems function and interrelate.
- Learn basic technical terminology and language associated with anatomy.

Learning Objectives: Skills

- Use the process of prosection to investigate anatomical structure.
- Use the microscope to learn anatomical or histological structure.
- Learn how to study, interpret and care for anatomical specimens.

Contents
Theory:

Unit I

Organization of the Human Body **12hrs**

Introduction to the human body

Definition and subdivisions of anatomy

Anatomical position and terminology

Cell - Definition of a cell, shapes and sizes of cells

- Parts of a cell - cell membranes, cytoplasm, sub cellular organelles.

  Cell Division - Definition and main events in different stages of mitosis and meiosis.

Tissues - Tissues of the body

- Definition and types of tissues
- Characteristics, functions and locations of different types of tissues
- Epithelial tissue - definition, classification with examples
- Glands- classification with examples

Unit II

Locomotion and Support **12hrs**

1. **Cartilage - Types with examples**
2. **Skeletal system**

Skeleton - Definition, axial and appendicular skeleton with names and number of bones, Types of bones. Marking of bones. Functions of bones.Development (types and ossification) and growth of bone.Name, location and general features of the bones of the body.

Joints - Definition and types of joints with examples. Axes and kind of movements possible. Name, location, type, bones forming, ligaments, movements possible and the muscles producing such movements of the joints of the body.

3. Muscular system

Parts of the Skeletal muscle. Definition of origin and insertion. Classification of muscular tissue. Compartment muscles of upper limb, lower limb, sternocleidomastoid

Unit III

Maintenance of the Human Body **12hrs**

1. Cardio-vascular system

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

2. Lymphatic system

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

3. Respiratory system

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

4. Digestive system

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

Unit IV

1.Urinary system and Reproductive system **12hrs**

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

Names of male and female organs of reproduction. Location and features of scrotum, testis, epididymis, vas deferens, seminal vesicle, ejaculatory duct, prostate gland, penis and spermatic cord.

Location and features of uterus & its supports, uterine tube, ovary & mammary gland.

2. Development

Gametes, period of gestation, gametogenesis, structure of sperm and ovum, growth of ovarian follicles, events of 1st, 2nd and 3rd weeks of development, folding of embryo. Derivatives of germ layers, placenta

Unit V

Control Systems of the Body **12hrs**

1. Nervous system

Sub-divisions of the nervous system

Brain - Sub-divisions, location external features and internal structure of medulla oblongata, pons, mid-brain, cerebellum and cerebrum.

Spinal cord - Location, extent, spinal segments, external features and internal structure.

Location and features of thalamus and hypothalamus.

Locations and subdivisions of basal ganglia. Meninges and spaces around them.

Name and location of ventricles of brain and circulation of cerebrospinal fluid.

Blood supply of the brain and spinal cord. Cranial nerves

2. Sense organs

Location and features of the nose, tongue, eye, ear and skin

3. Endocrine system

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

Practical :

1. Demonstration of parts of microscope and its uses
2. Demonstration of skeleton and joint
3. Demonstration of deltoid and gluteus maximus, Cubital fossa
4. Demonstration of heart and its blood supply, demonstration of major arteries of upper limb and lower limb, histology of cardiac muscle and histology of vessels
5. Demonstration of location and parts of lungs, histology of trachea and lungs
6. Demonstration of location of stomach, small and large intestines. Location and features of pancreas, liver and gall bladder
7. Demonstration of location and features of kidney, ureter, urinary bladder and urethra. Histology of urinary system except urethra
8. Demonstration of location of male and female reproductive organs
9. Demonstration of brain and spinal cord
10. Histology of cornea and retina

Practical Examination Pattern **40 Marks**

1. Gross Anatomy- Discussion of any one specimen -10 Marks

   Disscusion of specimens of Cardiovascular system, Respiratory System, Gastrointestinal system, Urinary system, Reproductive system
2. Spotters - Cardiovascular system, Respiratory System, Gastrointestinal system, Urinary system, Reproductive system - 10x2=20 Marks
3. Histology discussion of any one demonstrated slide - 10 Marks

Recommended Books Recent Editions:

1. Ross and Wilson: Anatomy and Physiology in Health and illness
2. Understanding Human Anatomy and Physiology, William Davis (p) MC Graw Hill
3. Essentials of Human Embryology. Bhatnagar, Orient Blackswan Pvt. Ltd.
4. Anatomy for B.Sc Nursing by Renu Chauhan. Arichal publishing company 2012
5. Hand book of Anatomy BD Chaurasia
6. Basics in Human Anatomy for B.Sc. Paramedical Courses 1st edition 2008 Jaypee Publishers

Reference books:

1. B D Chaurasia: Regional Anatomy. Vol I, II, III 6th edition

I Semester
Core- 2 Physiology

Objectives

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

1. Blood cell counts
2. Nerve and muscle functions
3. Cardiac functions
4. Pulmonary functions
5. Renal functions
6. The actions of various hormones
7. Functions of Central nervous system and special senses

Contents:

Theory

Unit -I

General physiology and Blood **12 Hrs**

General Physiology (2 Hrs)

- Organization of the cell and its function, homeostasis
- Transport across cell membrane
- Membrane Potentials - Resting Membrane Potential & Action Potential
- Body Fluid Compartments - Normal Values

Blood (10 Hrs)

- 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.
- 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.

Unit -II

Digestive system & Respiratory system **12hrs**

Digestive System (4Hrs)

- 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, movements defecation

Respiratory system (8 Hrs)

- 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.

Unit -III

Cardiovascular and Endocrine system **12hrs**

Cardiovascular system (7Hrs)

- Heart: Physiological Anatomy, Nerve supply.
- Properties of cardiac muscle, cardiac cycle:
- Conducting System of Heart, Origin and Spread of Cardiac Impulse
- Electrocardiogram (ECG) waves and normal duration. Recording
- Cardiac Cycle: Phases and Volume Changes
- Normal heart sounds, areas of auscultation. Pulse: jugular, radial pulse,
- Cardiac output : definitions of stroke volume, cardiac index, factors Affecting It. measurement of Cardiac output.
- General principles of circulation
- Blood pressure: definition, normal value, clinical measurement of blood pressure, hypotension, hypertension. Factors affecting it and regulation

- Physiological variations & regulation of heart rate.
- Coronary circulation.
- Shock

Endocrine System (5 Hrs)

- 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:

Unit -IV

Excretory system and Reproductive system 12 hrs

Excretory System (8Hrs)

- Functional anatomy of kidney
- Juxta glomerular apparatus: structure and function.
- Glomerular filtration
- Tubular function(reabsorption and secretion)
- Micturition, innervation of bladder, cystometrogram.
- Artificial kidney, renal function tests skin and body temperature

Reproductive system (4Hrs)

- 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.

Unit -V

Muscle nerve physiology, Nervous system and Special senses 12hrs

Muscle nerve physiology (3Hrs)

- Classification and properties of neuron and neuroglia. Classification of nerve fibers
- Classification of muscle, structure of skeletal muscle,
- Neuromuscular junction. Transmission across nmj
- Excitation contraction coupling. muscle tone, fatigue, rigor mortis

Nervous system (5Hrs)

- Organisation of nervous system
- Synapse: structure, types, properties.
- Receptors: definition, classification, properties. Sensations-pain
- Organization Spinal cord. Ascending tracts, descending tracts.
- Reflex : definition reflex arc, clinical classification of reflexes : Babinski's sign.
- Hypothalamus- functions
- Cerebral cortex lobes - functions,
- Cerebellum- functions
- Basal ganglia functions.
- Cerebro Spinal Fluid (CSF) : formation, circulation & reabsorption . composition and functions. Lumbar puncture.
- Autonomic Nervous System: Sympathetic and parasympathetic distribution

Special senses (4Hrs)

- 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.

Practicals (20 Hrs)

1. Haemoglobinometry.
2. Haemocytometry
3. Total leucocyte count.
4. Total Red blood cell count.
5. Determination of blood groups.
6. Differential WBC count.
7. Determination of clotting time, bleeding time.
8. Erythrocyte sedimentation rate (ESR). Determination of packed cell Volume, Calculation of Blood indices: CI, MCH, MCV, MCHC.
9. Blood pressure recording.
10. Spirometery, Artificial Respiration

Practical Examination : 40 Marks

1. Estimation of Hemoglobin. - 10 marks
2. Determination of Blood Groups. - 10 marks
3. Determination of Bleeding and Clotting time. - 10 marks
4. Spotters-Haemocytometer, (Identification of cells) Differential Count, Sphygmomanometer, Spirometer . - 10 marks

Recommended Books Recent Editions

1. A.K.Jain, Human Physiology and Biochemistry for Physical Therapy and Occupational Therapy, 1st Ed. Arya Publication.
2. Dr. Venkatesh.D and Dr. Sudhakar H.S.Basic of Medical Physiology, 2nd Ed., Wolter-Kluwer Publication.
3. Chaudhari (Sujith K) Concise Medical Physiology 6th Ed. New Central Book.

Reference Books

1. A.K.Jain, Text book of Physiology for Medical Students, 4th Ed. Arya Publiction.
2. Guyton (Arthur) Text Book of Physiology.11th Ed. Prism Publishers.
3. Ganong (William F) Review of Medical Physiology. 23rd Ed . Appleton.

I Semester
Core- 3- Basic Biochemistry

Unit I **12hrs**

Chemistry of Cell & Chemistry of Carbohydrates, Proteins, Lipids &Nucleotides-

Cell- Structure & Function of Cell Membrane, Subcellular Organelles and their Functions.

Carbohydrates- Definition, Classification & Biological importance of carbohydrates, Derivatives of Monosaccharides.

Proteins- Definition & Classification of amino acids & Proteins, Biologically important peptides Plasma proteins, Immunoglobulins.

Lipids- Definition, Classification & Biological importance and Functions of Lipids. Structure and functions of Cholesterol, types and functions of Lipoproteins.

Nucleotides- Structure and Functions of DNA & RNA. Biologically important nucleotides.

Unit II **12hrs**

Enzymes & Acid base balance

Enzymes- Definition and Classification. Factors affecting enzyme activity. Coenzymes and Cofactors. Enzyme inhibition & Regulation of enzyme activity

Acid Base balance- Acids, Bases & Body Buffers, Regulation of pH, Acid base disorders.

Unit III **12hrs**

Vitamins & Minerals

Vitamins-Classification, Sources, RDA, Functions(in brief), deficiency manifestations and hypervitaminosis.

Minerals- Classification, Sources, RDA, Functions (in Brief), deficiency manifestations of the following: calcium, phosphorous, iron, copper, iodine, zinc, fluoride, magnesium, selenium, sodium, potassium and chloride.

Unit IV **12hrs**

Nutrition, Blood chemistry & Urine Chemistry

Nutrition- Nutrients, Calorific value of food, BMR, SDA, respiratory quotient and its applications, Balanced diet based on age, sex and activity, biological value of proteins, nitrogen balance, Protein energy malnutrition, Total parenteral nutrition, dietary fibers.

Blood chemistry- Biochemical components & their reference ranges in normal & diseased states.

Urine chemistry- Biochemical components & their reference ranges in normal & diseased states

Unit V **12hrs**

Clinical Biochemistry- 10 hrs

Specimen Collection- Blood,Urine and Body fluids.

Preanalytical, analytical and postanalytical errors

Clinical Biochemistry- Parameters to diagnose Diabetes & Cardiovascular diseases.

Diagnostic enzymology, Assessment of arterial Blood gas status and electrolyte balance, Point of Care Testing. Renal Function tests(in brief), Liver function tests(in brief), Biomedical Waste Management.

Practicals

1. General Reactions of Carbohydrates.
2. Color reactions of Proteins.
3. Reactions of Non Protein nitrogenous substances.
4. Demonstration of pH meter, Colorimeter and spectrophotometer.
5. Demonstration of Chromatography and Electrophoresis.

Practical Examination

1. Identification of Substance of physiological importance - 10 Marks
2. Color reactions of Proteins - 10 Marks
3. Spotters - 10 Marks
4. Charts on Clinical biochemistry - 10 Marks

Recommended books Recent edition

1. Textbook of Biochemistry -D.M.Vasudevan
2. Biochemistry -Pankaja Naik
3. Clinical Biochemistry-Principles and Practice-Praful.B.Godkar
4. Textbook of Biochemistry-Chatterjea and Shinde
5. Textbook of Clinical Chemistry-Norbert W Teitz

Reference Books Recent Edition

1. Harpers Biochemistry
2. Clinical Biochemistry-Michael L.Bishop
3. Textbook of Biochemistry-Rafi M.D
4. Lippincott's Illustrated review of Biochemistry
5. Practical Clinical Biochemistry-Harold Varley

I Semester

Language-1English

Unit I

Introduction

a) Study Techniques - Reading Comprehension

Exercises on reading passages and answering questions based on the passage.

b) Organization of Effective Note Taking

Why good note-taking is important

Effective note-taking is an important practice to master at university. You have a lot of new knowledge and you need to develop reliable mechanisms for recording and retrieving it when necessary. But note-taking is also a learning process in itself, helping you to process and understand the information you receive.

c) Use of the Dictionary

Tips on how to use the dictionary

1. Choose the right dictionary.
2. Read the introduction.
3. Learn the abbreviations.
4. Learn the guide to pronunciation.
5. Looking Up a Word
   a) Find the section of the dictionary with first letter of your word.
   b) Read the guide words.
   c) Scan down the page for your word.
   d) Read the definition.
6. Online dictionaries
7. Research various facts.
8. Thesaurus

It is a dictionary of synonyms and antonyms, such as the online Thesaurus.com.

Enlargement of Vocabulary

Roots : A to G

Effective Diction

Foreign Expressions - meaning and pronunciation

Unit II

Applied Grammar

a) Correct Usage

The Eight Parts of Speech

1. Noun
2. Pronoun
3. Adjective
4. Verb
5. Adverb
6. Preposition
7. Conjunction
8. Interjection

b) The Structure of Sentences

What is a sentence?

What are clauses?

What are phrases?

Types of sentences:

1. Simple sentences
2. Compound sentences
3. Complex sentences

c) The Structure of Paragraphs

1. What is a Paragraph?

Paragraphs are comprised of sentences, but not random sentences. A paragraph is a group of sentences organized around a central topic.

2. The Secrets to Good Paragraph Writing:

Four Essential Elements

The four elements essential to good paragraph writing are: unity, order, coherence, and completeness.

4. Paragraph Structure

A paragraph consists of 3 main structures :

1. Claim
2. Evidence
3. Analysis

d) Enlargements of Vocabulary

Roots: H to M

Unit III

Written Composition

a) Precise writing and Summarizing

1. Definition of precise:

   A precise or summary is an encapsulation of someone's writing or ideas.

   Technically it should be one - third the length of the actual passage given.

2. Definition of summary:

   Summaries may not always follow a direct line through what they're summarizing - if you want to summarize someone else's ideas in a few sentences, it might make more sense if you begin with their conclusion, and work back to the arguments they use to develop that conclusion.

Guidelines to follow while writing a summary are:

1) Divide…and conquer.

2) Read.

3) Reread.

4) One sentence at a time.

5) Write a thesis statement.

6) Check for accuracy.

7) Revise.

b) Writing of a Bibliography

I. What is a bibliography?

A bibliography is an alphabetical list of all materials consulted in the preparation of your assignment.

II. What is an annotated bibliography?

An annotated bibliography is an alphabetical list of books or articles for which you have added explanatory or critical notes.

III. Why you must do a bibliography?

a) To acknowledge and give credit to sources of words, ideas, diagrams, illustrations and quotations borrowed, or any materials summarized or paraphrased.

b) To show that you are respectfully borrowing other people's ideas, not stealing them, i.e. to prove that you are not plagiarizing.

IV. What must be included in a bibliography?

- author
- title
- place of publication
- publisher
- date of publication
- page number(s) (for articles from magazines, journals, periodicals, newspapers, encyclopedias, or in anthologies).

V. Writing a bibliography in MLA style

1. Standard Format for a Book:

Author. Title: Subtitle. City or Town: Publisher, Year of Publication.

If a book has no author or editor stated, begin with the title. If the city or town is not commonly known, add the abbreviation for the State or Province.

2. Standard Format for a Magazine, Periodical, Journal, or Newspaper Article:

Author. "Title: Subtitle of Article." Title of Magazine, Journal, or

Newspaper Day, Month, Year of Publication: Page Number(s).

c) Enlargement of Vocabulary

Roots - N to S

Unit IV

Reading and Comprehension

a) Review of selected materials and express oneself in one's words

Seminar for students on powerpoint presentation and book review.

b) Enlargement of Vocabulary

Roots - T to Z

Unit V

The study of Varioius forms of Composition

a) Paragraph

Exercises for students on short paragraph topics.

b) Essay

How to Write an Essay

The writing of an essay has three stages :

1. Essay writing
2. Close reading
3. Research

c) Letter

Mechanics of writing formal and business letters.

Exercises on writing letters for students.

d) Summary

Writing reports: project report, magazine article and reporting in newspapers on sporting events.

e) Practice In Writing

Exercises and assignments on report writing for students.

Unit VI

Verbal Communication

a) Discussions And Summarization

Tips on taking minutes of a meeting

Why Meeting Minutes Matter

Meeting minutes are important. They capture the essential information of a meeting - decisions and assigned actions. The following instructions will help you take useful and concise meeting minutes.

Before the Meeting

If you are recording the minutes, make sure you aren't a major participant in the meeting. You can't perform both tasks well.

Create a template for recording your meeting minutes and make sure you leave some blank space to record your notes.

Decide how you want to record your notes. If you aren't comfortable relying on your pen and notepad, try using a tape recorder or, if you're a fast typist, take a laptop to the meeting.

During the Meeting

As people enter the room, check off their names on your attendee list. Ask the meeting lead to introduce you to meeting attendees you aren't familiar with. This will be helpful later when you are recording assigned tasks or decisions.

After the Meeting

Review the notes and add additional comments, or clarify what you didn't understand right after the meeting.

a) Debates

Group Discussions:

1. Do's in a group discussion:

- Be confident. Introduce yourself with warm smile and get into topic soon.
- Have eye contact with all group members
- Learn to listen.
- Be polite.
- Be a good team player. Move with all group members and help them when needed.

2. Don'ts in a group discussion:

- Don't be harsh when you are interrupted.
- Don't interrupt the other person
- Don't try to push your ideas on others.
- Don't argue. Everyone is free to express their ideas.

c) Oral Reports

An oral report is a presentation, usually done for a student's teacher and classmates, though it can also be done for a larger segment of the school community, for parents, or for a more open group, depending on the circumstances. For example, at a science fair, a student might present a report on his or her project periodically for the class, for other visitors who pass by, and for judges.

d) Use in Teaching

Writing of dialogues

Originating from dialogos, the Greek word for conversation, the term dialogue refers to a verbal conversation between two or more people.

When writing dialogues, it is important to adhere to specific grammar rules. The following points need to be remembered while writing dialogues for role play.

1. Quotation Marks
2. Periods
3. Question Marks
4. Commas
5. Capitalization and Paragraphs
6. How Dialogue Enhances Writing

Dialogue reveals information about the speaker(s) within a written work. Dialogue also enhances the story line and plot.

a) Exposes Character Traits

Through indirect characterization, dialogue reveals details about a character by what they say, how they say it, and perhaps what they choose not to say.

b) Unveils Mood/Emotions

A character's word choice, description of tone, and choice of language reveal the inner state of the character without directly "telling" the audience. Showing instead of telling creates a deeper understanding of the character through the eyes of the reader or audience.

c) Reveals Motivation/Influences

Dialogue can illuminate a character's internal motivation or desires.

d) Establishes Relationships

Seeing how a character addresses and responds to other characters shows the type of relationships that they form and where their relationships currently stand. Dialogue can demonstrate how relationships change throughout the course of the story. It can show how a character changes or responds to various situations.

Exercises for students on preparing a dialogue exchange between two people

1. On the street (with a vegetable vendor)
2. At college with a lecturer (regarding admissions)
3. In a bank with the manager (for opening a bank account)
4. Telephone conversation with a hotel receptionist (make room reservations)
5. Telephone conversation (taking an appointment with the dentist/doctor)

I Semester
Language 2- Kannada

ಕನ್ನಡ : ಒಂದು

ಪಠ್ಯಕ್ರಮದ ರೂಪರೇಖೆ

ಸ್ಥಾನ : ಬಿ.ಎಸ್.ಸಿ. (ಅಲೈಡ್ ಹೆಲ್ತ್ ಸೈನ್ಸ್‌ಕೋರ್ಸ್) ಮೊದಲವರ್ಷ

ಸಮಯ : 30 ಘಂಟೆಗಳು (ಮೂವತ್ತು ಘಂಟೆಗಳು)

ಪಠ್ಯಕ್ರಮದ ವಿವರಣೆ : ವಿದ್ಯಾರ್ಥಿ/ ವಿದ್ಯಾರ್ಥಿನಿಯರು ದಿನನಿತ್ಯ ಸಂಪರ್ಕಿಸಬಹುದಾದ ಜನಸಾಮಾನ್ಯರೊಡನೆ ಶುಶ್ರೂಷೆಗೆ ಸಂಬಂಧಿಸಿದಂತೆ ಕನ್ನಡದಲ್ಲಿ ಸಂಭಾಷಣೆ ಮಾಡಲು ಹಾಗೂ ತಿಳುವಳಿಕೆ ನೀಡಲು ಸಹಕಾರವಾಗುವಂತೆ ಪಠ್ಯಕ್ರಮದ ಮಾದರಿಯನ್ನು ಅಳವಡಿಸುವುದು.

ಉದ್ದೇಶ : ದಿನಬಳಕೆಯ ವ್ಯವಹಾರದಲ್ಲಿ ಶುಶ್ರೂಷಣೆಗೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಕನ್ನಡ ಭಾಷೆಗೆ ಅಳವಡಿಕೆ.

ಕನ್ನಡೇತರರಿಗೆ ಕನ್ನಡ ಭಾಷೆಯ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.

ಪಠ್ಯಕ್ರಮದವಿವರಣೆ

ಘಟಕಒಂದು (ಆರು ಘಂಟೆಗಳು) : ಅಕ್ಷರಮಾಲೆ, ಸ್ವರಗಳು, ವ್ಯಂಜನಗಳು, ,ಕಾಗುಣಿತ, ಬರವಣಿಗೆ, ಅಭ್ಯಾಸ.

ಚಟುವಟಿಕೆ : ೧. ಕನ್ನಡ ವರ್ಣಮಾಲೆಯ ಅಕ್ಷರಗಳನ್ನು ಬರೆಯಿರಿ.

ಘಟಕಎರಡು (ಆರು ಘಂಟೆಗಳು) : ಪದಪರಿಚಯ, ಪದಪುಂಜ, ದಿನಬಳಕೆಯ ಪದಗಳು, ಸಂಬಂಧಗಳು, ನಾಮಪದ, ಸರ್ವನಾಮ, ಅಂಕಿಗಳ ಪರಿಚಯ, ಪ್ರಶ್ನಾರ್ಥಕ ಪದಗಳು.

ಚಟುವಟಿಕೆ : ೧ ನಿಮಗೆ ತಿಳಿದಿರುವ ವಿವಿಧ ರೋಗಗಳ ಹೆಸರುಗಳನ್ನು ಪಟ್ಟಿಮಾಡಿ

೨. ನಿಮಗೆ ತಿಳಿದಿರುವ ತಿಂಡಿ – ತಿನಿಸುಗಳ ಹೆಸರುಗಳನ್ನು ಪಟ್ಟಿಮಾಡಿ

ಘಟಕಮೂರು (ಆರು ಘಂಟೆಗಳು) : ಲಿಂಗ, ವಚನ, ಅವ್ಯಯ, ತಿಂಡಿ – ತಿನಿಸುಗಳ ಪರಿಚಯ, ದೇಹದ ಅಂಗಗಳ ಪರಿಚಯ, ವಿವಿಧ ಬಗೆಯ ರೋಗಗಳ ಪರಿಚಯ.

ಚಟುವಟಿಕೆ : ರೋಗಿಯ ವಿವರ ತಿಳಿಯಲು ಆಸ್ಪತ್ರೆಯಲ್ಲಿ ಬಳಸಲಾಗುವ ನಮೂನೆಯ ಮಾದರಿಯನ್ನು ರಚಿಸಿ.

ಘಟಕ ನಾಲ್ಕು (ಆರು ಘಂಟೆಗಳು) : ಶುಶ್ರೂಷಣಾ ಪದಗಳು, ಆಸ್ಪತ್ರೆಯಲ್ಲಿ ಬಳಸುವ ವಿವಿಧ ನಮೂನೆಗಳ ಪರಿಚಯ, ನಮೂನೆಗಳ ರಚನೆ.

ಚಟುವಟಿಕೆ : ಶುಶ್ರೂಕರು ಮತ್ತು ರೋಗಿಯ ನಡುವಿನ ಸಂಭಾಷಣೆಯ ಮಾದರಿಯನ್ನು ತಯಾರಿಸಿ.

ಘಟಕ ಐದು (ಆರು ಘಂಟೆಗಳು) : ಶುಶ್ರೂಕರ ಹಾಗೂ ರೋಗಿಗಳ ನಡುವೆ ನಡೆಯುವ ಸಂಭಾಷಣೆಗೆ ಬೇಕಾದ ವಾಕ್ಯಗಳ ಪರಿಚಯ.

ಅಧ್ಯಯನಕ್ಕೆ ಶಿಫಾರಸ್ಸು ಮಾಡಲಾಗಿರುವ ಗ್ರಂಥಗಳು

1. ಕನ್ನಡ ವ್ಯಾಕರಣ (೮ & ೯ ಮತ್ತು ೧೦ನೇ ತರಗತಿಗಳಿಗೆ ಕರ್ನಾಟಕ ಸರ್ಕಾರ, ಪಠ್ಯಪುಸ್ತಕಗಳ ಇಲಾಖೆ)
2. ವ್ಯವಹಾರಿಕಕನ್ನಡ : ಎ ಚ್ಚೆಸ್ಕೆ
3. ಪತ್ರಲೇಖನ : ಕನ್ನಡಸಾಹಿತ್ಯಪರಿಷತ್ತು
4. ಲೇಖನಕಲೆ : ಎನ್ ಪ್ರಹ್ಲಾದರಾವ್
5. ಆರೋಗ್ಯ ಮತ್ತು ಇತರೆ ಪ್ರಬಂಧಗಳು : ಡಾ|| ಪಿ.ಎಸ್ ಶಂಕರ್
6. ವೈದ್ಯ ಪದಗಳ ಹುಟ್ಟುರಚನೆ : ಡಾ|| ಡಿ.ಎಸ್.ಶಿವಪ್ಪ

ಕನ್ನಡ ಎರಡು

ಪಠ್ಯಕ್ರಮದರೂಪರೇಖೆ

ಸ್ಥಾನ : ಬಿ.ಎಸ್‌ಸಿ(ಅಲೈಡ್ ಹೆಲ್ತ್ ಸೈನ್ಸ್‌ಕೋರ್ಸ್) ಮೊದಲ ವರ್ಷ

ಸಮಯ : 30 ಘಂಟೆಗಳು (ಮೂವತ್ತು ಘಂಟೆಗಳು)

ಉದ್ದೇಶ : ಜನರ ಆರೋಗ್ಯದ ಬಗ್ಗೆ ಸಮುದಾಯಕ್ಕೆ ತಿಳುವಳಿಕೆ ಕೊಡುವುದು.

II Semester
Core 4-General Pathology

Unit I

Introduction- & scope of pathology **12hrs**

Cell injury and Cellular adaptations - Normal cell, Cell injury - types, etiology, morphology, Cell death-autolysis, necrosis, apoptosis, Cellular adaptations-atrophy, hypertrophy, hyperplasia, metaplasia.

Inflammation-Introduction, acute inflammation-vascular events, cellular events, chemical mediators, chronic inflammation-general features, granulomatous inflammation, tuberculosis.

Healing and repair - Definition, different phases of healing, factors influencing wound healing, fracture healing.

Haemodynamic disorders-Oedema, hypermia, congestion, haemorrhage, embolism, thrombosis, infarction.

Neoplasia - defintion, nomenclature, features of benign and malignant tumors, spread of tumors, dysplasia, carcinoma in situ, precancerous lesions.

Environmental and nutritional pathology - smoking, radiation injury, malnutrition, obesity, vitamin deficiencies.

Unit II

Haematological Disorders **12hrs.**

Introduction and Haematopoiesis

Anaemia - introduction and classification (morphological and etiological), iron deficiency anemia: distribution of body iron, iron absorption, causes of iron deficiency , lab findings, megaloblastic anamia: causes, labfindings, haemolytic anemias: definition. Causes, classification and labfindings.

WBC disorders - quantitative disorders, leukemia - introduction and classification, acute leukemias, chronic leukemias.

Bleeding disorders - introduction, physiology of hemostasis. Classification, causes of inherited and acquired bleeding disorders, thrombocytopenia, DIC, laboratory findings.

Pancytopenia.

Unit- III

Basic Hematological Techniques **12 hrs**

Characteristics of good technician, Blood collection - methods (capillary blood, venipuncture, arterial puncture) complications, patient after care, anticoagulants, transport of the specimen, preservation, effects of storage, separation of serum and plasma, universal precautions, complete hemogram - CBC, peripheral smear, BT, CT, PT, APTT, ESR, disposal of the waste in the laboratory.

Unit IV

Transfusion Medicine **12 hrs**

Selection of donor, blood grouping, Rh typing, cross matching, storage, transfusion transmitted diseases, transfusion reactions, components - types, indications.

Unit V

Clinical Pathology **12 hrs**

Introduction to clinical pathology - collection, transport, preservation, and processing of various clinical specimens.

Urinalysis - collection. Preservatives, physical, chemical examination and microscopy. Physical examination; volume, color, odor, appearance, specific gravity and ph, Chemical examination; strip method- protein - heat and acetic acid test, sulfosalicylic acid method, reducing sugar-benedicts test, ketone bodies - rotheras test, bile pigments fouchet method, bile salt - hays method, blood - benzidine test, urobilinogen and porphobilinogen - ehrlich aldehyde and schwartz test, bence jones protein., microscopy.

Examination of cerebrospinal fluid - physical examination, chemical examination, microscopic examination, examination of body fluids (pleural, pericardial and peritoneal), physical examination, chemical examination, microscopic examination, sputum examination.

Practicals:

Laboratory organization-

Reception of specimen, dispatch of reports, records keeping, coding of cases.

Laboratory safety guidelines.

SI units and conventional units in hospital laboratory.

Haematology techniques

Basic requirements for hematology laboratory

Glasswares for hematology

Equipments for haematology.

Anticoagulant vials

Complete blood counts.

Determination of haemoglobin.

RBC count and TLC by hemocytometer.

Differential leukocyte count.

Determination of platelet count

Determination of ESR and PCV.

Erythrocyte Indices - MCV, MCH, MCHC.

Reticulocyte count

Absolute eosinophilic count

Morphology of blood cells

Urinanalysis

Examination of cerebrospinal fluid

Examination of body fluids (pleural, pericardial, peritoneal)

Sputum examination.

Practical Examination- 40 marks.

Spotters- 10 marks.

Estimation of Haemoglobin or blood grouping- 10 marks.

Urine analysis- 10 marks.

Determination of ESR and PCV- 10 marks.

1.Recommended Books Recent Editions.

1. Basic Pathology Robbins Saunders, an imprint of Elsevier Inc., Philadelphia, USA.
2. Text book of Pathology Harsha Mmohan Jaypee Brothers, New Delhi.
3. Practical Pathology P. Chakraborthy, Gargi Chakarborty 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 Publications house, Mumbai.
6. Textbook of Medical Laboratory Technology Ramanik Sood.
7. Practical Haematology Sir John Dacie Churchill Livingstone, London.
8. Todd and Sanford, Clinical Diagnosis and Management by Laboratory
9. Methods John Bernard Henry, All India Traveller Bookseller.
10. Histopathology Techniques, Culling.
11. Histopathology Techniques Bancroft.
12. Diagnostic Cytopathology Koss.
13. Diagnostic Cytopathology Winfred Grey.
14. Hand book of Medical Laboratory Technology, CMC Vellore.
15. Basic Haematological Techniques Manipal.

II Semester
Core 5- Microbiology
Theory

Unit - I

General Microbiology **12 hrs**

1. Morphology and classification of microorganisms.
2. Growth, nutrition and multiplication of bacteria
3. Sterilization and Disinfection - Principles and use of equipments of sterilization namely hot air oven, autoclave and serum inspissator, pasteurization, antiseptics and disinfectants
4. Immunology - antigen, Antibodies, Immunity, vaccines, types of vaccine and immunization schedule.
5. Hospital acquired infection - Causative agents, transmission methods, investigation, prevention and control of hospital Acquired infections.

Unit - II

Bacteriology **12 hrs**

Classification of bacteria, morphology, infections, lab diagnosis, treatment and prevention of common bacterial infections. Staphylococcus, Streptococcus, Pneumococcus, Neisseria, Corynebacterium diphtheriae, Clostridia, Enterobacteriaceae - Shigella, Salmonella, Klebsiella, E.coli, Proteus, Vibrio cholerae, Pseudomonas and Spirochetes

Unit III

Mycobacteriology & Parasitology **12 hrs**

Mycobacteria- classification, pathogenesis, lab diagnosis and prevention

Classification, infections and lab diagnosis of following parasites. Entamoeba, Giardia, Malaria, Hookworm, Roundworm and Filarial worms.

Unit IV

Mycology **12 hrs**

Morphology, disease caused and lab diagnosis of following fungi. Candida, Cryptococcus, Dermatophytes, opportunistic fungi (Aspergillus, Zygomycetes and Penicillium)

Unit V

Virology **12 hrs**

General properties of viruses, diseases caused lab diagnosis and prevention of following viruses, Herpes, Hepatitis, HIV, Dengue, Influenza, Chikungunya, Rabies and Poliomyelitis.

Practicals: 20 hours

1. Compound microscope and its application in microbiology.
2. Demonstration of sterilization equipments: 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, MacConkey agar with LF & NLF, Nutrient agar with staph colonies.Anaerobic culture, Methods and Antibiotic susceptibility test.
3. Demonstration of common serological tests: Widal, VDRL, ASLO, CRP, RF, Rapid tests for HIV, Hbsag and HCV.
4. Grams staining.
5. Acid fast staining.
6. Principles and practice of Biomedical waste management.
7. Stool Microscopy.

Practical examination pattern

Spotters (10 spotters carrying 2 marks each) 20 marks

Culture media - 6

Equipments - 2

Slides - 2

Discussion:

1. Gram stain 10 marks
2. Ziehl - Neelsen stain 10 marks

Recommended Books Recent Editions.

1. Anathanarayana & Panikar: Medical Microbiology - Revised 8th edition University Press.
2. Parasitology by Chatterjee - Interpretation to Clinical Medicine.
3. Textbook of Microbiology - Baveja, 5th edition, Arya Publications
4. Textbook for Laboratory technicians by RamnikSood. Jaypee Publishers
5. Textbook of Parasitology by Paniker. 7th edition

II Semester
Core - 6 - Pharmacology

Unit I

General Pharmacology, ANS, PNS. **12 Hrs**

Sources of Drugs

Route of drug administration

Pharmacokinetics (Absorption, Metabolism, Distribution, Excretion)

Pharmacodynamics (Mechanisms of action)

Adverse drug reactions

ANS : ADRENERGIC Drugs - Adrenaline, Noradrenaline, Ephidrine, Dopamine, Dobutamine

Anti adrenergic - Phentolamine, Phenoxybenzamine, Prazocin, Tamsulosin, Propranolol, Atenolol, Carvidelol

Cholinergic drugs-Acetyl choline, Pilocarpine, Neostigmine, Organophosphorous compounds

Anti cholinergic agents-Atropine, Glycopyrrolate, Ipratropium Bromide, Dicyclomine

Unit II

PNS, CVS, Renal System **12 hrs**

Skeletal muscle relaxants - D Tubocurarine, Succinyl choline, Diazepam, Dantroline

Local anaesthetics - lignocaine, la + vasoconstrictor

CVS - ionotropic agents - Digoxin,

Antianginal drugs - GTN,

Antihypertensives - Betablockers (Propranolol, Atenolol, carvidelol), CCBs (Nifedeine), Diuretics (Thiazide, Furesemide, ace inhibitors, ARBs, Clonidine

Drugs used in treatment of different types of shock, Plasma expanders

Renal system - Diuretics Furosemide, Thiazide, Spiranolactone

Antidiuretics - Vasopressin

Unit III

CNS, Blood **12 hrs**

CNS - general Anaesthetics - nitrous oxide, Halothane, iv anaesthetics

Sedative hypnotics - diazepam, barbiturates, zolpidem

Antiepileptics - Phenytoin, carbamezapine, phenobarbitone, valproate

Opioid analgesics - morphine, pethidine, codiene

NSAIDS - Aspirin, Diclofenacibuprofen, Selective COX2 inhibitors

Respiratory system-treatment of cough And Bronchial asthma

Blood - Hematinics, Anticoagulants - Warfarin, Heparin

Thrombolytics & Antiplatelet drugs - streptokinase,/ aspirin, clopidogrel

Unit IV

GIT, Chemotherapy **12 hrs**

GIT - drugs used in peptic ulcer - ppi, H2 blockers, Antacids

Antiemetics - Metaclopromide, Domperidone, Ondensetron

Purgatives & Laxatives-bran, ispaghula, Lactulose, Bisacodyl &senna

Drugs used in Diarrhoea- ORS, Super ORS, Antimotility drugs (loperamide, diphenoxylate)

Chemotherapy - general considerations MOA, Resistance, Prophylaxis

Sulfonamides, cotrimoxazoles, Quinolones

Tetracyclines, chloramphenicol

Betalactam antibiotics

Unit V

Chemotherapy, Hormones. **12 hrs**

Aminoglycosides

Macrolides, other antibiotics (vancomycin, linezolid) & treatment of UTI

Antifungal (clotrimazole, flucanozole)

Antiviral (Acyclovir, Few drugs used in HAART,)

Cancer chemotherapy

(names, common Adverse effects, general principles in the treatment of cancer)

Hormones - Corticosteroids its uses and adverse effects,

Treatment of Diabetes mellitus(insulin, Metformin, Glibenclamide)

Practicals Syllabus : -20 hrs

Dosage forms

Solid Dosage forms

Liquid Dosage forms

Gaseous Dosage forms

Oral route

Parentral routes

Novel routes

Fixed dose combination - Amoxycillin + clavulinic acid - cotrimoxazole, Lignocaine + Adrenaline

Drug stations - Adrenaline, dopamine, Dobutamine)

Drug stations - Corticosteroids (hydrocortisone, prednisalone, inhaltional steroids)

Drug stations - common antibiotics (amoxycillin, ciprofloxacin, Azithromycin, Metronidazole, Cephalosporins)

Drug stations - Insulin preparations

Instrument & devices (Nasogastric tube, laryngoscope, Different Cathetors, nebulizers, Inhalers, Rotahalers)

Practical examination : 40 marks

1. Dosage Forms : 15 Marks (5 X 3)

Capsules, Tablets, Syrup, Iv, Im, Sc, Ia, Intra Articular -
Advantages (1 Mark), Disadvantages (1 Mark) Examples (1 Mark)

2. Mention the name of the Device / Instruments and uses : 15 marks (5X3)
   Inhalares, Rotahalers, Spacehalers, Dripsets, Vasofix, ryles tube, urinary catheter, Endotracheal tube, Hand gloves
3. 10 Spotters : 10 marks (10X 1) 2 uses of preparation

Recommended Books Recent Editions.

1. K.D. Tripathi, Essentials of Medical Pharmacology, V. Edition, M/s. Jaypee Brothers, Post Box, 7193, G-16, Emca House, 23/23, Bansari Road, Daryaganj, New Delhi.
2. Padmaja Udaykumar -Pharmacology for Allied Sciences.
3. R.S. Satoskar, S.D. Bhandarkar, S.S. Ainapure, Pharmacology and Pharmacotherapeutics, 18th edition, Single Volume, M/s Popular Prakashan, 350, Madan Mohan Marg, Tardeo, Bombay - 400 034.

II Semester
Allied - 1 Health Care

Learning Objectives

1. To define Health and understand various concepts of Health
2. To know the Health care delivery system in India
3. To know various National Health Programmes of India
4. To have overview of First Aid Principles and guidelines

Unit I

1a Concepts of Health

Definition of health; evolution in concepts of public health; public health events-sanitary awakening, germ theory of disease, rise of public health in various countries, changing concepts of health- biomedical concept, ecological concept, psycho-social concept and holistic concept.

1b. Dimensions of Health

Physical dimension, mental dimension, Social dimension etc; Common health problems in India - Communicable diseases, Non communicable diseases, MCH problems, Nutritional problems, Environmental sanitation, Glance over National Health profile.

Unit II

2a Evolution of health care delivery systems

History of health care delivery services; Genesis of primary health care; National health policy; MDGs.

2b Levels of health care

Primary health care, secondary health care, tertiary health care.

Primary health care-principles of primary health care, elements of primary health care.

Unit III

3a Primary health care: Delivery of services

Introduction; Structure of health care delivery system; Delivery of primary health care services at village level; Village health guide, ASHA, ICDS: Subcentre: Primary health centre.

3b Secondary and tertiary health care: Delivery of services

Community Health centre; First referral unit; District hospital.

Unit IV

4a Primary health care - Current status in India

Status of health care infrastructure; Health team concept; Health insurance; Social security and social assistance in health; AYUSH.

4b National Health Programmes

Introduction; National Vector Borne Disease Control Programme; National Leprosy Eradication Programme; Revised National Tuberculosis Control

Programme; National AIDS Control Programme; Universal Immunization Programme; National Rural Heath Mission.

Unit V

5a National Health Programmes

Reproductive and Child Health Programme; Integrated Management of Neonatal and Childhood Illnesses; National Nutritional Anemia Prophylaxis Programme; National Programme for Control of Blindness; National Cancer Control Programme; National Mental Health Programme.

5b First aid

Basic terminologies; general guidelines; first aid in specific situations; Wound, bleeding, fracture, choking, burns, epistaxis, strains and sprain, animal bites (classification, causes and first aid), Cardio-pulmonary resuscitation

Recommended Books Recent Editions.

1. Park K. Park's Textbook of Preventive and Social Medicine. 23rd ed. Jabalpur: Banarsidas Bhanot Publishers, 2015. p.135-141
2. Suryakantha. Textbook of Community Medicine with recent advances. 4th edition
3. Bhalwar R editor. Textbook of Public Health and Community Medicine. 2nd Pune, Department of Community medicine AFMC; 2012
4. Essentials of Community Medicine for Allied Health Sciences, JSS University Publications, 2015

II Semester
Allied -2- Psychology

Objective
After studying this applied paper, at the end of the semester students shall be able to demonstrate and develop the skills to understand patients better in the respective field.

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

Unit -II
Identifying psychological disorders. Anxiety disorders (panic, phobia, OCD, PTSD signs symptoms and management).

Unit -III
Stress, Hans Selye Model of stress. Lazarus and Folkman model of stress. Sources of stress. Stress, disease and health. Changing health- impairing behavior.

Unit-IV
Learning; Meaning, definition, Theories of learning .Pavlov's classical conditioning .Skinner's operant conditioning.

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

Recommended Books Recent Editions.

1. C.P. Khokhar (2003) Text book of Stress Coping and Management Shalab Publishing House.
2. S.M.Kosslyn and R.S.Rosenberg (2006) Psychology in Context. Pearson Education Inc.
3. C.R. Carson, J.N. Bitcher, S.Mineka and J.M. Hooley (2007), Abnormal Psychology13th, Pearson Education, Inc.
4. D.A. Barlow and V.M. Durand (2004) Abnormal Psychology Wadsworth, Thompson Learning, 3rd edition USA.
5. R.J . Gerrig & P.G. Zimbardo (2006) Psychology and life, Pearson Education, Inc.
6. Pestonjee, D.M. (1999). Stress & Coping, The Indian Experience 2nd edn. New Delhi, Sage India Publications.

B.Sc. Cardiac Care Technology
III Semester
Core-7- Applied Pathology

Unit I

* Atherosclerosis-definition, risk factors, pathogenesis, morphology and complications
* Ischemic heart disease: Myocardial infarction - definition, pathogenesis, morphology and complications
* Hypertension- Benign and malignant hypertension: pathogenesis, pathology and complications

Unit II

* Heart failure - Right and left heart failure: causes, pathophysiology and morphology
* Rheumatic heart disease and infectious endocarditis - definition, etiopathogenesis, morphology and complications
* Congenital heart disease- Types and atrial septal defect; aneurysms - types and morphology; cardiomyopathies in brief

Unit III

* Atelectasis - types, Adult respiratory distress syndrome - causes , pathogenesis and morphology; pulmonary edema- classification, causes and morphology
* Chronic obstructive pulmonary disease- Chronic bronchitis, emphysema, asthma, bronchiectasis: Definition, etiopathogenesis and morphology
* Restrictive pulmonary diseases - Definition, categories, pathogenesis and morphology

Unit IV

* Pneumoconiosis - types, asbestosis, coal workers pneumoconiosis - etiopathogenesis and morphology
* Pulmonary embolism, infarction, pulmonary hypertension - Definition, etiopathogenesis and morphology
* Pneumonia - Classification of pneumonias; Lobar pneumonia and bronchopneumonia - etiology, pathology and complications

Unit V

* Clinical manifestations of renal diseases
* Glomerular lesions in systemic diseases - diabetes, amyloidosis and systemic lupus erythematosus
* Pericardial and pleural effusions - causes and microscopy

Practicals:

1. Urine examination: physical, chemical, microscopy
2. Blood grouping & Rh typing
3. Hemoglobin estimation, packed cell volume (PCV), erythrocyte sedimentation rate (ESR)
4. Charts
5. Specimens

   * Atherosclerosis
   * Pneumonia
   * Tuberculosis
   * Infarct - lung
   * Contracted kidney
   * Hydronephrosis

Final examination (practicals)

1. Hemoglobin - 10 marks
2. Blood group - 10 marks
3. Charts + Specimens - 10 marks (5 marks each)
4. Urinalysis - 10 marks

Reference Books (latest edition)

1 Basic Pathology Robbins Saunders an imprint of Elsevier Inc., Philadelphia, USA

2 Text book of Pathology Harsh 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 RamanikSood

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 Manipal Manual

III Semester
Core-8-Applied Microbiology
Theory

Unit I

- Sterilization and disinfection **12 hours**
- Sterilization and disinfection - classification, principle, methods
- Central sterile supply department

Unit II

Importance of sterilization and disinfection **12 hours**

- Disinfection of instruments used in patient care
- Disinfection of patient care unit
- Infection control measures for ICUs

Unit III

Health care associated infections **12 hours**

- Surgical site infections
- Urinary tract infections
- Ventilator associated pneumonia
- Catheter associated blood stream infections
- Antibiotic associated diarrhea

Unit IV

Drug resistant bacteria **12 hours**

MRSA
VRE
Drug resistant Gram negative bacteria

Unit V

Occupationally acquired infections and its prevention **12 hours**

a. Respiratory route - Tuberculosis, Varicella zoster virus, Influenza, RSV
b. Blood borne route - HIV, HBV, HCV, CMV, Ebola
c. Orofecal route - Salmonella, Hepatitis A
d. Direct contact - Herpes virus

Practicals 20 hrs

1. Sterilization and disinfection practices in tertiary care hospital
2. Quality control of sterilization and Interpretation of results of sterility testing
3. Collection of specimen from outpatient units, inpatient units, minor operation theatre and major operation theatre for sterility testing.
4. Preparation of materials for autoclaving - packing of materials, loading, holding time and unloading
5. Disinfection of wards, operation theatres and laboratoryand air sampling methods

Practical Examination Pattern

1. Sterilization and disinfection practices in tertiary care hospital and quality control of sterilization and Interpretation of results of sterility testing. 20 Marks
2. Preparation of materials for autoclaving - packing of materials, loading, holding time and unloading. 10Marks
3. Disinfection of wards, operation theatres, dialysis units and laboratory and air sampling methods. Collection of specimen from outpatient units, inpatient units, minor operation theatre and major operation theatre for sterility testing. 10Marks

Reference Books (latest edition)

1. Textbook of Microbiology by Ananthnarayan and Paniker.
2. Textbook of Hospital Infection Control by Purvamathur.
3. Textbook of Microbiology by Baveja.
4. Hospital Infection Control by Mayhall.

III Semester
Core -9- Basic Cardiac Care Technology

Objectives:
To understand and get introduced to cardiac care, applied anatomy and physiology, noninvasive - ECG and TMT, noninvasive echocardiography, cardiac invasive in adult and pediatric, hardware and biomedical technology in Cath - Lab, clinical.

Unit I

Applied Anatomy and Physiology - 13 hours

1. Applied Anatomy
   a) Structure of the heart and gross anatomy, normal position situs solitus, situs inverses with dextrocardia, situs solitus with dextrocardia, situs inversus with levocardia.
   b) Systemic and pulmonary circulation, coronary structure, coronary sinus structure and circulation.
   c) Chest topography - identification of imaginary lines, topographical landmarks over thorax, topography of heart and lungs.
   d) Surface marking of heart, aorta, pulmonary artery, precordium, heart valves, subclavian.
2. Applied Physiology
   a) Control of heart rate.
   b) Concepts of congenital heart (ASD, VSD, PDA, TOF and transpositions).
   c) Blood circulation, cardiac output, pulmonary circulation, pulmonary oedema
   d) Concepts of myocardial functions.
   e) Control of circulation
   f) Conduction system of the heart

Unit II

Noninvasive ECG and TMT - 13 hours

ECG
   a) Technique of ECG recording
   b) ECG Leads system
   c) ECG waves - PQRSTU, Osborn wave, delta wave, epsilon wave.
   d) ECG rates, rhythm, axis calculation, lead positioning.
   e) Intervals and segments - PR interval, PR segment, ST segment, QT interval, J point and QRS complex.
   f) ECG anatomy - Chambers enlargement.
   g) Technical artefacts
   h) ECG reporting

TMT

a) Overview - pretest ECG, Introduction to Treadmill Test - Indications and Safety, equipment and Protocols, exercise End Points, basics of Interpretation of the Exercise Test.

b) Exercise Testing to Diagnose Obstructive Coronary Artery Disease - Rationale and Guidelines, Pretest Probability (true positive, false positive, true negative and false negative ST-Segment Interpretation, Confounders of Stress ECG Interpretation.

c) Result Reporting

Unit III

Noninvasive Echocardiography - 8 hours

a) Introduction and purposes, demonstration of machine parts,

b) Basic windows

c) Echocardiographic views

d) Imaging modes - two-dimensional (2D) imaging, M-mode imaging, and Doppler imaging, color - flow mapping.

Unit IV

Invasive technologies - 12 hours

a) Orientation to the Cath - Lab and biomedical equipments, Introduction and purposes of the Cath - Lab.

b) Radiation safety and protocols.

c) Vascular access - arterial in femoral, radial and ulnar, venous in femoral.

d) Catheterization left heart and right heart, Angiography - Chambers.

e) Transducers balancing, measurement of pressures, Calculations of gradients

f) Blood flows, cardiac output and Calculations of cardio shunts, resistances.

g) Management of patient in the Cath - Lab, coronary angiogram views.

h) Prerequisites of cat lab procedures: CBC, RFT, Serology, ECG, Echo, and customised list for all types of procedures.

i) Maintaining sterility, PPE - Personnel protective equipments.

Unit V

Gas Administration Devices - 14 hours

3. Gas administration devices (reducing valves, flow meters and regulators).

a) Simple oxygen administration devices.

b) Methods of controlling gas flow.

c) Reducing valve, Flow meters, restrictors and regulators

d) Selection of device

e) Precautions, advantages and disadvantages

Practical:

1. History taking
2. Clinical Examination: General Physical Examination and assessment of vital signs
3. Clinical Examination: Basic Systemic Examination
4. Conversion between different units
5. Identifying the types of medical gas supply and its advantages/disadvantages
6. Devices: Sphygmomanometer, thermometer, pulse oximeter, simple oxygen delivery devices,

Practical Exam Pattern:- 40 marks

* Spotters-20 marks
  Drugs, Instruments and devices
  X rays, ECG, ABG and Basic Blood investigation reports
* Case Discussion- 10 marks
* Demonstration of Procedures- 10 marks

Reference Books (latest edition)

1. Hutchison's Clinical Methods
2. A text book of Electrocardiography - Goldberger
3. Nanda's A Text book of Echocardiography
4. A Text of Cardiac Catheterization & Interventions. Dr. W. Grossman's D. Baim
5. A Text book of Cardiovascular Medicine. Dr. Bruanwald's
6. A Text book of Medicine, Davidsons

III Semester
Skill Enhancement-1
Computer Application

1 Overview
- Functionalities of a computer
- Definition
- Advantages
- Disadvantages

2 Applications
- Banking
- Insurance
- Education
- Marketing
- Health Care
- Engineering Design
- Military
- Communication
- Government

3 Generations
- First Generation
- Second Generation
- Third Generation
- Fourth Generation

  Fifth Generation

4 Types of Computer
- PC (Personal Computer)
- Workstation
- Minicomputer
- Mainframe
- Supercomputer

5 Components
- Input Unit
- CPU (Central Processing Unit)
- Output Unit

6 CPU - Central Processing Unit
- Memory or Storage Unit
- Control Unit
- ALU (Arithmetic Logic Unit)
- Arithmetic Section
- Logic Section

7 Input Devices

- Keyboard
- Mouse
- Advantages
- Joystick
- Light Pen
- Track Ball
- Scanner
- Digitizer
- Microphone
- Magnetic Ink Card Reader(MICR)
- Optical Character Reader(OCR)
- Bar Code Readers
- Optical Mark Reader(OMR)

8 Output Devices

- Monitors
- Cathode-Ray Tube (CRT) Monitor
- Flat-Panel Display Monitor
- Printers
- Impact Printers
- Character Printers
- Dot Matrix Printer
- Daisy Wheel
- Line Printers
- Drum Printer
- Chain Printer
- Non-impact Printers
- Laser Printers
- Inkjet Printers

9 Memory

- Cache Memory
- Primary Memory (Main Memory)
- Secondary Memory

10 Random Access Memory

- Static RAM (SRAM)
- Dynamic RAM (DRAM)

11 Read Only Memory

- MROM (Masked ROM
- PROM (Programmable Read only Memory)
- EPROM(Erasable and Programmable Read Only Memory)
- EEPROM (Electrically Erasable and Programmable Read Only Memory)
- Advantages of ROM

12 Mother board
- Features of Mother board
- Popular Manufacturers
- Description of Mother board

13 Memory Units

14 Ports
- Serial Port
- Parallel Port
- PS/2 Port
- VGA Port
- Power Connector
- Firewire Port
- Modem Port
- Ethernet Port
- Game Port
- Digital Video Interface, DVI port
- Sockets

15 Hardware
- Relationship between Hardware and Software

16 Software
- System Software
- Application Software

17 Number System
- Decimal Number System
- Binary Number System
- Octal Number
- Hexadecimal Number System

18 Data and Information
- Data Processing Cycle

19 Networking
- Characteristics of Computer Network
- Cables
- Router
- Network Card
- Internal Network Cards
- External Network Cards

20 Operating System
- Objectives of Operating System
- Characteristics of Operating System

21 Internet and Intranet

- Similarities in Internet and Intranet
- Differences in Internet and Intranet

22 Computer Viruses

- Types of computer virus
- Use of Antivirus software

Practicals:
Suggested Hands on Exercises
Operating System:

1. Starting the Windows Starting a program, running a program Running multiple programs and switching between windows Customizing the Task bar Recycle bin, restoring the deleted files
2. Creating and removing folders Making the taskbar wider, arranging icons on the Desktop Displaying and hiding the taskbar clock Controlling the size of start menu options Creating Shortcuts.
3. Customizing desktop view Adding a program to the start menu Adding a program shortcut in the Desktop Customizing the mouse settings
4. Expanding and collapsing a folder Recognizing File types using icons Running a program from explorer Renaming a file or folder Sorting a folder
5. Displaying the properties for a file or folder Using cut and paste operations to move a file Using copy and paste operations to copy a file Moving and copying files with mouse Searching a file or folder by using search command
6. Finding a file or folder, by name Defragmenting the disk, using disk defragmenter Controlling the speaker volume Recording and saving an audio file Connecting a printer to the PC

Word Processing:

1. Preparing a Govt. Order / Official Letter / Business Letter / Circular Letter Covering formatting commands - font size and styles - bold, underline, upper case, lower case, superscript, subscript, indenting paragraphs, spacing between lines and characters, tab settings etc.
2. Preparing a news letter: To prepare a newsletter with borders, two columns text, header and footer and inserting a graphic image and page layout.
3. Creating and using styles and templates To create a style and apply that style in a document To create a template for the styles created and assemble the styles for the template.
4. Creating and editing the table to create a table using table menu To create a monthly calendar using cell editing operations like inserting, joining, deleting, splitting and merging cells To create a simple statement for math calculations viz. Totaling the column.
5. Creating numbered lists and bulleted lists To create numbered list with different formats (with numbers, alphabets, roman letters) To create a bulleted list with different bullet characters.
6. Printing envelopes and mail merge. To print envelopes with from addresses and to

addresses To use mail merge facility for sending a circular letter to many persons To use mail merge facility for printing mailing labels.

7. Using the special features of word To find and replace the text To spell check and correct. To generate table of contents for a document To prepare index for a document.

8 Create an advertisement Prepare a resume. Prepare a Corporate Circular letter inviting the shareholders to attend the Annual Meeting.

Work Sheet:

1. Using formulas and functions: To prepare a Worksheet showing the monthly sales of a company in different branch offices (Showing Total Sales, Average Sales). Prepare a Statement for preparing Result of 10 students in 5 subjects (using formula to get Distinction, I Class, II Class and Fail under Result column against each student).
2. Operating on the sheets: Finding, deleting and adding records, formatting columns, row height, merging, splitting columns etc. Connecting the Worksheets and enter the data.
3. Creating Different type of Charts: To create a chart for comparing the monthly sales of a company in different branch offices.
4. Using the data consolidate command: To use the data consolidate command to calculate the total amount budgeted for all departments (wages, travel and entertainment, office supplies and so on) or to calculate the average amount budgeted for - say, department office expenses.
5. Sorting Data, Filtering Data and creation of Pivot tables.

Presentation::

1. Creating a new Presentation based on a template - using Auto content wizard, design template and Plain blank presentation.
2. Creating a Presentation with Slide Transition - Automatic and Manual with different effects.
3. Creating a Presentation applying Custom Animation effects - Applying multiple effects to the same object and changing to a different effect and removing effects.
4. Inserting Objects Creating and Printing handouts.
5. Publishing Presentation Exporting Presentations.

Internet:

1. Understanding different types of Browser Programs and Internet file types. (.html, pdf etc.)
2. Searching for a web site / application / text documents viewing and downloading.
3. Create an E-mail account, Retrieving messages from inbox, replying, attaching files filtering and forwarding
4. Operating on a Tablet / Smart Phone - browsing and practicing on some important applications (UcBrowser, Skype) - operating on internet - creating and sending messages / mails using the applications like WhatsApp and We Chat etc.- downloading text and media files and video conferencing using Skype.

III Semester

Allied-3- Environment Science and Health

Learning Objectives

1. To know various Environmental factors Health
2. To learn the modes of disease transmission and various control measures

Unit I

1. a. Introduction to Environment and Health and Water

Ecological definition of Health, Population perspective of relations, Health & environment perspective of relations, Environmental factors, Environmental Sanitation, Need to study environmental health, Predominant reasons for ill-health in India

1.b. Water

Safe and wholesome water, requirements, uses, sources; sanitary well; Hand pump; water Pollution; Purification of water; large scale & small scale; slow sand filters; rapid sand filters; Purification of Water on a small scale; Household purification, Disinfection of wells; water quality criteria & standards.

Unit II

Air, Light, Noise, Radiation

2 a. Air

Composition, Indices of Thermal Comfort, Air pollutants, Air Pollution - Health Effects, Environmental Effects, Green-house effect, Social & Economic Effects, Monitoring, Prevention & Control.

2. b. Light, Noise, Radiation

Natural and Artificial light; Properties, sources, noise pollution and its control, types, sources, biological effects and protection.

Unit III

Waste and Excreta Disposal

3 a. Disposal of Wastes

Solid Wastes, Health hazards, Methods of Disposal; Dumping, Controlled tipping/ sanitary landfill, Incineration, Composting.

3 b. Excreta Disposal

Public health importance, Health hazards, sanitation barrier, Methods of excreta disposal, unsewered areas and sewered areas, sewage, Modern Sewage Treatment.

Unit IV

Housing and Health and Medical Entomology

4 a. Housing and Health

Human Settlement, Social goals of housing, Criteria for Healthful Housing by Expert Committee of the WHO, Housing standards- Environmental Hygiene Committee, Rural Housing Standards, Overcrowding, Indicators of Housing.

4 b. Medical Entomology

Classification of Arthropods, Routes of Disease transmission, Control measures.

Unit V

Insecticides and Rodents

5 a. Insecticides

Types, mechanism of action, dosage and application for control of insects.

5 b. Rodents

Rodents and its importance in disease, along with anti-rodent measures.

Reference Books (latest edition)

1. Park K. Park's Textbook of Preventive and Social Medicine. 23rd ed. Jabalpur: Banarsidas Bhanot Publishers; 2015. p.135-141
2. Suryakantha. Textbook of Community Medicine with recent advances. 4th edition.
3. Bhalwar R. Textbook of Public Health and Community Medicine. 2nd edition. Pune: Department of Community Medicine AFMC, 2012
4. Essentials of Community Medicine for Allied Health Sciences, JSS University Publications, 2015.

IV Semester

Core-10- Patient care and basic Nursing

Objectives:

To learn about patient care and basics of nursing activities, communication and documentation, infection control, medication administration and wound care.

Unit I

Introduction, Communication and Documentation - 12 hours

1. Introduction to Patient Care:

a) Principles of patient care

b) Types of patients (gender, age, diseases, severity of illness, triage)

2. Communication & Documentation:

a) Communication with doctors, colleagues and other staffs.

b) Non-verbal communication, Inter-personnel relationships.

c) patient contact techniques, communication with patients and their relatives

3. Documentation:

a. Importance of documentation,

b. initial and follow up notes;

c. documentation of therapy, procedures and communication

Unit II

Universal Precautions and Infection Control - 10 hours

4. Universal Precautions and Infection Control:

a) Hand washing and hygiene.

b) Injuries and Personal protection, Insulation and safety procedures.

c) Aseptic techniques, sterilization and disinfection.

d) Disinfection and Sterilization of devices and equipment

e) Central sterilization and supply department

f) Biomedical Medical waste management

Unit III

Medication Administration and Transport of patient - 14 hours

5. Medication Administration:

a) Oral / Parenteral route

b) Parenteral medication administration: Intra venous, intra muscular, sub-cutaneous, intra dermal routes, Intra venous Infusion

c) Aerosol medication administration, Oxygen therapy

d) Intravenous fluids,

e) Blood and blood component transfusion

6. Position and Transport of patient:

a) Patient position, prone, lateral, dorsal, dorsal recumbent, Fowler's positions, comfort measures, bed making, rest and sleep.

b) Lifting and transporting patients: lifting patients up in the bed, transferring from bed to wheel chair, transferring from bed to stretcher.

c) Transport of ill patients (inotropes, intubated / ventilated patients)

Unit IV

Bedside care and monitoring - 14 hours

7. Bedside care:

a) Methods of giving nourishment: feeding, tube feeding, drips, transfusion.

b) Recording of pulse, blood pressure, respiration, saturation and temperature.

c) Bed side management: giving and taking bed pan, urine container.

d) Observation of stools, urine, sputum, drains

e) Use and care of catheters and rubber goods.

f) Care of immobile/bed ridden patients, bed sore and aspiration prevention

8. Monitoring of Patient:

a) Pulse, ECG (Cardiac Monitor), Oxygen Saturation, Blood Pressure, Respiration

b) Multi parameter monitors, Capnography and End Tidal CO2 (ETCO2)

c) Hydration, intake and output monitoring

d) Monitoring ventilator parameters: Respiratory Rate, Volumes, Pressures, Compliance, Resistance

Unit V

Wound care and first aid - 10 hours

9. Dressing and wound care:

a) Bandaging: basic turns, bandaging extremities, triangular bandages and their application.

b) Surgical dressing: observation of dressing procedures.

c) Suture materials and suturing techniques

d) Splinting

e) Basic care of patient with burns

10. First Aid and Basic Life Support (BLS)

Practical:

1. Demonstration of Patient care Procedures:

a) Positioning of patient, transport of the patient, Dressing and Bandaging, Care of inter costal drain tube, Insertion of naso-gastric tube and feeding

b) Phlebotomy and obtaining blood samples, Arterial Blood sampling for ABG

c) Injections: intra muscular, intra venous, sub cutaneous, intra dermal

d) Insertion of intra venous catheter and infusion of medications, blood transfusion

e) Recording of ECG and monitoring of patient
f) Oxygen therapy: oxygen cannula, masks. Aerosol therapy: nebulization, inhalers
g) Suctioning and care of artificial airway
h) Insertion of urinary bladder catheter

2. Uses, principles, advantages and disadvantages of instruments and Devices in patient care
3. First aid and Basic Life Support (BLS)

Practical Exam Pattern:

Spotters, Drugs, Instruments and devices - identification and usage, demonstration of patient care procedures.

Reference Books (latest edition)

1. Principles and Practice of Nursing - Sr Nancy
2. Introduction to Critical Care Nursing - Mary Lou Sole
3. First Aid - Redcross Society Guidelines
4. Basic Life Support (BLS) - American Heart Association Guidelines

IV Semester
Core -11- Basics Cardiac Evaluation and Therapies

Objectives:
To learn about heart diseases and related disorders. Also basics of cardiovascular - investigations and therapies.

Unit I
Heart diseases and related disorders - 14 Hours

a) Ischaemic heart disease
b) Rheumatic heart disease
c) Congenital heart disease
d) Arrhythmias
e) Peripheral vascular disease
f) Pericardial disease
g) Shock state
h) Cardiomyopathy
i) Hypertension, diabetes, dyslipidaemias
j) Infective endocarditis
k) Heart failure
l) Pulmonary hypertension and embolism

Unit II
Cardiovascular investigations: Noninvasive - 14 Hours

a) ECG - cardiac diagnosis by ECG: Chambers enlargement, arrhythmias, myocardial ischaemia and infarction.
b) Echocardiography - cardiac diagnosis: valvular heart diseases, myocardial diseases, ischaemic heart diseases, Cardiomyopathies
c) Pulmonary hypertension, infective endocarditis, intracardiac masses.
d) Stress test- treadmill test review, pharmacological stress testing.
e) 24 hours Holter monitoring
f) Ambulatory BP monitoring
f) Tilt table test
g) Ankle-Brachial Index

Unit III
Cardiovascular investigations: Invasive - 10 Hours

a) Diagnosis of coronary artery disease
b) Diagnosis of valvular heart diseases in the cath-lab - stenosis, regurgitation and mixed
c) Diagnosis of shunts
d) Evaluation of pulmonary hypertension
e) Diagnosis of pericardial constriction
f) Diagnosis of peripheral and aortic diseases

g) Complications of cardiac catheterization
h) Complications and management of Contrast

Unit IV
Cardiovascular pharmacological therapies - 12 hours

a) Antiplatelets
b) Anticoagulants
c) Antiarrhythmic
d) Antihypertensive
e) Intravenous fluids
f) Atropin
g) Inotropics
h) 2B 3A receptors blocking agents
I) Diuretics
j) Nitrates
k) miscellaneous

Unit V
Cardiovascular interventional therapies - 10 hours

a) Coronary angioplasty
b) Peripheral angioplasty
c) Mitral valvoplasty
d) Pulmonary and aortic valvuplasty
e) Device closures
f) Pacemakers
g) Pericardiocentesis
h) Myocardial biopsy
i) Retrieval of foreign bodies
j) Clot aspiration

Practicals:

Non invasive Technology;

a) ECG recording basic
b) ECHO evaluation basic
c) Preparation for treadmill test
d) Preparation for 24 hours Holter monitoring
e) Preparation for ABPM

Invasive Technology;

a) Cardiac Cath right Heart
b) Cardiac Cath Left Heart
c) Cardiovascular Angiography
d) Cardiac Pacing

e) Relevant instrumentation in Cath Lab
f) Cardiac Emergencies in Cath Lab

Practical Exam Pattern:

1) Spotters -20 marks
   a) Instruments and consumables
   b) Pharmacology of cardio vascular Drugs
   c) Devices
2) Discussion- 20 marks

Reference Books (latest edition)

1 A text book of Electrocardiography - Goldberger
2 Nanda's A Text book of Echocardiography
3 A Text of Cardiac Catheterization & Interventions. Dr. W. Grossman's D. Baim
4 A Text book of Cardiovascular Medicine. Dr. Bruanwald's
5 A Text book of Medicine. Davidsons

IV Semester

Core-12- Basics of Medical Disorders

Objective:

To learn about basic concepts of common medical disorders and its therapeutic options.

Unit I

Cardiac and Respiratory diseases - 12 hours

1. Cardio vascular diseases
   a. Hypertension, Ischemic heart diseases, Myocardial Infarction, arrhythmias
   b. Heart failure, shock - types, causes
2. Respiratory diseases
   a. Pneumonia, tuberculosis,
   b. Chronic obstructive pulmonary disease, asthma
   c. Pleural effusion, pneumothorax
   d. Interstitial lung disease

Unit II

Neurological, Renal, GI and infectious diseases - 12 hours

3. Neurological diseases
   a. Polio myelitis, Gullian Barre Syndrome, Myasthenia Gravis, epilepsy / seizure disorder, cerebro vascular accident / stroke
4. Renal Diseases
   a. Acute kidney injury
   b. Chronic Kidney Disease
5. Gastro intestinal and Liver Diseases
   a. Gastritis / APD, peptic ulcer
   b. Acute gastroenteritis
   c. Hepatitis, Hepatic failure, alcoholic liver disease
6. Infectious diseases: Dengue, malaria, leptospirosis

Unit III

Blood, fluid, electrolyte and acid base abnormalities - 12 hours

7. Blood loss and Anemia, thrombocytopenia
8. Fluid Electrolyte imbalance and corrective methods
9. Acid Base abnormalities and corrective methods

Unit IV

Pulmonary Oedema, Sepsis and MODS - 10 hours

10. Pulmonary Oedema, Acute Lung Injury and Acute Respiratory Distress Syndrome
11. Sepsis, multi-organ failure, Multi-organ dysfunction syndrome

Unit V

Health problems in Specific conditions and Toxicology - 14 hours

12. Health problems in specific conditions
    a. Pregnancy - antenatal care, disorders in pregnancy
    b. Children and new born
    c. Obesity
    d. Diabetes mellitus
    e. HIV infections and AIDS
    f. Elderly subjects and disability
    g. Brief mention about endocrine disorders
13. Poisoning and drug over dosing
    a. Classification of poisons
    b. Principles of treatment of poisoning and Primary care
    c. Poisons and drug over dosing requiring ventilation
14. Miscellaneous
    a. Drowning
    b. Hanging

Practical:

1. History Taking and clinical examination, monitoring of patient.
2. Therapeutic options for various diseases and conditions

Practical Exam Pattern:

* Spotters-20 marks
  Drugs, Instruments and devices
  X rays, Basic Blood investigation reports
* Case Discussion- 10 marks
* Demonstration of Procedures- 10 marks

Recommended Books Recent Editions.

1. Davidson's Principles and Practice of Medicine - Elsevier Publications
2. Harrison's Principle of Internal Medicine

IV Semester
Skill Enhancement-2
Biostatistics and Research Methodology

Learning Objectives

1. To have a basic knowledge of Biostatistics and its applications in medicine
2. To know various types of data presentation and data summarization in Medical field
3. To have overview of data analysis and sampling techniques
4. To understand various study designs in Medical field
5. To know applications of various study designs in Medical Research

Biostatistics

Unit I

Introduction and Presentation of data

Meaning , Branches of Statistics, Uses of statistics in medicine, Basic concepts, Scales of measurement, Collection of data, Presentation of data; Tabulation, Frequency Distribution, Diagrammatic and Graphical Representation of Data.

Unit II

Measures of central tendency and Measures of variation

Arithmetic Mean (Mean), Median, Mode, Partition values, Range, Interquartile range , Mean Deviation, Standard Deviation, Coefficient of Variation.

Unit III

Probability and standard distributions

Definition of some terms commonly encountered in probability, Probability distributions, Binomial distribution, Poisson distribution, Normal distribution, Divergence from normality; Skewness and kurtosis

U**nit IV**

Census and Sampling Methods

Census and sample survey, Common terms used in sampling theory, Non-probability (Non random) Sampling Methods; Convenience sampling, Consecutive Sampling, Quota sampling, Snowball sampling, Judgmental sampling or Purposive sampling, Volunteer sampling, Probability (Random) Sampling methods; Simple random sampling, Systematic Sampling, Stratified Sampling, Cluster sampling, Multi-stage sampling, Sampling error, Non-sampling error.

Unit V

Inferential Statistics

Parameter and statistic, Estimation of parameters; Point estimation, Interval Estimation, Testing of hypothesis; Null and alternative hypotheses, Type-I and Type-II Errors.

Research Methodology

Unit I

Introduction to research methodology

Types of research; Descriptive vs. Analytical, Applied vs. Fundamental, Quantitative vs. Qualitative, Conceptual vs. Empirical

Unit II

Study Designs-Observational Studies

Epidemiological study designs; Observational studies, Descriptive studies; Case reports, Case series, Analytical studies; Case control studies, Cohort studies, Cross sectional

Unit III

Experimental Studies

Experimental studies (Interventional studies); Randomized control Trials (Clinical trials), Field trials, Community trials and Randomized Trials

Unit IV

Uses of Epidemiology

Unit V

Application of study Designs in Medical Research

Recommended Books Recent Editions.

1. K.R.Sundaram, S.N.Dwivedi and V Sreenivas (2010), Medical Statistics, Principles and Methods, BI Publications Pvt Ltd, New Delhi
2. NSN Rao and NS Murthy (2008), Applied Statistics in Health Sciences, Second Edition, Jaypee Brothers Medical Publishers (P) Ltd.
3. J.V.Dixit and L.B.Suryavanshi (1996), Principles and practice of Biostatistics, First Edition, M/S Banarsidas Bhanot Publishers.
4. Getu Degu and Fasil Tessema (2005), Biostatistics, Ethiopia Public Health Training Initiative.
5. Essentials of Community Medicine for Allied Health Sciences, JSS University Publications, 20.
6. Park K. Park's Textbook of Preventive and Social Medicine. 23rd ed. Jabalpur: Banarsidas Bhanot Publishers, 2015. p.135-141.
7. Suryakantha. Textbook of Community Medicine with recent Advances. 4th edition.
8. Bhalwar R. Textbook of Public Health and Community Medicine. 2nd Edition. Pune, Department of Community Medicine AFMC, 2012.
9. Leon Gordis. Epidemiology 4th Edition - Elsevier Saunders Publication.

IV Semester
Allied-4
Constitution of India

Unit - I
Meaning of the term 'Constitution'. Making of the Indian Constitution 1946-1950.

Unit - II
The democratic institutions created by the constitution, Bicameral system of Legislature at the Centre and in the States.

Unit - III
Fundamental rights and duties their content and significance.

Unit - IV
Directive principles of States, policies the need to balance fundamental rights with directive principles.

Unit - V:
Special rights created in the Constitution for dalits, backwards, women and children and the religious and linguistic minorities.

Unit - VI
Doctrine of Separation of Powers, legislative, executive and judicial and their functioning in India.

Unit - VII
The Election Commission and State Public Service commissions.

Unit - VIII
Method of amending the Constitution.

Unit - IX
Enforcing rights through writs.

Unit - X
Constitution and sustainable development in India.

Recommended Books Recent Editions.

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, Allahbad, Central Law Agency, 1998.
3. Granville Austin. The Indian Constitution. Corner Stone of a Nation-Oxford, New Delhi, 2000.

V Semester
Core-13- Cardiac Evaluation and Therapies (Part I)

Objectives:

To learn about heart diseases and related disorders. To learn the concepts of cardiovascular - investigations and therapies.

Unit I

Clinical disorders of heart - 12hours

a) Clinical presentation, evaluation and management of acute coronary syndromes
b) Clinical presentation, evaluation and management of stable ischemic heart disease
c) Hypertension, diagnosis, complications and management
d) Cardiac arrhythmia, presentation, diagnosis and management
e) Heart failure, classification, diagnosis and management

Unit II

Drugs and Nutrition in Cardiac Care - 12 hours

1. Drugs acting on cardiac system and emergency cardiovascular drugs
   a. Antiplatelets drugs
   b. Antiischaemic drugs
   c. Thrombolytic drugs
   d. Antiarrhythmic drugs
2.Nutrition assessment and management

Unit III

Patient monitoring in cardiac care- 12 hours

3. Monitoring of a patient with cardiac disease
   a) Cardiac Rhythm and rate.
   b) Trans-cutaneous oxygen monitors and Pulse oximeters.
   c) Invasive hemodynamic monitoring
   d) Multi parameter monitoring
   e) ACT monitoring
   f) Monitoring response to therapy and progression of disease

Unit IV

Cardiovascular investigations: Noninvasive - 14 Hours

a) ECG - Review of ECG patterns in ischaemic heart diseases, hypertensive heart disease.
b) Echocardiography - A review of Evaluation of valvular heart diseases, ischaemic heart diseases, Cardiomyopathies and pericardial diseases
c) Pulmonary hypertension, infective endocarditis, intracardiac masses.
d) Stress test- treadmill test review, pharmacological stress testing.
e) 24 hours Holter monitoring

Unit V

Cardiovascular investigations: Invasive - 10 Hours

a) Coronary angiography
b) Diagnosis of mitral stenosis, regurgitation and mixed
c) Diagnosis of shunts A review
d) Diagnosis of peripheral and aortic diseases
e) Complications of cardiac catheterization
f) Contrast induced nephropathy prevention and management

Practicals/ Students Presentations - Round Table

1. Diagnostic patterns of ECG changes in a patient with chest pain.
2. Diagnostic patterns of ECG changes during stress test
3. Evaluation of rheumatic mitral stenosis by echocardiography
4. Evaluation of Pericardial effusion by echocardiography

Practical Exam Pattern:-40 marks

Spotters-20 marks
Drugs, Instruments and devices
Demonstration of Procedures- 20 marks

Recommended Books Recent Editions.

1 A Text book of Electrocardiography - Goldberger.
2 Nanda's A Text book of Echocardiography.
3 A Text of Cardiac Catheterization & Interventions. Dr. W. Grossman's D. Baim.
4 A Text book of Cardiovascular Medicine. Dr. Bruanwald's.
5 A Text book of Medicine. Davidsons.

V Semester

Core-14- Cardiac Evaluation and Therapies (Part II)

Objective:
To learn about optimum use of noninvasive and invasive cardiology techniques

Unit I

Electrocardiography **12 Hours**

a) Optimum recording of 12 leads ECG and computerised interpretation
b) Trouble shooting of ECG artefacts
c) Bradyarrhythmais and tachyarrhythmias.

Stress test (tread mill, bicycle and others)

a) Indications/ contra indications
b) Complications

Unit II

Echocardiography **12 Hours**

a) Evaluation of left ventricular studies - 16 segment model
b) Evaluation of left ventricular studies - systolic and diastolic functions
c) Evaluation of right ventricle

Unit III

Invasive techniques **12 Hours**

a) Guide wires
b) Diagnostic catheters for coronary angiography
c) Diagnostic catheters for carotid, /cerebral angiography
d) Diagnostic catheters for renal angiography
e) Diagnostic catheters for abdominal vessels

Unit IV

Invasive techniques Procedures **12 Hours**

a) Carotid and cerebral angiography
b) Renal angiography
c) Studies of abdominal aorta, mesenteric, iliac and others

Unit V

Care of patient undergoing vascular procedures **12 Hours**

a) Indications, contraindications for angiographic studies
b) Patient education of the invasive procedures, consent processes and preparation
c) Monitoring physiological variables during cath lab procedures

d) Post procedure protocols
e) Reporting and data management of the cath procedures

Practicals/ Students Presentations - Round Table

a) Right sided ECG chest leads and its importance
b) Demonstration of TAPSE.
c) Demonstration of estimation of pulmonary artery pressure by echocardiography
d) Spotters on guide wires and diagnostic catheters

Practical Exam Pattern: 40 marks

* Spotters-20 marks

Instruments and devices

* Case Scenarios-20 marks

Demonstration of Procedures

Recommended Books Recent Editions.

1. A Text book of Electrocardiography - Goldberger
2. Nanda's A Text book of Echocardiography
3. A Text of Cardiac Catheterization & Interventions. Dr. W. Grossman's D. Baim
4. A Text book of Cardiovascular medicine. Dr. Bruanwald's
5. A Text book of Medicine. Davidsons

V Semester
Core-15- Cardiac Evaluation and Therapies (Part III)

Objective:
To learn about optimum use of noninvasive and invasive cardiology techniques

Unit I
Electrocardiography - 12 hours

a) PR interval
b) QT interval
c) Calculation of heart rate
d) Analysis of ST segment
e) Artefacts in tread mill ECG

Unit II
Echocardiography - 12 hours

a) Basics of pediatric echocardiography.
b) Echocardiography in acute rheumatic fever
c) Echocardiography in chronic rheumatic heart disease
d) Echocardiography in cardiac tamponade

Unit III
Invasive techniques - 12 hours

a) Cardiac pacing indications
b) Cardiac anatomy and its importance in pacing
c) Cardiac pacing physiology
d) Cardiac pacing temporary
e) Cardiac pacing permanent
f) Programing of pacemakers
g) Common problems associated with pacemakers.
h) External cardiac pacing

Unit IV
Important Medical conditions and their relevance to cardiac care - 12 hours

a) Anemia
b) Renal failure
c) Bleeding Diathesis
d) Heart failure
e) Hypoxia (cyanosis)

Unit V

Basics of Nuclear cardiology - 12 hours

a) Principles of nuclear cardiology
b) Tracers used in nuclear cardiology
c) Imaging techniques in nuclear cardiology
d) Indications of nuclear diagnostic procedures in cardiology

Practicals/ students presentations - round table

1. Pacemaker interrogation
2. Demonstration of estimation of severe mitral stenosis by echocardiography

Practical Exam Pattern:

Spotters- 20 marks
Demonstration of Procedures- 20 marks

Recommended Books Recent Editions.

1. A Text book of Electrocardiography - Goldberger
2. Nanda's A text book of Echocardiography
3. A Text of Cardiac Catheterization & Interventions. Dr. W. Grossman's D. Baim
4. A Text book of Cardiovascular medicine. Dr. Bruanwald's
5. A Text book of Medicine. Davidsons

V Semester
Elective-1- Echocardiography

Objective:
To learn about the basics of principles, practice and applications of echocardiography.
Introduction to echocardiography.

Principles of echocardiography: 4 hours
Ultrasound
Its application to obtain echocardiograms
Principles of two dimensional echo and its applications
Principles of M - mode and its application
Principles of colour Doppler and spectral Doppler and their applications

Practice of echocardiography: 12 hours
ECHO views
ECHO windows
Obtaining Left ventricular images
Obtaining Doppler data
Echocardiographic measurements
Other methods of imaging

Indications for echocardiography: 10 hours
Assessment of anatomy
Assessment of etiology
Assessment of pathology
Assessment of physiology
Assessment of follow up of cardiac diseases

Technical pit falls of echocardiography: 4 hours
Echo windows
Suboptimal use of technology of ultrasound
Artefacts in echocardiography
Echocardiography in special situations

Practical assessment :
a) Spotters
b) Video Clips
c) Demonstration of common disorders

V Semester
Allied - 5 - Medical Ethics

General Considerations of Medical Ethics

1. Medical Ethics - Introduction
2. Three Cor Contents in Medical Ethics - Best Interest, Autonomy Unrights
3. Doctors, Patient & Profession

Special Considerations of Medical Ethics

1. Consent
2. Confidentiality
3. Genetics
4. Reproductive Medicine
5. Mental Health
6. End of life and Organ Transporentation
7. Research & Clinical Trials

Recommended Books Recent Editions.

1. Medical Ethics & Law, The Cor Curriculum
2. Author - Tony Hope Atla
3. Reference book No. 16715 Center Library

VI Semester

Core 16 - Cardiac Care Technology - Applied (Part I)

Objective:

To learn about the clinical aspects of cardiac care and implement the knowledge in cardiac care technology.

Unit I

Documentation and Assessment for Cardiac care - 10 hours

1.Documentation in Non-Invasive technology

a) ECG
b) ECHO
c) TMT

2.Documentation in Invasive technology

a) Angiography
b) Interventional procedures

Unit II

Electrocardiography A review -14 hours

a) Chamber hypertrophy
b) Acute coronary syndromes
c) Bradyarrhythmias
d) Tachyarrhythmais
e) Pericardial diseases

Unit III

Ambulatory cardiac technologies - 14 hours

a) Holter monitoring
b) Loop recorders
c) Ambulatory blood pressure recording
d) Newer technologies for monitoring the patients with heart diseases

Unit IV

Invasive technologies - 10 hours

a) Coronary angiogram for performing angioplasty
b) PTCA
c) Coronary Stents
d) Optimizing the results of PTCA

Unit V

Invasive technologies - 12 Hours

a) Intra-aortic balloon pump
b) Fractional flow reserve

c) Rotational atherectomy
d) Intra vascular ultrasound
e) Optical coherence tomography

Practicals/ students presentations - round table

a) Demonstration of various ECGs
b) Demonstration of ambulatory blood pressure hook up and analysis
c) Demonstration of ambulatory (Holter) ECG hook up and analysis
d) Demonstration of Coronary angiography and analysis
e) Demonstration of PTCA, stenting and other technologies

Practical Exam Pattern:

* Spotters- 10 marks
* Drugs- 10 marks
* Instruments and devices- 10 marks
* Demonstration of Procedures- 10 marks

Recommended Books Recent Editions.

1. A Text book of Electrocardiography - Goldberger
2. Nanda's A Text book of Echocardiography
3. Text of Cardiac Catheterization & Interventions. Dr. W. Grossman's D. Baim
4. A Text book of Cardiovascular Medicine. Dr. Bruanwald's
5. A Text book of Medicine. Davidsons

VI Semester

Core -17- Cardiac Care Technology - Applied (Part II)

Objective:
To learn about the clinical aspects of cardiac care and implement the knowledge in cardiac care technology.

Unit II

Electrocardiography 12 hours

a) Diagnoses of acute myocardial infarction
b) Diagnoses of hyperkalemia
c) Diagnoses of WPW syndrome

Unit II

Echocardiography 14 hours

1) Congenital heart diseases
   a) ASD
   b) VSD
   c) PDA
   d) Coarctation of aorta
   e) Pulmonary and aortic stenosis
   e) Tetralogy of Fallot
   f) Others
2) Transesophageal echocardiography
3) Stress echocardiography (pharmacological
4) 3D echocardiography

Unit III

Cardiac common drugs used in cardiac patients 12 hours

Drugs acting on cardiac system and emergency cardiovascular drugs

a. Antiplatelets drugs
b. Antiischaemic drugs
c. Thrombolytic drugs
d. Antiarrhythmic drugs
e. Atropine
f. Digoxin
g. Nitrates

Unit IV

Invasive 10 hours

a) Organization of cath lab services
b) Data management of cath lab

c) Management of intra coronary thrombus
d) Management of hypotension
e) Management of vasovagal attack
f) Management of coronary perforation
g) Management of retrieval of dislodged foreign materials in the vessels

Unit V -
Case studies in cardiology 14 hours

a) A case of myocardial infarction with complications
b) A case of multivalvular heart disease
c) A case of pulmonary thrombo embolism
d) A case of infective endocarditis
e) A case of mitral valve prolapse
f) A case of rheumatic mitral stenosis

Practicals/ students presentations - round table

a) Demonstration of various varieties of myocardial infarction by ECG
b) Demonstration of ASD various types
c) Demonstration of VSD various types
d) Demonstration of PDA and Coarctation of aorta
e) Stent booster technology
f) Foreign body retrieval methods in the cath lab
g) Balancing transducer
h) Pressure traces, pressure gradients
I) Steps of PTMC
j) Steps of PTCA

Practical Exam Pattern:

* Spotters- 10 marks
* Drugs- 10 marks
* Instruments and devices- 10 marks
* Demonstration of Procedures- 10 marks

Recommended Books Recent Editions.

1. A Text book of Electrocardiography - Goldberger
2. Nanda's A Text book of Echocardiography
3. A text of Cardiac Catheterization & Interventions. Dr. W. Grossman's D. Baim
4. A Text book of Cardiovascular Medicine. Dr. Bruanwald's
5. A Text book of Medicine. Davidsons

VI Semester
Core-18- Basic Intensive Care

Objective:
To learn about basic intensive care concepts by applying the knowledge of patient care, anatomy, physiology and medical disorders.

Unit I
General ICU Care and Monitoring - 12 hours

1. General care and transport of ICU patient - eye, skin, bladder care, position, airways, drains, catheters. Transport of critically ill patient to and out of ICU, transport of patient with drains, airway, inotropes, mechanical ventilator.
2. Monitoring in critical care: vital signs, drains, ECG, fluid intake & output, invasive hemodynamic and central venous pressure monitoring

Unit II
Infection Control and Nutrition in ICU - 10 hours

3. Infection control in ICU: prevention of cross infection, personal protection, antibiotics and policy.
4. Nutrition and Fluid balance - total parentral nutrition, nasogastric tube, gastric tube, jejunostomy tube care and feeding, IV Fluids.

Unit III
Systemic Diseases and Care in ICU - 14 hours

5. Cardiac care in ICU: hypertension, hypotension, arrhythmias, cardiac arrest, ACLS
6. Respiratory care in ICU: airway care, tracheostomy care, endotracheal intubation, mechanical ventilation, care of ventilated patient, complications and weaning.
7. Renal failure: types, etiology, complications, corrective measures
8. Hepatic failure: types, etiology, complications, corrective measures

Unit IV
Head Injury and Trauma care in ICU - 12 hours

9. Head injury and Trauma Care: Glasgow coma scale, care of head injury patient, poly trauma patient
10. Blood and blood products transfusion: Transfusion reactions & complications, Massive transfusion

Unit V
Acid base disorders, neonatal ventilation, imaging in ICU - 12 hours

11. Acid-base & electrolyte balance and their correction, fluid, electrolyte, nutrition balance and management.
12. Neonatal mechanical ventilation: intubation and problems inherent to the neonate, basic principles of neonatal ventilation, modes, initiation and maintenance.

13.Miscellaneous: X-rays, ultrasound, chest and limb physical therapy in ICU

Practical:

1. Monitoring of Patients
2. Operating devices, ventilator and monitor settings for different clinical conditions
3. Drugs used in Intensive Care
4. Trouble shooting and maintenance of monitors, equipments and ventilators

Practical exam pattern:

1. Identification and use of devices and equipments used for monitoring and care in ICUs-20 marks
2. Demonstration of patient care procedures- 10 marks
3. Identifications of drugs used in ICU and its effects / precautions / complications- 10 marks

Recommended Books Recent Editions.

1. Introduction to Critical Care Nursing - Mary Lou Sole
2. Critical Care Notes: Clinical Pocket Guide - Janice Jones

Reference Books

1. AACN Essentials of Critical Care Nursing - American Association of Critical Care Nursing
2. Textbook of Critical Care: Expert Consult - Jean-Louis Vincent
3. The ICU Book - Paul L. Marino.

VI Semester
Elective-2- Coronary Angiography

Objective:

To learn about the basics of coronary angiography.

Introduction to coronary angiogram **4 hours**

a) History of coronary angiography

b) Instrumentation in coronary angiography

c) Indications for coronary angiography

d) Contraindications for coronary angiography

Procedure **6 hours**

a) Approach

b) Seldingers technique

c) Catheters for coronary angiography

d) Views for coronary angiography

e) Evaluation of a coronary lesion

f) Reporting of coronary angiography

Decision making on management **12 hours**

a) Revascularization PTCA or CABG

b) Planning review of protocol

Post procedure care **8 hours**

a) Drugs

b) Groin care (femoral approach)

c) Wrist care (radial approach)

Complications and management

Practical assessment:

a) Spotters

b) Video Clips

c) Demonstration of common disorders

All page ok

VI Semester
Allied - 6 - Hospital Management

1. Quality Concepts: Definition of Quality, Dimensions of Quality, Basic concepts of Total Quality Management, Quality Awards. Accreditations for hospitals: Understanding the process of getting started on the road to accreditation, National and International Accreditation bodies, overview of standards- ISO (9000 & 14000 environmental standards), NABH, NABL, JCI, JACHO.

2. Hospital Information System: Hospital Information System Management and software applications in registration, billing, investigations, reporting, ward management and bed distribution, medical records management, materials management and inventory control, pharmacy management, dietary services, management, information processing. Security and ethical challenges.

3. Inventory Control: Concept, various costs of inventory, Inventory techniques-ABC, SDE / VED Analysis, EOQ models. Storage: Importance and functions of storage. Location and layout of stores. Management of receipts and issue of materials from stores, Warehousing costs, Stock verification.

4. Equipment Operations management: Hospital equipment repair and maintenance, types of maintenance, job orders, equipment maintenance log books, AMCS, outsourcing of maintenance services, quality and reliability, concept of failure, equipment history and documents, replacement policy, calibration tests, spare parts stocking techniques and polices

5. Biomedical Waste Management: Meaning, Categories of Biomedical Wastes, Colour code practices, Segregation, Treatment of biomedical waste - Incineration and its importance. Standards for waste autoclaving, Microwaving. Packaging, Transportation & Disposal of Biomedical wastes.