

# **COURSE WORK SYLLABUS FOR ALLIED HEALTH SCIENCE**

**(Subject code: 18SPHDAH01)**

## **RESEARCH METHODOLOGY**

**(COMMON TO ALL STUDENTS)**

### **MODULE 1 - Introduction to research methodology**

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

### **MODULE 2 – Study Designs-Observational Studies**

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

### **MODULE 3- Experimental Studies**

Experimental studies (Intervention studies); Randomized control trials (Clinical trials), Field trials, Community trials.

### **MODULE 4- Uses of Epidemiology**

### **MODULE 5- Application of study Designs in Medical Research**

## **REFERENCES**

1. K.R.Sundaram, S.N.Dwivedi and V Sreenivas (2010): Medical statistics, principles and methods, BI Publications Pvt Ltd, New Delhi
2. NSN Rao and NS Murthy (2008): Applied Statistics in Health Sciences, Second Edition, Jaypee Brothers Medical Publishers (P) Ltd.
3. J.V.Dixit and L.B.Suryavanshi (1996): Principles and practice of biostatistics, First Edition, M/S Banarsidas Bhanot Publishers.
4. GetuDegu and Fasil Tessema (2005): Biostatistics, Ethiopia Public Health Training Initiative.
5. Essentials of Community Medicine for Allied Health Sciences, JSS University Publications, 20

6. Park K. Park's Textbook of Preventive and Social Medicine. 23rd ed. Jabalpur: Banarsidas Bhanot Publishers; 2015. p.135-141
7. Suryakantha. Textbook of CommMODULEy medicine with recent advances. 3rd edition.
8. Bhalwar R. Textbook of Public Health and CommMODULEy Medicine.2nd Edition. Pune: Department of CommMODULEy Medicine AFMC; 2012
9. Leon Gordis. Epidemiology Fourth Edition – Elsevier Saunders Publication

(Subject code: 18SPHDAH02)

## **Common Subject 2- HEALTH CARE**

### **MODULE 1 - Introduction to Health**

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

### **MODULE 2 -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.

**MODULE 3 -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.

**MODULE 4 -Methods Of Giving Nourishment:** Feeding, Tube feeding, drips, transfusion

Care of Rubber Goods , Recording of body temperature, respiration and pulse,

Simple aseptic technique, sterilization and disinfection.

**MODULE 5 - Surgical Dressing:** Observation of dressing procedures

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

(Subject code: 18SPHDAH03)

### **Common Subject 3 - MICROBIOLOGY**

**MODULE 1 - Morphology** Classification of microorganisms, size, shape and structure of bacteria. Use of microscope in the study of bacteria.

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

**MODULE 2 - Sterilisation and Disinfection** 4 hours Principles and use of equipments of sterilization namely Hot Air oven, Autoclave and serum inspissator. Pasteurization, Antiseptic and disinfectants. Antimicrobial sensitivity test

Immunology Immunology 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)

**MODULE 3 - 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) Staphylococci, Streptococci, Pneumococci, Gonococci, Meningococci, Clostridia, Bacillus, Shigella, Salmonella, Escherichia coli, Klebsiella, Proteus, Vibrio cholerae, Pseudomonas & Spirochetes

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

**MODULE 4 - Mycology** Morphology, diseases caused and lab diagnosis of following fungi. Candida, Cryptococcus, Dermatophytes, opportunistic fungi.

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

**MODULE 5 - Hospital infection** Causative agents, transmission methods, investigation, prevention and control Hospital infection.

Principles and practice Biomedical waste management

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## MLT Subject- BIOCHEMISTRY

### **MODULE 1 - Fundamental Chemistry**

- Valency, Molecular weight & Equivalent weight of elements and compounds.  
Normality, Molarity, Molality

### **MODULE 2 - Acids, Bases, Salts and Indicators**

- Basic concepts. Determination of pH – Henderson Hasselbalch's equation. Buffer solutions. pH determination of buffers. Blood pH. Fluid buffers.

### **MODULE 3 - Introduction to General Bio-molecules:**

- Chemistry of carbohydrates: Classification, Functions of carbohydrates
- Chemistry of amino acids: Classification – based on structure and nutritional requirement,  
Occurrence. Functions of amino acids.
- Chemistry of lipids: Classification of lipids and fatty acids. Functions of lipids
- Chemistry of nucleotides: Purine and Pyrimidine bases. Composition of nucleosides and  
Nucleotides. Occurrence of bases.

### **MODULE 4 - MODULES of measurement**

- Metric system. Common laboratory measurements, Prefixes in metric system
- International system of MODULES- SI MODULES- definition, classification, Conversion of conventional and SI MODULES.

### **MODULE 5 - Solutions: Definition, use, classification where appropriate, preparation and storage**

- Stock and working solutions.
- Molar and Normal solutions of compounds and acids. (NaCl, NaOH, HCl, H<sub>2</sub>SO<sub>4</sub>, H<sub>3</sub>PO<sub>4</sub>, CH<sub>3</sub>COOH etc.,)
- Preparation of percent solutions – w/w, v/v w/v (solids, liquids and acids), Conversion of a

percent solution into a molar solution

- Saturated and supersaturated solutions
- Standard solutions - Technique for preparation of standard solutions and Storage. E.g: glucose, albumin etc.
- Dilutions - Diluting Normal , Molar and Percent solutions. Preparing working standard from stock standard.

Part dilutions: Specimen dilutions. Serial dilutions, Reagent dilution, Dilution factors

(Subject code: 18SPHDAH05)

## **RCT SUBJECT- RESPIRATORY CARE TECHNOLOGY**

### **MODULE 1 - Respiratory Care Technology - Clinical**

Symptoms of respiratory diseases • Cough, Haemoptysis, dyspnoea, cyanosis Concept of disease, clinical Evaluation and management of the following Respiratory Diseases • Acute Rhinitis • Acute sinusitis • Acute pharyngitis • Laryngotracheitis • Epiglottitis

Lower respiratory tract infection • Bronchitis • Pneumonia - community acquired, hospital acquired • Immunocompromised host • Lung abscess • Atypical pneumonia • Common viral and fungal lower respiratory • Pulmonary tuberculosis • Tropical eosinophilia • Acute obstructive pulmonary diseases and acute respiratory failure • Pulmonary oedema • Acute lung injury • Toxic inhalation • Bronchial asthma and other types of chronic obstructive pulmonary disease

**MODULE 2 - Oxygen therapy (rationale for oxygen therapy, precautions assessment of need and adequacy and therapy and the relevant devices) • Causes and responses to hypoxemia • Clinical signs of hypoxemia • Goals of oxygen therapy • Oxygen therapy devices • Hazards of oxygen therapy • Uses of humidification • Possible of inadequate humidification • Possible results if leaked airway • Types of humidifiers (including active and passive methods of humidification) • Goals of aerosol therapy • Hazards of aerosol therapy • Assessment of aerosol therapy • Factors influencing aerosol deposition in the lungs • Particle deposition**

• Aerosol generators, Nebulisers and metered dose inhaler • Types of nebulisers • Aerosol output • Small volume nebuliser therapy-definition, physiological rationale Gas Analysers (Oxygen, Carbon - Dioxide) • Gas analysis • Transcutaneous oxygen monitors • pulse oximeters • Capnography

Manual Resuscitators • types of resuscitator bags, bypass airway • Indications • Hazards

Artificial airway (oral and Nasal Endotracheal tubes tracheostomy tubes) • Parts of airway and features • Types sizes and method of insertion • Indications for use • Care of long term airway and complications • Face mask - types sizes and its usage

### **MODULE 3 - Respiratory Care Technology - Applied**

Principles of mechanical ventilation -Airway resistance, lung compliance, dead space Ventilation, ventilatory failure, oxygenation failure, clinical conditions leading to mechanical ventilation. Operating modes of mechanical ventilation. Monitoring in mechanical ventilation- concepts of monitoring, vital signs, chest inspection and auscultation, fluid electrolyte balance, arterial blood gases, oxygen and end tidal carbon dioxide monitoring Management of mechanical ventilation-strategies to improve ventilation, improve oxygenation, acid base electrolyte balance and their correction. Fluid electrolyte nutrition balance and management. Troubleshooting of ventilator alarms and events, care of the ventilation circuit, care of the artificial airway. Pharmacotherapy for mechanical ventilation

**MODULE 4 -** This includes drugs for improving ventilation, steroids, MDI medications, neuromuscular blocking agents like nitric oxide, propofol and Anaesthetic gases Effect of PEEP- Pulmonary considerations, effects on the cardiovascular system, Haemodynamics, renal neurological considerations. Basic ventilator waveform analysis. Haemodynamics monitoring; ECG arterial catheter, CVP , pulmonary artery catheter, Cardiac output and vascular resistance calculation, Preload after load contractility assessment, calculation of haemodynamic values, monitoring of mixed venous saturation Classification of mechanical ventilators- Ventilator classification, ventilatory work, drive mechanism, control circuits, control variables, phase variables, output waveform, alarm system. Airway management in mechanical ventilation-intubation, common artificial airways, intubation procedures, management of endotracheal and tracheostomy tubes, extubation, complications of the above. Tracheostomy minitracheostomy Endotracheal intubation Humidification

### **MODULE 5 -Respiratory Care Technology - Advanced**

Initiation of mechanical ventilation- indications, contraindication, initial Ventilator settings, Ventilator alarm settings, hazards and complications Weaning from mechanical ventilation- weaning and its failure, weaning criteria and indices, weaning procedure, signs, causes of weaning failure. Neonatal mechanical ventilation - intubation and problems inherent to the neonate, surfactant replacement therapy, basic principles of neonatal ventilation, modes, initiation and maintenance, high frequency ventilation, liquid ventilation Clinical situations with case studies of mechanical ventilation and management. Noninvasive positive pressure ventilation - introduction, terminology, indications, CPAP, bi-level PAP , Home mechanical ventilation-goals, indications, patient selection, equipment selection. Miscellaneous -



barotraumas, transport during ventilation, hyperbaric therapy, caissons disease and high altitude sickness, sleep apnea and related disorders, drug overdosing and poisoning requiring ventilation and their therapy, pulmonary edema, drowning, oxygen toxicity.