SUMANDEEP VIDYAPEETH

(Declared as Deemed to be University under Section 3 of the UGC Act 1956)

Accredited by NAAC with a CGPA of 3.53 out of four-point scale at 'A' Grade

Category – I deemed to be university under UGC Act - 2018

At & Post Piparia, Tal: Waghodia 391760 (Gujarat) India.
Ph: 02668-245262/64/66, Telefax: 02668-245126,
Website: www.sumandeepvidyapeethdu.edu.in

Attested CTC

15/2/2021

Vice-Chancellor
Sumandeep Vidyapeeth
An Institution Deemed to be University
Vill. Piparia, Taluka: Waghodia.
Dist. Vadodara-391 760. (Gujarat)

CURRICULUM

Diploma
in
ELECTROGRAPHY AND ELECTROTHERAPY TECHNOLOGY

Sumandeep Vidyapeeth • Deemed to be University •

Dean

Smt. B. K. Shah Med. Instt. & Res. Centre

AMENDED UP TO DECEMBER -2020

INTRODUCTION

Learning objectives

An **Electrography and Electrotherapy Technician** should have knowledge of moral values and disciplines of the medical field and able to independently handle the latest technology relevant to heart diseases and able to perform Electrograph.

Program outcomes

Demonstrate leadership, teamwork and decision making in the management of critical case in ambulance. Plan and implement clinical and scientific activities related to the cardiovascular disease.

Ethics and accountability

Students will understand core concepts of clinical ethics and law so that they may apply these to their practice as healthcare service providers. Program objectives should enable the students to:

- Describe and apply the basic concepts of clinical ethics to actual cases and situations
- Recognize the need to make health care resources available to patients fairly, equitably and without bias, discrimination or undue influence
- Demonstrate an understanding and application of basic legal concepts to the practice
- Employ professional accountability for the initiation, maintenance and termination of patient-provider relationships
- Demonstrate respect for each patient's individual rights of autonomy, privacy, and confidentiality

Commitment to professional excellence

The student will execute professionalism to reflect in his/her thought and action a range of attributes and characteristics that include technical competence, appearance, image, confidence level, empathy, compassion, understanding, patience, manners, verbal and non-verbal communication, an anti-discriminatory and non-judgmental attitude, and appropriate physical contact to ensure safe, effective and expected delivery of healthcare.

Eligibility for admission

- Candidate should have passed 10 + 2 with science(PCB)

Duration of the course

Duration of the course is 2 year and 1 year internship

Medium of instruction: English shall be the medium of instruction for all the subjects of study and for examination of the course.

Attendance

A candidate has to secure minimum 80% attendance in overall with at least-

1. 75% attendance in theoretical
2. 80% in Skills training (practical) for qualifying to appear for the final examination.

No relaxation, whatsoever, will be permissible to this rule under any ground including indisposition etc.

Assessment: Assessments should be completed by the academic staff, based on the compilation of the student's theoretical & clinical performance throughout the training programme. To achieve this, all assessment forms and feedback should be included and evaluated. Student must attain at least 50% marks in each Theory, Internal assessment and Practical independently / separately for each individual subject.

COURSE OF INSTRUCTION

Course Name	Course Code	Theory (In hrs.) (Class and lab)	Practical (In hrs.) (Clinical)	Total (in Hours)
First Year - Total Hours 600				
Anatomy	DEET101	60	40	100
Physiology	DEET102	60	40	100
Biochemistry	DEET103	60	40	100
Pathology & Microbiology	DEET104	60	40	100
2nd Year - Total Hours 540				
Basic Electrocardiography (ECG)	DEET201	60	40	100
Advanced Electrocardiography (ECG)	DEET202	60	40	100
Pharmacology related to cardiac care technology	DEET203	60	40	100
3rd year-Internship	Total hours-2184			

SCHEME OF EXAMINATION

Sl. No.	Subject Title	I A		University Exam	
		Theory	Practical	Theory	Practical
First Year					
1.	Anatomy	20	20	80	80
2.	Physiology	20	20	80	80
3.	Biochemistry	20	20	80	80
4	Pathology & Microbiology	20	20	80	80
Second Year					
1	Basic Electrocardiography (ECG)	20	20	80	80
2	Advanced Electrocardiography (ECG)	20	20	80	80
3	Pharmacology related to cardiac care technology	20	20	80	80

1ST YEAR Diploma Electrography and Electrotherapy Technology

DEET 101 Anatomy — 100 Hours

Basic Anatomical terminology

- The human body
- Skeleton
- Brain
- Head and neck
- Limbs
- Thorax
- Abdomen

DEET 102 Physiology — 100 Hours

The Cell:

- Cell Structure and functions of the various organelles.
- Endocytosis andexocytosis

The Blood:

- Composition of Blood
- Functions of the blood and plasma proteins, classification and protein.
- Pathological and Physiological variation of theRBC.
- Function of Hemoglobin
- Erythrocyte Sedimentation Rate.
- Detailed description about WBC-Total count (TC), Differential count (DC) and functions.
- Platelets – formation and normal level and functions
- Blood groups and Rh factor

DEET 103 Biochemistry — 100 Hours

Carbohydrates-Glucose and GlycogenMetabolism
Proteins:-Classification of proteins and functions
Lipids:-Classification of lipids andfunctions
Vitamins & Minerals:

- Fat soluble vitamins(A,D,E,K) – Water soluble vitamins –B-complex
- vitamins- principal elements(Calcium, Phosphorus, Magnesium,Sodium,
- Potassium, Chlorine and sulphur)- Trace elements – Calorific value of foods–
- Basal metabolic rate(BMR) – respiratory quotient(RQ) Specificdynamicaction(SDA)
- Balanced diet – Marasmus –Kwasoirkar

DEET 104 Pathology& Microbiology — 100 Hours

Cellular adaptation, Cell injury & cell death.
Introduction to pathology.
Overview: Cellular response to stress and noxious stimuli. Cellular adaptations of growth and differentiation.

Overview of cell injury and cell death. Causes of cell injury

Mechanisms of cell injury.

- Reversible and irreversible cell injury.
- Examples of cell injury and necrosis

Inflammation.

- General features of inflammation Historicalhighlights
- Acuteinflammation
- Chemical mediators of inflammation Outcomes of acute inflammation Morphologic patterns of acute inflammation Summary of acute inflammation
- Chronic inflammation

Immunitydisorders.

- General features of the immune system Disorders of the immune system
- **Infectiousdiseases.**
- General principles of microbial pathogenesis Viral infections
- Bacterial infections-Rheumatic heart disease. Fungal infections
- Parasitic infections

Neoplasia.

- Definitions Nomenclature
- Biology of tumor growth benign and malignant neoplasm Epidemiology
- Carcinogenic agents and their cellular interactions Clinical features of tumors

Environmental and nutritional disorders.

- Environmental anddisease
- Common environmental and occupational exposures Nutrition and disease.
- Coronary artery disease.

Microbiology

U**NIT I: General Microbiology**

- History: Louis Pasteur, Robert Koch
- Microscope: Parts, function and its types
- Morphology of bacteria: classification of microorganisms, bacteria cell, staining of
- bacteria-Gram and ZN stain.
- Physiology of bacteria: Growth and nutrition of bacteria, Growth curve
- Sterilization and disinfection: Dry heat, moist heat sterilization, filtration, Radiation,
- Disinfectants use in hospital
- Culture media: simple and complex media, preparation and its use
- Culture methods: aerobic and anaerobic
- Identification of bacteria: catalase test, coagulase test, oxidase test, Urease test.

UNIT II: Immunology

- Infection
- Immunity
- Antigen
- Antibody

UNIT III: Collection, Transport and Processing Of Clinical Specimens:

- Throat swab
- Sputum
- Urine
- Pus
- Blood
- CSF

UNIT IV: Systemic Bacteriology

- Staphylococcus aureus
- Streptococcus pyogenes
- Pneumococcus
- E.coli, Klebsiella and Pseudomonas

UNIT V: Health care associated Infections: Sources, Method of transmission and Prevention

UNIT VI: Principle and Practices of Biomedical waste management:
Practical:

- Microscope: parts function, focus, care and handling
- Hanging drop preparation
- Performance of Gram's stain
- Performance of ZN stain
- Culture media preparation: Nutrient agar, Blood agar, Chocolate agar, NA slant,
    - Mac Conkeys agar.
- Functioning of Autoclave and Hot air oven
- Visit to hospital for the demonstration of Biomedical Waste Management
- Aseptic practices in laboratory and safety precautions

Second Year

Each student shall undergo training in Skill Simulation Laboratory for learning certain basic clinical skills like IV/IM injection, setting IV line, Cardio-pulmonary resuscitation (CPR), and Life support skills in the beginning of second year, for duration of continuous four days. (Board of Studies letter No.:FPMS/SV/BOS-MIN/0006/2016-17, dated 19/04/2017, and vide notification of Board of Management resolution Ref.:No. SVDU/R/2017-18/5056, dated 09/01/2018).

DEET 201 Basic Electrocardiography(ECG) 100 Hours

- Fundamental principles of electrocardiography Cardiac electrical field generation during activation Cardiac wave fronts
- Cardiac electrical field generation during ventricular recovery Electrocardiographic lead systems
- Standard limb leads
- Precordial leads and the Wisdom central terminal Augmented limb leads
- The hexaxial reference frame and electrical axis Recording adult and pediatric ECGs
- The normal electrocardiogram Atrial activation
- The normal P wave Artial repolarization
- Atrioventricular node conduction and the PR segment Ventricular activation and the QRS complex Ventricular recovery and ST-T wave, U wave
- Normal variants Rate and rhythm

DEET 202 Advanced Electrocardiography (ECG) 100 Hours

- The abnormal electrocardiogram Left atrial abnormality
- Right atrial abnormality
- Left ventricular hypertrophy and enlargement Right ventricular hypertrophy and enlargement intraventricular conduction delays
- Left anterior fascicular block Left posterior fascicular block Left bundle branch block Right bundle branch block
- Myocardial ischemia and infarction Repolarization (ST-Twave) abnormalities QRS changes
- Evolution of electrocardiographic changes Localization of ischemia or infarction Non-infarction Q waves
- Primary and seconday T wave change Electrolyte and metabolic ECG abnormalities Cardiac arrhythmias
- Ventricular premature beats Supra-ventricular tachycardia's Atrial flutter/fibrillation
- Ventricular Tachycardia/Ventricular fibrillation Atrio Ventricular block
- Prolonged PR interval
- Mobitz type 1 and 2 block Complete heart block Direct Current (DC) shock Defibrillator
- Monophasic and biphasic shock Technique of cardio version Indications for cardioverion

DEET 203 Pharmacology related to cardiac care technology 100 Hours

Anti-anginalagents

- Beta blockers-propranolol, atenolol, metoprolol, bisoprololcarvedilol, esmolol.
- Nitrates-nitroglycerine, isosorbidedinitrate, isosorbidemononitrate, transdermal nitrate patches
- Calcium channel blockers-nifedipine, verapamil, dilteazem, amlodipine

Anti-failureagents

- Diuretics-furosemide, torsamide, thiazide diuretics, metolazone, spironolactone, combination diuretics
- Angiotensin convertying enzyme (ACE) inhibitors – captopril Enalapril, ramipril, lisinopril, ACE inhibitors for diabetics and hypertensive renal disease
- Digitalis and acute ionotropes – digoxin, odoubutamine, dopamine, adrenaline, noradrenaline, isoprenaline

Anti-hypertensive drugs

- Diuretics, beta-blockers, ACE inhibitors, calcium antagonists, direct Vasodilators,

centrally acting and peripherally acting vasodilators.

Anti- arrhythmicagents
Amiodarone, adenosine, verapamil, diltiazem, lidocaine, mexiletine, Phenytoin, flecainide, bretylium, atropine

Antithromboticagents

- Platelet inhibitors: aspirin, clopidogrel
- Anticoagulants: heparin, low molecular weight heparin, warfarin Fibrinolytics: streptokinase, urokinase
- Glycoprotein 2b3a antagonists: abciximab, tirofiban, eptifibatide
- Lipid lowering and anti-atherosclerotic drugs: statins, exetimibe, niacin, fenofibrate

Miscellaneous drugs Protamine

- **Narcotics:** morphine, pethidine, fentanyl Sedatives: diazepam, midazolam **Steroids**: hydrocortisone, oprednisolone, Antihistamines: diphenhydramine
- **Antibiotics**: penicillin's, cephalosporins, aminoglycosides Antacids and proton pump inhibitors
- **Anesthetic agents**: local and general

CODE OF PROFESSIONAL CONDUCT
INTRODUCTION

The Code of Professional Conduct is designed and set out as guidance for the clinical practitioner within the relationship that exists with every patient receiving health care.

Essential to that relationship is the patient's trust in the practitioner. This trust hangs upon the patient's assurance of being the practitioner's first concern during their clinical encounter, and upon the patient's confidence that the care received will be competent, whether in diagnosis, therapy or counseling.

STANDARD OF PRACTICE AND CARE

Patients are entitled to the highest standard of practice and care. The essential elements of this are professional competence, good relationships with patients and colleagues and observance of professional ethical obligations.

In providing care you must therefore:

- Recognize the limits of your professional competence.
- Be willing to consult colleagues
- Keep clear, accurate and contemporaneous patient records which report the relevant findings.
- Keep colleagues informed.
- Pay due regard to the efficacy and the prudent use of resources.
- Be competent, truthful, and accurate, when reporting on investigations.
- Be competent when giving or arranging treatment.

Patient's rights

- Listen to patients and respect their views.
- Treat patients politely and considerately.
- Respect patients' privacy and dignity.
- Give information to patients in a way they can understand.
- Respect the right of patients to be fully involved in decisions about their care.
- Respect the right of patients to refuse treatment or to take part in teaching or research, reporting the refusal to the person requesting the procedure.
- Respond to complaints promptly and constructively.
- Ensure that your views about a patient's life style, culture, beliefs, race, colour, sex, sexuality, age, social status, or perceived economic worth, do not prejudice the service you give.

CONFIDENTIALITY

Patients have a right to expect that you will not pass on any personal information which you learn in the course of your professional duties, unless they agree.

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