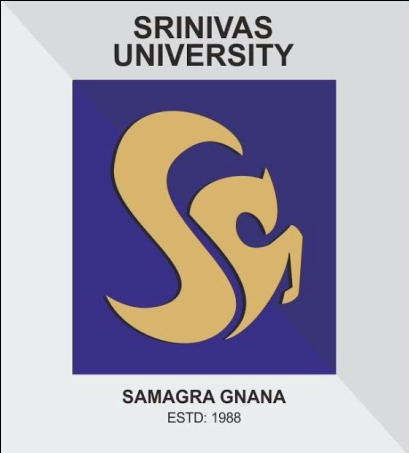
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**REGULATIONS AND COURSE CURRICULUM FOR**

**Bachelor of Science in**

**RESPIRATORY CARE TECHNOLOGY**

**2017**

**COLLEGE OF ALLIED HEALTH SCIENCES,**

**SRINIVAS UNIVERSITY,**

**MUKKA, MANGALURU**

**Name of the course :- B.Sc. Respiratory Care Technology**

1. **About the course:-** The Bachelor of Sciences in **Respiratory Care Technology** is an undergraduate program offered by Srinivas University, Mukka, Mangalore. The department has well-equipped facilities for practical and clinical exposure and faculty selected for their field expertise and academic experience.
2. **Eligibility for Admission:** **-** A candidate seeking admission to **B.Sc. Respiratory Care Technology** should have completed 17 years of age as on 31st December, of the year of admission and should have studied English as one of the principal subject during the tenure of the course.

1. Two year Pre-University examination or equivalent as recognized by University with Physics, Chemistry and Biology as principle subjects of study.

OR

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

OR

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

OR

4. The 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 is considered equivalent to plus TWO examinations of Government of Karnataka Pre University Course.

OR

5. Candidates with two years Diploma from a recognized Government Board in a subject for which the candidate desires to enroll, in the respective to **B.Sc. Respiratory Care Technology** will have passed plus 12 [10+2] with Physics, Chemistry and Biology, as principal subjects or candidates with 3 years diploma from a recognized Government Board in a subject for which the candidate desires to enroll.

6. Lateral entry to second year for allied health science courses for candidates who have passed diploma program from the Government Boards and recognized by University, fulfilling the conditions specified above under Sl. No. 5 and these students are eligible to take admission on lateral entry system only in the same subject studied at diploma level.

**Note:**

1. The candidate will have passed individually in each of the subjects.
2. Candidates who have completed diploma or vocational course through correspondence will not be eligible for any of the course mentioned above.
3. **Duration:-**Duration will be for a period of three and a half years including six months of Internship.
4. **Medium of instruction:** The medium of instruction and examination will be in English.
5. **Scheme of examination:** There will be three examinations one each at the end of each academic year.
6. **Attendance:** Every candidate has to attend at least 80% of the total number of theory classes, clinical postings, and practical separately in an academic year in each of the subjects prescribed for that year. Only such candidates are eligible to appear for the university examinations in their first attempt. Special classes conducted for any purpose will not be considered for the calculation of percentage of attendance for eligibility. A candidate lacking in prescribed percentage of attendance in any subjects either in theory or practical in the first appearance will not be eligible to appear for the University Examination in that subject .
7. **Internal Assessment (IA):**

**Theory** - 50 marks. **Practical** - 10 marks\*.

There will be a minimum of three periodical tests in theory and practical in an academic year. The marks of IA will be communicated to the University at least 15 days before the Commencement of the University examination. The University will have access to the records of such periodical tests.

The marks of the internal assessment will be displayed on the notice board of the respective colleges with in a fortnight from the date the test is held.

\* There will be No University Practical Examination in First year.

1. **Course content*:*** The number of hours for theory and practical subject wise in first year, second year and third year are shown in Table –I to V. Subsidiary subjects are common in first year for all the courses in Allied Health Sciences.
2. **TABLE : 1 Distribution of subjects and number of hours of teaching in First year**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Subject** |  | **Theory No. of**  **Hours** | **Practical**  **No. of Hours** | **Total**  **No. of Hours** | **University Exams** | **Marks** | | |
|  |  |  |  |  |  | **Exam**  **Duration** | UE | IA | Total |
| 1 | Human Anatomy |  | 70 | 20 | 90 | 2 hours | 50 | 50 | 100 |
| 2 | Physiology |  | 70 | 20 | 90 | 2 hours | 50 | 50 | 100 |
| 3 | Biochemistry |  | 70 | 20 | 90 | 2 hours | 50 | 50 | 100 |
| 4 | Pathology-[Clinical  pathology, Hematology&  Blood -Banking |  | 70 | 20 | 90 | 2 hours | 50 | 50 | 100 |
| 5 | Microbiology |  | 70 | 20 | 90 | 2 hours | 50 | 50 | 100 |
| 6 | Clinical Respiratory Care |  | 70 | 20 | 90 | 2 hours | 50 | 50 | 100 |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | **Subsidiary Subjects** |  |  |  |  |  |  |  |  |
| 1 | English |  | 30 | **----** | 30 | 2 hours | 50 |  | 50 |
| 2 | Kannada |  | 30 | **----** | 30 | 2 hours | 50 |  | 50 |
| 3 | Health Care |  | 30 | **----** | 30 | 2 hours | 50 |  | 50 |

**1st year no practical examinations**

**TABLE: II. Distribution of subjects and number of hours of teaching & Examination in 2nd year**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Subject** | **Theory No. of**  **Hours** | **Practical**  **No. of Hours** | **Clinical**  **Posting** | **Total**  **No. of Hours** | **Theory** | | | | **Practical** | | |
| **Theory** | **Viva** | **IA** | **Total** | **Practical** | **IA** | **Total** |
| 1 | Medicine relevant to Respiratory technology | 70 | ----- | ---- | 70 | 50 | **----** | 50 | 100 | **No Practical** | | |
| 2 | Applied Pathology | 70 | 20 | ---- | 90 | 50 | 50 | 50 | 150 | 40 | 10 | 50 |
| 3 | Applied Microbiology | 70 | 20 | ---- | 90 | 50 | 50 | 50 | 150 | 40 | 10 | 50 |
| 4 | Applied Pharmacology | 70 | --- | --- | 70 | 50 | ---- | 50 | 100 | **No Practical** | | |
| 5 | Pulmonary Diagnostics & Critical Care Monitoring | 70 | 30 | 450 | 550 | 50 | 50 | 50 | 150 | 40 | 10 | 50 |

**TABLE: III Distribution of subjects and number of hours of teaching & Examination in 2nd year subsidiary subjects**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sl. No.** | **Subsidiary Subject\*\*** | **Teaching Hours** | **Duration of exam** | **Marks** |
| 1 | Constitution Of India | 30 | 2 hours | 50 |
| 2 | Environment Science &Health | 30 | 2 hours | 50 |
| 3 | Medical Psychology | 30 | 2 hours | 50 |

**TABLE: IV. Distribution of subjects and number of hours of teaching & Examination in Third year**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Subject** | **Theory No. of**  **Hours** | **Practical**  **No. of Hours** | **Clinical**  **Posting** | **Total**  **No. of Hours** | **Theory** | | | | **Practical** | | |
| **Theory** | **Viva** | **IA** | **Total** | **Practical** | **IA** | **Total** |
| 1 | Respiratory  Technology - Clinical | 70 | 50 | 150 | 270 | 50 | 50 | 50 | 150 | 120  (40+  40+  40) | 30  (10+10+10) | 150 |
| 2 | Respiratory  Technology - Applied | 70 | 50 | 150 | 270 | 50 | 50 | 50 | 150 |
| 3 | Respiratory  Technology - Advanced | 70 | 50 | 150 | 270 | 50 | 50 | 50 | 150 |
| 4 | Pulmonary Rehabilitation | 70 | 50 | 150 | 270 | 50 | ---- | 50 | 100 | **No practical** | | |

**TABLE: V Distribution of subjects and number of hours of teaching & Examination in 3rd year subsidiary subjects**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sl. No.** | **Subsidiary Subject\*\*** | **Teaching Hours** | **Duration** | **Marks** |
| 1 | Medical Ethics and legal aspects | 30 | 2 hours | 50 |
| 2 | Research & Biostatistics | 30 | 2 hours | 50 |
| 3 | Computer application | 30 | 2 hours | 50 |

**A short project will be carried out by the student in 3rd year under the guidance of subject experts.**

**9. Schedule of Examination:**

The university will conduct annual examination at the end of the academic year as notified by the university. A candidate who satisfies the requirement of attendance, progress and conduct as stipulated by the university will be eligible to appear for the university examination. The makeup examinations will be conducted within 6 to 8 weeks from the announcement of results.

**10.Pass criteria**

a. Main Subjects: A candidate is declared to have passed in a subject, if he/she secures, 50% of marks in University Theory exam and internal assessment separately.

b. Subsidiary Subjects: The minimum prescribed marks for a pass in subsidiary subject will be 50% of the maximum marks prescribed for a subject. The marks obtained in the subsidiary subjects will be communicated to the University before the Commencement of the University examination.

**11. Carry over benefit**

**11.1 First year examination:**

A candidate who fails in not more than any three of the six main subjects of first year will be permitted to carry over those subjects to second year. Failed candidate will be permitted to appear in the failed subject in the following university examination along with the second year subjects.

**11. 2. Second year examination.**

A candidate who fails in any one subject can carry over that subject to the third year. Failed candidate will be permitted to appear in the failed subject in the following university examination along with the third year subjects. However he or she will clear all failed subjects in the third year to be awarded the degree.

**12. Declaration of Class**

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

b. A candidate having appeared in all subjects in the same examination and passed that examination in the first attempt and secures 60% of marks or more but less than 75% of grand total marks prescribed will be declared to have passed the examination in First Class.

c. A candidate having appeared in all the subjects in the same examination and passed that examination in the first attempt and secures 50% of marks or more but less than 60% of grand total marks prescribed will be declared to have passed the examination in Second Class.

d. A candidate passing the university examination in more than one attempt will be placed in Pass class irrespective of the percentage of marks secured by him/her in the examination.

e. The marks obtained by a candidate in the subsidiary subjects will not be considered for award of Class or Rank.

**13. Eligibility for the award of Degree:**

A candidate will have passed in all the subjects of first, second and third year to be eligible for a compulsory six month of rotational internship, following which, the candidate is eligible for the award of degree.

**14. Distribution of Type of Questions and Marks for Various Subjects**

**Theory**

|  |  |  |
| --- | --- | --- |
| **Subjects having maximum marks 50** | | |
| Type of Questions | No. Of questions | Marks for each questions |
| Short Essay | 07 ( 5 x 5) | 05 |
| Short answers | 07 (5 x 3) | 03 |
| To the point answers | 5 (5x 2) | 02 |

**15.Special features:** A respiratory therapist is a specialized health care practitioner trained in pulmonary and critical care to work with the physicians to care for people suffering from pulmonary disease, and requiring intensive care.

* They work most often in intensive care, operating rooms and out-patient clinics in the hospital setting and also in home-care environments
* They are trained in advanced airway management, establishing & maintaining the airway during management of trauma and in intensive care.
* They initiate & manage ventilator and life support for people in intensive care units & emergency departments. They also are trained to stabilize, treat and manage patients transported within a hospital and hospital to hospital by ground or air ambulance.
* In the outpatient setting, they work as educators in asthma clinics and are trained to perform pulmonary function testing and are trained as sleep-disorder diagnosticians in sleep – clinics.
* Work with physicians to help patients with breathing problems.
* They also perform various procedures in the critical care setting under the guidance of a physician.

**16.Career opportunities:-**

* RTs are an indispensable part of a health sector
* Besides doctors, RTs play an integral role in the efficient functioning of the health care mechanism.
* RTs help the doctor in the diagnosis, treatment & rehabilitation of patients in hospitals and in specialized rehabilitation centers.
* To have a successful career, RTs should have the ability to work in rotational shifts & should have presence of mind to take the right decision during an emergency
* RTs function with emergency medical services that run 24x7 and plays an important role in stabilizing the victims of trauma cardiac arrest.
* RTs also play an important role in local as well as inter-hospital transport of critically ill patients in hospitals.
* RTs also find opportunities in providing home-health care services for patients who require long term mechanical ventilation at homes.
* RTs can also find jobs as technical specialists in various companies associated with manufacture of equipment for the care of critically ill patients.

1. **Rules and Regulations**
2. Maintenance of DISCIPLINE within the College campus is of utmost importance. Any student involved in RAGGING of any sort directly or indirectly will be dismissed from the college immediately in addition to facing action by the law enforcing authorities. An undertaking to this effect is to be signed by both Students and Parents. Students expelled on grounds of indiscipline will not be entitled to any refund of any fees or deposit.
3. Individually a minimum of 80% attendance is required in all classes. Anyone who fails to adhere to this will not be permitted to take the examinations. Unauthorized absence is liable for fine and punishment. Punctuality is a must for each lecture class laboratory and clinical session.
4. Attendance to internal tests is compulsory and leave / absence will not be permitted.
5. Students should maintain good academic progress and conduct, which are prerequisites to appear for university examinations.
6. A student can avail leave only with prior sanction from the concerned HOD / Principal. When leave is availed for unforeseen / inevitable reasons, the leave application must be made available on returning from leave, to the HOD / Principal.
7. Students are expected to never use ethnic slur, be courteous, polite and behave with decorum within and outside the campus so as to not bring any bad name to the college.
8. Every student must follow and obey the rules / regulations of the institution, preserve the property of the institution and discharge his / her duties as a student with honour, diligence and fidelity.
9. Usage of mobile is strictly prohibited inside the campus.
10. Tobacco / alcohol / drugs usage is strictly prohibited within the campus and anyone found doing so will be punished.
11. Transfer / Adjustment of fee from one institution to another institution is not permitted by the management.
12. Students dismissed on disciplinary grounds will forfeit their entire Fees.

**DRESS CODE**

* All students in the campus should wear clean and appropriate attire.
* Prescribed uniform for all the batches.
* All students must wear white over coat.
* Every student must wear the Photo Identity Card issued by the College.
* No student will be allowed inside the campus without the Identity Card.

**ENTRANCE EXAMINATION FOR THE ALLIED HEALTH COURSES WILL BE CONDUCTECD COURSE WISE**

**SYLLABUS FOR FIRST YEAR RESPIRATORY CARE TECHNOLOGY**

**SUBJECT I - ANATOMY**

**COURSE DESCRIPTION**

The course is designed to assist students to acquire knowledge of the normal structure of

Human body and its functions. To ensure that the students understand the alteration in

Anatomical structure and function in disease condition.

**OBJECTIVES**

At the end of the course, the student will be able to

1. Describe the anatomical terms, organization of human body and structure of cell, tissue,

membranes and glands.

2. Describe the structure and functions of bones and joints.

3. Describe the structure and functions of systems in body. Have knowledge about Applied

Anatomy

**COURSE OUTCOMES FOR ANATOMY**

At the end of the course, students will be able to...

AN-AHS-CO1: Explains the Gross and Microscopic structure of human body.

AN-AHS-CO2: Explains the normal structure and integration of the functions of the organs

and systems on basis of the structure of Human body.

AN-AHS-CO3: Explains the clinical correlation of the organs and structures involved and

interprets the anatomical basis of the disease presentations.

AN-AHS-CO4: Knows about the General development of human body.

AN-AHS-CO5: Outlines the knowing of the hard & soft structures of the body.

**Theory 70 hours**

**Practical 20hours**

**Unit-1**

**Syllabus**

**Unit 1 15 Hrs**

Introduction to Anatomy, Anatomical terms and description of anatomical positions

**Tissues** – Definition and classification

**Epithelial tissue** – Definition, classification with examples

**Cartilage** – Types with examples

**Skeletal system**

Axial and Appendicular skeleton with names and number of bones

**Bones**- Classification, macroscopic anatomy, microscopic anatomy, development and growth (in brief)

**Joints** – Definition, Types of joints with examples

**Muscles** – General anatomy, classification, Microscopic structure

**Nervous Tissue** – Structure of a neuron, supporting cells

**Skin and fascia** – General anatomy and microscopic anatomy of skin

**At the end of the unit-1, the student will be able to:**

1. **knowledge or remember**
2. Name the bones of human body
3. Name the cartilage,epithelial tissue
4. Label the parts of bone

**b. understand**

1 .Classify the bones of upper limb,lower limb,abdomen ,face

2 .Demonstarte the epithelial,muscle,nervous ,connective tissue .

3. E xplain the bones,joints

**Unit 2 15 Hrs**

**Blood vessels** – Types and general structure of arteries, veins and capillaries

**Lymphatic system** – Lymph, lymphatic vessels, overview of lymphatic organs

**Cardiovascular system**

Shape, size, location, coverings, external and internal features of heart, structure of heart wall, conduction system and blood supply of heart, names and branches of major arteries and veins and related histology

**Respiratory system**

Names of organs of respiration, location and features (in brief) of nose, pharynx, larynx, trachea, bronchi, lungs, pleura and related histology

**At the end of the unit-2, the student will be able to:**

1. **knowledge or remember**
2. Name the chambers of heart
3. Name the parts of respiratory system
4. Name the blood supply to heart

**b. understand**

1 .Demonstrate the arteries and veins of whole of body

2 .Demonstarte the heart , blood supply of heart

3. Demonstate nose,pharynx,larynx,lungs

**Unit 3 15 Hrs**

**Digestive system**

Names of organs of digestion, location and features (in brief) of mouth, pharynx, oesophagus, stomach, small and large intestine, salivary glands, liver, pancreas, gall bladder and related histology

**Urinary system**

Names of organs of urinary system, location and features (in brief) of kidney, ureter, urinary bladder, urethra

**Reproductive system**

Names of organs of male and female reproductive system,

Location and features (in brief) of testis, epididymis, vas deferens, seminal vesicle, ejaculatory duct, accessory glands

Location and features (in brief) of uterus, uterine tubes and mammary glands.

**At the end of the unit-3, the student will be able to:**

1. **knowledge or remember**
2. Name the parts of digestive system
3. Name the parts of urinary system
4. Name the reproductive system

**b. understand**

1 .Demonstrate of digestive system

2 .Demonstrate of urinary system

3. Demonstrate of reproductive system

**Unit 4 15Hrs**

**Nervous system**

Subdivisions of nervous system, Meninges

Brain subdivisions & external features

Spinal cord location extent, external and internal features in brief

Blood supply , cranial nerves

**Sense organs**

Location and features (in brief) of eye and ear

**At the end of the unit-4, the student will be able to:**

1. **knowledge or remember**
2. list the cranial nerves in order
3. Define neuron
4. Name the parts of brainstem

**b. understand**

1 .Demonstrate the cerebellum, cerebrum .

2 .Demonstrate of meninges

3. illustrate the cerebrum

**Unit 5 10 Hrs**

**Endocrine system**

Name, location, features (in brief) and hormone of pituitary gland, thyroid gland, parathyroid gland, suprarenal gland , pancreas, ovaries and testes

**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

**At the end of the unit-5, the student will be able to:**

1. **knowledge or remember**
2. Name the endocrine glands
3. Name the parts of hyroid,pancreas,suprarenal gland
4. Define spermatogenesis ,oogenesis

**b. understand**

1 .Demonstrate the endocrine system

2 .Demonstrate of thyroid,pancreas,pituitary,suprarenal gland

3. demonstrate embryology

**PRACTICAL 20 Hrs**

Demonstration of skeleton and joints

Demonstration of major muscles, nerves, vessels of upper limb and thorax

Demonstration of major muscles, nerves, vessels of lower limb and abdomen

Demonstration of Cardiovascular system

Demonstration of Respiratory system

Demonstration of Digestive system

Demonstration of Urinary system

Demonstration of Reproductive system

Demonstration of Brain and Spinal cord

Identification of Basic Histology Slides

**At the end of the anatomy practicals, the student will be able to:**

**Skills**

1. To identify various tissue under the miscroscope
2. To locate various structure of body and to mark the topography of living anatomy
3. To detect various congenital anaomaly

**Recommended books:**

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 RenuChauhan. Arichal publishing company2012

1st edition

1. Hand book of anatomy BD Chaurasia

**Reference books:**

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

**COURSE DESCRIPTION**

The course is designed to assist students to acquire the knowledge of the normal physiology

of various human body systems and understand the alternation in physiology in disease condition.

**COURSE OBJECTIVES**

At the end of the course, the student will be able to

• Describe the physiology of cell, tissues, membranes and glands.

• Describe the physiology of blood and functions of heart.

• Demonstrate blood cell count, coagulation, grouping, Hb; BP and Pulse monitoring

• Describe the physiology and mechanism of respiration.

• Demonstrate Spirometry

• Describe the physiology of Excretory system

**COURSE OUTCOMES FOR PHYSIOLOGY**

At the end of the course, students will be able to...

PHY-AHS-CO1: Understand normal structure and functioning of the organs and organ systems of the body

PHY-AHS-CO2: Understand the regulatory mechanisms in normal and physiological variations.

PHY-AHS-CO3: Understand age-related physiological changes in the organ functions that reflect normal growth and development.

PHY-AHS-CO 4: Understand the physiological basis of diseases

PHY-AHS- CO 5: Interpret laboratory data pertaining to normal function of organ and organ system.

**Theory 70 hours**

**Practical 20hours**

**Unit-1**

**BLOOD 14hours**

Red blood cells – Erythropoiesis , stages of differentiation function , count physiological Variation. Haemoglobin –structure , functions , concentration physiological variation

Methods of Estimation of Hb

White blood cells – Production , function, life span, count, differential count

Platelets – Origin, normal count, morphology functions.

Plasma Proteins – Production, concentration , types, albumin, globulin, Fibrinogen, Prothrombin functions.

Haemostasis & Blood coagulation

Haemostasis – Definition, normal haemostasis, clotting factors, mechanism of clotting, disorders of clotting factors.

Blood Bank

Blood groups – ABO system, Rh system

Blood grouping & typing

Crossmatching Rh system – Rh factor, Rh in compatibility.

Blood transfusion – Indication, universal donor and recipient concept.

Selection criteria of a blood donor. transfusion reactions Anticoagulants – Classification, examplesand uses

Anaemias : Classification – morphological and etilogical. effects of anemia on body

Blood indices – Colour index , MCH, MCV, MCHC

Erythrocyte sedementation Rate (ESR) and Paced cell volume

Normal values, Definition .determination,

Blood Volume -Normal value ,determination of blood volume and regulation of blood volume

Body fluid – pH, normal value, regulation and variation

Lymph – lymphoid tissue formation, circulation, composition and function of lymph

**Cardiovascular system 10hours**

Heart – Physiological Anatomy, Nerve supply

Properties of Cardiac muscle,

Cardiac cycle-systole,diastole. Intraventricular pressure curves.

Cardiac Output – only definition

Heart sounds Normal heart sounds Areas of auscultation.

Blood Pressure – Definition, normal value, clinical measurement of blood pressure.

Physiological variations, regulation of heart rate, cardiac shock, hypotension, hypertension.

Pulse – Jugalar, radial pulse, Triple response

Heart sounds – Normal heart sounds, cause characteristics and signification. Heart rate Electrocardiogram (ECG) –significance.

At the end of the unit-1, the student will be able to:

1. **knowledge or remember**
2. Name the types of blood cells
3. Define the functions of blood
4. List the functions of cardiovascular system with other organ

**b. understand**

1.Assess the relative contribution of each blood cells towards the maintenance of the milieu interior.

2.Explain the normal functioning of cardiovascular system and their interactions for well

coordinated total body function.

3. explain the functions of each chamber of the heart.

**Unit-2**

**3. Respiratory system 10hours**

Functions of Respiratory system, Physiological Anatomy of Respiratory system, Respiratory tract, Respiratory Muscles, Respiratory organ-lungs, Alveoli, Respiratory membrane, stages of respiration. Mechanism of normal and rigorous respiration. Forces opposing and favouring expansion of the lungs. Intra pulmonary pleural pressure, surface tension, recoil tendency of the wall. H Transportation of Respiratory gases :

Transportation of Oxygen : Direction, pressure gradient, Forms of transportation, Oxygenation of Hb. Quantity of Oxygen transported.

Lung volumes and capacities Regulation of respiration what? Why? How? Mechanisms of Regulation, nervous and chemical regulation. Respiratory centre. Hearing Brier, Reflexes. Applied Physiology and Respiration : Hypoxia, Cyanosis, Asphyxia, Dyspnea, Dysbarism, Artificial Respiration, Apnoea.

**Digestive System** 5hours

Physiological anatomy of Gastro intestinal tract, Functions of digestive system Salivary glands Stucture and functions. Deglutination –stages and regulation Stomach – structure and fuctions

Gastric secretion – Composition function regulation of gastric juice secretion

Pancrease – structure, function, composition, regulation of pancreatic juice

Liver – functions of liver

Bile secretion, composition, function regulation of bile secretion .Bilirubin metabolism types of bilirubin, Vandernberg reaction, Jaundice- types, significance.

Gall bladder – functions

Intestine – small intestine and large intestine

Small intestine –Functions- Digestive, absorption ,movements.

Large intestine – Functions, Digestion and absorption of Carbohydrates,Proteins, Fats,Lipids.Defecation

**At the end of the unit-2, the student will be able to:**

1. **knowledge or remember**
2. Name the functions of functions of lungs
3. Define the functions of stomach
4. List the functions of gastrointestinal system

**b. understand**

1.Assess the transport of respiratory gases in blood

2.Explain the regulation of respiration

3. explain the functions of liver,pancrease,intestine

**Unit-3**

**Excretory System 8hours**

Excretory organs

Kidneys: Functions of kidneys structural and functional unit nepron, vasarecta, cortical and juxtamedullary nephrons – Comparision, Juxta Glomerular Apparatus –Structure and function.

Renal circulation peculiarities.

Mechanism of Urine formation : Ultrafiltration criteria for filtration GFR, Plasma fraction, EFP, factors effecting EFR. Determination of GFR selective reabsorption – sites of reabsorption ,substance reabsorbed, mechanisms of reabsorption Glucose, urea. H + Claminoacids etc. TMG, Tubular lead, Renal threshold % of reabsorption of different substances, selective e secretion. Properties and composition of normal urine, urine output. Abnormal constituents in urine , Mechanism of urine concentration.

Counter – Current Mechanisms : Micturition, Innervation of Bladder, Cysteurethrogram

Diuretics : Water, Diuretics, osmotic diuretics, Artificial kidney Renal function tests – plasma clearance Actions of ADH, Aldosterone and PTH on kidneys. Renal function tests

**Skin** -structure and function

Body temperature measurement, Physiological variation, Regulation of body Temperature by physical chemical and nervous mechanisms .Role of Hypothalamus, Hypothermia and fever.

**At the end of the unit-3, the student will be able to:**

1. **knowledge or remember**
2. list the functions of kidney
3. Define the functions of nephron
4. List the functions of skin

**b. understand**

1.Assess the mechanism of urine formation

2.Explain the process of micturition

3. explain the uses of diuretics

**Unit-4**

**Endocrine and Reproductive system 8hours**

Endocrine System - Definition Classification of Endocrine glands & their Harmones Properties of Harmones .

Thyroid gland hormone – Physiological, Anatomy, Hormone scerated, Physiological function, regulation of secretion. Disorders – hypo and hyper secretion of hormone Adrenal gland, Adrenal cortex physiologic anatomy of adrenal gland, Adrenal cortex, cortical hormones – functions and regulation Adrenal medulla – Hormones , regulation and secretion.

Functions of Adrenaline and nor adrenaline

Pituitary hormones – Anterior and posterior pituitary hormones, secretion ,function Pancreas – 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 – function and action

Function of Reproductive system, Puberty, male reproductive system.

Functions of testes, spermatogenesis site, stages, factors influencing semen.

Endocrine functions of testes Androgens – Testosterone structure and functions. Female reproducivesyustem. Ovulation, menstrual cycle.

Physiological changes during pregnancy, pregnancy test.

Lactation : Composition of milk factors controlling lactation.

**At the end of the unit-4, the student will be able to:**

1. **knowledge or remember**
2. Define hormones
3. Name the endocrine glands and its hormone secretion
4. Name the gonads and its hormone secretion

**b. understand**

1.Explain the female reproductive system

2.explain the functions of growth hormone

3.explain the functions of cortisol

4.explain the functions of thyroid hormone,insulin

**Unit-5**

**Muscle nerve physiology**  **10hours**

Classification of muscle, structure of skeletal muscle, Sarcomere contractile proteins, Neuromuscular junction.

Transmission across, Neuromuscular junction. Excitation contraction coupling. Mechanism of muscle contraction muscle tone, fatigue Rigour mortis

**Nervous system**

Functions of Nervous system, Neurone structure, classification and properties. Neuroglia, nerve fiber, classification ,conduction of impulses continuous and saltatory. Velocity of impulse transmission and factors affecting. Synapse – structure, types, properties.

Receptors – Definition, classification ,properties. Reflex action – unconditioned properties of reflex action. Babinski’s sign. Spinal cord nerve tracts. Ascending tracts, Descending tracts –

pyramidal tracts – Extrapyramidal tracts. Functions of Medulla, pons, Hypothalamic disorders. Cerebral cortex lobes and functions, Sensory cortex, Motor cortex,Cerebellum functions of Cerebellum.Basal ganglion-funtions. EEG.

Cerebro Spinal Fluid(CSF) : formation, circulation, properties, composition and functions lumbar puncture.

Autonomic Nervous System : Sympathetic and parasympathetic distribution and functions and comparison of functions.

**Special senses 5hours**

Vision – structure of eye. Function of different parts.

Structure of retina Hearing structure and function of can mechanism of hearing Taste – Taste buds functions .

Smell physiology, Receptors.

**At the end of the unit-4, the student will be able to:**

1. **knowledge or remember**
2. what is nervous system
3. what is special senses
4. why we call it as special sense
5. Name the sensory tracts
6. Name the descending tracts

**b. understand**

1.classify the muscle

2.Explain the skeletal muscle contraction

2.explain the functions of hypothalamus

3.summarize the functions of autonomic nervous system

4.explain the functions eye and ear

**Practicals 20hours**

Haemoglobinometry

White Blood Cell count

Red Blood Cell count

Determination of Blood Groups

Leishman’s staining and Differential WBC count

Determination of packed cell Volume

Erythrocyte sedimentation rate [ESR]

Calculation of Blood indices

Determination of Clotting Time, Bleeding Time

Blood pressure Recording

Auscultation for Heart Sounds

Artificial Respiration

Determination of vital capacity

**I. SKILLS**

At the end of the course, the student shall be able to

1. Conduct experiments designed for the study of physiological phenomena.

2. Interpret experimental and investigative data

3. Distinguish between normal and abnormal data derived as a result of tests which he/she has performed and observed in the laboratory

**SUBJECT III - BIOCHEMISTRY**

**Course Objectives:**

* Describe Fundamentals of Chemistry , Valency, Molecular weight & Equivalent weight of elements and compounds. Normality ,Molarity, Molality
* Understand the Acids, Bases, Salts and Indicators
* Understand Solutions, Definition, use, classification where appropriate, preparation and storage
* Learn about Laboratory Apparatus ,different types, use, care and maintenance
* To know about Instruments, Use, care and maintenance
* Categorize biomedical wastes and dispose them

**Course Outcome:**

**CO1:** Define Normality ,Molarity, Molality, Henderson Hasselbalch’s equation ,

Buffer solutions. pH determination of buffers. Blood pH, Fluid buffers

**CO2:** Explain the Chemistry of carbohydrates, Chemistry of amino acids, Chemistry

lipids and Chemistry of nucleotides

**CO3:** Buildon Instruments, Responsibilities of health care personals

**CO4:** Select proper instruments, glasswares and plasticware for performing various

Experiments

**CO5**: Take part in preparation of various solutions, Cleaning , storage of lab apparatus

**CO6**:: Choose proper method for the disposal of biomedical waste

Theory: Specimen collection : Pre-analytical variables Collection of blood

Collection of CSF & other fluids

Urine collection

Use of preservatives

Anticoagulants

Introduction to Laboratory apparatus

Pipettes- different types (Graduated, volumetric, Pasteur, Automatic etc.,)

Calibration of glass pipettes

Burettes, Beakers, Petri dishes, depression plates.

Flasks - different types )Volumetric, round bottmed, Erlemeyer conical etc.,)

Funnels – different types (Conical, Buchner etx.,)

Bottles – Reagent bottles – graduated and common, Wash bottles – different type Specimen bottles etc., Measuring cylinders, Porcelain dish

Tubes – Test tubes, centrifuge tubes, test tube draining rack Tripod stand, Wire gauze, Bunsen burner.

Cuvettes, significance of cuvettes in colorimeter, cuvettes for visible and UV range, cuvette holders Racks – Bottle, Test tube, Pipette

Dessicator, Stop watch, rimers, scissors

Dispensers – reagent and sample

Any other apparatus which is important and may have been missed should also be covered Maintenance of lab glass ware and apparatus:

Glass and plastic ware in Laboratory

\*use of glass: significance of boro silicate glass ; care and cleaning of glass ware, different cleaning solutions of glass

\* care and cleaning of plastic ware, different cleaning solutions

. 3. Instruments

(Theory and demonstration) Diagrams to be drawn Water bath: Use, care and maintenance

Oven & Incubators : Use, care and maintenance.

Water Distilation plant and water deionisers.

Use, care and maintenance

Refrigerators, cold box, deep freezers – Use, care and maintanance Reflux condenser : Use, care and maintenance

Centrifuges (Theory and demonstration) Diagrams to be drawn

Definition, Principle, svedberg unit, centrifugal force, centrifugal field rpm, ref.Conversion of G to rpm and vice versa.

Different types of centrifuges

Use care and maintenance of a centrifuge

Laboratory balances [Theory & Practicals) Diagrams to be drawn

Manual balances: Single pan, double pan, trip balance

Direct read out electrical balances.

Use care and maintenance. Guideline to be followed and precautions to be taken while weighing

Weighing different types of chemicals, liquids. Hygroscopic compounds etc. Colorimeter and spectrophotometer (Theory and Practicals) Diagrams to be drawn Principle, Parts Diagram. Use, care and maintenance.

pH meter (Theory & practicals) Diagrams to be drawn

principle, parts, Types of electrods, salt bridge solution.

Use, care and maintenance of Ph meter and electrodes Guidelines to be followed and precautions to be taken while using pH meter

4. Safety of measurements

5. Conventional and SI units

6. Atomic structure

Dalton’s theory, Properties f electrons, protons, neutrons, and nucleus, Rutherford’s model of atomic structure, Bohr’s model of atomic structure, orbit and orbital, Quantum numbers, Heisenberg’s uncertainly principle.

Electronic configuration – Aufbau principle, Pauli’s exclusion principle, etc.,m Valency and bonds – different types of strong and weak bonds in detail with examples Theory & Practicals for all the following under this section Molecular weight, equivalent weight of elements and compounds, normality molarity Preparation of molar solutions (mole/litre solution) eg: 1 M Nacl, 0.15 M NaCL 1 M NaOH, 0.1 M HCl, 0.1 M H 2S04 etc.,

preparation of normal solutions. eg., IN Na2CO3, O IN Oxalic acid, 0.1 N HCl, 0.1N H2504, 0.66 N H2S04 etc.,

Percent solutions. Preparation of different solutions – v/v w/v (solids, liquids and acids) Conversion of a percent solution into a molar solution

Dilutions

Diluting solutions: eg. Preparation of 0.1 N NaCl from 1 N NaCl from 2 NHCl etc., Preparing working standard from stock standard, Body fluid dilutions, Reagent dilution techniques, calculating the dilution of a solution, body fluid reagent etc.,

Saturated and supersaturated solutions. Standard solutions. Technique for preparation of standard solutions eg: Glucose, urea, etc., Significance of volumetric flask in preparaing standard solutions. Volumetric flasks of different sizes, Preparation of standard solutions of deliquesent compounds (CaCl2, potassium carbonate, sodium hydroxide etc.,)

Preparation of standards using conventional and Sl units

Acids, bases, salts and indicators.

Acids and Bases: Definition, physical and chemical properties with examples.

Arrehenius concept of acids and bases, Lowery – Bronsted theory of acids and bases classification of acids and bases. Different between bases and alkali, acidity and basicity, monoprotonic and polyprotonic acids and bases

Concepts of acid base reaction, hydrogen ion concentration, Ionisation of water, buffer, Ph value of a solution, preparation of buffer solutions using Ph meter. Salts: Definition, classification, water of crystallization – definition and different types, deliquescent and hygroscopic salts

Acid- base indicators: (Theory and Practicals)

Theory – Definition, concept, mechanism of dissociation of an idicator, colour change of an indicator in acidic and basic conditions, use if standard buffer solution and indicators for Ph determinations, preparatin and its application, list of commonly used indicators and their Ph range, suitable pH indicators used in different titrations, universal indicators

Practicals – Titration of a simple acid and a base (Preparation of standard solution of oxalic acid and using this solution finding out the normality of a sodium hydroxide soslution . Acid to be titrated using this base) Calculation of normality of an acid or a base after titration, measurement of hydrogen ion concentration

Quality control : Accuracy

Precision

Specificity

Sensitivity

Limits of error allowable in laboratory

Percentage error

Normal values and Interpretations

Special Investigations :

Serum Electrophoresis

Immunoglobulins

Drugs : Digitoxin, Theophyllines

Regulation of Acid Base status:

Henderson Hasselback Equations

Buffers of the fluid

pH Regulation

Disturbance in acid Base Balance

Anion Gap

Metabolic acidosis

Metabolic acidosis

Metabolic alkalosis

Respiratory acidosis

Respiratory alkalosis

Basic Principles and estimation of Blood Gases and pH

Basic principles and estimation of Electrolytes

Water Balance

Sodium regulation

Bicarbonate buffers Nutrition, Nutritional support with special emphasis on parental nutrition. Calorific Value

Nitrogen Balance

Respiratory Quotient

Basal metabolic rate

Dietary Fibers

Nutritional importance of lipids, carbohydrates and proteins

Vitamins

PRACTICALS

Analysis of Normal Urine

Composition of urine

Procedure for routine screening

Urinary screening for inborn errors of metabolism

Common renal disease

Urinary calculus

Urine examination for detection of abnormal constituents

Interpretation and Diagnosis through charts

Liver Function tests

Lipid Profile

Renal Function test

Cardiac markers

Blood gas and Electrolytes

4. Estimation of Blood sugar, Blood Urea and electrolytes

5. Demonstration of Strips Demonstration of Glucometer

**SUBJECT IV - PATHOLOGY**

**Course objective :**

* To define and study about histopathology and techniques followed in histopatholgy laboratory for tissue processing
* To compare and study about different samples received in clinical pathology laboratory and processing of the samples
* To develop knowledge about basics of haematology and methods, anticoagulants, safety measures to be taken during time of blood collection
* Compare and study about basic test procedure done in haematology lab and blood bank

**Course outcome :**

CO1: gain knowledge about histopathology laboratory and proceudres followed there

CO2: understand about sample examination methods followed in clinical pathology

CO3: apply the knowledge of collection of blood in daily work and process of perfoming few of haematological and bloob bank test proceudres.

Histo Pathology ,Clinical Pathology, Haematology and Blood Banking

HistoPathology -

Theory

- Introduction to Histo Pathology

- Receiving of Specimen in the laboratory

- Grossing Techniques

- Mounting Techniques

– various Mountants

- Maintenance of records and filing of the slides.

- Use & care of Microscope

- Various Fixatives, Mode of action, Preparation and Indication.

- Bio-Medical waste management

- Section Cutting

- Tissue processing for routine paraffin sections

- Decalcification of Tissues.

- Staining of tissues - H& E Staining

- Bio-Medical waste management

Clinical Pathology – Theory

- Introduction to Clinical Pathology

- Collection, Transport, Preservation, and Processing of various clinical specimens

- Urine Examination – Collection and Preservation of urine. Physical, chemical, Microscopic Examination

- Examination of body fluids.

- Examination of cerebro spinal fluid (CSF)

- Sputum Examination.

- Examination of feces

Haematology – Theory

- Introduction to Haematology

- Normal constituents of Blood, their structure and function.

- Collection of Blood samples

- Various Anticoagulants used in Haematology

- Various instruments and glassware used in Haematology, Preparation and use of glassware

- Laboratory safety guidelines

- SI units and conventional units in Hospital Laboratory

- Hb,PCV

- ESR

- Normal Haemostasis Bleeding Time, Clotting Time, Prothrombin Time, Activated Partial Thromboplastin Time.

Blood Bank

Introduction

Blood grouping and Rh Types

Cross matching

PRACTICALS

- Urine Examination.

- Physical

-

- Microscopic

- Blood Grouping Rh typing.

- Hb Estimation,Packed Cell Volume[PCV], Erythrocyte Sedimentation rate{ESR]

- Bleeding Time, Clotting Time.

- Histopathlogy – Section cutting and H &E Staining.[For BSc MLT only ] .

**SUBJECT V - MICROBIOLOGY**

**Course objectives:**

* Define and understand the morphology, growth and nutrition of bacteria
* To know about the definition and principles sterilization and disinfection methods
* Develop knowledge about the immune system and the basics of serological diagnosis of infections
* Analyse and gain knowledge about different types of pathogens and their mode of infection which includes bacteria, parasites, viruses and fungi.
* Develop knowledge about the hospital infection control policy and biomedical waste management.

**Course outcomes:**

CO1: to gain knowledge about basics of microbiology like morphology, bacterial growth curve.

CO2: understand and gain knowledge about the different sterilization and disinfection methods.

CO3: apply and make use of the information of the functioning of the immune system of human body to fight against microbial infections.

CO4: To develop knowledge about the different infections caused by the pathogenic bacteria, viruses, fungi and parasites.

Theory -

1. Morphology Classification of microorgaisms, size, shape and structure of bacteria. Use of microscope in the study of bacteria.

2. Growth and nutrition Nutrition, growth and multiplications of bacteria, use of culture media in diagnostic bacteriology. 3. Sterilisation and Disinfection

Principles and use of equipments of sterlization namely Hot Air oven, Autoclave and serum inspissrator. Pasteurization, Anti septic and disinfectants. Antimicrobial sensitivity test

4. Immunology Immunity Vaccines, Types of Vaccine and immunization schedule Principles and interpretation of commonly done serological tests namely Widal, VDRL, ASLO, CRP, RF & ELISA. Rapid tests for HIV and HbsAg(Technical details to be avoided)

5. Systematic Bacteriology Morphology, cultivation, diseases caused ,laboratory diagnosis including specimen collection of the following bacteria( the classification, antigenic structure and pathogenicity are not to be taught) Staphyloccci, Streptococci, Pneumococci, Gonococci, Menigococci, C diphtheriae, Mycobacteria, Clostridia, Bacillus, Shigella, Salmonella, Esch coli, Klebsiella, Proteus,vibrio cholerae, Pseudomonas & Spirochetes

6. Parasitology Morphology, life cycle, laboratory diagnosis of following parasites E. histolytica, Plasmodium, Tape worms, Intestinal nematodes

7. Mycology Morphology, diseases caused and lab diagnosis of following fungi. Candida, Cryptococcus, Dermatophytes ,opportunistic fungi.

8. Virology General properties of viruses, diseases caused, lab diagnosis and prevention of following viruses, Herpes, Hepatitis, HIV, Rabies and Poliomyelitis.

9. Hospital infection Causative agents, transmission methods, investigation, prevention and control Hospital infection.

10. Principles and practice Biomedical waste management

Practical

**Course objectives:**

* Understand the working and functions of compound microscope.
* To know about the sterilization of different equipment’s and culture media and study about the antibiotic sensitivity testing methods.
* To learn the principle and procedures of the different serological tests
* To know about the principle and procedure of Gram staining and ZN staining.
* Should know about stool examination and various anaerobic culture methods and in short about the biomedical waste management.

**Course outcomes:**

CO1: to gain knowledge the use of compound microscopes in microbiology laboratory and the different sterilization methods.

CO2: understand and gain knowledge about the principles of serological tests

CO3: should know to perform Gram staining and ZN staining using the correct procedure.

CO4: To develop knowledge about the stool examination, anerobic culture methods and biomedical waste management.

Compound Microscope.

Demonstration and sterlization of equipments – Hot Air oven, Autoclave, Bacterial filters. Demonstration of commonly used culture media, Nutrient broth, Nutrient agar, Blood agar, Chacolate agar, Mac conkey medium, LJ media, Robertson Cooked meat media, Potassium tellurite media with growth, Mac with LF & NLF, NA with staph

Antibiotic susceptibility test

Demonstration of common serological tests – Widal, VRDL, ELISA.

Grams stain

Acid Fast staining

Stool exam for Helminthic ova

Visit to hospital for demonstration of Biomedical waste mangement.

Anaerobic culture methods.

**SUBJECT VI – CLINICAL RESPIRATORY CARE**

**COURSE OBJECTIVES:**

1. To describe why patient interviews are necessary and the appropriate interview techniques.
2. To review the importance of examining the all body system to identify abnormalities associated with cardiopulmonary disease.
3. To describe the mechanism of each devices that are used in respiratory care.
4. To identify the indication, contraindication and complication of all the devices used in respiratory care.
5. To describe how to assemble, check for proper function, and identify malfunctions in gas delivery equipment.
6. To learn Performance and interpretation of bedside and laboratory pulmonary function tests will be discussed.
7. To describe the proper technique and potential benefit of bronchial hygiene techniques.
8. To learn the fundamentals behind the resuscitation of cardiopulmonary system.
9. To learn the Chest Compressions, Ventilation techniques, Adult, pediatric and Infant BLS, Automated External defibrillator (AED).
10. To learn the management of foreign body airway obstruction (FBAO).

**COURSE OUTCOME:**

CO1: Explains about communication with patient and history taking at admission.

CO2: Describes a systematic method for clinical assessment of patients with cardiorespiratory diseases.

CO3: Explains the basic concepts of humidity and aerosol therapy and how to administer humidity and aerosol therapy.

CO4: Evaluate a patient’s response to airway clearance therapy.

CO4: Describe bedside tests used for evaluating lung function.

CO5: Understand the meaning of the terms: provocative tests and post bronchodilator tests of lung function.

CO6: Explain the rationale of Cardio-Pulmonary Resuscitation (CPR)

CO7: Describes AHA guidelines for high quality CPR (Difference in Adult, pediatric and infant BLS)

CO8: Describes how to use AED

Lecture and Practical Plan for Clinical Respiratory Care I

Topic No Name of the Topic

1. Nonverbal communication

2. Patient interview and examination

3. Practical on patient interview and examination

4. Medical history taking

5. Practical on medical history taking

6. Universal precautions – Hand washing & isolation

7. Practical on universal precautions

8. Assessment of vital signs (including SpO2)

9. Practical: assessment of vital signs

10. Chest topography

11. Practical on chest topography

12. Assessment of respiratory system (thorax)

13. Practical: physical examination of thorax

14. Assessment of cardiovascular system

15. Assessment of other body systems

16. Practical: Assessment of CVS and other body systems

17. Chest physical therapy

18. Practical: chest physical therapy

19. Postural drainage

20. Practical: postural drainage

21. Bronchial hygiene therapy

22. Practical: tracheobronchial suctioning

23. Breathing exercises

24. Practical: breathing exercises

25. Pulmonary function testing

26. Practical: pulmonary function testing

25. Basic life support (Adult, paediatrics, and infants)

26. Foreign body airway obstruction management

27. Practical: BLS and FBOA management adults and paediatrics

**SUBSIDIARY SUBJECT I - ENGLISH**

**Course Objective:**

* Enable the students to understand the parts of speech and their usage in daily life situations.
* To have the knowledge of framing right sentence by using proper punctuations and tences in it.
* Devolping an attitude to participate In group discussions, debate and dialogues in the class.
* Having an right information about the study techniques and notes taking methods to improve the learning habits.
* To transfer a good knowledge on Improving upon the rich vocabulary and Using dictionary to upgrade it.

**Course outcome:**

CO1: the different punctuation marks and the parts of speech, which they have learnt in the class.

CO2: by learning the different study techniques and note taking methods in the daily life situations.

CO3: an nature to improve the vocabulary to use in reading, writing and speaking skills.

UNIT - I : INTRODUCTION :

Study Techniques Organisation of effective note taking and logical processes of analysis and synthesis Use of the dictionary Enlargement of vocabulary Effective diction

UNIT - II : APPLIED GRAMMAR :

Correct usage The structure of sentences The structure of paragraphs Enlargements of Vocabulary

UNIT - III : WRITTEN COMPOSITION :

Precise writing and summarising Writing of bibliography Enlargement of Vocabulary

UNIT - IV : READING AND COMPREHENSION :

Review of selected materials and express oneself in one's words. Enlargement of Vocabulary.

UNIT - V : THE STUDY OF THE VARIOUS FORMS OF COMPOSITION :

Paragraph, Essay, Letter, Summary, Practice in writing

UNIT - VI : VERBAL COMMUNICATION :

Discussions and summarization, Debates, Oral reports, use in teaching

**SUBSIDIARY SUBJECT II - KANNADA**

**ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕಾ0ಶಗಳು**

೧. ಕನ್ನಡ ಭಾಷೆಯ ಬಗ್ಗೆ ಅಭಿಮಾನ ಮತ್ತು ಕಲಿಕಾ ಕೌಶಲ್ಯ ತರಬೇತಿ ನೀಡುವ ಮೂಲಕ ಕಲಿಕಾದಾರರಿಗೆ ಕನ್ನಡ ಭಾಷೆಯ ಕುರಿತು ಆಸಕ್ತಿಯನ್ನು ಮೂಡಿಸುವುದು

೨. ಕನ್ನಡ ಭಾಷೆಯಲ್ಲಿರುವ ವರ್ಣಮಾಲೆಯ ಅಕ್ಷರಗಳನ್ನು ಬರೆಯುವುದು ಹಾಗೂ ಅವುಗಳನ್ನು ತಮ್ಮ ದಿನನಿತ್ಯದ ಜೀವನದಲ್ಲಿ ಅಳವಡಿಸಿಕೊಳ್ಳುವುದು.

೩. ಕನ್ನಡ ಭಾಷೆಯಲ್ಲಿ ದೇಹದ ಅಂಗಾಂಗಳ ಹೆಸರುಗಳನ್ನು ಹಾಗೂ ದಿನನಿತ್ಯ ಬಳಸುವ ತರಕಾರಿ, ಹಣ್ಣು ಹಂಪಲು, ಪ್ರಾಣಿ ಹಾಗೂ ಪಕ್ಷಿಗಳ ಹೆಸರುಗಳನ್ನು ತಿಳಿದು ಅದನ್ನು ಬಳಸುವುದು.

೪. ಕನ್ನಡ ಭಾಷೆಯಲ್ಲಿ ಹೆಚ್ಚಿನ ಮಾಹಿತಿಯನ್ನು ಪಡೆದು ಅದನ್ನು ಬಳಸುವುದು ಹೇಗೆ ಹಾಗೂ ಮುಂದಿನ ಜೀವನದಲ್ಲಿ ಅಳವಡಿಸಿಕೊಳ್ಳುವುದು.

**ನಿರ್ಧಿಷ್ಟ ಉದ್ದೇಶಗಳು :**

೧.ಕಲಿಕಾದಾರರು ಕನ್ನಡ ಭಾಷೆಯಲ್ಲಿ ದೇಹದ ಅಂಗಾಂಗಳ ಹೆಸರುಗಳನ್ನು ಪಟ್ಟಿಮಾಡುವರು.

೨ .ಕನ್ನಡ ಭಾಷೆಯಲ್ಲಿ ಸಂಭಾಷಣೆ ಮಾಡಲು ಹಾಗೂ ದಿನನಿತ್ಯ ಬಳಸುವ ವಿವಿಧ ರೀತಿಯ ಕೆಲಸ ಕಾರ್ಯಗಳ ಹೆಸರುಗಳನ್ನು ತಿಳಿದುಕೊಳ್ಳುವರು.

೩. ಕನ್ನಡ ಭಾಷೆಯ ಬಗ್ಗೆ ಅಭಿಮಾನ ತೋರಿಸಿ, ತಮ್ಮ ಕಲಿಕಾ ಕೌಶಲ್ಯವನ್ನು ಅಭಿವೃದ್ದಿ ಪಡಿಸಲು ಸಹಕರಿಸುವುದು.

**ಪಠ್ಯಕ್ರಮದ ರೂಪರೇಖೆ:**

**ಘಟಕ ಒಂದು:** ಅಕ್ಷರಮಾಲೆ, ಸ್ವರಗಳು, ವ್ಯಂಜನಗಳು, ಕಾಗುಣಿತ, ಬರವಣಿಗೆ, ಅಭ್ಯಾಸ.

**ಚಟುವಟಿಕೆ:** ಕನ್ನಡ ವರ್ಣಮಾಲೆಯ ಅಕ್ಷರಗಳನ್ನು ಬರೆಯಿರಿ.

**ಘಟಕ ಎರಡು:** ಪದಪರಿಚಯ, ಪದಪುಂಜ, ದಿನಬಳಕೆಯ ಪದಗಳು, ಸಂಬoಧಗಳು, ನಾಮಪದ, ಸರ್ವನಾಮ, ಅಂಕಿಗಳ ಪರಿಚಯ, ಪ್ರಶ್ನಾರ್ಥಕ ಪದಗಳು.

**ಚಟುವಟಿಕೆ:**

೧. ನಿಮಗೆ ತಿಳಿದಿರುವ ವಿವಿಧ ರೋಗಗಳ ಹೆಸರುಗಳನ್ನು ಪಟ್ಟಿಮಾಡಿ.

೨. ನಿಮಗೆ ತಿಳಿದಿರುವ ತಿಂಡಿ – ತಿನಿಸುಗಳ ಹೆಸರುಗಳನ್ನು ಪಟ್ಟಿಮಾಡಿ.

**ಘಟಕ ಮೂರು:** ಲಿಂಗ, ವಚನ, ಅವ್ಯಯ, ತಿಂಡಿ – ತಿನಿಸುಗಳ ಪರಿಚಯ, ದೇಹದ ಅಂಗಗಳ ಪರಿಚಯ, ವಿವಿಧ ಬಗೆಯ ರೋಗಗಳ ಪರಿಚಯ.

**ಚಟುವಟಿಕೆ:** ರೋಗಿಯ ವಿವರ ತಿಳಿಯಲು ಆಸ್ಪತ್ರೆಯಲ್ಲಿ ಬಳಸಲಾಗುವ ನಮೂನೆಯ ಮಾದರಿಯನ್ನು ರಚಿಸಿ.

**ಘಟಕ ನಾಲ್ಕು:** ಶುಶ್ರೂಷಣಾ ಪದಗಳು, ಆಸ್ಪತ್ರೆಯಲ್ಲಿ ಬಳಸುವ ವಿವಿಧ ನಮೂನೆಗಳ ಪರಿಚಯ, ನಮೂನೆಗಳ ರಚನೆ.

**ಚಟುವಟಿಕೆ:** ಶುಶ್ರೂಕರು ಮತ್ತು ರೋಗಿಯ ನಡುವಿನ ಸಂಭಾಷಣೆಯ ಮಾದರಿಯನ್ನು ತಯಾರಿಸಿ.

**ಘಟಕ ಐದು:** ಶುಶ್ರೂಕರ ಹಾಗೂ ರೋಗಿಗಳ ನಡುವೆ ನಡೆಯುವ ಸಂಭಾಷಣೆಗೆ ಬೇಕಾದ ವಾಕ್ಯಗಳ ಪರಿಚಯ.

**ಅಧ್ಯಯನಕ್ಕೆ ಶಿಫಾರಸ್ಸು ಮಾಡಲಾಗಿರುವ ಗ್ರಂಥಗಳು:**

೧. ಕನ್ನಡ ವ್ಯಾಕರಣ (೮, ೯ ಮತ್ತು ೧೦ನೇ ತರಗತಿಗಳಿಗೆ ಕರ್ನಾಟಕ ಸರ್ಕಾರ, ಪಠ್ಯಪುಸ್ತಕಗಳ ಇಲಾಖೆ)

೨. ವ್ಯವಹಾರಿಕ ಕನ್ನಡ : ಎಚ್ಚೆಸ್ಕೆ

೩. ಪತ್ರಲೇಖನ : ಕನ್ನಡ ಸಾಹಿತ್ಯ ಪರಿಷತ್ತು

೪. ಲೇಖನಕಲೆ : ಎನ್‌. ಪ್ರಹ್ಲಾದ ರಾವ್

೫. ಆರೋಗ್ಯ ಮತ್ತು ಇತರೆ ಪ್ರಬಂಧಗಳು : ಡಾ║ ಪಿ.ಎಸ್ ಶಂಕರ್

೬. ವೈದ್ಯ ಪದಗಳ ಹುಟ್ಟುರಚನೆ : ಡಾ║ ಡಿ.ಎಸ್.ಶಿವಪ್ಪ

**SUBSIDIARY SUBJECT III - HEALTH CARE**

Introduction to Health

Definition of Health, Determinants of Health, Health Indicators of India, Health Team Concept. National Health Policy National Health Programmes ( Briefly Objectives and scope) Population of India and Family welfare programme in India

Introduction to Nursing

What is Nursing ? Nursing principles. Inter-Personnel relationships. Bandaging : Basic turns; Bandaging extremities; Triangular Bandages and their application.

Nursing Position, Bed making, prone, lateral, dorsal, dorsal re-cumbent, Fowler's positions, comfort measures, Aids and rest and sleep.

Lifting And Transporting Patients: Lifting patients up in the bed. Transferring from bed to wheel chair. Transferring from bed to stretcher.

Bed Side Management: Giving and taking Bed pan, Urinal : Observation of stools, urine. Observation of sputum, Understand use and care of catheters, enema giving.

Methods Of Giving Nourishment: Feeding, Tube feeding, drips, transfusion

Care Of Rubber Goods

Recording of body temperature, respiration and pulse,

Simple aseptic technique, sterlization and disinfection.

Surgical Dressing: Observation of dressing procedures

First Aid : Syllabus as for Certificate Course of Red Cross Society of St. John's Ambulance Brigade.

**SYLLABUS FOR SECOND YEAR RESPIRATORY CARE TECHNOLOGY**

**SUBJECT I - APPLIED PHARMACOLOGY**

**COURSE OBJECTIVES:**

1. Various groups of the drugs and their actions -
2. Various types of intravenous fluids- isotonic, hypertonic, hypotonic
3. Detail about electrolyte supplements and treatment for electrolyte imbalance

**COURSE OUTCOMES:**

CO1: Explain various groups of drug classification, mechanism of action, pharmacological actions adverse effects and uses

CO2: Describe the various types of intravenous fluids with examples and electrolyte supplements and treatment for electrolyte and metabolic imbalance

• General concepts about pharmacodynamic and Pharmacokinetic Principles involved in drug activity.

I. Autonomic nerves system.

• Anatomy & functional organisation.

• List of drugs acting an ANS including dose, route of administration, indications, contra indications and adverse effects.

II. Cardiovascular drugs- Enumerate the mode of action, side effects And therapeutic uses of the following drugs.

a. Antihypertensives

• Beta Adrenergic antagonists

• Alpha Adrenergic antagonists

• Peripheral Vasodilators

• Calcium channel blockers

b. Antiarrhythmic drugs

c. Cardiac glycosides

d. Sympathetic and nonsympathetic inotropic agents.

e. Coronary vasodilators.

f. Antianginal and anti failure agents

g. Lipid lowering & anti atherosclerotic drugs.

h. Drugs used in Haemostais – anticoagulants Thrombolytics and antithrombolytics.

i. Cardioplegic drugs- History, Principles and types of cardioplagia.

j. Primary solutions – History, principles & types.

k. Drugs used in the treatment of shock.

III. Anaesthetic agents.

• Definition of general and local anaesthetics.

• Classification of general anaesthetics.

• Pharmacokinetics and Pharmacodynamics of inhaled anaesthetic agents.

• Intravenous general anaesthetic agents.

• Local anaesthetics – classification mechanism of action, duration of action and methods to prolong the duration of action. Preparation, dose and routes of administration.

IV Analgessics

• Definition and classification

• Routes of administration, dose, frequency of administration, Side effects and management of non opioid and opiod analgesics

V. Antihistamines and antiemetics-

• Classification, Mechanism of action, adverse effects, Preparations, dose and routes and administration.

VI. CNS stimulants and depressants

• Alcohol

• Sedatives, hypnotics and narcotics

• CNS stimulants

• Neuromuscular blocking agents and muscle relaxants.

VII. Pharmacological protection of organs during CPB

VIII. Inhalational gases and emergency drugs.

IX. Pharmacotherapy of respiratory disorders

• Introduction – Modulators of bronchial smooth muscle tone and pulmonary vascular smooth muscle tone

• Pharmacotherapy of bronchial asthma

• Pharmacotherapy of cough

• Mucokinetic and mucolytic agents

• Use of bland aerosols in respiratory care.

• X. Corticosteroids – Classification, mechanism of action, adverse effects and complications. Preparation, dose and routes of administration.

XI Diuretics

• Renal physiology

• Side of action of diuretics

• Adverse effects

• Preparations, dose and routes of administrion.

XII. Chemotherapy of infections

• Definition

• Classification and mechanism of action of antimicrobial agents

• Combination of antimicrobial agents

• Chemoperophylaxis.

• Classification, spectrum of activity, dose, routes of administration and adverse effects of penicillin, cephalosporins, aminoglycosides, tetracyclines, chloramphenicol, antitubercular drugs.

XIII. Miscellaneous.

IV fluids- various preparations and their usage.

• Electrolyte supplements

• Immunosuppressive agents

• New drugs included in perfusion technology.

• Drugs used in metabolic and electrolyte imbalance.

PRACTICALS:

1. Preparation and prescription of drugs of relevance.

2. Experimental pharmacology directed to show the effects of commonly used drugs of relevance and interpretation of few charts.

**SUBJECT II -APPLIED PATHOLOGY**

**Course objective :**

* Define and understand cardiovascular system and disease condition related to cardiovascular system
* To compare and study about basics of haematology and disease condition and basic lab diagnosis of bleeding disorders
* Develop knowledge about respiratory system and different disease condition related to respiratory system
* Analyse and gain knowledge about renal system

**Course outcome:**

CO1: to gain knowledge about basics of cardiovascular system

CO2:understand about basics haematology and laboratory investigations performed for detection of bleeding disorder

CO3: apply and make use of the information gained about respiratory system and renal system.

I. CARDIOVASCULAR SYSTEM

• Atherosclerosis- Definition, risk factors, briefly Pathogenesis & morphology, clinical significance and prevention.

• Hypertension- Definition, types and briefly Pathogenesis and

effects of Hypertension.

• Aneurysms – Definition, classification, Pathology and

complications.

• Pathophysiology of Heart failure.

• Cardiac hypertrophy – causes, Pathophysiology & Progression to

Heart Failure.

• Ischaemic heart diseases- Definition, Types. Briefly

Pathophysiology, Pathology & Complications of various types of IHD.

• Valvular Heart diseases- causes, Pathology & complication.

Complications of artificial valves.

• Cardiomyopathy – Definition, Types, causes and significance.

• Pericardial effusion- causes, effects and diagnosis.

• Congenital heart diseases – Basic defect and effects of important types of congenital heart diseases.

II. HAEMATOLOGY

• Anaemia – Definition, morphological types and diagnosis of

anaemia.

Brief concept about Haemolytic anaemia and polycythaemia.

• Leukocyte disorders- Briefly leukaemia, leukocytosis, agranulocytosis etc,

• Bleeding disorders- Definition, classification, causes & effects of important types of bleeding disorders. Briefly: various laboratory tests used to diagnose bleeding disorders.

III. RESPIRATORY SYSTEM

• Chronic obstructive airway diseases – Definition and types.

Briefly causes, Pathology and complications of each type of COPD.

• Briefly: concept about obstructive versus restrictive pulmonary disease.

• Pneumoconiosis- Definition, types, Pathology and effects in brief.

• Pulmonary congestion and edema.

• Pleural effusion – causes, effects and diagnosis.

IV. RENAL SYSTEM

• Clinical manifestations of renal diseases. Briefly causes, mechanism, effects and laboratory diagnosis of ARF & CRS. Briefly Glomerulonephritis and Pyelonephritis.

• End stage renal disease – Definition, causes, effects and role of dialysis and renal transplantation in its management.

• Brief concept about obstructive uropathy.

PRACTICALS

1. Description & diagnosis of the following gross specimens.

a. Atherosclerosis.

b. Aortic aneurysm.

c. Myocardial infraction.

d. Emphysema

e. Chronic glomerulonephritis.

f. Chronic pyelonephritis.

2. Interpretation & diagnosis of the following charts. a. hematology Chart - AML, CML, Hemophilia, neutrophilia, eosinophilia. b. Urine Chart - ARF, CRF, Acute glomerulonephritis.

3. Estimation of Hemoglobin.

4. Estimation Bleeding & Clotting time.

**SUBJECT III - APPLIED MICROBIOLOGY**

THEORY –

1. Health care associated infections and Antimicrobial resistance: Infections that patients acquire during the course of receiving treatment for other conditions within a healthcare setting like Methicillin Resistant Staphylococcus aureus infections, Infections caused by Clostriduium difficle, Vancomycin resistant enterococci etc. Catheter related blood stream infections, Ventilator associated pneumonia, Catheter Related urinary tract infections, Surveillance of emerging resistance and changing flora. The impact and cost attributed to Hospital Associated infection.

2. Disease communicable to Healthcare workers in hospital set up and its preventive measure: Occupationally acquired infections in healthcare professionals by respiratory route (tuberculosis, varicella-zoster, respiratory synctial virus etc ), blood borne transmission ( HIV, Hepatitis B, Hepatitis C, Cytomegalovirus, Ebola virus etc), oro faecal route ( Salmonella, Hepatitis A etc), direct contact ( Herpes Simplex Virus etc). Preventive measures to combat the spread of these infections by monitoring and control.

3. Microbiological surveillance and sampling: Required to determine the frequency of potential bacterial pathogens including Streptococcus pneumoniae, Haemophilus influenzae, and Moraxella catarrhalis and also to assess the antimicrobial resistance. Sampling: rinse technique, direct surface agar plating technique.

4. Importance of sterilization:

a. Disinfection of instruments used in patient care: Classification, different methods, advantages and disadvantages of the various methods.

b. Disinfection of the patient care unit

c. Infection control measures for ICU’s

5. Sterilization:

a. Rooms: Gaseous sterilization, one atmosphere uniform glow discharge plasma (OAUGDP)

b. Equipment: classification of the instruments and appropriate methods of sterilization.

c. Central supply department: the four areas and the floor plan for instrument cleaning, high-level disinfecting and sterilizing areas.

6. Preparation of materials for autoclaving: Packing of different types of materials, loading, holding time and unloading.

PRACTICALS-

1. Principles of autoclaving & quality control of Sterilization.

2. Collection of specimen from outpatient units, inpatient units, minor operation theater and major operation theater for sterility testing.

3. The various methods employed for sterility testing.

4. Interpretation of results of sterility testing.

5. Disinfection of wards, OT and Laboratory.

**SUBJECT IV - MEDICINE RELEVANT TO RESPIRATORY CARE TECHNOLOGY**

**Cardiovascular System**

Ischaemic heart diseases

Rheumatic heart disease

Congenital heart disease

Hypertension

Aortic Aneurysms

Cardiomyopathy

Peripheral vascular disease

Pulmonary edema and LV failure

**Hematology**

Anaemia

Bleeding disorders

Laboratory tests used to diagnose bleeding disorders (in brief)

**Respiratory System**

Chronic obstructive airway diseases (COPD)

Concept of obstructive versus restrictive

**Renal System**

ARF & CRF

End stage renal disease

Role of dialysis and renal transplantation in its management

**CNS**

Automatic nervous system (Sympathetic & Parasympathetic system)

Brief mention of CNS disorders & their etiology

**Others**

DM

Obesity

Pregnancy

Paediatric Patient (neonate/Infant)

Elderly patient

**SUBJECT V – PULMONARY DIAGNOSTICS & CRITICAL CARE MONITORING**

**COURSE OBJECTIVES:**

1. To learn about the systemic evaluation of a chest x-ray.
2. To discuss the performance and interpretation of bedside and laboratory pulmonary function.
3. To describe the technique of sampling blood for arterial blood gas analysis and interpretation of arterial blood gas reports.
4. To discuss the technique of hemodynamic assessment.
5. To learn the Chest Compressions, Ventilation techniques, Adult, pediatric and Infant BLS, Automated External defibrillator (AED).
6. To learn the management of foreign body airway obstruction (FBAO).

**COURSE OUTCOME:**

CO1: Identify the information that can be obtained from a chest radiograph.

CO2: Recognize the uses and limitations of chest radiographs in the ICU.

CO3: Describe the various views used in chest radiography and list the indications for special views.

CO4: Systematically read a chest X-ray and list the abnormalities noticed in various cardiopulmonary disease processes

CO5: Describe typical chest X-ray findings in various disease processes such as emphysema, chronic bronchitis, atelectasis, pneumothorax, pneumonia, pulmonary tuberculosis, lung abscess, bronchiectasis, adult respiratory distress syndrome (ARDS) and congestive heart failure (CHF).

CO6: Describe bedside tests used for evaluating lung function

CO7: Describe static and dynamic lung function tests and interpret results of these tests.

CO8: Understand the meaning of the terms ―provocative tests‖ and ―post bronchodilator tests‖ of lung function.

CO9: Outlines the background knowledge of the anatomic sites where arterial blood can be sampled.

CO10: Describe the correct technique of sampling and practical aspects of collection and transport of arterial blood for arterial blood gas (ABG) analysis.

CO11: Read an ABG report and come to a logical conclusion regarding status of oxygenation, ventilation and acid-base balance.  
CO12: Evaluate the hemodynamic assessment in critical care which includes central venous and pulmonary artery catheterization.

CO13: Explain the rationale of Cardio-Pulmonary Resuscitation (CPR)

CO14: Describe the AHA guidelines for high quality CPR (Difference in Adult, pediatric and infant BLS)

CO15: Describe the how to use AED in adult and pediatrics

**Theory**

Clinical laboratory studies

Pulmonary Function Testing – Simple spirometry, body plethysmography, diffusing capacity, helium dilution, and nitrogen washout.

Practical for PFT

Thoracic Imaging – CXR Views, CT scans, lung fields, lung lesions, abnormal cardiac shadows, other abnormalities

Sleep assessment and polysomnography

Bronchoscopy

Practical: bronchoscopy

Arterial Blood Gas – Sampling and Interpretation

Practical: ABG

Electrocardiogram – Normal ECG, arrhythmias

Practical: ECG

Cardiac Pacemakers

Nutritional assessment

Hemodynamic monitoring – Central venous catheter, Pulmonary artery catheter, arterial line, and intracranial pressure monitoring

Respiratory monitoring in critical care

Monitoring of a patient on Mechanical ventilation

Oxygenation assessment

ICD insertion and underwater seal system

Practical: ICD insertion

Renal replacement therapy

Therapist driven protocol and role of RT

Respiratory failure and mechanical ventilation protocol

BLS, ACLS

**SUBSIDIARY SUBJECT I – CONSTITUTION OF INDIA**

Prescribed for the Second Year students of all degree classes

Unit-I: Meaning of the team ‘Constitution’ making of the Indian Constitution 1946-1940.

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.

**SUBSIDIARY SUBJECT II - ENVIRONMENT SCIENCE AND HEALTH**

Introduction to Environment and Health Sources, health hazards and control of environmental pollution Water

The concept of safe and wholesome water.

The requirements of sanitary sources of water.

Understanding the methods of purification of water on small scale and large scale.

Various biological standards, including WHO guidelines for third world countries.

Concept and methods for assessing quality of water.

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

Awareness of standards of housing and the effect of poor housing on health.

Role of arthropods in the causation of diseases, mode of transmission of arthropods borne diseases, methods of control

**SUBSIDIARY SUBJECT III – MEDICAL PSYCHOLOGY**

**UNIT –I:**

**Chapter1: Introduction to Psychology**

Meaning and Definitions psychology. Evolution of modern psychology. Scope of Psychology. Branches of psychology.

**Chapter 2: Normality and Abnormality**

Concept of normality and abnormality.

**UNIT –II**:

**Chapter 3:** **Identifying psychological disorders**

Anxiety disorders (panic, phobia, OCD, PTSD signs symptoms and management).

**UNIT –III**:

**Chapter 4: 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:**

**Chapter 5:** **Learning**

Meaning, definition, Theories of learning, Pavlov‘s classical conditioning, Skinner’s operant conditioning.

**UNIT-**V:

**Chapter 6:** **Therapeutic Techniques- Counseling**

-Counseling-meaning and definition.

**Chapter 7: Psychotherapy**

Meaning and definition. Relaxation-types. (Brief introduction to psychoanalytical, behavioral and CBT techniques)

**BOOKS FOR STUDY**:

C.P. Khokhar (2003) Text book of Stress Coping and Management Shalab publishing house.

S.M. Kosslyn and R.S. Rosenberg (2006)Psychology in Context. Pearson Education, Inc.

C.R. Carson, J.N. Bitcher, S.Mineka and J.M. Hooley (2007). Abnormal Psychology13th, Pearson Education, Inc.

D.A. Barlow and V.M. Durand (2004) Abnormal Psychology Wadsworth;Thompson Learning,3rd edition USA

R.J . Gerrig and P.G. Zimbardo (2006) Psychology and life . . Pearson Education ,Inc.

Pestonjee, D.M (1999). *Stress and coping: The Indian experience* (2nd edn.) New Delhi: Sage India Publications

**SYLLABUS FOR THIRD YEAR RESPIRATORY CARE TECHNOLOGY**

**SUBJECT I – RESPIRATORY CARE – CLINICAL**

**COURSE OBJECTIVES:**

1. To learn pathological changes, clinical findings, diagnosis and treatment of pulmonary disease.
2. To learn various adult, neonatal and childhood disorders.
3. To identify and describe the currently available treatment for all the pulmonary diseases.
4. To organize and distinguish between all the pulmonary diseases.

**COURSE OUTCOMES:**

CO1: Explains the pathological changes that occurs in the pulmonary system of patients suffering from pulmonary diseases.

CO2: Describe and diagnose clinical features of pulmonary disease in both adult and neonates.

CO3: Outlines the treatment of pulmonary diseases.

CO4: Understands the role of the respiratory therapist in the diagnosis and management of pulmonary disease.

**THEORY**

1. Symptoms of respiratory diseases – cough, hemoptysis, dyspnea, cyanosis
2. Upper respiratory tract infection
3. Lower respiratory tract infection

Bronchitis

Pneumonia – community acquired, hospital acquired, pneumonia in immunocompromised host, and atypical pneumonia

1. Lung abscess
2. Pulmonary tuberculosis
3. Tropical eosinophilia
4. Chronic obstructive pulmonary disease (COPD) and acute exacerbation of COPD
5. Bronchial asthma and acute severe asthma
6. Acute respiratory failure
7. Acute lung injury and acute respiratory distress syndrome
8. Pulmonary edema
9. Toxic inhalation
10. Meconium aspiration syndrome
11. Hyaline membrane disease (respiratory distress syndrome) and surfactant replacement therapy
12. Transient tachypnea of the new-born
13. Persistent pulmonary hypertension (PPHN)
14. Congenital cardiac defects
15. Oxygen therapy - hypoxemia, rationale, goals, precautions and hazards, assessment of need, adequacy of therapy, and devices
16. Humidification therapy - indications, uses, signs of inadequate humidification, and types of humidifiers
17. Aerosol therapy - goals, hazards, particle deposition in the lungs, aerosol generators, and types of nebulizers
18. Artificial airways and care of airways - types, indications for use, and care of long term airways and its complications
19. Manual resuscitators - types of manual resuscitators, and breathing circuits
20. Monitoring devices - transcutaneous monitoring, pulse-oximetry, capnometry
21. Advanced Cardiovascular Life Support –
    1. Adult cardiac arrest
    2. Adult bradycardia with a pulseand
    3. Adult tachycardia with a pulse.

**Practical**

Oxygen therapy

Humidification therapy

Aerosol therapy

Artificial airways and care of airways

Manual resuscitators

Monitoring devices - transcutaneous monitoring, pulse-oximetry, capnometry

Advanced Cardiovascular Life Support

**SUBJECT II – RESPIRATORY CARE - APPLIED**

**COURSE OBJECTIVES:**

1. To differentiate between hypoxemic respiratory failure (type I) and hypercapnic respiratory failure (type II).
2. To identify the effects of mechanical ventilation on oxygenation, ventilation, and lung mechanics.
3. To learn the how to manage the patients on mechanical ventilator.
4. To identify the risks and benefits of intensive care unit (ICU) monitoring techniques.

**COURSE OUTCOMES:**

CO1: Describe the general management principles of hypoxemic and hypercapnic respiratory failure.

CO2: Describe the effects of PPV on intracranial pressure, renal function, liver and splanchnic perfusion, gastrointestinal function, and central nervous system.

CO3: Describe the strategies to improve oxygenation and ventilation.

CO4: Describe the principles of monitoring the respiratory system, cardiovascular system, neurologic status, renal function, liver function, and nutritional status of patients in intensive care.

**THEORY**

***Cardio-pulmonary physiology***

1. Mechanics of ventilation - airway resistance, lung compliance, time constants, work of breathing, equal pressure point, and air trapping
2. Development of the respiratory system
3. Ventilation perfusion relationship
4. Oxygen transport
5. Carbon dioxide transport
6. Acid-base disorders
7. Regulation of respiration
8. Cardiac cycle
9. Regulation of cardiac output and blood pressure
10. Physiologic effects of positive pressure ventilation on all systems
11. Acute respiratory failure and need for ventilatory support – clinical features, types, classification, and causes of respiratory failure
12. Incentive spirometry

***Monitoring of patients on mechanical ventilation***

1. Arterial blood gases
2. Electrocardiography
3. Arterial lines
4. Central venous pressure monitoring
5. Pulmonary artery catheterization
6. Preload, afterload, and contractility assessment
7. Monitoring of parameters on the mechanical ventilator: Negative inspiratory force (NIF), spontaneous tidal volume, spontaneous respiratory rate, minute ventilation, hemodynamics, mean airway pressure, peak inspiratory pressure, air trapping, lung compliance, and airway resistance

***Management of patients on mechanical ventilator***

1. Strategies to improve ventilation and oxygenation
2. Fluid and electrolyte balance and nutrition
3. Pharmacotherapy: steroids, nebulization including MDI medications, neuromuscular blocking agents, and anaesthetics
4. Troubleshooting of ventilator alarms and events

**Practical**

1. Incentive spirometry
2. Arterial blood gases
3. Electrocardiography
4. Arterial lines
5. Central venous pressure monitoring
6. Pulmonary artery catheterization
7. Troubleshooting of ventilator alarms and events

**SUBJECT III – RESPIRATORY CARE – ADVANCED**

**COURSE OBJECTIVES:**

1. To learn the physical principles and functional design of mechanical ventilators.
2. To learn the various conventional modes of ventilation available in modern day ventilators.
3. To learn the working knowledge of various adult and pediatric intensive care ventilators used.
4. To learn the newer modes of ventilation.

**COURSE OUTCOMES:**

CO1: Identify the basic differences between spontaneous breathing, positive pressure ventilation and negative pressure ventilation.

CO2: Understanding of the physiological effects of mechanical ventilation.

CO3: Clear understanding of the conventional modes of ventilation such as assist control mode, control mode, intermittent mandatory ventilation (IMV), synchronized intermittent mandatory ventilation (SIMV), continuous positive airway pressure (CPAP) and pressure support ventilation (PSV).

CO4: Clear understanding of the present status of medical gases such as helium and nitric oxide in advanced cardiorespiratory care.

**THEORY**

1. Introduction to mechanical ventilation:

Spontaneous versus positive pressure ventilation

Negative pressure ventilation versus positive pressure ventilation

Pressure-time, flow-time, and volume versus time graphs of change in the alveoli and pleura during PPV and spontaneous breathing

Types of ventilators

Ventilator phase variables

1. Initiation of mechanical ventilation - indications, contraindications, initial ventilator settings, alarm settings, hazards and complications
2. Criteria for tracheal intubation and initiation of ventilatory support:

Universally followed intubation criteria, equipment selection, procedure for intubation, indication, contraindications, and complications

Selection of ventilatory modes and parameters depending on disease conditions and age of patient

1. Modes of ventilation:

Control mandatory ventilation

Assist – control mandatory ventilation

Positive end expiratory ventilation (PEEP) vs. continuous positive airway pressure (CPAP)

Synchronized intermittent mandatory ventilation

Pressure support ventilation (PSV) vs. mandatory minute ventilation (MMV)

Selection of other parameters during mode selection – trigger, I:E ratio, pressure support, frequency, FiO2, tidal volume, inspiratory flow, inspiratory plateau, and sigh

1. Ventilatory support during specific disease conditions (mode & settings selection)

Closed head injury, flail chest, obstructive lung disease, ARDS, unilateral lung disease.

1. Newer modes of ventilation

Biphasic positive airway pressure (BiPAP),

Airway pressure release ventilation (APRV)

Inverse ratio ventilation (IRV)

Pressure regulated volume control (PRVC)

High frequency ventilation

1. Ventilatory graphics and interpretation
2. Non-invasive positive pressure ventilation: introduction, indications, modes
3. Neonatal mechanical ventilation

CPAP delivery methods, indications and complications in neonates

Initiation of mechanical ventilatory support in neonates: indication, criteria, mode selection, selection of ventilator parameters, intubation criteria.

Weaning off ventilatory support

1. Weaning from mechanical ventilation

Criteria for weaning

Weaning from different modes - A-CMV to SIMV to PSV/ ASV to CPAP to SBT.

Weaning indices

Causes of weaning failure and ventilatory dependency

Long term mechanical ventilation

1. Special techniques for improving oxygenation

Extracorporeal membrane oxygenator

Liquid ventilation

Prone position ventilation

**Practical**

Initiation of mechanical ventilation

Modes of ventilation

Ventilatory support during specific disease conditions

Newer modes of ventilation

Ventilatory graphics and interpretation

Non-invasive positive pressure ventilation

Neonatal mechanical ventilation

Weaning from mechanical ventilation

**SUBJECT IV – PULMONARY REHABILITATION**

**COURSE OBJECTIVES:**

1. To learn the aspects of pulmonary rehabilitation.
2. To learn historical perspective, basic concepts, and family education as a part of pulmonary rehabilitation.
3. To train patients in home mechanical ventilation.
4. To learn pulmonary rehabilitation for COPD, non-COPD patients and pediatric patient with pulmonary disease.

**COURSE OUTCOMES:**

CO1: Understands the basic concepts of pulmonary rehabilitation.

CO2: Evaluates the behavioral medicine psychological, cognitive and social factors in pulmonary rehabilitation.

CO3: Describes about exercise in the rehabilitation of patients with respiratory disease.

CO4: Explains about physical medicine interventions and rehabilitation of the patient with COPD, non-COPD patients and pediatric patient with pulmonary disease.

**THEORY**

**Overview of pulmonary rehabilitation**

1. Definition and scope of pulmonary rehabilitation
2. The burden of chronic respiratory disease
3. A brief history of pulmonary rehabilitation
4. Essential components of pulmonary rehabilitation
5. Prevention
6. Patient goals, Program goals, Philosophy, Code of ethics for the pulmonary rehabilitation specialist

**Selection and assessment of the pulmonary rehabilitation candidate**

1. Patient selection and assessment
2. Goal development and rehabilitation potential

**Patient education and skills training**

1. Education process, Focus and scope of educational and skills training

**Exercise assessment and training**

1. Exercise assessment, Functional performance assessment Exercise training
2. Emergency procedures

**Psychosocial assessment and intervention**

1. Adjustment process, Psychosocial assessment, Psychosocial intervention

**Outcome assessment**

1. Timing of patient centered outcome measurement
2. Domains of outcome measurement

**Disease specific approach in pulmonary rehabilitation**

1. Asthma, Cystic fibrosis, Interstitial lung diseases
2. Obesity related respiratory disorders, Pulmonary hypertension
3. Neuromuscular and chest wall disorders
4. Lung volume reduction surgery, Lung transplantation
5. Lung cancer and thoraco-abdominal surgery
6. Mechanical ventilation
7. Pediatric patients with respiratory disease
8. Patients with coexisting pulmonary and cardiac disease
9. Special considerations in pulmonary rehabilitation

**Program management**

1. Program components and structure: Interdisciplinary team structure and Staff competencies, Strategies for program success, Medical director, program director and rehabilitation specialist
2. ATS Guidelines for six minute walk test, Forms, questionnaires and assessment
3. Therapeutic intervention in pulmonary rehabilitation:
4. Ventilatory muscle training
5. Nutritional assessment and support
6. Tobacco dependence: pathophysiology and treatment
7. Home mechanical ventilation
8. Sleep disorders in pulmonary patients
9. Surgical therapy for COPD patients
10. Dyspnea, assessment and management

**SUBSIDIARY SUBJECT I- MEDICAL ETHICS AND LEGAL ASPECTS**

**Theory**

**Unit 1**

Definition of ethics

Ethics and morals in relation to practice

Duties of a health care professional

Professional secrecy

**Unit 2**

Negligence and its various components

Product liability

Consumer protection Act

**Unit 3**

Consent, Types, Informed consent

Research and clinical trials

Organ transplantation

**SUBSIDIARY SUBJECT II - BIO STATISTICS**

Course Description:

Introduction to basic statistical concepts: methods of statistical analysis; and interpretation of data

Behavioral Objectives: Understands statistical terms. Possesses knowledge and skill in the use of basic statistical and research methodology.

Unit – I:

Introduction Meaning, definition, characteristics of statistics. Importance of the study of statistics. Branches of statistics. Statistics and health science including nursing. Parameters and estimates. Descriptive and inferential statistics. Variables and their types. Measurement scales

Unit – II:

Tabulation of Data Raw data, the array, frequency distribution. Basic principles of graphical representation. Types of diagrams - histograms, frequency polygons, smooth frequency polygon, cumulative frequency curve, ogive. Normal probability curve.

Unit - III:

Measure of Central Tendency Need for measures of central tendency Definition and calculation of mean - ungrouped and grouped. Meaning, interpretation and calculation of median ungrouped and grouped. Meaning and calculation of mode. Comparison of the mean, and mode. Guidelines for the use of various measures of central tendency.

Unit - IV:

Measure of Variability Need for measure of dispersion. The range, the average deviation. The variance and standard deviation. Calculation of variance and standard deviation ungrouped and grouped. Properties and uses of variance and SD.

Unit -V:

Probability and Standard Distributions. Meaning of probability of standard distribution. The Binominal distribution. The normal distribution. Divergence from normality - skewness, kurtosis.

Unit - VI:

Samling Techniques

Need for sampling - Criteria for good samples. Application of sampling in Community. Procedures of sampling and sampling designs errors. Sampling variation and tests of significance.

Unit - VII: Health Indicator Importance of health Indicator. Indicators of population, morbidity, mortality, health services. Calculation of rates and rations of health.

**SUBSIDIARY SUBJECT III - BASICS IN COMPUTER APPLICATIONS**

**Course Objectives:**

* The course focuses on the Fundamental of computer.
* At the end of the semester student must know Basic computer operation
* To understand the process of Editing and preparing documents
* To learn how to Preparing a power point presentation
* To learn the Basic knowledge about internet

**Course Outcomes:**

**CO1:** Students will be able to understand the basics of computer application.

**CO2:** Students will be able to gain knowledge about hardware and networking.

**CO3:** Students will be able to learn overview of computer and software.

**CO4:** Students will understand process of data processing.

The course enables the students to understand the fundamentals of computer and its applications.

Introduction to Data processing:

Features of computers, Advantages of using computers. Getting data into / out of computers. Role of computers. What is Data processing? Application areas of computers involved in Data processing. Common activities in processing. Types of Data processing, Characteristics of information. What are Hardware and Software?

Hardware Concepts:

Architecture of computers, Classification of computers, Concept of damage. Types of storage devices. Characteristics of disks, tapes, Terminals, Printers, Network. Applications of networking concept of PC System care, Floppy care, Data care.

Concept of Software.

Classification of software: System software. Application of software. Operating system. Computer system. Computer virus. Precautions against viruses. Dealing with viruses. Computers in medical electronics Basic Anatomy of Computers Principles of programming

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

Data processing

Computers in physical therapy - principles in EMG, Exercise testing equipment, Laser.