

# SUMANDEEP VIDYAPEETH

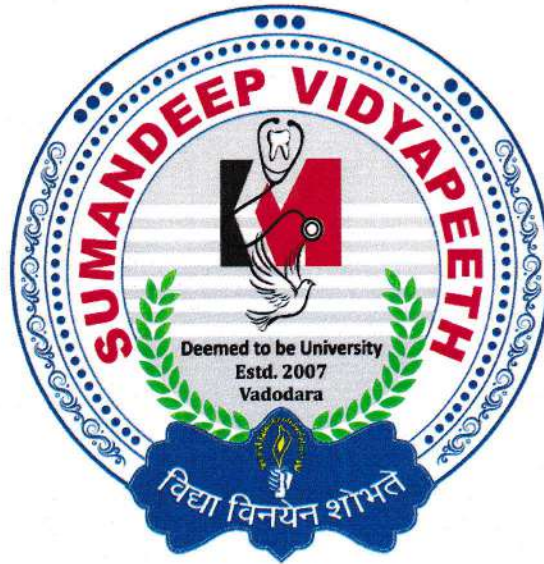
(Declared as Deemed to be University under Section 3 of the UGC Act 1956)

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

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CURRICULUM

Diploma  
in

CARDIAC AMBULANCE TECHNICIAN

Attested CTC

*Charaney*  
15/2/2021

Vice-Chancellor

Sumandeep Vidyapeeth

An Institution Deemed to be University

Vill. Piparia, Taluka: Waghodia.

Dist. Vadodara-391 760. (Gujarat)



2016

*Uchhanna*

*Chobshi*



## **INTRODUCTION**

### **Scope**

The quality of paramedical care has improved tremendously in the last few decades due to the advances in technology, thus creating fresh challenges in the field of healthcare. It is now widely recognized that health service delivery is a team effort involving both clinicians and non-clinicians, and is not the sole duty of physicians and nurses.<sup>1</sup> Professionals that can competently handle sophisticated machinery and advanced protocols are now in high demand. In fact, diagnosis is now so dependent on technology, that paramedical and healthcare professionals are vital to successful treatment delivery.

Effective delivery of healthcare services depends largely on the nature of education, training and appropriate orientation towards community health of all categories of health personnel, and their capacity to function as an integrated team, with a range of skills and expertise, play key roles within the National Health Service, working autonomously, in multi-professional teams in various settings. All of them are first-contact practitioners and work across a wide range of locations and sectors within acute, primary and community care.

### **Learning goals and objectives for paramedical healthcare professionals**

The learning goals and objectives of the undergraduate and graduate education program will be based on the performance expectations. They will be articulated as learning goals (why we teach this) and learning objectives (what the students will learn). Using the framework, students will learn to integrate their knowledge, skills and abilities in a hands-on manner in a professional healthcare setting.

### **Program outcomes**

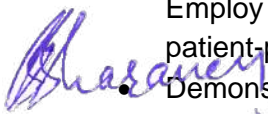
1. Perform an adequate patient assessment and formulate and implement a treatment plan for patients with a variety of medical and traumatic emergencies.
2. Demonstrate leadership, teamwork and decision making in the management of critical case in ambulance. Plan and implement clinical and scientific activities related to the profession of cardiovascular technology.
3. Describe and use defensive and safe driving techniques in the operation of emergency vehicles.

### **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

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### 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)
- Minimum percentage of marks: 55% aggregate.

### Duration of the course

Duration of the course is 2 years

**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.

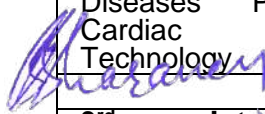
No relaxation, whatsoever, will be permissible to this rule under any ground including indisposition etc.

**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)
<b>First Year - Total Hours 400</b>				
Anatomy	DCAT101	60	40	100
Physiology	DCAT102	60	40	100
Biochemistry	DCAT103	60	40	100
Pathology & Microbiology	DCAT104	60	40	100
<b>2<sup>nd</sup>Year - Total Hours 200</b>				
Pharmacology related to cardiac care technology	DCAT201	60	40	100
Pathology, Microbiology, Clinical Features And Treatment of Diseases Pertinent to Cardiac Technology	DCAT202	60	40	100
<b>3<sup>rd</sup> year - Internship</b>		Total hours 218		

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**SCHEME OF EXAMINATION**

**FIRST YEAR:**

Sr. No.	Subject Title	I A		University Exam	
		Theory	Practical	Theory	Practical
1.	Anatomy	20	20	80	80
2.	Physiology	20	20	80	80
3.	Biochemistry	20	20	80	80
4	Pathology & Microbiology				

**SECOND YEAR:**

Sr. No.	Subject Title	I A		University Exam		Total	
		Theory	Practical	Theory	Practical	Theory	Practical
1	Pharmacology related to cardiac care technology	20	20	80	80	100	100
2	Pathology, Microbiology, Clinical Features And Treatment of Diseases Pertinent to Cardiac Technology	20	20	80	80	100	100

**First Year Diploma in Cardiac Ambulance Technician**

**DCAT101Anatomy 100 Hours**

**Basic Anatomical terminology**

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

**DCAT 102 Physiology 100 Hours**

**The Cell:**

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

**The Blood:**

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- Composition of Blood
- Functions of the blood and plasma proteins, classification and protein.
- Pathological and Physiological variation of the blood
- Function of Hemoglobin
- Erythrocyte Sedimentation Rate.

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- Detailed description about WBC-Total count (TC), Differential count (DC) and functions.
- Platelets – formation and normal level and functions
- Blood groups and Rh factor

### DCAT 103: Biochemistry

100 Hours

**Carbohydrates**-Glucose and Glycogen Metabolism

**Proteins**:-Classification of proteins and functions

**Lipids**:-Classification of lipids and functions

**Vitamins & Minerals:**

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

### DCAT 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

Historical highlights

Acute inflammation

Chemical mediators of inflammation

Outcomes of acute inflammation Morphologic

patterns of acute inflammation Summary of

acute inflammation

Chronic inflammation

**Immunity disorders.**

General features of the immune system

Disorders of the immune system

**Infectious diseases.**

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

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Carcinogenic agents and their cellular interactions  
Clinical features of tumors

**Environmental and nutritional disorders.**

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

**Microbiology**

**UNIT 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, Indole TESTS

**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:**

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- 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 Diploma Cardiac Ambulance Technician**

### **DCAT201 Pharmacology related to cardiac care technology**

**100 Hours**

#### **Anti-anginal agents**

Beta blockers-propranolol, atenolol, metoprolol, bisoprolol carvedilol, esmolol.  
Nitrates-nitroglycerine, isosorbide dinitrate, isosorbide mononitrate, transdermal nitrate patches  
Calcium channel blockers-nifedipine, verapamil, diltiazem, amlodipine

#### **Anti-failure agents**

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

#### **Anti-hypertensive drugs**

Diuretics, beta-blockers, ACE inhibitors, calcium antagonists, direct Vasodilators, centrally acting and peripherally acting vasodilators.

#### **Anti- arrhythmic agents**

Amiodarone, adenosine, verapamil, diltiazem, lidocaine, mexiletine, Phenytoin, flecainide, bretylium, atropine

#### **Antithrombotic agents**

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, ezetimibe, niacin, fenofibrate**

**Miscellaneous drugs Protamine**

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**Narcotics:** morphine, pethidine, fentanyl **Sedatives:** diazepam, midazolam **Steroids:** hydrocortisone, prednisolone, Antihistamines: diphenhydramine  
**Antibiotics:** penicillin's, cephalosporin's, amino glycosides Antacids and proton pump inhibitors  
**Anesthetic agents:** local general

**DCAT202 Pathology and Microbiology, Clinical Features and Treatment related to Cardiac Technology**

**100 Hours**

**Valvular heart disease**

- Etiology
- Acquired valvular heart disease
- Rheumatic fever and rheumatic heart disease Aortic stenosis
- Aortic regurgitation Mitral valve disease Mitral stenosis Mitral regurgitation Mitral valve disease
- Tricuspid valve disease Infective endocarditis Valvuloplasty and valve surgery

**Coronary artery disease**

Pathophysiology and clinical recognition Angina Pectoris

- Symptomatic and asymptomatic myocardial ischemic Types and locations of myocardial infarction Thrombolytic therapy
- Medical treatment Percutaneous interventions Surgical treatment
- Cardiac rehabilitation

**Systemic hypertension**

Essential and secondary hypertension

**Heart failure**

Surgical and medical treatment

**Myocardial disease**

Dilated cardiomyopathy Hypertrophic cardiomyopathy Restrictive cardiomyopathy Myocarditis

**Pericardial Diseases**

Pericardial effusion Constrictive pericarditis Cardiac tamponade

**Electrical disturbances of the heart**

Sinus node dysfunction

Arrhythmias and conduction disturbances

Treatment of arrhythmias – pharmacological, radiofrequency ablation and surgery

**Pulmonary hypertension**

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Primary pulmonary hypertension pulmonary thromboembolism

### **Peripheral Vascular Disease**

- Atherosclerotic peripheral vascular disease Aortic aneurysms
- Aortic dissection Takayasu's arthritis

### **Congenital heart disease**

- A cyanotic heart disease Atrial septal defect
- Ventricular septal defect Patent ductus arteriosus
- Congenital valvular disease Coarctation of aorta
- Cyanotic congenital heart disease Tetralogy of Fallot
- Double outlet right ventricle Pulmonary atresia Transposition of great arteries Truncus arteriosus
- Total anomalous pulmonary venous connection

## **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.

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- Be competent when giving or arranging treatment.

#### **Patient's rights**

- Listen to patients and respect their views.

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15/1/2021

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- 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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